

DRAFT

ANNUAL REPORT

2012 - 2013

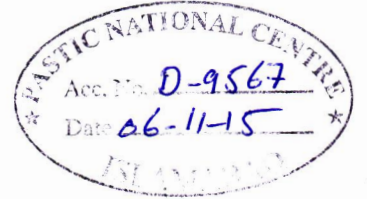


Pakistan Science Foundation
Islamabad

DRAFT

ANNUAL REPORT

2012-2013



PAKISTAN SCIENCE FOUNDATION
1 - Constitution Avenue
Islamabad

PAKISTAN SCIENCE FOUNDATION

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ACRONYMS

AGR	Agricultural Sciences
AJK	Azad Jammu and Kashmir
AKU	The Agha Khan University, Karachi
B	Balochistan
BIO	Biological Sciences
BIOTECH	Biotechnology & Genetic Engineering
C	Capital
CDWP	Central Development Working Party
CEMB	Center of Excellence in Molecular Biology, Lahore.
CEME	College of Electrical and Mechanical Engineering, Rawalpindi.
CEWRE	Center of Excellence in Water Resources Engineering, Lahore.
CIIT	COMSATS Institute of Information Technology
COMSATS	Commission on Science and Technology for Sustainable Development in the South
COMSTECH	OIC Standing Committee on Scientific and Technological Cooperation
DDWP	Departmental Development Working Party
EARTH	Earth Sciences
ENG	Engineering Sciences
ENVR	Environmental Sciences
ILG	Industrial Linkages Group
KPK	Khyber PakhtoonKhwa
PU	Peshawar University, Peshawar
FJWU	Fatima Jinnah Women University
GCU	Government College University, Lahore
GU	Gomal University, D. I. Khan
KU	Karachi University, Karachi
MED	Medical Sciences
NARC	National Agricultural Research Center
NIBGE	National Institute for Biotechnology and Genetic Engineering, Faisalabad
NNSFC	National Natural Science Foundation of China
NSLP	Natural Sciences Linkage Programme
NSTC	National Science and Technology Commission
P	Punjab
P-AU	Agriculture University, Faisalabad
P-PU	Punjab University, Lahore
PHYS	Physics
PINSTECH	Pakistan Institute of Nuclear Science and Technology, Islamabad
PCCC	Pakistan Central Cotton Committee, Sakrand.
PSDP	Public Sector Development Working Party
S	Sindh
SALU	Shah Abudul Latif University, Khairpur
SUIT	Sindh Institute of Urology & Transplantation, Karachi
SU	Sindh University, Jamshoro
SSGC	Sui Southern Gas Company
SLF	Snow Leopard Foundation

EXECUTIVE SUMMARY

PAKISTAN SCIENCE FOUNDATION (PSF)

Pakistan Science Foundation (PSF) is apex body for promotion and funding of scientific and technological research and other related activities in the country. The tasks undertaken by the Foundation for the performance of its statutory functions are divided into two broad categories viz., Science Promotion and Science Popularization. Some of these activities pertaining to above mentioned categories are undertaken by Pakistan Museum of Natural History (PMNH) and Pakistan Scientific and Technological Information Centre (PASTIC), the two subsidiary organizations of PSF, while others are performed by PSF Science Wing and are reflected as under:

RESEARCH SUPPORT

To promote basic and applied research relevant to socio-economic development of the country, Research Support Programme is playing a pivotal role in the Foundation. During 2012-13, a total of 397 projects in the fields of Agricultural, Biological, Chemical, Medical, Maths & Computer, Earth, Engineering Sciences, Biotechnology and Genetic Engineering and Physics remained under consideration. Out of these, 262 were under-process projects including 14 newly approved at a total cost of Rs.20.77 million and 135 ongoing research projects. An amount of Rs.0.84 millions was released on account of first installments of newly approved projects. Besides, 20 project proposals were recommended by relevant Technical Committees for funding, however, due to shortage of funds, these could not be processed. A total of 100 technical reports (semi-annual/annual/final) of on-going projects were received, of these, annual reports were sent to subject experts for evaluation and an amount of Rs.15.264 million released on account of due instalments. Final technical reports of 35 on-going projects were presented to relevant Technical Committees and were adopted, account settled and files closed. From these completed projects, a total 59 research papers were published in different national/international journals, and 12 Ph.D and 04 M.Phil degrees were awarded to the Research Associates enrolled under these projects.

Focusing on collaborative research and strong industrial linkages, R&D-Industry Programme (previously called Industrial Linkages Programme, ILP) aimed to bring researchers, end-users and the funding institutions together at one platform to create an environment of a unified approach to identify and solve industrial problems through applied research and technology

transfer mechanism. During the report period, a total of 11 research proposals were received from various organizations, out of these, 08 proposals were presented in Technical Committees, wherein, 05 were approved at a total cost of Rs.9.4 million. Currently, 02 projects are on-going and an amount of Rs.4.92 million was released on account of due instalments for smooth running of these projects. During this period, 01 project was also completed. In addition, under this programme, "Invention to Innovation Summit-2013" was also organized at University of the Punjab, Lahore to establish linkages between Academia and Private Sector.

PAK-US NATURAL SCIENCES LINKAGE PROGRAMME (NSLP) ENDOWMENT FUND

PSF maintains an Endowment Fund under Pak-US Natural Sciences Linkage Programme (NSLP) to boost the research in agriculture sector in the country. During the report period, 236 proposals remained under consideration for NSLP funding. Out of these, 33 projects were presented in four different Technical Committee meetings, wherein, 20 projects were recommended for funding by these Committees at total cost of Rs.54.134 million. Currently, 52 projects are on-going at different universities and R&D organizations across the country, and an amount of Rs.32.526 million was released on account of due installments for smooth running of these projects. During the report period, 02 projects were also completed.

SCIENCE PROMOTION ACTIVITIES

During the report period, an amount of Rs.3.18 million was released to various institutions for organizing 32 conferences, seminars, and workshops on important scientific topics and Rs.1.0 million were released to 08 scientific societies/journals for their regular activities. However, Institutional Support and PSF Fellowships programmes were not entertained due to paucity of funds. An amount of Rs.0.27 million was paid to 04 Ph.D/M.Phil students already approved during previous year on account of research fellowships for carrying out their Ph.D/M.Phil research at their parent institutions. Further, an amount of Rs.0.108 million was released to Institute of Biomedical and Genetic Engineering (IBGE), Islamabad for a scientific survey entitled "Epidemiological Genetic Survey of Dementia in Pakistani Population".

SCIENCE POPULARIZATION

This section popularizes science by increasing its awareness in the society and develop a scientific culture in the country. During the year 2012-13, Science Caravans, the Mobile Science Exhibitions played vital role in increasing public awareness about science and motivated the younger generation towards study of science. All 09 Science Caravan Units remained in operation, 08 in four provinces and one at Islamabad and organized countrywide Caravan Exhibitions for 471 days in various schools, wherein, more than 136,806 students of 597 schools visited these exhibitions. Further, the Foundation in collaboration with Boards of Intermediate and Secondary Education organized 22nd Essay & Poster competitions with themes "*Hydrogen as Energy Source*" and "*Waste generation and Management*" in English, Urdu and Sindhi languages, which were participated by thousands of students across the country.

As another routine activity, some 18,000 copies of Popular Science magazine "*Monthly Global Science*" were distributed among 1,500 schools and more than 12,000 copies of scientific brochures among students through science caravans' exhibitions. The scientific journal "*The Fountain*" Published by The Light Publishing, Turkey was also provided to Caravan offices, PASTIC offices and PMNH. In addition, an amount of Rs.714,000 was provided to 14 schools especially of rural areas and S & T organizations as financial assistance for strengthening of the Science Laboratories and organizing science popularization activities.

PSF has already signed MoU with the Academie des Sciences, France for improvement of Science Teaching through Inquiry Based Science Education (IBSE)-La main a la pate (LAMAP) in the country. Under this MoU, two review meetings on Inquiry Based Science Education; La main a la pate-LAMAP was organized for Pakistani teachers at PSF and eight more science clubs were also established. PSF in collaboration with Embassy of France also organized International Traveling Expo on energy entitled "*Energy, for a sustainable World*" in different cities of Pakistan and also Kabul, Afghanistan. PSF also collaborated with UNESCO and arranged various Science Popularization activities in Khyber Agency. Under International Collaboration, A French team "*Wing for Science*" visited Pakistan and 05 students participated in London International Youth Science Forum (LIYSF-2012).

INTERNATIONAL LIAISON

Liaison with Foundations, Academies, Science Centers, Museums and International bodies around the world provide many benefits and challenges. These include achieving greater awareness of a diverse, complex and interdependent world, exchange of expertise and professional development through undertaking collaborative research projects. During the report period, 15 proposals of PSF, PASTIC & PMNH for S&T collaboration with Turkey, Argentina, European Union, Uzbekistan, Mexico and Russia were forwarded to MoST for consideration under various S&T Protocols/Agreements/MoUs signed by the Government of Pakistan. Some other MoU's were also taken up with MoST/concerned International bodies such as; (i) MoU between Pakistan Science Foundation (PSF), Islamabad and National Science Foundation (NSF), Sri Lanka, (ii) MoU between the Scientific and Technological Research Council of Turkey (TUBITAK) and Pakistan Science Foundation, and (iii) MoU between Pakistan Science Foundation, Islamabad and Economic Cooperation organization-Institute of Environmental Science & Technology (ECO-IEST), Iran.

PLANNING AND DEVELOPMENT ACTIVITIES

During the year 2012-13 an amount of Rs.5.0 million was allocated under the PSDP while Rs.4.5 million was released to the project and spent on the project activities. A total of 276 requests were received from scientists and technologists of the country. After comprehensive scrutiny as per eligibility criteria 140 requests were presented in 06 meetings of Travel Grant Award Committee. Of these, 44 were recommended by the Committee, whereas 31 scientists/technologists availed the grant. Further, PC-I of one PSDP project was submitted to MoST for the consideration/approval of DDWP/CDWP.

PAKISTAN MUSEUM OF NATURAL HISTORY (PMNH)

PMNH has four principal divisions namely Botanical Sciences, Zoological Sciences, Earth Sciences and Public Services. The first three divisions are engaged in the collection, identification and research activities pertaining to plants, animals and mineral resources of Pakistan, respectively; while the latter is responsible for mass education and popularization of natural history. During the report period, PMNH researchers conducted field work in various localities of Sindh, Punjab, Khyber Pakhtunkhwa, Gilgit-Baltistan and Azad Jammu and Kashmir. Research activities were carried out under three national collaborative research projects and one PSF-funded research project and a number of natural history specimen

related to animals, plants, rocks, minerals and fossils were collected and identified. The findings of research activities were published in the form of 57 research articles in national and international journals. Ten popular articles on various natural history topics were also published and 14 technical reports on their collaborative research projects were produced.

During the report period, an exhibition and seminar on “medicinal and aromatic plants”, the “33rd Pakistan Congress of Zoology” and “1st NCOBAM” were jointly organized with various national and international organizations, and PMNH scientists also participated in celebrations of “International Biodiversity Day” on 22nd May, “World Environment Day” on 5th June, “International Museum Day” on 18th May and “World Science Day” on 14th November. PMNH as MAB country Secretariat in collaboration with UNESCO activated National MAB Committee-Pakistan and established MAB Secretariat, worked for the declaration of “Ziarat Juniper Biosphere Reserve”, prepared TORs for review of “Lal Suhanra National Park” and conducted studies for new Biosphere Reserve (Central Karakoram Biosphere Reserve). PMNH also rendered services to other organizations in animal and plant specimen identification, research techniques for students and evaluation of M.Phil and Ph.D theses.

During the period, the life size displays of *Baluchitherium* (the largest land mammal on earth) and Blue Whale Skeleton were inaugurated by the Federal Minister for Science and Technology, Mir Changez Khan Jamali at PMNH premises on 24th October 2012 in presence of a large number of scientists, educationists and students. Regarding popularization activities, about 73680 visitors (students and general public) including 159 foreigners from USA, France, China, India, Nepal, Afghanistan etc visited display galleries of PMNH. As a part of improvement/up-gradation of the Display Centre, a wide screen display was installed in the VOG to provide scientific information in the forms of movies, documentaries and different types of presentations to the visitors.

PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE (PASTIC)

Pakistan Scientific and Technological Information Centre (PASTIC) is the premier organization in the field of S & T information dissemination in the country. During the report period, 35 service stalls and 12 awareness seminars were organized at various universities and R&D organizations. Updating of in-house databases such as Serial Holdings of Libraries of S&T Institutions of Pakistan, Research Published in Pakistan and Scientific Periodicals of

Pakistan remained in progress. Further, a total of 2777 S&T documents were provided to 483 R&D workers from 60 organizations on demand, and 882,828 references/abstracts on various S&T topics to 5019 researchers from 180 organizations under the Bibliographic Information Service.

PASTIC also regularly publishes abstracting journal entitled “Pakistan Science Abstracts” (PSA) in ten different scientific disciplines. Five issues of bimonthly Trade and Technology news e-bulletin entitled “Technology Roundup” were published online and as a result oriented and coordinated University-Industry Partnership Programme, various seminars, symposia, conference and exhibitions were organized at the Chambers of Commerce & Industry in Lahore, Sialkot, Peshawar, Faisalabad and Islamabad. During the report period, a total of 5,267 users visited PASTIC library and the library also received 583 issues of National & International Journals along with 30 miscellaneous documents in exchange of Pakistan Science Abstracts, under international cooperation activities. Under Reprographic Service, 103 printing jobs of 08 R&D organizations were performed. Besides the development project on “Strengthening and Enhancement of Reprographic Services of PASTIC” was completed.

PASTIC also acts as the National Focal Point for International/Regional Information Networks, like SAARC Documentation Center (SDC), WHO/CEHANET, IFAP/UNESCO and is the national distributor of UNESCO developed library management software WINISIS and IDAMS. During the year, WINISIS package was supplied to 16 Librarians and other professionals and one training workshop on WINISIS was organized. Moreover, 10 seminars, workshops and symposia on PASTIC Information Services, Library & Information Management, Internet Searching Techniques, Intellectual Property Rights, Developing Local Food Additives/Preservatives and Technologies for Sportswear Sector-Ensuring Competitiveness, were organized at different cities of the country. In view of the importance of public private partnership for strengthening of activities, promotion of services, etc., PASTIC signed MoU with Riphah International University. A PC-1 “Establishment of PASTIC S&T Information Kiosks/Cells in selected Universities of Pakistan” was prepared and submitted to MoST.

INTRODUCTION

Pakistan Science Foundation was established on June 30, 1973 under the Pakistan Science Foundation Act No. III of National Assembly (**Annexure-I**) as an autonomous body to promote and finance scientific and technological activities having a bearing on the socio-economic needs of the country. The tasks undertaken by the Foundation for the performance of its statutory functions are divided into following three broad categories:

- i) Science Promotion supports basic and fundamental as well as applied research involving researchers/academia at universities and R&D organizations focusing socio-economic needs/development of the country.
- ii) Science Popularization endeavoring to image scientific ideas to grasp the concept of fundamental science.
- iii) Science Centers to encourage all segments of society in thinking, understanding and exploring science.

Under the Act, the Foundation has been entrusted to carry out the following functions:

- i) Establishment of comprehensive scientific and technological information and dissemination centers.
- ii) Promotion of basic and fundamental research in universities and other institutions on scientific problems relevant to the socio-economic development of the country.
- iii) Utilization of the results of scientific and technological research including pilot plant studies to prove the technical and economic feasibility of processes found to be promising on a laboratory scale.
- iv) Establishment of science centers, clubs, museums, herbaria and planetaria.
- v) Promotion of scientific societies, associations and academies engaged in spreading the cause of scientific knowledge in general or in the pursuit of a specific scientific discipline or technology in particular.
- vi) Organization of periodical science conferences, symposia and seminars.
- vii) Exchange of visits of scientists and technologists with other countries.
- viii) Grant of awards, prizes and fellowships to individuals engaged in developing processes, products and inventions of consequence to the national economy.
- ix) Special scientific surveys not undertaken by any other organization and collection of scientific statistics related to the scientific efforts of the country.

The Foundation shall also:

- i) Review the progress of scientific research sponsored by it and evaluate the results of such research.
- ii) Maintain a National Register of highly qualified and talented scientists/engineers and doctors both in and outside Pakistan, and to assist them in collaboration with concerned agencies to seek appropriate employment.
- iii) Establish liaison with similar bodies in other countries.

The activities performed under the above mentioned statutory functions are as under, however, the details are given in different chapters:

ACTIVITIES AND PROGRAMMES

The activities and programmes undertaken by the Foundation to perform its statutory functions can be divided into the following four categories:

- i. Promotion and Financing of Scientific Research in the Country and the Utilization of the Research Results.
- ii. Promotion and Popularization of Science in Society.
- iii. International Liaison.
- iv. Establishment of Comprehensive Scientific and Technological Information Dissemination Centers.

The main functions of the Foundation i.e., research support and science popularization etc., are performed by the Science Wing of the Foundation and their detail is given as under:

Research Support is performing the following activities:

1. Research Support
 - a) Grants for Research Projects
 - b) Grants for Institutional Support
2. Research Evaluation
3. Promotion/funding of Scientific Societies/Learned Bodies
4. Funding of Conferences, Symposia, Seminars & Workshops
5. Travel Grants
6. International Liaison
7. Awards and Fellowships
8. Survey and Statistics
9. Scientists Pool
10. Innovations & Inventions
11. Planning and Development Programme

Science Popularization carries out science popularization activities including Science Caravans, Science Clubs, Science Fairs and holding of Popular Science Lectures, Workshops, Conferences and Symposia.

Pakistan Museum of Natural History (PMNH) is a subsidiary organization of PSF, established in 1979 to serve the national needs in the vitally important areas of research, conservation and education involving Pakistan's heritage of natural resources. The Museum is a National Repository for permanent storage of plants, animals, rocks, minerals and fossils of the country.

Pakistan Scientific and Technological Information Centre (PASTIC) is another subsidiary organization of PSF, performs as Scientific and Technological Information Dissemination Center with its sub offices in all provincial capitals of the country.

1. PAKISTAN SCIENCE FOUNDATION (PSF)

1.0 RESEARCH SUPPORT

1.1 Research Funding

1.1.1 Research Projects Funded

Research Support (Science Promotion) is the principal programme of Pakistan Science Foundation for the promotion of basic and applied research relevant to the socio-economic development of the country. The criteria for funding of research projects include the availability of basic equipment and laboratory facilities, scientific and technical merit of the proposed research projects and likelihood of completion of the proposed research within the stipulated time and budget. Each proposal, after getting reviewed from subject expert in the particular field, is placed before the relevant Technical Committee for technical and fiscal evaluation and recommendations for provision of funds. The proposal, if recommended by the Technical Committee, is then submitted to PSF Executive Committee for final approval.

a. Under process Projects:

During 2012-13, 397 research proposals remained under active consideration of the Foundation. Out of these, 262 projects were under-process and 14 were approved by relevant Technical Committees at the total cost of Rs.20.77 million. Twenty more projects were also recommended for funding by these Committees (**Annexure-II, a&b**), however, due to shortage of funds, these could not be processed. An amount of Rs.0.84 million was released on account of first installments to approved projects.

b. On-going Projects:

During report period, 135 research projects were remained on-going and 100 progress reports (semi annual, 1st, 2nd annual & final) were received. Semi annual reports were scrutinized by PSF staff, whereas the annual and final reports after initial scrutiny were sent for evaluation to the subject experts to assess the interim progress of the projects. The due installments of on-going projects are released only if interim progress of the projects is satisfactory. An amount of Rs.15.264 million was released on account of due installments and evaluation fee of ongoing projects. A list of the semi-annual, annual and final reports is given in **Annexure-III**.

c. Completed Projects:

During the year, 32 research projects were completed. The subject experts evaluated the final technical reports of these projects, which were subsequently placed before the respective PSF Technical Committees for consideration. After adoption of these reports by the Committee, the accounts of these projects were settled and files were closed. A list of the completed projects followed by their scientific output is given below:

S.No.	Project No.	Project Title
1.	PSF/Res/S-KU/Bio (342)	Biology of Edible Crabs (<i>Portunus pelagicus</i> and <i>P. sanguinolentus</i>) Occurring in the Coastal Waters of Karachi
2.	PSF/Res/S-AKU/Bio (377)	Studies on Effects of Indigenous Medicinal Plants on Hypercholesterolemia, Hypertension and Endothelial Dysfunction
3.	PSF/Res/S-KU/Bio (404)	Isolation and Characterization of Bioactive Proteins/Peptides from Thermotolerant Bacteria from Sub-Optimal Habitat
4.	PSF/Res/P-PMAS.AAU/Bio (420)	Ecology, Status and Management of Fisheries in Mangla Dam
5.	PSF/Res/C-QU/Chem (270)	Studies of Vanadium-organic ligands Systems Containing Peptides Linkage: Syntheses Structural Elucidation and Biological Applications
6.	PSF/Res/S-SU/Chem (411)	Capillary Gas Chromatographic Determination of Glyoxal Methylglyoxal and Dimethylglyoxal and α -keto acids from Biological Fluids and Fermented Food
7.	PSF/Res/B-BU/Earth (57)	Facies Distribution, Paleo-environmental Analysis and Petroleum Prospects of the Foreland Basin Sediments in the Kirther Fold-belt.
8.	PSF/Res/S-KU/Earth (76)	Geological, Mineralogical and Geochemical Studies of China Clay Deposits of Nagar Parkar for their Diversified and Value added Industrial Applications.
9.	PSF/Res/C-PMNH/Earth (79)	Biostratigraphic Zonation of Lockhart Limestone of Paleocene Age in Nilawahan and Kalarwahan Areas of Central Salt Range, Pakistan.
10.	PSF/Res/C-PMNH/Earth (81)	Sedimentological Studies of Datta Formation in Western Salt Range of Potwar sub-basin.
11.	PSF/Res/P-KRL/Engg (284)	Synthesis and Characterization of Piezo-Electric BaTiO ₃ Crystals
12.	PSF/Res/S-PCSIR/Envr (85)	Studies on Toxic Effects of Metal Mixtures on Fish

13.	PSF/Res/S-PCSIR/Envr (86)	Hydro-chemical studies and development of Indigenous Defluoridation Technology for Fluoride Contaminated Groundwater in the Thar Desert Pakistan.
14.	PSF/Res/P-FJWU/Envr (92)	Using GIS Models for Design and Development of Effective Air Quality Management System.
15.	PSF/Res/C-QAU/Envr (93)	Removal of Inorganic and Organic Pollutants from water/ industrial wastes by Micellar Enhanced Ultra-filtration (MEUF).
16.	PSF/Res/C-NUST/Envr (95)	Development of Rapid and Robust Analytical Methodologies for Detection of Elemental Contaminants in Environmental Samples using Laser Induced Breakdown Spectroscopy (LIBS).
17.	PSF/Res/F-PMRC/Med (204)	Treatment of HCV in Traditional Medicine: A scientific Evaluation through Blood Chemistry, Viral Load and level of patient Satisfaction in Pre and Post Treatment State
18.	PSF/Res/S-AKU/Med (210)	Deficiency of vitamins B6, B12 and folic acid and its Relationship to Hyperhomocysteinemia in a Pakistani Population: Is there any Role of Methylene-tetrahydrofolate Reductase Gene in Causing Hyperhomocysteinemia in this Population?
19.	PSF/Res /P-GCU/Phys (143)	Nonlinear Landau Damping in Space Plasmas with Non-Maxwellian Distribution Function
20.	PSF/Res /C-NUST/Phys (147)	Measurement of Dielectric properties of Ceramics (Nano-Ferrites, R2S12 O7 –Er,Ho)
21.	PSF/ILG/002/03	Disbandment of Epoxy Coating & Integrity of Gas Transmission Pipeline
22.	PSF/ILG/013/03	Enhancement in Shelf Life of Bread and its allied Products
23.	PSF/ILG/016/03	Establishment of Sustainable Model Agriculture Farm in Basol Area, Balochistan using Wind Energy and Drip Irrigation System
24.	PSF/ILG/018/03	Bio-Ecology and Population Management of House Crow (<i>Corvus splendous</i>) in Islamabad Area
25.	PSF/ILG/019/03	Inventory of the Faunistic Diversity of Margala Hill National Park
26.	PSF/ILG/020/03	Development of <i>Aspergillus</i> 's Niger Variant through Genetic Engineering for Commercial Production of Citric Acid through Fermentation of Molasses

27.	PSF/ILG/021/03	The Development of Mutant Strain of <i>Aspergillus's Niger</i> for Citric Acid Fermentation
28.	PSF/ILG/023/03	Application of Solar Drying Technology for Apricots Design and Development of Solar Hybrid Dryer (Prototype)
29.	PSF/ILG/024/03	Inventory of the Flora of Margalla Hill National Park
30.	PSF/ILG/027/03	Production of Iron and Steel from Kalabagh Iron Ore through Direct Reduction Process
31.	PSF/ILG/034/03	Design and Manufacturing of Light Weight Composite Reinforced CNG Cylinders.
32.	ILP/038/09	Indigenous Development of Formulation of Radiation Compatible Polypropylene for the Industrial Manufacture of Medical Disposable Syringes

i) BIOLOGICAL SCIENCES

Project No.	PSF/Res/S-KU/Bio (342)
Project Title:	Biology of Edible Crabs (<i>Portunus pelagicus</i> and <i>P. sanguinolentus</i>) Occurring in the Coastal Waters of Karachi
Duration:	3-Years
Date of Initiation:	01.07.2006
Date of Completion:	30.06.2009
Total Expenditure:	Rs.528,076/-
Principal Investigator:	Prof. Dr. Javed Mustaqium
Name of Institution:	University of Karachi, Karachi

SUMMARY:

Portunus pelagicus and *Portunus sanguinolentus* are commercial species of marine crabs and are found throughout Indo-Pacific region and support substantial fisheries in several countries of the region. These were collected from commercial landings at Korangi Fish Harbour, Karachi. A total of 2,718 crabs were collected out of which 1,642 were *P. pelagicus* and 1,076 were *P. sanguinolentus*. Size at sexual maturity was determined by the relative growth of chela and pleopod in male and relative growth of abdomen in female crabs. Crabs were also dissected to observe the condition of testis and ovary. The male *P. pelagicus* attains sexual maturity at a size of 62 to 78 mm short carapace width (SCW) whereas female *P. pelagicus* attains sexual maturity at a size of 69 to 89 mm SCW. In case of *P. sanguinolentus* both male and female attain sexual maturity at about 63 to 70 mm SCW. Sex ratio was significantly different from 1:1 in both the species. Sex ratio in *P. pelagicus* was female based (1:1.1) whereas it was male biased (1:0.6) in *P. sanguinolentus*. The two species of

crab breed almost throughout the year in our coastal waters. They appear to be irregular breeder. Fecundity was found to be positively correlated with SCW and may vary from 207,000 to 783,266 in *P. pelagicus* and from 383,333 to 1,217,667 in *P. sanguinolentus*.

Project No.	PSF/Res/S-AKU/Bio (377)
Project Title:	Studies on Effects of Indigenous Medicinal Plants on Hypercholesterolemia, Hypertension and Endothelial Dysfunction
Duration:	2-Years
Date of Initiation:	01.10.2007
Date of Completion:	31.03.2011 (Extended)
Total Expenditure:	Rs.676,943/-
Principal Investigator:	Dr. Anwar ul Hassan Gilani
Name of Institute:	The Aga Khan University, Karachi

SUMMARY:

The aim of this study was to investigate the cardiovascular effects of POL-10 on various animal models in order to rationalize its medicinal use in CVDs. When tested on laboratory animal models, POL-10 was found to have antihypertensive, endothelial modulating, anti-atherogenic, antidyslipidemic, antioxidant along with calcium channel blocking activities in various experimental models. In safety studies, it had no lethality (up to 12% in diet) during 2 months treatment, except increase in heart rate, body weight and diet consumption. All of the ingredients of POL-10 were systematically screened. More detailed studies were carried out on the most active four plants namely, *Zingiber officinalis* (Z), *Piper nigrum* (P), *Terminalia bellerica* (T) and *Orchis mascula* (O) and their combinations ZPTO and ZTO (all above except *Piper nigrum*) consisting of four and three ingredients respectively. Among the individual ingredients, *Orchis mascula* was found to be the most active in reversing endothelial dysfunction. All remaining ingredients showed antioxidant, antihypertensive, endothelial modulating, smooth muscle relaxant and lipid lowering activities to varying extent.

Project No.	PSF/Res/S-KU/Bio (404)
Project Title:	Isolation and Characterization of Bioactive Proteins/Peptides from Thermotolerant Bacteria from Thermotolerant Bacteria of Sub-Optimal Habitat
Duration:	3-Years
Date of Initiation:	01.01.2009
Date of Completion:	31.12.2011
Total Expenditure:	Rs.10,66,040/-
Principal Investigator:	Prof. Dr. Sheikh Ajaz Rasool
Name of Institute:	University of Karachi, Karachi

SUMMARY:

The study aimed to decipher indigenous resources and isolate microbial germs. A total number of 211 bacteria were isolated from Manghopir hot springs. Among these isolates, gram positive bacteria were dominant over gram negative bacteria and both thermophilic and thermotolerant group of bacteria were identified. These bacteria were screened for their potential for bacteriocinogenesis, amylase, β -galactosidase, cellulose and protease production using both spectrophotometric and plate assays. Different combinations of enzyme production were observed among different isolates. However, some isolates were found to secrete all of the aforementioned enzymes. Screening of all the bacterial isolates for their bacteriocinogenic potential revealed that most of the isolates had the ability to produce bacteriocin and some of them were found to be very efficient bacteriocin producing strains.

Project No.	PSF/Res/P-PMAS.AAU/Bio (420)
Project Title:	Ecology, Status and Management of Fisheries in Mangla Dam
Duration:	2-Years
Date of Initiation:	28.10.2009
Date of Completion:	27.10.2011
Total Expenditure:	Rs.960,669/-
Principal Investigator:	Dr. Muhammad Sajid Nadeem
Name of Institution:	PMAS-Arid Agriculture University, Rawalpindi

SUMMARY:

In order to find out the trophic status of the dam, the water quality parameters such as; temperature, Secchi depth, dissolved oxygen, conductivity, chlorides, total hardness, total alkalinity, total dissolved solids, nitrates, and phosphorous and chlorophyll- α , and phytoplankton counts recorded. The results showed that presently the dam harbors 31 fish species belonging to 7 orders, 10 families and 26 genera. The most abundant family was Cyprinidae represented by 55 per cent of the recorded species. Five new species were also registered first time from the dam. These species are *Ctenopharyngodon idella* (Grass carp), *Arichthys nobilis* (Bighead carp), *Heteropneustes fossilis*, *Oreochromis aureus*, and *Oreochromis niloticus*. Out of these grass and bighead carps, and *Oreochromis niloticus* are artificially stocked in the dam while the *Oreochromis aureus* have established self sustaining populations in the dam. Out of 31 species recorded, 12 were rare, 3 were not common, and 11 were common. At this rate of production, 1.053 mt of fish could be produced from the dam.

ii) **CHEMICAL SCIENCES**

Project No.	PSF/Res/C-QU/Chem (270)
Project Title:	Studies of Vanadium-organic Legends Systems Containing Peptides Linkage: Syntheses Structural Elucidation and Biological Applications
Duration:	2-Years
Date of Initiation:	18.06.2007
Date of Completion:	17.06.2009
Total Expenditure:	Rs.782,158/-
Principal Investigator:	Prof. Dr. Saqib Ali
Name of Institution:	Quaid-i-Azam University, Islamabad.

SUMMARY:

this project aimed to synthesize vanadium complexes of the ligands which are biologically active and having peptide linkage, their structural characterization, using various analytical techniques like ¹h-nmr, ¹³c-nmr, ft-ir, tga, conductivity, elemental analysis and by physical techniques like color, melting point, solubility, and their biological applications. In study, some new ligands were synthesized and characterized them physically and analytically. These ligands were crystalline in nature. The oxovanadium complexes of the ligands were also synthesized and checked their activity against an enzyme "alkaline phosphate". The complexes were found to be potent inhibitor of the enzyme. Some vanadium complexes were also synthesized with other biologically active ligands.

Project No.	PSF/Res/S-SU/Chem (411)
Project Title:	Capillary Gas Chromatographic Determination of Glyoxal Methylglyoxal and Dimethylglyoxal and α -keto acids from from Biological Fluids and Fermented Food.
Duration:	1-Year
Date of Initiation:	16.10.2008
Date of Completion:	15.10.2009
Total Expenditure:	Rs.321,200/-
Principal Investigator:	Prof. Dr. M. Y. Khuhawar
Name of Institution:	University of Sindh, Jamshoro.

SUMMARY:

The present study was to examine 2,3-diamino-2,3-dimethylbutane(DDB) as derivatizing reagent for capillary GC determination of Glyoxal (Go) and Methylglyoxal(MGo) from urine of diabetic patients using flame ionization detection frequently available with GC.

The dicarbonyl compounds Glyoxal (Go), Methylglyoxal(MGo) and dimethylglyoxal were separated by capillary GC on HP-5 column after precolumn derivatization with 2,3-diamino-2,3-dimethylbutane at pH 4 and separation was achieved within 6 min. The derivatives were monitored by flame ionization detection, and linear calibration plots were obtained in ranges 0.06-0.69, 0.05-1.01, and 0.07—1.33 $\mu\text{g mL}^{-1}$ for Glyoxal (Go), Methylglyoxal(MGo) and dimethylglyoxal respectively; the respective detection limits were 20, 10, 10 ng mL^{-1} . Glyoxal and methylglyoxal were analyzed in serum and urine from diabetic patients were 0.19-0.33 and 0.20-0.29 $\mu\text{g mL}^{-1}$ respectively with respective relative standard deviation (RSD) of 0.8-1.0 and 0.8-1.1%. Amounts of glyoxal and methylglyoxal in serum from healthy volunteers were 0.05-0.08 and 0.04-0.10 $\mu\text{g mL}^{-1}$ respectively, with respective RSD of 0.9-1.2 and 1.0-1.2%. Level of glyoxal and methylglyoxal in urine from diabetic patients were 0.18-0.40 and 0.25-0.36 $\mu\text{g mL}^{-1}$ respectively. The high basicity of nitrogen in tetramethyl-substituted diamine (DDB) facilitated the condensation of diamine with 1,2-diketones. Therefore 2,3-dimethyl-2,3-diaminobutane was used to determine Go, MGo and DMGo from biological samples and food products by capillary GC with FID detection.

Another analytical procedure was also developed for gas chromatographic separation and determination of α -keto acids after derivatization with 1,2-propylenediamine (PDA) in pharmaceutical preparation from the column HP-5(30 x 0.32 mm i.d). Linear calibration curves were obtained within 9.0-84 $\mu\text{g mL}^{-1}$ and detection limit within 3.0-5.6 $\mu\text{g mL}^{-1}$. The extraction recovery from pharmaceutical preparation tested by standard addition of these compounds was calculated to be 94.0-96.8% with RSD 0.1-0.8%.

iv) EARTH SCIENCES

Project No.	PSF/Res/B-BU/Earth (57)
Project Title:	Facies Distribution, Paleoenvironmental Analysis and Petroleum Prospects of the Foreland Basin Sediments in the Kirther Fold-belt, Balochistan, Pakistan
Duration:	3-Years
Date of Initiation:	01.11.2001
Date of Completion:	31.10.2004
Total Expenditure:	Rs.369,465/-
Principal Investigator:	Dr. Abdul Salam Khan
Name of Institution:	University of Balochistan, Quetta

SUMMARY:

The project was designed to investigate sedimentary rocks of the foreland basin of the Kirthar foldbelt, Pakistan in order to better understand the evolution of the basin and its hydrocarbon potential. Because, Moghal Kot and Pab formations (Upper Cretaceous) are the main stratigraphic units of the basin that possess hydrocarbon, therefore, sediments of the Moghal Kot and Pab formations were studied in detail that included description of rock types, facies, their texture and sedimentary structures, measurement of 19 stratigraphic sections and noting of paleocurrent direction. All these are imperative for understanding and recognition of depositional environments and hydrocarbon potential of the rocks. Samples of different rock types were collected for further analysis in the laboratory. Distribution of the facies and facies associations and paleocurrent directions indicate that the deposits of the Upper Cretaceous (Moghal Kot and Pab formations) of the Kirthar Fold Belt were formed in two different, partly coeval depositional systems.

The sediments of the Northern System were deposited in shallow marine conditions on a broad, delta fed elastic ramp dominated. It shows transitional variations from shoreface to deeper shelf settings from east to west with consistent westward paleoflow. The sediments of the Southern System were deposited into submarine fan system. The lower part of the system (Moghal Kot Formation) represents basin floor lobes, channel filled sand-bodies and base of slope mud-rich lobes while the upper part is comprised of sand-bodies showing characters of slope channels and associated lobes. The paleoflow and sandstone composition display that the material was supplied from the Indian shield in the east through different routes. Sandstone samples were thin sectioned and studied under microscope to know their composition and texture for the purpose of provenance and reservoir characters. Detrital component of the sandstones were plotted in discrimination diagrams which indicate that these sandstones were derived from Craton Interior and Recycled Orogen. Sandstone of the Northern Depositional System can be classified as quartz arenites and derived from Indian Craton located to east of study area, whereas, the sandstones of the Southern Depositional System are quartz arenites and sublithic arenites and were derived from Craton Interior, Recycled, Quartz Recycled, Arc, and Mixed Recycled Orogens and were feeded from Indian Craton located to SSE. So, the sandstones are quartz rich with lithic fragments increased upperward in Southern Depositional System. The difference more likely was caused by Deccan Volcanism within the Indian Shield area located in the SSE. Reservoir characters are largely concerned with the regional distribution of attributes, such as total thickness and

percentage of sandstones together with the internal architecture, heterogeneity and geometries of major sand bodies and their constituent facies. Coarse grained, well sorted, amalgamated and thick packages of sandstones are more porous and have a good lateral and vertical connectivity. The submarine channels and slope fan lobes and shelfal delta lobe facies associations are believed to have good prospects of hydrocarbon, whereas, mud/marl dominated and bioturbated sandstone facies have poor reservoir characters.

Project No.	PSF/Res/S-KU/Earth (76)
Project Title:	Geological, Mineralogical and Geochemical Studies of China Clay Deposits of Nagar Parkar for their Diversified and Value added Industrial Applications
Duration:	3-Years
Date of Initiation:	01.11.2008
Date of Completion:	28.02.2011 (Extension)
Total Expenditure:	Rs.894,900/-
Principal Investigator:	Prof. Dr. Viqar Husain
Name of Institution:	University of Karachi, Karachi

SUMMARY:

There are dozens of localities in Nagar Parkar, where hundreds of open pits have been dug to explore kaolin during past 30 years. But six largest kaolin deposits of Viravah, Karkhi, Parodhro, Moti jo Vandio, Dhedvero and Ramji Jo Vandio in Nagar Parker area were the focus of the present study. A new kaolin deposit near Parodhro village was identified during present study by the occurrence of laterite cap rock over the kaolin deposit, covering about 2 km² area with an overburden of about half meter thickness. This deposit has good quality and bright white kaolin with its bed thickness of over 10 meters. Nagar Parkar kaolin deposits occur in the form of medium to large size pockets or lenses. Mapping of these deposits at 1:10,000 scale shows that all kaolin deposits lie parallel to Runn of Kutch, aligned in a belt trending NW-SE. Thickness of kaolin deposits varies from 4.5 to 10.6 meters and average thickness of the overburden is 2 m. Wherever, laterite cap rock occurs, the thickness of overburden is reduced to about 0.1 to 0.4 m. These deposits are mined by open pit method up to the depth of 10-15 meters due to lack of scientific mining techniques and technically trained manpower. These open pits are abandoned due to mine water, despite the fact that kaolin beds continue further deep.

Physical tests show that Nagar Parkar kaolin has medium plasticity, medium toughness and medium compressibility. The plasticity of Nagar Parkar kaolin is quite comparable with the

kaolin deposits of Georgia (USA) and Makoro (Botswana). The Nagar Parkar (raw and washed) kaolin has low shrinkage limit ranging from 0.15 to 3.20%. The fired shrinkage ranges from 6 to 13% at 1360 °C with no indication of black spots and cracks. The firing behavior of Nagar Parkar kaolin is as good as Deopani kaolin of western Cameroon with fired shrinkage ranging between 13 to 15%. The screen residue percentages of Nagar Parkar (raw) kaolin retained on 300 mesh range from 23.5 to 30%. After washing, the grit is reduced to 6.6%, which can further be removed, if processing of Nagar Parkar kaolin is done by Elutriation plant. Average Nagar Parkar kaolin (raw) densities dried at 110 °C range from 1.273 to 1.797 gm/ cm³, which are quite comparable with important kaolin deposits of the world. Specific gravity of Nagar Parkar kaolin ranges from 2.40 to 2.69, which is very close to the specific gravity of pure kaolinite (2.62- 2.66). Thermal behavior of Nagar Parkar kaolin (raw and washed) is also comparable with the pure kaolin. Moreover, the kaolinite percentage of 60.7% in washed kaolin is higher than in the English kaolin deposits.

Chemical studies show that silica content of Nagar Parkar kaolin (raw) ranges from 48.7 to 59.2%, which is much higher than in the ideal kaolin (46.6%). After washing, silica content is reduced to about 45.1%. However, the alumina content of raw kaolin is lower (21.3-26.8%) than the ideal kaolin (39.5%) but after washing, the alumina content is enriched to 35.1%. Most of the chemical parameters of Nagar Parkar kaolin are comparable to the world known kaolin deposits except its Al₂O₃, CaO and Fe₂O₃ contents. The weight loss of 14.8% at 1000 °C of kaolin (washed) from Nagar Parkar is also quite similar to other important kaolin deposits of the world.

Presently, Nagar Parkar washed kaolin is suitable for colored ceramic table and sanitary wares and rubber industries. But this kaolin is not suitable for making white ceramic table wares, as it shows inconsistency in its chemical composition and changes to off white at elevated temperature. Though, a number of physical and chemical characteristics of washed kaolin are very close to the world's best known kaolin deposits. However, the suitability of Nagar Parkar kaolin for white table wares, paper, paint, cosmetics and pharmaceutical industries depends on its processing by Elutriation plant.

Project No.	PSF/Res/C-PMNH/Earth (79)
Project Title:	Biostratigraphic Zonation of Lockhart Limestone of Paleocene Age in Nilawahan and Kalarwahan Areas of Central Salt Range, Pakistan.
Duration:	1-Year
Date of Initiation:	01.08.2008
Date of Completion:	31.07.2009
Total Expenditure:	Rs.327,586/-
Principal Investigator:	Mr. Amir Yaseen
Name of Institution:	Pakistan Museum of Natural History, Islamabad

SUMMARY:

Based on the field evidences and laboratory (microscopic) studies of thin sections of the representative rock samples of the project area revealed that; the Lockhart Formation is a carbonate sequence almost entirely of marine origin with minor amount of clay and calcareous shale contenting diagnostic large that confirm the Paleocene age of the formulation. The Permanent microfiches are he Bioclastic Grainstone, Bioclastic Packstone and Bioclastic Wackestone. The Bioclasts observed in the formation are large foraminifera identified as *Miscellaneamiscella (Archiac & Haime)*, *Operculina salsa Davies & Pinfold*, *Operculina patalensis Davies & Pinfod*, *Lockhartia haimei (Davies)*, *Assilina subspinosa Davies & Pinfod*, *Lockhartia conditi Nuttall*, *Discocyclina ranikotensis Davies* and *Lockhartia tipperi (Davies)*. On the base of observed fauna in the formulation it can concluded that the deposition of Lockhart Limestone took place in open marine, shallow shelf environments. The presence and fillings of calcite veins in the fractures indicates slight to moderate re crystallization of limestone under the influence of pressure and temperature generated due to sheared and compress ional forces of deformation at local and regional scale. The inter-formational facial changes and the gradual variation in grain size from bottom to top of the formulation depicts changes in the nature and type of the source material at the time of deposition as well as a slight change in the depositional environment.

Project No.	PSF/Res/C-PMNH/Earth (81)
Project Title:	Sedimentological Studies of Datta Formation in Western Salt Range of Potwar sub-basin.
Duration:	1-Year
Date of Initiation:	26.06.2008
Date of Completion:	25.06.2009
Total Expenditure:	Rs.405,072/-
Principal Investigator:	Mr. Khalid A. Mirani
Name of Institution:	Pakistan Museum of Natural History, Islamabad

SUMMARY:

Datta Formation exposed in the Western Salt Range was been investigated to identify its textural characteristics, grains composition and their relationship, depositional trend, diagenesis and environment of deposition. Eleven sandstones facies were determined with different cementing materials such as quartz arenite, quartzwacke, sublithic arenite, subgraywacke, greywacke, lithic arenite, sub-feldspathic arenite, feldspathic arenite, coarse siltstone and calcarenite. They are composed of fine to medium grains occasionally coarse grains, poor to well sorted and submature. Sandstone are predominantly cemented with quartz, clay and iron oxide and minor amount of calcite and ferrogenous cements. Formation is 123 meters and 155 meters thick in Zaluch Nala Section and Nammal Gorge respectively. Rock fragments are chert, siltstone, shale, volcanic fragments and schist are derived from igneous, metamorphic and sedimentary source area. Over all texture and composition of sandstone indicate that formation was deposited in low to high energy of fluvial environments, however fluctuation of fluvial energy resulted in the formation of large and small scale cross sets. Cross sets range in size from 20.32 cm-91.44 cm. textural characteristics indicate a recycled origin of sandstone. Heavy minerals are tourmaline (rounded), biotite, muscovite, and epidote, iron oxide minerals in sandstone. This assemblage indicates the reworked sediments of Datta Formation. Wood particles are also observed. Eight lithofacies determined in Datta Formation from both sections. These lithofacies provided the information about trend of deposition and environmental behavior of Datta Formation. Observation from outcrop sections, sieve analysis and petrographic analysis of forty rock samples suggested deposition of Datta Formation in fluvially dominated deltic environment.

iv) ENGINEERING SCIENCES

Project No.	PSF/Res/P-KRL/Engg (284)
Project Title:	Synthesis and Characterization of Piezo-Electric BaTiO ₃ Crystals
Duration:	3-years
Date of Initiation:	20.05.2007
Date of Completion:	19.05.2010
Total Expenditure:	Rs.1,109,268/-
Principal Investigator:	Dr. Muhammad Muneeb Asim
Name of Institution:	Dr. A. Q. Khan Research Labs. Rawalpindi

SUMMARY:

In this study, the synthesis of OM samples was optimized to get capacitance of 700pF, tan loss 0.002% and d_{33} 144pC/N. The calcination and sintering temperatures were 950°C and 1300°C respectively. These samples were poled in an electric field of 2KV/min. The SG powder was synthesized by using metal-alkoxides as precursors. This powder gave grain size of nano scale, more dense samples and, overall enhanced piezoelectric properties as compared to samples prepared by OM. The optimized SG samples showed capacitance of 768pF, tan loss of 0.007% and piezoelectric coefficient d_{33} 170pC/N. The SG samples were poled in an electric field of 3.5KV/mm, a larger value as compared to OM samples. The optimized calcinations and sintering temperatures for SG samples were 800°C and 1200°C respectively; which is lower than those applied to OM samples. This feature is useful where loss of lead is to be avoided. The grain size of sintered OM samples was in the range of 20-25 microns whereas, for SG sintered samples the value was less than or equal to 2 microns. The bulk density of sol gel samples are improved by 1%. The values of piezoelectric coefficient showed about 18% higher values than those obtained from OM samples. The yield of powder obtained by SG method was remarkably low, i.e 22 wt% of the starting material, which is not astonishing as metallic contents of Ba and Ti in acetate and alkoxide is 54 wt% and about 17 wt% respectively. To meet production rate larger reactors are used. The loss of lead was also low in sol gel powder, which is helpful to stabilize the piezoelectric properties. Finally the rings (prepared by OM) were replaced with corresponding components of an operational transducer to evaluate their piezoelectric response. The measured parameters were comparable with those of the reference transducer.

v) ENVIRONMENTAL SCIENCES

Project No.	PSF/Res/P-AU/Envr (85)
Project Title:	Studies on Toxic Effects of Metal Mixtures on Fish
Duration:	3-Years
Date of Initiation:	01.03.2009
Date of Completion:	28.02.2012
Total Expenditure:	Rs.1,654,278/-
Principal Investigator:	Prof. Dr. Muhammad Javed
Name of Institution:	University of Agriculture, Faisalabad.

SUMMARY:

In this study, the acute toxicity of 19 mixtures of five metals viz. Fe, Zn, Pb, Ni and Mn was determined for five commercially important fish species (*Catla calla*, *Labeo rohita*, *Cirrhina mrigala*, *Ctenopharyngodon idella* and *Hypophthalmichthys molitrix*). The fish growth under metals stress and the extent of metals bio-accumulation in fish organs during acute and chronic exposures were investigated. The 96-hr LC50 and lethal concentrations of each metal mixture were determined for each fish species at constant water hardness (225 mgL⁻¹), pH (7.25) and water temperature (30°C) by using static bioassay. During acute toxicity trails, each test concentration was evaluated with three replications for each fish species, separately, in glass aquaria. Acute toxicity tests revealed significant differences among five fish species for their tolerance limits against 19 mixtures of five metals. Regarding overall sensitivity of five fish species, *Hypophthalmichthys molitrix* were highly sensitive while *Labeo rohita* showed significantly least sensitivity. Regarding overall response of fish towards 19 mixtures, mean sensitivity of fish to the mixture of five metals (Fe+Zn+Pb+Ni+Mn) was significantly high, followed by that of four metals (Fe+Zn+Pb+Mn) with statistically significant difference while fish showed significantly least sensitivity towards a mixture of lead and manganese.

The 96-hr LC50 exposure of Fe+Zn+Pb+Mn mixture to the fish caused significantly higher iron accumulation in their bodies while manganese and nickel accumulations were significantly higher in *Cirrhina mrigala* due to Fe+Zn+Pb+Ni+Mn and Zn+Pb+Ni mixtures, respectively. *Hypophthalmichthys molitrix* showed significantly highest ability to accumulate both zinc and lead during exposures of Zn+Ni and Fe+Zn+Pb+Mn, respectively. Lethal exposures to the five fish species resulted in significantly variable accumulation of all metals in their bodies. Lethal exposure of Fe+Zn+Pb+Mn mixture caused significantly highest accumulation of iron in *Labeo rohita* while manganese and nickel accumulations were significantly maximum, due to the exposures of Zn+Mn and Pb+Ni mixtures, in *Hypophthalmichthys molitrix* and *Catla catla*, respectively. Zinc accumulations were higher in both *Ctenopharyngodon idella* and *Hypophthalmichthys molitrix*. *Hypophthalmichthys molitrix* exhibited significantly highest ability to concentrate lead in its body when exposed to Fe+Zn+Pb+Ni+Mn mixture. During both 96-hr LC₅₀ and lethal exposures, fish liver showed significantly higher ability to concentrate manganese, nickel, zinc and lead while iron accumulation was significantly high in fish kidney. Generally, fish muscle and bones showed

significantly least tendencies to accumulate various metals. Besides liver, fish kidney appeared as a target organ for the accumulation of significantly higher iron during acute exposure of metal mixtures, making it the "critical" organ for toxic symptoms also. Although, fish were significantly more sensitive to iron+zinc and zinc+lead mixtures but accumulation of these metals were not so escalated in fish body organs.

The toxic effects of sub-lethal concentrations (1/3 of LC50) of 19 mixtures of iron, zinc, lead, nickel and manganese on the growth performance of five fish species viz. *Catla catla*, *Labeo rohita*, *Cirrhina mrigala*, *Ctenopharyngodon idella* and *Hypophthalmichthys molitrix* were investigated using renewable static bioassay. After 90-day growth period, the patterns of Fe, Zn, Pb, Ni and Mn residues in fish body organs viz, kidney, liver, skin, muscle, fins, gills and bones were analyzed. The exposure of 19 mixtures of Fe, Zn, Pb, Ni and Mn caused no mortality in fish during 90-day growth period. However, during first few hours of growth period, various mixtures caused changes in the behavioral responses of five fish species, indicating restiveness as compared with the control (un-stress) fish. Furthermore, initial few days caused reduction in feed intake to cause functional disturbances in various organs of fish. The Fe+Zn+Pb+Ni mixture caused significantly pronounced impacts on the growth performance of fish, followed by that of Fe+Zn+Pb+Ni+Mn and Fe+Zn+Pb+Mn mixtures. Four and five metal mixtures caused significantly lesser growth in all the five fish species due to significant interactions among various metals due to their synergistic / antagonistic or additive effects. However, the toxic responses of fish to various metal mixtures showed direct relationships with their exposed concentrations (1/3 of LC50) and metallic ion composition. Among the five fish species, *Cirrhina mrigala* and *Labeo rohita* attained significantly higher growth under metal stress, followed by *Catla catla*, *Hypophthalmichthys molitrix* and *Ctenopharyngodon idella*. However, growth of all species of fish under metal stress was significantly lower than that of control. Significantly variable condition factor values reflected the degree of fish well-beings that correlated directly with their growth. Among the species, *Labeo rohita* exhibited significantly higher condition factor values while it was lowest in *Hypophthalmichthys molitrix*. The exposure of four and five metal mixtures did not cause any significant reduction in fish feed intake. However, fish FCE was affected significantly due to lower weight gains under these mixtures. The post-stocking stress of various mixtures (of metals) caused significant impacts on fish growth, in terms of weight and length increments, that followed the order: mixture # 6 > 5 > 3 > 4 > 2 > 1. However, the overall growth performance of all the control fish species (un-stressed) was significantly

higher than that of metal mixture stressed fish. Among the five fish species, *Cirrhina mrigala* gained significantly higher weights and lengths, followed by that of *Ctenopharyngodon idella*, *Labeo rohita*, *Hypophthalmichthys molitrix* and *Calla catla*. Amongst treatments, Zn+Pb+Ni mixture (# 1) caused significantly least effects on fish fork length increments while the effect of Fe+Zn+Pb+Ni+Mn mixture (# 6) was significantly pronounced as it caused lower increments in fish fork lengths. Metal mixture stressed five fish species showed significantly variable responses towards their weights, fork and total length increments when placed in metal-free pond environments.

The sub-lethal exposure of Fe+Zn+Pb+Ni mixture to all the five fish species resulted in significant escalation of these metals in fish body organs that followed the order: Kidney > liver > skin > fins > gills > muscles > bones. *Catla catla* showed significantly higher ability to concentrate metals, followed by that of *Ctenopharyngodon idella* and *Hypophthalmichthys molitrix* with statistically non-significant differences. *Labeo rohita* appeared as a species that showed significantly least tendency for such accumulations during 90-day exposure of mixture # 5. All fish species showed significantly higher ability to concentrate iron while amassing of Mn was significantly least. The rearing of metals mixture stressed fish in ponds exerted significant impacts on the depuration of all metals from the fish body. However, this depuration appeared significantly higher for Zn (4004.38%), followed by Ni (3488.96%), Fe (2251.65%), Pb (778.57%) and Mn (584.53%) in the fish stressed with mixture # 1,4,5,6 and 5, respectively.

Project No.	PSF/Res/S-PCSIR/Envr (86)
Project Title:	Hydrochemical studies and development of Indigenous Defluaridation Technology for Fluoride Contaminated Groundwater in the Thar Desert Pakistan
Duration:	2-Years
Date of Initiation:	07.07.2008
Date of Completion:	06.07.2010
Total Expenditure:	Rs.1,804,060/-
Principal Investigator:	Dr. Tanzil Haider Usmani
Name of Institution:	PCSIR Labs Complex, Karachi.

SUMMARY:

An integrated study with particular emphasis on fluoride (F) ion contamination was carried out to determine its occurrence, distribution and the possible geochemical processes controlling the high concentrations in the groundwater of Thar Desert, southeastern Sindh.

The F concentration in groundwater ranged from 0.0 to 34.00 mg/L with mean and median values of 3.38 and 2.16 mg/L, respectively. In 410 groundwater samples, 36.10% (n=148) were found in the range of 0-1.5 mg/L, 24.63% (n=101) in 1.5-3.0 mg/L, 18.54% (n=76) in 3.0-5.0 mg/L and 20.73% (n=85) above 5.0 mg/L respectively. Results have showed that 63.90% of the collected water samples were found to be severely contaminated by the presence of F concentrations higher than the prescribed WHO standards (1.5 mg/L) for drinking water which is probably the main cause of widespread dental and skeletal fluorosis disease in the study area. High F concentrations have been found in Umarnkot, Chachro, Nagarparkar and Mithi sub-districts. Factors regulating the occurrence of high F in groundwater have been investigated considering geochemical influences. The content of F has been correlated with other major ions found in the groundwater of study area. The positive correlation of F with HCO_3^- shows that water with high HCO_3^- stabilizes F ions in the groundwater of Thar Desert. The log TDS and $\text{Na}/(\text{Na}+\text{Ca})$ ratio reflects supremacy of weathering of rocks with some influence of evaporative concentration, which promotes the availability of F ions in the groundwater. Piper diagram has been used to classify the hydrofacies and in the cation triangle, all samples are Na-type, while the anion triangle reflects major dominance of Cl-type with a minor influence of HCO_3^- and SO_4^{2-} . The log of TDS and $\text{Na}/(\text{Na}+\text{Cl})$ ratio imply that the geochemical behavior of F in groundwater is also related to the base-exchange process releasing Na^+ and removing Ca^{2+} ions.

The suitability of indigenous adsorbents as possible adsorbents was studied for F removal from aqueous solutions. The experiments were conducted on the batch mode operation for estimating the behavior of F adsorption. The effect of various parameters such as shaking time, hydronium ion concentration, initial fluoride concentration and adsorbent doses were studied. Freundlich, Langmuir, Temkin and Dubinin-Kaganer-Radushkevich equation were applied to calculate the adsorption behaviors of F. The kinetics of the adsorption was assessed using Lagergren Pseudo-First-Order, Pseudo-Second-Order and Intra-particle-diffusion equations. China clay, bauxite, bentonite, magnesite, red brick, burnt brick, trimetal oxide, PNT-1, PNT-2, PNT-3 and PNT-5 were showed good potential for defluoridation.

The selected adsorbents were characterized by XRF and XRD where the most dominant compounds and the mineral phases of the respective adsorbents were found. The selected adsorbents showed high F efficiency between pH 6-8, whereas the optimized pH range of adsorption was around 6-7. The Langmuir, Freundlich, Temkin and Dubinin-Kaganer-Radushkevich adsorption models were found to be in good agreement with the experimental

data of adsorption behavior and the mechanism was taken place by chemisorption for all the selected adsorbents in the present study. The removal of fluoride by various adsorbents taken place by particle diffusion mechanism. The results of kinetic studies showed that the processes of the adsorption of F follow pseudo-first-order as well as pseudo-second-order kinetic models. They have showed great potential for designing of indigenous defluoridation technology to address the high fluoride groundwater problem in the Thar Desert areas of Pakistan.

Project No.	PSF/Res/P-FJWU/Envr (92)
Project Title:	Using GIS Models for Design and Development of Effective Air Quality Management System.
Duration:	3-Years
Date of Initiation:	01.10.2009
Date of Completion:	30.09.2012
Total Expenditure:	Rs.968,985/-
Principal Investigator:	Dr. Sheikh Saeed Ahmed
Name of Institution:	Fatima Jinnah Women University, Rawalpindi

SUMMARY:

Among other air pollutants, nitrogen dioxide (NO₂) and ozone (O₃) are also of utmost important, which are capable of causing detrimental effects to life. Primary source of NO₂ is automobile exhaust and photolysis of NO₂ leads to Ozone formation. In this study, the task of predicting the spread of an air pollutant in a multi-dimensional space was focused. The prediction task consists of three dimensional search spaces where the dimensions are Geography, Weather and Air pollutant concentration value. NO₂ and O₃ are the air pollutants selected for the investigation in this work and their concentration was measured during the two successive years in twin cities (Rawalpindi and Islamabad) from November 2009-March 2011. Levels of NO₂ were determined using passive sampling method, while ozone was determined by Model 400E ozone analyzer.

The annual average NO₂ and O₃ concentration in twin cities of Pakistan was found to be 44 + 6 ppb and 18.2 ± 1.24 ppb respectively. Spatial interpolation also showed variations graphically in NO₂ and O₃ concentration in Rawalpindi and Islamabad. The annual average NO₂ and O₃ concentration was found to be 48 ± 17 ppb and 20 + 4.2 ppb respectively in Rawalpindi, while in Islamabad it was found to be 40 ± 12 ppb and 19 ± 1.77 ppb respectively. Comparison of average NO₂ and O₃ concentration levels and the vehicular data of Rawalpindi and Islamabad clearly depicted the fact that the high number of motor vehicle

is the major contributing factor in increased levels of pollutants in Rawalpindi as compared to Islamabad. Among 12 categories the highest values of NO₂ were measured near to dual carriage ways i.e. 55.23 ppb due to intense flow of road vehicles, while highest values of O₃ were measured near to semi-rural areas due to its long range movement. NO₂ and O₃ levels vary throughout the different seasons. Highest concentrations of NO₂ were found in winter (67.92) and lower in summers (29.29). While the ozone showed maximum concentrations in summers (42.50) and lower concentrations in winter (16.76).

The present study indicated that the values obtained for NO₂ for all sampling points exceeded the annual limit value set by WHO/Pak-EPA standard, while ozone concentration of all the sampling points were within WHO/Pak-EPA standard. To control these increasing levels of air pollutants analysis and forecasting of air quality parameters are important topics of atmospheric and environmental research today. Forecasting was done by artificial neural network model trained with evolutionary approaches which would be helpful in the development and simulation of air quality index with maximum performance.

Project No.	PSF/Res/C-QAU/Envr (93)
Project Title:	Removal of Inorganic and Organic Pollutants from water/ industrial wastes by Micellar Enhanced Ultrafiltration (MEUF).
Duration:	2-Years
Date of Initiation:	16.11.2009
Date of Completion:	15.11.2011
Total Expenditure:	Rs.1,140,489/-
Principal Investigator:	Prof. Dr. M. Saddiq
Name of Institution:	Quaid-e-Azam University, Islamabad

SUMMARY:

Water is more of blessing for every one. However, water with pollutant can cause serious diseases and environmental problems. Therefore water treatment is essential before it is used for drinking, cooking, washing and agricultural purposes. Similarly many industrial processes use different synthetic chemical dyes for various purposes. Effluents coming out from these industries are highly colored resulting in major environmental threat. Hence safe disposal of these colored aqueous wastes is the prime demand of healthy environment. To address this problem scientifically, many methods have been adopted by the industries over the years. Of these methods, biodegradation, coagulation, filtration, oxidation and adsorption are most frequently used. Nevertheless, on the basis of low energy, labor, and capital cost, search for

better method is continued in the field of science and technology. Corresponding to three factors i.e., low energy, labor and capital cost, recently a new, effective and sophisticated separation technique namely, micellar enhanced ultrafiltration (MEUF) has been introduced to remove inorganic and organic pollutants from water(aqueous solution) as well as industrial wastes. This technique is based on the membrane and surfactant to be added in feed solution. Surfactant added causes self-assembly or aggregates of surfactant molecules which can adsorb or solubilize the pollutant. The size of these aggregates incorporated by pollutants is greater enough than the largest pore of membrane used for this purpose. Therefore pollutants can be retained or stopped on one side of the membrane while.

On the other side IP pollutant free flux can be obtained. For effective execution of this technique on industrial scale, several experimental parameters are necessary to be conducted in the laboratory. As a consequence, these experimental parameters have been targeted in this proposed research project for the assessment or improvement of efficiency of this separation technique. The foremost expected output of this project is the swift replacement of old, costly and time consuming separation techniques with advanced, cheap and effective technique i.e. micellar enhanced ultrafiltration in both water treatment plants and local industries situated at Faisalabad. A triplicate sampling was made to carry out qualitative and quantitative analysis from the textile industries. Two major parameters rejection percentage and permeate flux were determined to see the removal efficiency of applied surfactants. More than 90% rejection of dyes was found to be dependant on many factors such as nature of pollutants. Nature of surfactants, trans-membrane pressure (TMP), type of membrane used and pH or the solution. Permeate flux (J) was reciprocal to rejection percentage in the experimental results.

Project No.

Project Title:

Duration:

Date of Initiation:

Date of Completion:

Total Expenditure:

Principal Investigator:

Name of Institution:

PSF/Res/C-NUST/Envr (95)

Development of Rapid and Robust Analytical Methodologies for Detection of Elemental Contaminants in Environmental Samples using Laser Induced Breakdown Spectroscopy (LIBS)

1-Year

10.08.2010

09.08.2011

Rs.368,220/-

Dr. Muhammad Ali Awan

National University of Science & Technology,
Islamabad

SUMMARY:

The project was aiming to extend analytical capabilities of an analytical equipment 'Ocean Optics L/13S2500 plus Laser-induced Breakdown Spectrometer' (preset-ft at IESH-NUST) to ambient air and wastewater samples. The application of 'Ocean Optics LIBS2500 plus system' was primarily limited to the analysis of solid samples only. The conversion of ambient air particulate matter and wastewater to solid phase, with uniform distribution of heavy metals over the whole solidified surface was focused during the research. The optimization of LIBS parameters using solidified standards helped in devising complete methods for subsequent analyses of ambient air particulate matter and wastewater samples. In order to achieve the objective of research, the study for the proposed project was divided into two sections (A and B). Development of a rapid method for the detection of heavy metals in ambient air particulate matter using laser-induced breakdown spectroscopy (LIBS). Development of a method for the determination of chromium and cadmium in ,tannery wastewater using laser-induced breakdown spectroscopy (LIBS). The section describes the systematic development of LIBS methods for the gratification of environmental significant heavy metals in ambient air particulate matter (Part A) and in tannery wastewater (Part B) using Optics LIBS2500 plus Laser-induced Breakdown Spectrometer. Development of a method for the detection of heavy metals in ambient air particulate matter Chemicals: All metal salts (cadmium acetate 98.5%, lead acetate 99.5%, zinc sulphate 99.5% and the banding material potassium bromide 99.5%) and digestion reagents (hydrogen peroxide 35%, hydrochloric acid 37%, and nitric acid 65%) were purchased from Merck (Germany).

vi) MEDICAL SCIENCES

Project No.	PSF/Res/F-PMRC/Med (204)
Project Title:	Treatment of HCV in Traditional Medicine: A Scientific Evaluation through Blood Chemistry, Viral Load and Level of Patient Satisfaction in Pre and Post Treatment State.
Duration:	2-Years
Date of Initiation:	01.08.2008
Date of Completion:	31.07.2010
Total Expenditure:	Rs.594,150/-
Principal Investigator:	Dr. Tasleem Akhter
Name of Institution:	PMRC, Khyber Medical College, Peshawar

SUMMARY:

This study was conducted on HCV positive patients getting treatment from hakims during the year 2008-2011. A questionnaire was filled and information's were collected from 21 registered traditional healers giving treatment to HCV positive patients. HCV patients visiting these registered Hakim clinics were approached. Before starting the herbal therapy a questionnaire was filled from each patient to collect relevant information's. The patients were investigated for serum HCV RNA (PCR test), complete blood count including platelet count, complete liver function test (LFT), albumin/globulin (A/G) ratio and subjective assessment of symptoms at registration and end of treatment. As regards the method of confirmation 7(80.9%) of the hakims were confirming hepatitis C with the help of laboratory tests, while only 4(19.1%) were giving treatment based on history, sign and symptoms of patients. Most of the hakims were giving more than one type of drugs to hepatitis C patients. Eighteen (85.7%) of them declared that there is no side effect of herbal medicines and according to 10(47.6%) hakims the success rate of their treatment in HCV patients is 75%, while relapse rate was reported in one out of ten patients by 14(66.7%) hakims. Major ingredients in these herbal medicines are seeds of kasni (*Cichorium intybus*), berge mako (*Solanum nigrum*), kheera (*Cucumis sativus*), nelathri (*Cuscuta reflexa*), phul naqsha (*Viola serpens*), Ghi Kunvar (*Aloe vera*) and brandis kangar (*Pistacia integerrima*). Out of 80 HCV RNA positive patients, only 48 (60%) patients continued treatment for a period greater than three months and were followed and further investigated. Tremendous improvement was observed in most symptoms of these HCV positive patients except 12.5% patients reported jaundice at the end of hakim treatment.

Overall by the end of treatment with herbal medicines serum bilirubin was decreased in 29.2% patients, serum ALT in 70.8% patients, alkaline phosphatase in 64.6%, albumin in 39.6%, globulin level in 50%, total leukocyte count ((TLC) in 70.8% and platelet count was decreased in 52.2% patients. Results of HCV RNA were found positive in all (100%) patients at the completion of treatment with herbal medicines. Overall level of satisfaction for all types of herbal medicine used was very high. Twenty six (54.2%) patients expressed full satisfaction and were of the view that therapy made them significantly better while five patients (10.4%) reported mild side effects. In 14(29.2%) users the herbal therapy remained continued for a period greater than 18 months. Our results suggest no therapeutic benefit of these medicinal plants in regard to standard measures of virologic response or any

significant change in blood complete and blood chemistry; however health-related quality of life was improved and recorded as very satisfactory in most of the patients.

Project No.	PSF/Res/S-AKU/Med (210)
Project Title:	Deficiency of Vitamins B6, B12 and Folic Acid and its Relationship to Hyperhomocysteinemia in a Pakistani Population: Is There Any Role of Methylene tetrahydrofolate Reductase Gene in Causing Hyperhomocysteinemia in this Population
Duration:	3-Years
Date of Initiation:	01.07.2007
Date of Completion:	29.02.2012 (Extension)
Total Expenditure:	Rs.1,173,376/-
Principal Investigator:	Prof. Dr. Mohammad Perwaiz Iqbal
Name of Institution:	The Aga Khan University, Karachi

SUMMARY:

A study was carried out to monitor serum/plasma levels of folate, vitamin B12, pyridoxal phosphate and homocysteine in healthy adults working in four different health care institutions in Karachi and Rawalpindi. The preliminary data obtained in this study showed high prevalence of deficiencies of these vitamins and mean plasma levels of homocysteine ($17.95 \pm 8.4 \mu \text{mol/l}$) to be among the highest in the literature. For the primary objective, we recruited 872 healthy adults in Sultanabad, a low economy community in Karachi. Serum/plasma samples were analyzed for levels of folate, vitamin B12, pPLP and homocysteine. Percent values of foliate deficiency ($\leq 3.5 \text{ ng/ml}$) vitamin B6 deficiency ($\text{PLP} \leq 20 \text{ nmol/l}$) and vitamin B12 deficiency ($\leq 200 \text{ pg/ml}$) in the study population were found to be 27.5%, 33.7% and 9.74%, respectively. Hyperhomocysteinemia (levels $> 15 \mu \text{mol/l}$) was associated with male sex, folate deficiency, vitamin B12 deficiency. A 3-week supplementation with folic acid (5 mg/day), methycobalamin (0.5 mg/day) and pyridoxine hydrochloride (50 mg/day) in vitamin- deficient subjects ($n=194$) decreased plasma homocysteine levels by 37%. High prevalence of folate, vitamin B12 and vitamin B6 deficiencies appear to be the major determinants of hyperhomocysteinemia in general population in Karachi. We also found that a diet rich in fruits and un cooked vegetables decreased the risk of hyperhomocysteinemia, whereas diet rich in red meat, chicken and tea with milk was positively associated with hyperhomocysteinemia. In order to investigate whether exposure to lead (Pb) had any influence on plasma levels of homocysteine, we determined the levels of blood Pb and homocysteinemia. Result showed that prevalence of

high blood Pb was higher in males compared to females. DNA isolated from white blood cells of these individuals was analyzed for 6 polymorphisms in genes of 3 enzymes- methylenetetrahydrofolate reductase, methioninesynthase, cystathionine- β -synthase. Results showed that gene polymorphism, folate and vitamin B12 deficiencies, male gender and high blood lead level appeared to be contributing towards the development of hyperhomocysteinemia in this population.

vii) PHYSICS

Project No.	PSF/Res/P-GCU/Phys (143)
Project Title:	Nonlinear Landau Damping in space plasmas with Non-Maxwellian Distribution Function
Duration:	2-Years
Date of Initiation:	02.11.2009
Date of Completion:	01.05.2012
Total Expenditure:	Rs. 377,432/-
Principal Investigator:	Dr. M. Nouman Sarwar Qureshi
Name of Institution:	G. C, University, Lahore

SUMMARY:

The linear as well as nonlinear Landau damping of longitudinal waves in collision less plasma by employing non-Maxwellian distribution function such as generalized (r, q) distribution function, which is generalized from k - (κ) and Maxwellian distribution functions was studied.

A non-Maxwellian distribution function i.e., generalized (r, q) distribution function to study the non linear Landau damping of Langmuir waves with two electron populations, a dense thermal core and a small hot fraction of electrons were employed. The work with plasma kinetic theory which is most sophisticated theory to study plasmas was carried out. In many physical situation when a laser or electron beam is passed through dense plasma, hot low density electron population can be generated which results in a particle distribution function consisting of a dense cold population and a small hot population. Presence of such low density electron distributions can act to alter the wave damping rate. In this study we first study the linear damping of Langmuir waves when small hot electron population is present in dense cold electron population with generalized (r, q) distribution function. Departures of plasma from Maxwellian distribution significantly alter the damping rates as compared to the Maxwellian plasma. Strong damping is found for highly non-Maxwellian distributions as well as plasmas with higher dense and hot electron population. Existence of weak damping is also established in the study when the distribution contains broadened flat tops at low energies or tends to be Maxwellian. For the non-

linear case, we again employed two electron distribution function and found that non linear damping significantly increase when either of the spectral indices r or q decrease. After few oscillations the wave amplitude settles down to constant amplitude due to the phase mixing.

For the first time, we studied nonlinear Landau damping of high frequency waves with two electron temperature non- Maxwellian distribution function. These investigations may provide valuable insights into some of the unresolved problems of collision less nonlinear damping in plasmas.

Project No.	PSF/Res/C-NUST/Phys (147)
Project Title:	Measurement of Dielectric properties of Ceramics (Nano-Ferrites, $R_2Si_2O_7$, $R= Er, Ho, Dy$)
Duration:	2-Years
Date of Initiation:	01.10.2009
Date of Completion:	30.09.2011
Total Expenditure:	Rs.19,947,82/-
Principal Investigator:	Prof. Dr. Asghari Maqsood
Name of Institution:	National University for Science and Technology Islamabad

SUMMARY:

The Ceramic nano ferrites and Rare earth compounds are very important from different dimensions as their electrical, magnetic, optical characteristics are used in many technological applications. The applications' incorporating these elements range from few mm fabrications upon small chips in microelectronic industry to large scales deposition in nuclear power plants. Some others uses lie in the fields of microwave (formulation of stealth/ radar absorbing feature). Ferroelectric, ferro magnetic, lasers, phosphors etc. Rare earth dislocates are basically dielectric materials. These are further sub-classified as the high $-k$ dielectric materials because of their sufficiently high dielectric constant. In this present project work, nono ferrites (Ni-Co, Mn-Ni, Mn-Mg $-Ni$, Mn-Cu-Ni) and rare earth dislocates (E-Dy₂ Si₂O₇ C-Ho₂Si₂O₇, D-Er₂Si₂O₇) are prepared and they are characterized structurally and compositionally (XRD, SEM, FTIR, EDX) electrically (DC and AC Temperature) and Dielectrics spectroscopy. Dielectric spectroscopy is also carried out as a function of temperature .The electric and dielectrics data is analyzed in the high of different conductivity model, providing valuable information on conduction mechanism within the temperature and frequency range studied.

viii) R&D-INDUSTRY PROJECTS

Project No.	PSF/ILG/002/03
Project Title:	Disbondment of Epoxy Coating & Integrity of Gas Transmission Pipeline
Duration:	2-Years

Date of Initiation:	01-11-2004
Date of Completion:	30-10-2006
Total Expenditure:	Rs.1,534,217/-
Principal Investigator:	Dr. I. H. Khan
Name of Institution:	University of the Punjab, Lahore.

SUMMARY:

Corrosion threat to Pakistan's 10,000 km gas/oil transmission pipeline infrastructure is an engineering and economic problem. The coating costs represent only a small part of the overall project cost. However, it protects a pipeline, which has high replacement cost and this in turn, protects the viability of much larger assets. SSGC and SNGPL have made use of two pre-dominant coating types in their networks, (i) the first, which has been used the longest, is Coal Tar Enamel (CTE) has serious health concerns during manufacturing and application, and (ii) the second, which has been used for just over 15 years or so, is the three layer coating system comprising of a fusion bonded epoxy primer, an adhesive layer and a top polythene layer, often referred to as 3LPE with a service life of 50 to 60 years.

The research work was conducted as field visit by experts to the site of coating disbondment (failure analysis), and consequential effects on long term integrity of pipelines. No physical wetting with moisture was observed during peel test for all 3LPE field excavations except CTE coating at the interface between the coating and the pipeline over a period of three years of research. One of the most significant results of this research is the fact that the interface between the pipeline steel outer-surface and the epoxy coating is the most crucial weak point, in addition to molecular water diffusion for disbondment of coating. Epoxy resins on all coatings are not completely cross-linked as we can show by simulation of post-cure reaction that some reactive groups are still there in the epoxy coating. The interface of Epoxy and hot melt shows various contaminants. All the research results and finding have been transferred to industry simultaneously in the form of technical reports and updates at every three monthly meetings among the research partners during this period.

The research findings have been incorporated into the corporate engineering activities/practices through R&D departments and training centers. The thickness of FBE primer which was initially 50 microns was increased to 100 microns initially and subsequently to 250-300 microns. Grit blasted surface profile is now being maintained between 50-70 microns. A full fledge corrosion/coating testing laboratory has been established through the courtesy of the joint venture in cooperation with HEC and Punjab

University. Testing facilities include surface preparation/evaluation, coating application/evaluation and electrochemical equipment. The objective of the project has been successfully achieved through the joint responsibility of the end user, sponsors, university and Pakistani expatriates who were expert in relevant fields having vast experience in the 3 LPE coating-Cp systems. Moreover, Joint research venture was accomplished at a cost of about one third of the international tender basis.

Project No.	PSF/ILG/013/03
Project Title:	Enhancement in Shelf Life of Bread and its allied Products
Duration:	1-Year
Date of Initiation:	01-09-2003
Date of Completion:	19-09-2005 (Extension)
Total Expenditure:	Rs.999,098/-
Principal Investigator:	Dr. Ijaz Ahmad
Name of Institution:	PCSIR Laboratories, Lahore

SUMMARY:

Significant differences were observed in moisture, fat, protein, NFE, wet gluten, dry gluten, falling number values and Farinographic characteristics. However ash and crude fiber of different commercial flours showed non-significant differences. The results showed that commercial flour contained moisture 9.95-11.58%, fiber 0.40-0.60%, nitrogen free extract (NFE) 74.62-77.74%, wet gluten 23.1-28.4%, and dry gluten 8.4-10.3%. Teen-Sher, Sufi, Super and A-one exhibited higher protein contents than other commercial flours. However, A-one showed higher wet and dry gluten contents. Falling number values of different commercial flour ranged from 450-575. Falling number values of more than 400 indicated that these commercial flours possessed very low alpha amylase activity. The water absorption ranged from 55.7-59.75, development time 1.4-2.0 minutes, stability 8.8-12.6 minutes and farinograph quality number 18-30. Teen-Sher possessed greater farinograph quality number. However, farinograph quality number 30 or less than 30 shows that these are weak flours.

The prepared bread was evaluated for sensory parameters. Statistical analysis indicated that storage intervals and treatments showed highly significant differences for all the internal and external characteristics of bread. However, interaction was found to be non-significant. Scores for all sensory characteristics of bread decreased gradually during storage of 244 hours in all the treatments. Maximum scores for color of crust, evenness of bake, taste and texture was obtained by t18. T5 and T6 got lower scores for all the sensory characteristics. However, T1, T4 and T3 also remained almost at the lower level in all the characteristics of

bread. T11, T16, T18 and T12 got higher mean scores for volume of bread than other treatments. T18, T17 and T16 got higher scores (7.0) for color of crust than other treatments. T18, T17, T16 and T12 got maximum scores and remained at the top for evenness of bake, and taste of bread. Highest score for crumb color was exhibited by T12. T14 showed highest scores for aroma followed by T18, T12, T16 and T11. The results for texture of bread indicated that T18 got highest score followed by T16, T14, T12 and T11. T11 & T12 (both containing 60ppm maltogenic amylase) remained soft even at 144hrs. T16 and T18 retained enough softness up to 5 days (good scores=7), so that it looks like fresh. Softness of T18 was more than the respective normal bread of Bunny's limited.

The microbiological studies of some selected treatments at different time intervals showed that T14 was proved more effective against mold growth followed by T16. However, T14 showed 6.6×10^4 yeast & mold at 144 hrs. In the laboratory experiments T12 (calcium propionate 0.3%, calcium acetate 0.2% and maltogenic amylase 60ppm) followed by T11 gave better results. Trials conducted in Bunny's Ltd indicated that T16 may be more important for economical commercial production of bread because it contain less calcium propionate (0.3%). To study the economical aspect of using maltogenic amylase in bread making and to see the affect of maltogenic amylase in the commercial recipe, T17 and T18 were conducted in which Bunny's commercial recipe was used. The results indicated that T18 gave excellent results almost similar and comparable to that of T16. Thus, T16 (containing dextrose 6.0%, CP 3.0%, CA 2.0%, acetic acid (1:10) 0.275%, SSL 0.375%, MG 1.0% and maltogenic amylase 90ppm) and T18 (containing dextrose 2%, SSL 0.375%, MG 1.0% and maltogenic amylase 90ppm) were found to be the most suitable to enhance the shelf life of bread.

Statistical analysis of data of buns indicated that storage intervals and treatments showed significant differences for all the sensory characteristics of buns. However interaction was found to be significant for crumb color, aroma, taste and texture while non-significant differences were observed for volume, color of crust and evenness of bake. Scores for sensory evaluation of buns also decreased gradually during storage of 114 hrs in all the treatments. However, the use of dextrose, SSL and monoglyceride (MG) in the preparation of buns is more useful to improve softness and shelf life of buns.

Project No.	PSF/ILG/016/03
Project Title:	Establishment of Sustainable Model Agriculture Farm in Basol area, Balochistan using Wind Energy and Drip Irrigation System
Duration:	3-Years
Date of Initiation:	01-07-2005
Date of Completion:	30-06-2008 (Terminated)
Total Expenditure:	Rs.679,627/-
Principal Investigator:	Dr. Syed Shahid Hussain
Name of Institution:	Pakistan Museum of Natural History, Islamabad

SUMMARY:

The Basol area (having the highest average wind speed throughout the year amongst the coastal areas of Baluchistan) located on the Makran Coastal Highway, at a distance of about 35 km NW of the town of Ormara, was selected for establishing an agricultural farm using wind energy and drip irrigation system. The model agricultural farm was to be developed on a five-acre land, having enough sweet water potential to meet the farm's requirement. After the initiation of development work at the Gwader port, the commercial value of the land in the whole coastal region increased substantially. Therefore, the locals who initially offered their land for the Farm backed out. Hence, great and protracted efforts had to be made in acquiring the required land for the project.

After acquiring 5-acre land in Basol, Tehsil Ormara, it was properly leveled through mechanized means to make it suitable for farming. Geophysical (electric resistivity) survey was undertaken to make estimates about depth and quantity of water available in the sub-surface, which indicated presence of sweet water at a depth of about 45-50 feet. A good number of soil samples, collected from the farm area, were got analyzed from the NARC Laboratories, Islamabad which confirmed the suitability of the soil for undertaking various agricultural activities. This was followed by completion of a dugwell to a depth of about 50 feet. The necessary windmill for water pumping was purchased and was on installation. The job for the construction of water tank and office/store has been assigned to the council for Works and Housing Research (CWHR), Karachi and they would complete the civil work at the earliest possible. Meanwhile, the drip irrigation system would be procured and laid down in the farm area as per Farm's layout plan immediately on completion of the water tank and installation of the windpump. The agricultural farm was ready for sowing the orchards and other suitable crops/plants, however, due to severe floods in Balochistan, all equipment and crop site vanished, and work could not be completed as envisaged.

Project No.	PSF/ILG/018/03
Project Title:	Bio-Ecology and Population Management of House Crow in Islamabad Area
Duration:	3-Years
Date of Initiation:	01.08.2004
Date of Completion:	31.07.2007
Total Expenditure:	Rs.877,133/-
Principal Investigator:	Dr. S. Azhar Hussan
Name of Institution:	Pakistan Museum of Natural History, Islamabad

SUMMARY:

The House Crow (*Corvus splendens*) is predator of eggs, chicks and adults of other bird species. It causes displacement of indigenous bird species through competition and aggression. House Crow also causes severe damage to crops and is a potential carrier and transmitter of diseases. It has become a general nuisance in Islamabad especially on account of its large roosts. To have a check on the depredations of this avian pest, the knowledge of ecology and general biology of the House Crow was required. In the absence of such essential information, it was hard to conceive the means to manage its population. Therefore, present study was designed to gather information about nests and nesting habits, breeding season and reproduction, roosts and roosting behaviour and ecology of House Crow.

This research was carried out in Islamabad and adjoining areas from August 1, 2004 to June 30, 2007 to conduct ecological studies on House Crow with a major focus on nesting, breeding and roosting. In the present study area, all nests were located in the trees and no nest was found in power poles. House Crow nested in 17 different tree species. The tree heights ranged from 7.9 m to 29.26 m with an average height of 12.44 m. The nests heights were recorded 6.40 m as minimum and 15.54 m as maximum with average height of 9.86 m. The Clear Bole Height (CBH) ranged from 1.28 m to 12.19 m with an average of 3.0 m. Maximum diameter at breast height (DBH) was 3.96 m and minimum was 0.33 m with average value of 1.37 m.

Maximum clutches were recorded in second half of June and first half of July and no egg was noted in the month of August. The number of eggs per clutch ranged from 1-7 but average clutch size turns out to be 4.0 eggs per clutch. Number of chicks ranged from one to six in single nest. The number of the breeding nests of House Crow in these localities varied from 2 to 16. A total of 125 eggs were collected from 31 clutches located in 15 sites. Morphometric measurements of these eggs revealed that maximum weight of a single egg of the House Crow was recorded as 17.4 grams and minimum was 8.0 grams with an average weight of 12.85 g. The maximum

length of a single egg of the House Crow was recorded as 4.9 cm and minimum was 3.21 with an average length of 3.75 cm. The width of the eggs ranged from 2.38 cm to 3.23 cm with an average width of 2.64 cm.

Analysis of nests in the laboratory revealed that the number of the metallic wires in a single nest ranged from 5-245 with average number of 111.5. Wooden sticks varied from 25-849 with average of 292.68. Maximum number of plastic wires used in individual nests was recorded 62 and minimum as 2 with average value of 15.0. Total number of sticks/wires used in the construction of House Crow ranged from 197-849 with average of 408.95. The weight of metal in individual nests ranged from 24.7 g to 1140 g with average metal content of 394.35 g. Weight of wooden material varied from 30-1644 g with an average of 586.37 g. Maximum weight of plastic wires used in individual nests was recorded 86.3 g and minimum as 1.0 g with average value of 18.44 g. The weight of bed material ranged from 3.4 to 123 g. The average weight of the soft cup shaped bed was 27 g. Total weight of single nest of House Crow ranged from 412.1 - 2067 g with an average weight of 979.12 g. The roosts of the crows are of immense significance from population estimation and management point of view. The roost size ranged from 3100 to 19600 in Islamabad Capital Territory with a total count of 100300 crows while roost size ranged from 1800 to 21800 in the localities situated in Rawalpindi and other adjoining areas. The crow roosting predominantly occurred in only three tree species in Islamabad urban and rural areas viz. 64.28 % in Paper mulberry (*Broussonetia papyrifera*), 28.57 % in Sufeda (*Eucalyptus cameldulensis*) and 7.14 % in Tali (*Delbergia sissoo*).

The availability of sufficient food in urban environment as a result of anthropogenic activities and occurrence of large trees in recreational sites, city road avenues and road side plantations in Islamabad are very favorable conditions for breeding of House Crow. Therefore, best strategy to have a check on population of this species in urban environments is to deprive this pest of the roosting and foraging sites.

Project No.	PSF/ILG/019/03
Project Title:	Inventory of the Faunistic Diversity of Margallah Hill National Park
Duration:	3-Years
Date of Initiation:	01.09.2004
Date of Completion:	30.06.2007
Total Expenditure:	Rs.1,010,392/-
Principal Investigator:	Mr. Muhammad Rafique
Name of Institution:	Pakistan Museum of Natural History, Islamabad

SUMMARY:

Margalla Hills National Park spreading over an area of 15,883 hectares was established in 1980. It forms the southern most distributional limit for many Himalayan animal species and the northern most limits for many species of the plain areas in the south. It is also the transitional zone between the faunal communities of the mountains and the plain areas of the region. This park provides refuge to many indigenous species locally migrating from northern parts of the country during winter season. It also serves as transit place for many migratory species of birds migrating from northern hemisphere. It is also serving as an important recreational place for the people of Islamabad and Rawalpindi. The park is unique in the sense that it has remarkable variety of microhabitats which is indicator of high species diversity.

As a result of the series of faunal surveys of the park, 54 species of butterflies, 37 species of fishes, 9 species of amphibians, 20 species of reptiles, 380 species of birds, 21 species of small mammals and 15 species of large mammals were recorded. The bird diversity is substantially high and mainly associated with the Rawal Lake area. The National park at the moment is being treated like a city park and facing many threats. Ever increasing human settlements, mining and stone crushing, forest fires, tree cutting, fuel wood extraction, wildlife hunting, livestock grazing, road construction, air, water and noise pollution, recently installed lights on the Damn-e-Koh road, are the main problems in the park area. All these factors will ultimately result in squeezing the actual core habitat and concentration of species in certain pockets. Such hurdles in habitat and resource partitioning will lead to competition among the species resulting in drastic changes in species composition and their associations. To convert the park up to the level of a world class national park, it was imperative to conduct a thorough faunal baseline survey of the park so that a comprehensive management plan could be chalked out for its future sustainability.

Project No.	PSF/ILG/020/03
Project Title:	Development of Aspergillus's Niger variant through Genetic Engineering for Commercial Production of Citric Acid through fermentation of Molasses
Duration:	1-Year
Date of Initiation:	01.10.2004
Date of Completion:	16.11.2005 (Extension)
Total Expenditure:	Rs.938,289/-
Principal Investigator:	Dr. Muhammad Ibrahim Rajokka

Name of Institution:

Institute for Biotechnology and Genetic Engineering (IBGE), Faisalabad

SUMMARY:

Citric Acid fermentation of cane-molasses by submerged fermentation in 1 litre Erlenmeyer flasks (working volume 200 ml) and 23-l fermentor (working volume 15l) was investigated. Pre-treated molasses medium containing sugar ($S_0=70-160 \text{ g l}^{-1}$) was employed as the basal fermentation medium. Different process variables for accumulation of citric acid were optimized. At optimum substrate concentration (150 g l^{-1}), starting pH_0 (6.0), temperature (30°C), and agitation (200 rpm), sugars were consumed for citric acid formation (final citric acid concentration of 90 g l^{-1}), product yield on substrate of $0.65 \text{ gpg}^{-1}\text{s}$, and maximum volumetric and specific productivities of $1.35 \text{ gpl}^{-1}\cdot\text{h}^{-1}$ and $2.1 \text{ gpg}^{-1}\cdot\text{h}^{-1}$ respectively) while 24-46 g l^{-1} substrate was consumed for cell mass formation and maintenance functions while 15.0 g for respiration and accumulation of other products by the mutant derivative in shake flask studies. At higher or lower values of process variables, both organisms changed their metabolism to support varying concentrations of citric acid. In both shake-flask and fermentor studies. At temperatures ranging from $22-38^\circ \text{C}$, sugars in molasses were 75-83% consumed to produce citric acid in shake flask while 80-100% in fermentor. To demonstrate the kinetic mechanism of citric acid production and thermal inactivation of enzymes of the system, the related kinetic and thermodynamic parameters were determined from the experimental data on volumetric and specific productivity with the application of Arrhenius model. The midpoint temperature, activation energy for growth and activation enthalpy and entropy indicated that mutation had dramatic effect on thermo stability of metabolic activities and that inactivation phenomena implied a little randomness increase during the activated state formation and suggested a sort of more protection exerted by mutated cell system. The mutant was significantly improved over its wild parent and favorably comparable with other cultures reported in literature with respect to thermodynamic parameters.

Project No.

PSF/ILG/021/03

Project Title:

The Development of Mutant Strain of *Aspergillus's Niger* for Citric Acid Fermentation
1-Year

Duration:

01.10.2004

Date of Initiation:

30.09.2005

Date of Completion:

Total Expenditure:

Rs.618,660/-

Principal Investigator:

Prof. Dr. Ikram-ul- Haq, s.r

Name of Institution:

G.C University, Lahore.

SUMMARY:

In the present study, one hundred and ninety strains of *Aspergillus niger* were isolated from soil samples collected from different areas by serial dilution method. These strains were qualitatively screened for citric acid production in the petriplates on Czapek-Dox agar medium containing bromocresol green dye as an indicator. One hundred and twenty nine strains that produced yellowish zones (0.5-1.5 cm, dia.) due to acid formation were selected for further screening by submerged fermentation. Among all the strains, *A. niger* GCBT-117 gave the highest citric acid productivity (15.2 ± 0.14 g/l). The fermentation was carried out using 25 ml of cane molasses medium (sugar 15.0%, pH 6.0, free ferrocyanide 200 ppm) in 250 ml Erlenmeyer flasks. The flasks were rotated in a shaking incubator (200 rpm) at 30° C for 168 h.

After optimizing the cultural conditions, the isolate GCBT-117 gave 17.19 ± 0.71 g/l citric acid and hence subjected to mutagenic treatment for improvement. Both the conidial suspension and vegetative mycelia (6-24 h old) of strain GCBT-117 were used for random mutagenesis. After exposure to the UV irradiation, 54 mutants of GCBT-117 were picked up and tested for citric acid biosynthesis. However, the *A. niger* mutant strain designated as UV-50 gave maximum citric acid production i.e., 27.91 ± 0.19 g/l. The mutant was further improved after ethyl methane sulphonate (EMS, 50-350mM) treatment for different time intervals (5-30 min). Seventy two mutants were selected and evaluated for citric acid production. The best mutant strain *A. niger* EMS-66 was obtained after 350 mM EMS treatment for 15 min which gave 1.68 fold higher citric acid production (46.81 ± 1.33 g/l) than the mutant UV-50. This mutant was further subjected to nitrous acid for 2-12 min. Among the 41 nitrous acid mutants, mutant strain NA-32 gave the maximum citric acid production (50.3 ± 0.58 g/l). This mutant was isolated after an exposure to nitrous acid for 10 min. Thus, the mutant *A. niger* NA-32 showed an over all improvement of 2.93 fold in the citric acid production over to that of wild culture *A. niger* GCBT-117. The rate of citric acid fermentation by the mutant strain *Aspergillus niger* NA-32, in stirred fermentor, was investigated and the maximum production (45.07 ± 2.12 g/l) was achieved 144 h after incubation. Attempts were also made to improve the best mutant strain (NA-32) by gamma irradiation, UV irradiation, chemical mutagens (EMS and nitrous acid) and alternative treatment of UV irradiation and chemical mutagens but no mutant with improved citric acid production rate was obtained.

Project No.	PSF/ILG/023/03
Project Title:	Application of Solar Drying Technology for Apricots Design and Development of Solar Hybrid Dryer
Duration:	1-Year
Date of Initiation:	01.07.2005
Date of Completion:	30.06.2006
Total Expenditure:	Rs.95,468/-
Principal Investigator:	Mr. Majid-ul-Hassan
Name of Institution:	PCRET, Islamabad

SUMMARY:

The design of the Apricot Solar Dryer was conceived on the principle of Rodale's Solar Food Dryer. It is unique amongst solar dryers as it uses a down draft principle. Solar dryers traditionally depend on the fact that as air is heated it rises. Thus, they have a collector, which heats air and then allows the air to rise through the food trays and exit the top of the unit. In working with dryers, we found that this technique actually works against some other laws of nature. When the air began to dry food it cools as it absorbs moisture. Even though moist air is lighter than dry air, the fact that it is cool overpowers everything else, and it tends to sink, not go up, creating a slow air movement pattern in the food area of the dryer.

Whereas this dryer lets the air naturally flow up the collector through convection, but then we use a unique principle, that when the dryer is first heated, in the morning, the warm air will gather at the top of the drying cabinet however, as the dryer gets warmer the air in the exhaust chimney begins to be heated. As the air in the chimney is heated, it rises and exits the chimney. This creates a negative pressure at the bottom of the cabinet that draws warm air down, through the food trays. As air passes over the food, it cools and falls to the bottom of the cabinet. At that point the air is still warmer than the outside ambient air and flows up the chimney to exit. As it goes up the chimney, it is re-heated to speed up its flow. Thus, air starts moving through out the dryer somewhat slowly but quickly gathers momentum and because of the natural type of flywheel, pulling air from the collector, over the food, and out the chimney, much faster than dryers that rely on natural convection. That is what allows this dryer to handle such loads of food using only solar energy. Another unique feature of this solar dryer is that the moist air from each food tray is directed to pass through the chimney, separately. As a result homogeneous drying takes place in all food trays placed in the drying chamber. Thus, shuffling of trays is not needed while operating this dryer.

Project No.	PSF/ILG/024/03
Project Title:	Inventory of the Flora of Margalla Hill National Park
Duration:	3-Years
Date of Initiation:	01.08.2004
Date of Completion:	31.07.2007
Total Expenditure:	Rs.656,745/-
Principal Investigator:	Dr. Muqarrab Shah
Location of Scheme:	Pakistan Museum of Natural History, Islamabad

SUMMARY:

In study, the visits were conducted to selected sites twice a month alternately and the plant species found in blooming were collected, identified and preserved in the PMNH Herbarium. Moreover, all three herbaria (National Herbarium, Rawalpindi, Quaid-i-Azam University Herbarium and PMNH Herbarium) were also visited to collect information about already collected and preserved plant species of Margalla Hills, and a comprehensive list of species was prepared describing its overall floral identity. During first year, a total of 375 plant species (Herbs: 268, Shrubs: 62, Trees: 45) were confirmed to be present out of 608 or 616 species figures already reported. Important species were photographed in flowering state and their local names were recorded. The species of *Leontopodium* reported for the first time from this area. The specimen of *Viola* collected from Gokina village does not resemble with either *V. canescens* or *V. stocksii* already reported. *Psammogeton biternatum* is not found in Margalla Hills National Park and has been misreported by previous workers. Instead another species of *Psammogeton* (*P. Canescens*) was reported for the first time from Margalla Hills National Park. In the second year, further 160 plants were confirmed to be present in MHNP out of 608 or 616 species figures already reported. Important species were photographed in flowering stage and their local names were recorded.

For the first time, more than 200 important plant species of trees, shrubs, herbs and climbers in the blooming stage were photographed in the wild which are available for computerization and digitization of the flora of Margalla Hills National Park for display to the general public and researchers in future. So far, more than 500 plant species were confirmed to be present in MHNP out of 608 or 616 species figures already reported. More than a dozen new reports are being expected. The process of accurate identification, preservation and cataloging of the collected specimens is still continued.

Project No.	PSF/ILG/027/03
Project Title:	Production of Iron and Steel from Kalabagh Iron Ore through Direct Reduction Process
Duration:	1-Year
Date of Initiation:	01.02.2006
Date of Completion:	10.12.2007 (Extension)
Total Expenditure:	Rs.1,588,549/-
Principal Investigator:	Engr. M. Shafique
Name of Institution:	PCSIR, Lahore

SUMMARY:

Kalabagh iron ore deposits are known to be the biggest deposits in Pakistan. These deposits are estimated to be more than 450 million tons. Different institutions conducted a number of studies within the country and abroad for beneficiation and utilization of these deposits. The deposits have not yet been exploited on commercial scale due to complex nature of the ore, associated gangue minerals present and economical aspects involved in beneficiation of this ore prior to smelting. As iron content in Kalabagh iron ore is low that is 33-35% Fe and silica content is high around 24-28%, it can not be used in conventional blast furnace technology to make iron and steel. Besides this, mineralogical composition of Kalabagh iron ore is also not favorable for conventional route. In spite of these facts, the present project was envisaged on this iron ore and other indigenous raw material to develop a process on pilot plant level to make iron and steel by omitting beneficiation step and avoiding conventional blast furnace route which was a new type of work in Pakistan and has not been carried out before.

Iron ore and limestone were acquired from Makerwal area of Kalabagh. The coke breeze was purchased from local market. Bench scale experiments were conducted in gas fired pit furnace using graphite crucibles No. 25 – No. 35 for different batches of chare. The Pilot plant tests were completed in a rotary kiln after making required modifications according to the process. The kiln was fired with coal burner; Gas burner was also used during experimentation. Process parameters like batch composition, residence time, temperature in different zones of the kiln, feeding and discharging time and cooling mechanism for pouring/discharging the material produced, were studied and optimized of achieve the maximum grade and recovery, both at bench scale as well as pilot plant level. The laboratories scale experimental results, presented in the report led us to the conclusion that it is possible to produce iron metal from the Kalabagh low grade iron ore. The purity of the metal obtained is 97-98% Fe with Carbon as maximum as 1.5% while at pilot plant level, studies resulted iron luppens or roasted material. The Luppens were segregated from the slag.

The roasted material was ground and subjected magnetic separation to get beneficiated iron concentrate. The grade and recovery of the final iron concentrate produced was 60% and 70% respectively.

The annual production capacity of Pakistan steels, Karachi is only 1.1 million tons and it operates on imported ore while the demand of our country for iron and steel and its products is over five million tons per year. In these circumstances, the implementation of successful research findings of this study on commercial scale will be a major break through in the economy of Pakistan and it will also lead to he self reliance in field of iron and steel.

Project No.	PSF/ILG/034/03
Project Title:	Design and Manufacturing of Light Weight Composite Reinforced CNG Cylinders
Duration:	2-Years
Date of Initiation:	01.07.2005
Date of Completion:	30.06.2009
Total Expenditure:	Rs.1,800,000/-
Principal Investigator:	Mr. Ahmed Faraz
Name of Institution:	SUPARCO, Karachi

SUMMARY:

During this study, in first stage, an E-glass wound CNG cylinder using non-metallic polyurethane liner was manufactured and hydrostatically tested. Later on to overcome the deficiencies resulted in first stage a Kevlar fiber wound CNG cylinder using seamless Aluminum liner was manufactured and tested. Finally in ordered to further reduce weight and increase vehicle performance due to better fuel efficiency, CNG cylinder with a plastic liner with embedded metallic flanges is developed and tested. This newly developed plastic liner can now be used instead of previously used liner was developed and successfully qualified against pressure of 250 bars. This has enabled to indigenously develop a composite CNG cylinder. In this regard, all the required technology/skills for product development and manufacturing have been well acquired and mastered and developed CNG cylinder has been qualified.

Project No.	PSF/ILP/038/09
Project Title:	Indigenous Development of Formulation of Radiation Compatible Polypropylene for the Industrial Manufacture of Medical Disposable Syringes
Duration:	2-Years
Date of Initiation:	20.05.2010

Date of Completion:	19.05.2012
Total Expenditure:	Rs.1,800,000/-
Principal Investigator:	Dr. Shamshad Ahmed
Name of Institution:	NUST, Islamabad.

SUMMARY:

In this study, the formulation possessing most desirable attributes was selected, syringes were fabricated, irradiated and subsequent medical quality tests, optical tests, and mechanical tests on the aged samples were carried out in an accredited lab in Malaysia. The formulation is the formulation of choice as the syringes produced from it passed all the tests recorded in British Pharmacopeia and ISO standards. It was important to produce a bigger batch and see its acceptability in market and establish economic viability of the indigenously produced syringes. It was envisaged that repeated success and acceptable properties would also establish the authenticity of the formulation and the processes involved in producing these from the starting materials. Other aspects to be addressed included the exploration of the avenues for sale of end use product and particularly important was to fabricate this batch using newly installed high speed mixer at SCME which would lead to utilization of formulation for commercial purposes. An important test of the end use material would inevitably necessitate the absence of heavy toxic metals in the syringes. The second most important aspect was the establishment of a processing unit at SCME to undertake commercial production of the radiation compatible material in case NUST decides to do so. This was successfully accomplished by the installation of a high speed mixer and extruder in a lab to be used as Polymer Processing Lab. The facility will also cater to the needs of processing of other polymeric formulations both for academic and business ventures.

1.1.2 Scientific Publications Produced through PSF Supported Projects

One of the main achievements of any research is the publication of its results in scientific journals. Based upon the results of completed projects, 59 research papers were published in different national/international journals. Detail is at **Annexure-IV**.

1.1.3 Higher Degrees Earned through PSF Supported Projects

One of the major goals of the Foundation is the development of scientific human resource in the country. This results in strengthening of R&D infrastructure of various scientific organizations. The Foundation has been developing scientific manpower through its research projects and the Research Associates employed in the PSF supported research projects to

register for higher degrees. Following students working on PSF supported research project were awarded Ph.D/M.Phil/M.Sc. (Hons) degrees:

S. No.	Project No.	Name of the Researcher	Degree awarded
1.	S-KU/Bio (342)	Ms. Shazia Rasheed	Ph.D
2.	S-AKU/Bio (377)	Mr. Nauman Aziz	Ph.D
3.	S-KU/Bio (404)	Ms. Farah Saleem Ms. Wajeeha Asad Ms. Maria Asif	Ph.D Ph.D Ph.D
4.	P-PMAS.AAU/Bio (420)	Mr. Zahid Sharif Mirza	Ph.D
5.	C-QU/Chem (270)	Mr. Khurram Shahzad	M.Phil
6.	S-SU/Chem (411)	Mr. Liaquat Ali Zardari	Ph.D.
7.	B-BU/Earth (57)	Mr. Muhammad Umar	Ph.D
8.	P-AU/Envr (85)	Mr. Sajid Yaqoob	Ph.D
9.	C-QAU/Envr (93)	Mr. Muhammad Arshad Khosa Mr. Mohibullah	Ph.D M.Phil
10.	C-NUST/Envr (95)	Ms. Mahwish Bukhari	M.S
11.	P-GCU/Phys (143)	Ms. Sumbul Sehar	M.Phil
12.	S-AKU/Med (210)	Dr. Mohsin Yakub	Ph.D
13.	PSF/ILG/002/03	Mr.Usman Majeed	Ph.D

1.1.4 R&D-Industry Programme

Focusing on collaborative research and strong industrial linkages, R&D–Industry Programme (previously called Industrial Linkages Programme) is bringing together researchers, end-users and the funding institutions at one platform to create an environment of a unified approach to identify and solve industrial problems through applied research and technology transfer mechanism.

a) Under-Process Projects

During 2012-13, the following project proposals were remained under-process;

1. The project proposal entitled “*Development of Technology for synthesis of Pharmaceutical Raw Materials*” received from Pakistan Council of Scientific & Industrial Research (PCSIR), Lahore. Team Leader, R&D-Industry Programme held a

meeting with Dr. Shahid Hussain, Executive Director, Commercialization cell of MoST and Mr. Javed Akhtar Bhatti, President, Rawalpindi Chamber of Commerce & Industry regarding commercialization of this research. Mr. Jawed A. Bhatti consented to share 10% of the research cost of the project.

2. The proposal entitled "*Eco-Friendly Alternative Energy Source from Municipal Solid Waste*" received from Pakistan Council of Scientific & Industrial Research (PCSIR), Lahore. An intrinsic link with Century Paper Mills, Lahore, Lahore Compost Ltd. and Sapphire Mills Ltd. has been made to be the end-users for the said study.
3. Another proposal entitled "*Development of Eco-Friendly Products as Larvicidal/Insecticidal Against Dengue Vector*" received from Centre for Environmental Protection Studies (CEPS), Pakistan Council of Scientific & Industrial Research (PCSIR), Lahore. Sitara Chemical Industries, Faisalabad and Green Environment pvt Ltd, Gujranwala have been identified as its end-users. This project was initiated in coordination with Commercialization Cell of MoST.
4. The proposal entitled "*Development of Anti-Ballistic Intelligent Armored Panels for IED (Improved Explosive Device), CQB (Closed Quarter Battle) Protection of Personnel Operating in LIC (Low Intensity Conflict) Areas and Level IV+ (B7 Multi-Shot) Protection of Armored Vehicles*" received from Institute of Space Technology, Islamabad. Air Weapon Complex (AWC) has been identified as end-user of this research. The MoU is also in pipeline to be signed among PSF, AWC and Institute of Space Technology, Islamabad for collaboration and commercialization of this research.
5. The proposal entitled "*Development of an Indigenous Gasifier for Lignite Coal*" was received from Faculty of Engineering & Technology, Mehran University of Engineering & Technology, Jamshoro. To liaise with private sector, Eco-Gen Engineering, Lahore has been identified who is involved in gasifiers.
6. The proposal entitled "*Making Environmental Friendly Biodegradable Green Plastics and its Commercial Use in Food Packaging Industry*" was received from Department of Microbiology, Quaid-i-Azam University, Islamabad. Team Leader, R&D-Industry Programme held conversation with the P.I to involve some end-user in the project so

that the project may be dealt under R&D-Industry Programme. The project will be further processed after successful negotiations with the end-user.

7. The proposal entitled "*Design and Fabrication of Solar Flash Desalination System under Hydrostatically Sustained Vacuum*" received from Pakistan Navy Engineering College, National University of Science & Technology, Karachi. The objective of this project is to introduce an energy efficient and cost effective solar desalination technique to purify water for the masses. This proposal is in initial review and scrutiny at R&D-Industry Programme and will be processed further after the identification of end-user.
8. The proposal entitled "*Production of Astaxanthin from Algae Using Crude Glycerol as a Carbon Source*" was received from Center of Energy Systems, NUST, Islamabad. Astaxanthin is routinely used in animal feed, fish feed, cosmetics and pharmaceuticals. This research effort will be a significant step towards the conversion of low cost carbon source i.e. Glycerol into an extremely high value product.
9. The proposal entitled "*Development of Cost Effective and User Friendly Solar Cookers for Pakistan*" was received from National University of Science & Technology, Islamabad. The objective of this project is to introduce user friendly solar cooker which could be replaced with conventional cooking practices of the households in Pakistan.
10. The proposal entitled "*Design, Fabrication and Commercialization of a Novel Solar Water Heater Hybridized with Conventional Fossil Fuels (Oil, Gas and Biomass) Fulfilling the Domestic and Commercial Water Heating requirements according to Pakistani Climatic Conditions*" was received from National University of Science & Technology, Islamabad. The objective of this project is to introduce a hybrid water heating arrangement which could be run and switched between oil, gas and biomass.
11. The proposal entitled "*Development of Finishing Techniques for the Improvement of Defective & Low Grade Leather*" was received from Leather Research Centre, Pakistan Council of Scientific & Industrial Research, Karachi. The objective of this project is to create indigenous techniques of value addition in leather manufacturing to make it internationally competitive.

b) Projects Approved

Under R&D-Industry programme of the Foundation, following projects were approved during report period;

1. *“Development of Technology for synthesis of Pharmaceutical Raw Materials”* received from Pakistan Council of Scientific & Industrial Research (PCSIR), Lahore was approved by the Technical Committee on Chemical Sciences held on 09.01.2013. Its funding is in process.
2. *“Eco-Friendly Alternative Energy Source from Municipal Solid Waste”* received from Pakistan Council of Scientific & Industrial Research (PCSIR), Lahore was approved by the Technical Committee on Environmental Sciences held on 20.03.2013, and its funding is in process.
3. *“Development of Eco-Friendly Products as Larvicidal/Insecticidal Against Dengue Vector”* received from Centre for Environmental Protection Studies (CEPS), Pakistan Council of Scientific & Industrial Research (PCSIR), Lahore, and was approved by the Technical Committee on Environmental Sciences held on 20.03.2013.
4. *“Making Environmental Friendly Biodegradable Green Plastics and its Commercial Use in Food Packaging Industry”* received from Department of Microbiology, Quaid-i-Azam University, Islamabad, and was approved by the Technical Committee on Environmental Sciences held on 20.03.2013.
5. *“Design and Fabrication of Solar Flash Desalination System under Hydrostatically Sustained Vacuum”* received from Pakistan Navy Engineering College, National University of Science & Technology, Karachi, and was approved by the Technical Committee on Engineering Sciences held on 29.04.2013.

c) On-Going Projects

Following projects were remained on-going during the report period with given progress;

1. The final technical report of the project entitled, *“Investigation and Optimization of Combustion and Emissions Characteristics of Fatty Acid Methyl Esters of Different Origin”* was received from P.I. Its first annual technical report was also adopted by the Technical Committee on Engineering Sciences.

2. The 1st semi-annual technical report of the project entitled, “*Molecular Characterization, Mass Production and Formulation of Entomopathogenic Nematodes*” was also received. This project was approved under the 17th Protocol of S&T Cooperation between Pakistan and China (2012-16) and is being conducted in collaboration with National Nematological Research Center, University of Karachi, Karachi and Guangdong Entomological Institute, Guangzhou, China. The 1st and 2nd installments of the project have been released during the fiscal 2012-13, to University of Karachi, Karachi for execution of this project.

So far, lot of research activity has been conducted both at Guangdong Entomological Institute Guangzhou (GEI), China and National Nematological Research Center, Karachi. Pakistani isolate 1139 and other nematode isolates (Chinese isolate H06, All, X-7, MEX and L1V2) were analyzed for the control of Formosan Subterranean termite. Morphological and molecular identification of 1139 strain/bacterial symbiont has been conducted which ensured that the studied nematode is a valid new species. Further research work is in progress.

The ultimate objective of this project is mass production and formulation of EPNs at pilot plant level. The partners from both countries have to collaborate for inter-faced activity leading to commercialization of research findings.

d) Completed Projects

The project entitled “*Indigenous Development of Formulation of Radiation Compatible Polypropylene for Industrial Manufacture of Medical Disposable Syringes*” was completed. The Final Technical Report was adopted by the Technical Committee on Engineering Sciences held on 29.04.2013 and subsequently, its final settlement were made and project file closed.

1.1.5 Collaborations with Private Sector

1. M/s Sitara Chemicals contributed an amount of Rs.200,000/- being 10% of the total cost of the project entitled, “*Development of Eco-Friendly Products as Larvicidal/Insecticidal against Dengue Vector*”. This project was undertaken by R&D-Industry Programme of the Foundation from PCSIR, Lahore through commercialization cell of Ministry of Science & Technology.

2. M/s Waste Busters contributed an amount of Rs.200,000/- being 10% of the total cost of the project entitled, “Eco-Friendly Alternative Energy Source from Municipal Solid Waste”. This project was undertaken by R&D-Industry Programme of the Foundation from PCSIR, Lahore through commercialization cell of Ministry of Science & Technology.

1.1.6 Memorandum of Understanding (MoUs)

- i) Pakistan Science Foundation (PSF) signed Memorandum of Understanding (MoU) with Sargodha Chamber of Commerce & Industry (SCCI) for projects of mutual interest on 29.01.2013 at SCCI, Sargodha. Dr. Khalil Ahmed Ibupoto, Member Science, PSF and Mr. Zia Amin Sheikh, President, SCCI signed the MoU on behalf of their respective organizations. This MoU has been materialized by joint efforts of R&D Industry Programme of the Foundation and R&D Cell, SCCI. R&D cell of the Chamber shall identify projects of economic worth and R&D Industry Programme will undertake the task with Universities/R&D organizations.



Dr. Khalil Ahmed Ibupoto, Member Science, PSF and Mr. Zia Amin Sheikh, President, SCCI, flanked by Dr. Ata-ul-Mohsin, Director Research, PSF and Dr. Mirza Habib Ali, Team Leader, R&D-Industry Programme at MoU signing ceremony at Sargodha.

- ii) Pakistan Science Foundation (PSF) signed another Memorandum of Understanding (MoU) with Highway Research & Training Centre (HRTC), National Highway Authority (NHA) on 27.02.2013 at HRTC, Burhan for mutual initiatives on research & development projects.



Dr. Manzoor H. Soomro, Chairman, Pakistan Science Foundation and Mr. Hamid Ali Khan, Chairman, National Highway Authority, Islamabad signing MoU at National Highway Authority

1.1.7. Exhibition Organized

Pakistan Science Foundation in collaboration with University of the Punjab, Lahore and Institute of Research Promotion (IRP) organized two day “Invention to Innovation Summit-2013” on April 9-10, 2013 at University of the Punjab, Lahore. Dr. Manzoor H. Soomro, Chairman, Pakistan Science Foundation inaugurated the summit. Dr. Mujahid Kamran, Vice Chancellor, University of the Punjab, Lahore, Dr. Abid H. K. Sherwani, CEO, IRP and Dr. Hasan Sohaib Murad, Rector, University of Management and Technology, Dr. Aamir Ijaz, Director, Office of Research Innovation and Commercialization, University of the Punjab and several other dignitaries, students, research scholars and industrialists attended the event. The people having technologies engrossed with local R&D were invited to show their ideas through exhibition, poster presentations, documentaries and physical prototypes etc. The industrial and academia representatives also presented their innovative products and shared their research experiences.

A total of 60 different projects from different sectors were in place which included University of the Punjab, Lahore, GC University, Lahore, Quaid-i-Azam University, Islamabad, National University of Science & Technology (NUST), ECO-Gen, Pakistan Council of Scientific & Industrial Research (PCSIR), Lahore College for Women University, Lahore, National Textile University, Faisalabad, Ghulam Ishaq Khan Institute of Engineering Sciences and Technology, COMSATS Institute of Information Technology, Lahore, Pakistan Agriculture Research Council, Bahauddin Zakariya University, Multan, University of

Haripur, Pakistan Council of Research in Water Resources, Indus Pak Corporation, Intellectual Property Organization (IPO), Centre for Excellence in Molecular Biology, Centre for Applied Molecular Biology (CAMB), Punjab Agriculture Research Board (PARB), Al-Karam Rice Engineering, Prime Rice Engineering, Boondh Products and Shafi ResoChem, Lahore.



Dr. Manzoor H. Soormro, Chairman, PSF, Dr. Mujahid Kamran, VC, University of the Punjab, Dr. Hasan Sohaib Murad, Rector, University of Management and Technology and Mr. Abid H. K. Shirwani, CEO, Institute of Research Promotion cutting the ribbon to inaugurate the summit



Dr. Mujahid Kamran, VC, University of the Punjab presenting souvenir to Dr. Manzoor H. Soomro, Chairman, Pakistan Science Foundation, Islamabad at University of the Punjab, Lahore

1.1.8. Workshops/Seminars/Meetings and Trainings attended

- Dr. Mirza Habib Ali, Team Leader, R&D-Industry Programme attended a meeting for “*Agro Based Rice Producing, Processing & Manufacturing Industry*” at National Vocational Technical Training Commission (NAVTTTC), Lahore on July 09, 2012. The requirement of colour sorter was pointed out by the Private Sector because of its use in various industries i.e. rice, pulses, flakes and grains etc and at present, there is no indigenous production facility for color sorter and currently, it is widely imported from China, UK & Japan. To discuss technical details, participants of the meeting visited Dr. Muhammad Fiaz Shah, Dean, Faculty of Mechatronics, University of Engineering & Technology, Lahore on the same date. A letter has been issued to Muhammad Fiaz Shah, Dean, Faculty of Mechantronics, University of Engineering & Technology, Lahore to submit a concept paper for indigenous manufacturing of Color Sorter.
- Team Leader alongwith Scientific Officer, R&D-Industry Programme conducted meeting with Mr. Usman Khan, Economic Consultant, UNIDO on 6th March, 2013 to find out viable projects relating to socio-economic needs of the country. Need for a chemical to clean of surgical instruments as prescribed by the World Health Organization has been identified.
- Team Leader, R&D-Industry Programme facilitated the team of artists at Shinkiari and Abbaspur, Azad Jammu & Kashmir to shoot a documentary to highlight success stories of the R&D-Industry Programme of the Foundation. The project of R&D-Industry Programme entitled, “*Establishment of Pilot Green Tea Processing Plant*” was one of the selected project for this documentary wherein a green tea processing plant was installed at National Tea Research Institute (NTRI), Shinkiari and its first produce was sold to Tapal Tea (Pvt) Ltd. The tender of this documentary was awarded to M/s Reset Switch to prepare a video documentary of 8-9 minutes duration on digital system. National Tea Research Institute, Shinkiari and tea cultivation areas in AJK were visited, in this regard. This documentary would highlight the model and procedure adopted for the projects of R&D-Industry Programme, which would not only attract private sector towards potential indigenous areas of investment but also help other bodies having similar mandate of commercialization, across the country.
- Representative of R&D-Industry Programme attended a workshop on “*Industrial Biotechnology*” organized by COMSTECH, Islamabad on July 10-12, 2012.

- Scientific Officer of R&D-Industry Programme attended a workshop on “*Growth Strategy of Pakistan*” organized by Pakistan Planning & Management Institute, Planning and Development Division, Islamabad from August 27-30, 2012.
- Team Leader, R&D-Industry Programme delivered a talk on “*Career Entrepreneurship*” during one day workshop on “*Minds to Market*” organized by National Academy of Young Scientists (NAYS) at CIIT, Abbottabad on December 01, 2012. The same talk was also delivered at the University of Agriculture, Faisalabad on December 15, 2012 at the event of “*Skill Development Workshop*” jointly organized by NAYS and Agrarian Society. Inventions and Innovations Programme of the Foundation was shared with youth to motivate them for innovative ideas.
- Dr. S. Lal Shah and Dr. Mirza Habib Ali attended international workshop on “*Technological Innovation Governance for Sustainable Development*” organized by COMSATS Institute of Information Technology at Islamabad on December 18-19, 2012.
- Dr. Mirza Habib Ali, Team Leader, R&D-Industry Programme and Mr. Irfan Ahmad, Scientific attended a workshop on “*Pakistan Composites Show*” organized by College of Electrical and Mechanical Engineering, NUST, Islamabad on December 05, 2012.
- Mr. Irfan Ahmad, Scientific Officer, R&D-Industry Programme attended a research workshop on “*Plural Business Partnerships for Peace: Perspectives from Pakistan*” organized by Sustainable Development Policy Institute (SDPI) in collaboration with International Alert on December 03, 2012.
- Team Leader, R&D-Industry Programme participated in the National Engineering Robotics Contest-2013 held at College of Electrical & Mechanical Engineering (CE&ME), NUST, Rawalpindi on 29th June, 2013 and Scientific Officer, R&D-Industry Programme attended one day workshop on Technologies for Green Energy jointly organized by Lahore Chamber of Commerce & Industry (LCCI), Institute of Research Promotion (IRP) and National Forum for Environment & Health (NFEH) at Lahore on 27.06.2013.
- Team Leader, R&D-Industry Programme attended Final Meeting of National Curriculum Revision Committee of Environmental Science on June 19-21, 2013 at HEC Regional Centre, Peshawar.

1.1.9 Inventions and Innovations Programme

The Foundation has initiated programme to translate the concepts into Innovations and Inventions and their movement toward commercialization for the benefit of the national economy. The scientists, researchers and students with innovative ideas are awarded with cash prizes. Students of different universities participate in different international events with their indigenously manufactures prototypes. During the report period, a financial grant of Rs.1.05 million was provided to 08 different proposals of inventions & innovations. The detail of the proposals is as under:

1. *“Real Time Bus Arrival Display System”* by Bahria University, Islamabad.
2. *“Designing and Fabrication of Underground Vegetables Harvesting Machine”* from University of Engineering & Technology, Peshawar.
3. *“Designing and Fabrication of Fuel Efficient Aircraft”* from Ghulam Ishaq Khan Institute of Engineering and Technology, Topi.
4. *“Designing and Fabrication of One Seater, Four Wheel, Light Weight, Highly Fuel Efficient Car”* from CEME, NUST, Rawalpindi.
5. *“Designing and Implementation of Grid-Tie Solar Micro-Inverter”* from Center for Advanced Studies in Engineering (CASE), Islamabad.
6. *“Designing and Fabrication of Aerodynamically Fuel Efficient Car”* from Ghulam Ishaq Khan Institute of Engineering and Technology, Topi, Swabi.
7. *“Designing and Fabrication of Aerodynamically and Thermodynamically Fuel Efficient, Fiber Glass, Light Weight, One Seater, Three Wheel Car”* from University of Engineering and Technology, Lahore.
8. *“To Design and Fabricate Energy Efficient Plastic Injection Molding Machine”* from HITEC University, Taxila.

1.2 Pak-US Natural Sciences Linkage Programme (NSLP) Endowment Fund

Natural Sciences Linkage Programme (NSLP) Endowment Fund is an important component of Pakistan Science Foundation (PSF) which is aimed at enhancement of agricultural production through effective research. The outcome of this research will benefit the end user by uplifting the life standard and income of the farmers. The Fund is being managed by PSF through Board of Governors (BoG) and Fund Management Committee (FMC). The Chairman, PSF is the Chief Executive of the Programme/Fund.

Aims and Objectives

- To enhance cooperation among scientists from Pakistan and the United States of America, in areas of significant mutual interest and benefit relating to natural sciences as applicable to agriculture.
- To increase the contact and collaboration among scientists and institutions of biological research, development and higher learning between the two nations.
- To provide researchers and institutions with opportunities to exchange information, ideas, skills and techniques.
- To enhance opportunities to collaborate in solving problems of common interest relating to natural sciences and to utilize special research and development facilities or opportunities available.
- To identify the researchable areas in natural sciences especially agricultural sciences with aim to increase farmers profitability

Research Priority Areas:

Selected priority areas for collaboration may include, but are not limited to; Collection, Evaluation and Exchange of Germplasm, Plant Genomics, Plant Biotechnology, Stress Biology, Bio-Informatics, Application of Information Technology in Agriculture, Identification and Control of Animal/Plant Diseases, Dryland/Sustainable Agricultural Production System; Integrated Pest and Disease Management, Biotechnology, Microbiology, Agribusiness Development, Biophysics, Chemistry, Environment, Energy, Water Resource Management and Climate Change particularly with reference to Agriculture.

Project proposals which highlight main problems of agricultural sector are invited from Universities and R&D organizations across the country. Research work is emphasized on the food production & food security issues in Pakistani scenario. Currently, 52 projects are being funded in different Universities and R&D organizations around the country under this programme.

Projects are received from researchers throughout the year; they undergo tough scrutiny and peer review before presenting to the Technical Committee, which comprises of eminent scientists from different specialized areas of agriculture and natural sciences. The target areas of these projects include germplasm screening of different crops, insect and pest management for the disease free crop production, nutrition management of crops and post-harvest technology. All these research issues are vital component of today's agriculture and are imperative in bringing the value added products in the market. Apart from this, many projects from specialized fields of animal sciences are also being funded. These projects include research in genetic screening of different animal breeds, feed technology and milk quality areas. In future, the fund aims to maintain focus on applied research projects related to Energy, Water Resources Management, Environment and Climate Change.

1.2.1 Activities and Programmes

1.2.1.1 Research Funding

Research funding is the principal activity of Natural Sciences Linkage Programme (NSLP). Efforts are being made to establish linkages between end-users and scientists of different R&D organizations and Universities throughout the country. Projects of applied nature are selected for funding and research proposals received undergo the strict process of scrutiny before the funding. The criteria include the competence of the scientific personnel to carry out the research, institutional capabilities i.e availability of the basic equipment and laboratory facilities, scientific merit of the proposed research proposals and likelihood of completion of proposed research work within the stipulated time and funds requested. The proposals are reviewed by two Pakistani experts along with US experts. The proposals cleared by experts are placed in the Technical Committee for technical evaluation and recommendation. Technical Committee on NSLP comprises of the renowned scientists from various fields of agriculture and natural sciences. The proposals recommended by the Technical Committee are then submitted to NSLP Fund Management Committee (FMC) for administrative and budgetary approval, before the release of funds.

a) Under process Projects

During the report period, 236 proposals remained under consideration of the NSLP. Out of these 33 projects were presented in four different Technical Committee meetings held during the report period. Technical Committee recommended 20 new projects for funding at total cost of Rs.

54.134 million. List of projects recommended for funding during the report period is given in **Annexure-V**.

b) On-going Projects

During the year, there were 52 ongoing research projects and the progress reports of 52 projects (semiannual, 1st and 2nd annual & final reports) were received. The NSLP staff scrutinized the semiannual reports before releasing of next due installment. Whereas, annual and final reports after initial scrutiny by NSLP team were sent for evaluation to the subject experts to assess the interim progress of the projects before next due installment was released. It is worth mentioning that due installment of the on-going projects are released only if the interim progress of the projects at the end of each year is rated as satisfactory by the subject expert. An amount of Rs. 32.526 million was released on account of due installments of ongoing projects. A list of semi annual and annual reports is given in **Annexure-VI**,

c) Completed Projects

During the year two projects were completed. The subject experts evaluated the final technical reports of the projects which were subsequently placed before the Technical Committee for adoption. The accounts of these projects have been settled. Details of the projects along with the scientific out put are given below.

Project No.	PSF/NSLP/KP-AU (25)
Project Title:	Quantification of Economic Gain from Chickpea Sown on Irrigated Fields in Southern Khyber Pakhtunkhwa & its Implication for Agricultural Extension
Duration:	3-Years
Date of initiation:	01.09.2008
Date of completion:	30.04.2012 (with extension in duration)
Total Expenditure:	Rs.549,341 /-.
Principal Investigator:	Dr. Khalid Nawab
Name of Institution:	The University of Agriculture, Peshawar

SUMMARY:

During the study, growth of chick pea regarding height, pods per plant, branches per plant, biological and grain yields were not significantly affected by irrigation at any location except grain yield at Karak. In contrast to expectation, grain yield was higher at plots with no irrigation followed by plots irrigated at sowing or flowering at Karak. Plant height, pods per

plant, branches per plant, biological and grain yields were significantly affected by sowing dates at all locations and mostly declined with delay in sowing from 1st October to 15th November. Similarly, different varieties also differed significantly for plant height and grain yield of chick pea at Laki Marwat. Plants of chick pea variety Karak -1 were taller while Karak-II and produced higher grain yield at Bannu. Similarly varieties also differed significantly for plant height and biological yield of chick pea at Karak.

It is concluded from the above experiments that irrigation significantly affected grain yield at Karak. In contrast to expectation, no irrigation produced higher grain yield as compared to irrigation at sowing or flowering at Karak. Likewise, sowing dates significantly affected grain yield at all locations. Grain yield was higher for sowing on 15th October at Laki Marwat. Karak II and Karak 1 produced higher grain yield as compared to Sheenghar and KC 98.

It is therefore, finally concluded that sowing of any of the studied varieties upto 15th October produced higher yield of chick pea and the same is recommended for the farmers of three locations for obtaining higher yield of chick pea sowing because this site has sandy soil and relatively high rainfall. Similarly, the low yield in Bannu and Lakki Marwat may be due to clay soil and completely low rain fall in these sites. It was also noted from the data that grain yield was higher in Karak and Bannu in early sown plots which indicates the importance of early sowing (1st October) in these sites however sowing can be delayed till 15th October in Laki Marwat without any yield penalty.

Project No	PSF/NSLP/P-FCCU (121)
Project Title:	Increasing Phosphorus Use Efficiency in Wheat through Genetic Engineering.
Duration:	2-Years
Date of initiation:	01-11-2010
Date of completion:	31-10-2012
Total Expenditure:	Rs.3,794,892/-
Principal Investigator:	Dr. Asma Maqbool
Name of Institution:	Forman Christian College (A Chartered University), Lahore

SUMMARY:

Wheat is a main crop of Pakistan and also cultivated worldwide. Like other plants wheat gets its nutrients from soil by roots. Phosphorus is a macronutrient and also a limiting factor for plant growth and development. Major component of soil organic phosphorus occurs as phytates plants are unable to utilize it. Phytate is also stored in plant seeds that are used as

animal feed, but phosphate bound in this form is not bio-available to mono gastric animals due to absence of phytase enzyme which can release the phosphorus from phytates.

The present study was aimed to transform synthetic phytase gene in wheat under root specific promoter. For this purpose a heat stable hybrid phytase gene and two root specific promoters (*Arabidopsis pht1* and Barley *pht1*) were selected. *Arabidopsis Pht1* promoter and hybrid phytase gene was synthesized while barley *Pht1* promoter was amplified from barley genomic DNA. The amplified promoter sequences were analyzed by using various bioinformatics tools. Initially the whole cassette with each promoter was completed in pbract304 and then transferred in PSB219 plant expression vector. The cassette was completed by amplifying synthetic phytase gene (1.5kb) from parent vector by using gene specific primers. The recombinant plasmid was confirmed through restriction analysis and PCR. The confirmed positive clone was given the name C304-G. The *Arabidopsis* and Barley *pht1* promoters were amplified from parent vectors. The amplified promoters were cloned in C304-G by using *AscI* and *Eco81I* and transferred to *E. coli* DH5 α competent cells. The recombinant plasmid was confirmed through restriction analysis and PCR. The confirmed pbract304 that have *Arabidopsis* promoter upstream to phytase gene was given the name C304-A and the plasmid that have Barley *pht1* was given the name C304-B. Cassettes A was released from C304-A by using *Hind* III and *XbaI* and cloned into PSB219 after en-filing and transferred to *E. coli* DH5 α competent cells and the positive clone was given the name C219-A. Cassette B was released from C304-B by using *EcoRV* and cloned into PSB219 and transferred to *E.coli* DH5 α competent cells and the positive clone was given the name C219-B. Both constructs (C219-A and C219-B) were transferred into AGLI strain of *Agrobacterium tumifaciens* through electroporation. The positive colonies were screened through colony PCR.

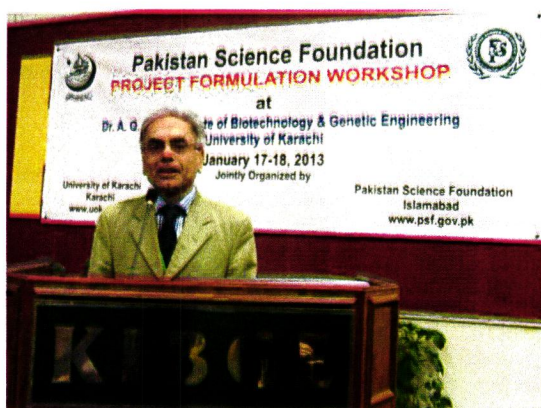
About twenty five hundred immature embryos of wheat variety Faisalabad 2008 were isolated from immature seeds 2 and shifted on callus induction medium. Two thousand calli were formed and infected with AGLI strain of agrobacterium harboring C219-A or C219-B. After cultivation calli were shifted on regeneration media, five hundred and thirty seven plants were regenerated. Putative transgenic plants were selected on the basis of DL-Phosphinothricin (Basta), a marker gene. Two rounds of selection were given to regenerated plants and further growth was prolonged in green house under natural light. The protocol was established to check the phytase activity from soil sample.

1.2.1.2 Scientific Publications and Patents Produced through PSF Funded Projects

One of the main achievements and usefulness of any research is the publication or patents of its results in scientific journals. Based upon the results of completed research projects, 17 research papers were published in peer review journals while nine patents were awarded during the report period, the detail of which is given at **Annexure-VII** and **Annexure-VIII**, respectively.

1.2.2 Project Formulation Workshops

During the fiscal year 2012-13, three Project Formulation Workshops were organized to enhance the capacity of the researchers for writing project proposals. The workshops were organized at University of Sargodha, Sargodha on Oct 10-11, 2012, University of the Karachi, Karachi on Jan 17-18, 2013 and University of Swat, Mingora, on June 24-25, 2013, respectively. A total of 153 researchers from 62 different R&D organizations and Universities benefitted from these workshops. Scientists were trained on different aspects of writing a good quality research proposal by experienced scientists.



Prof. Dr. Manzoor H. Soomro, Chairman, PSF addressing the inaugural session of Workshop



Prof. Dr. Manzoor H. Soomro, Chairman, PSF during the inaugural session of Workshop



Dr. Nassrulah Jan Malik, Ex-Dir, SCRI, Mardan, Prof. Dr. Jehanzeb Khan, Vice Chancellor, University of Swat, Prof. Dr. Khalil Ahmed Ibupoto, Member Science, PSF, Dr. Mirza Habib Ali, PSO, NSLP at inaugural session of Workshop at University of Swat

1.2.3 Fourth Meeting of NSLP Board of Governors (BoG)

The fourth meeting of NSLP Board of Governors was held in PSF on 14.03.2013. The meeting was Chaired by the Federal Minister for Science and Technology, Mir Changez Khan Jamali and Co-Chaired by Mr. Akhlaq Ahmed Tarar, Secretary, Ministry of Science and Technology. Meeting was attended by the esteemed members from different national ministries.

Chairman, PSF/Secretary BoG, Prof. Dr Manzoor H. Soomro briefed about significant achievements and working of NSLP Endowment fund. The Board confirmed minutes of the previous BoG meeting held on 10.05.2012 and expressed its satisfaction on the progress of NSLP. The BoG also approved the annual expenditures and Audit Report of NSLP Accounts, 2011-12. Furthermore, the Board enhanced the financial powers of the FMC for approval of research projects from Rs.4.00 million to Rs.8.00 million per project. The meeting ended with the vote of thanks to and from the Chair.



*Federal Minister for Science and Technology, Mi, Changez Khan Jamali,
chairing the 4th BoG meeting of NSLP on 14.03.2013*

1.2.4 Meetings of Fund Management Committee of NSLP

During the year two meetings of the Fund Management Committee (FMC) were held on 03.10.2012 and 14.03.2013 respectively to review the financial matters of NSLP. The meetings were chaired by the Chairman, PSF/Chief Executive, NSLP and attended by members of the Fund Management Committee. The FMC approved budgets of 12 new projects recommended by the NSLP Technical Committee.

1.2.5 Meetings of Technical Committee of NSLP

During the year 2012-2013 four meetings of the Technical Committee (TC) were held on 24.10.2012, 01.01.2013, 23-04-2013 and 07-06-2013 respectively to technically evaluate the projects to be funded. The meetings were chaired by the Chairman, PSF/Chief Executive, NSLP and attended by the renowned scientists related to agriculture and natural sciences. The Technical Committees recommended 20 new projects for funding.

1.2.6 On-Site Monitoring of On-Going Projects

Research funding is the principal activity of NSLP. In order to evaluate the progress of ongoing projects, PSF has devised the system of onsite project monitoring to get a better idea about the issues of PIs pertaining to project execution. The on-going research projects are

monitored by visiting the scientists at their labs and fields and by obtaining periodical progress reports on six monthly basis.

Dr. Mirza Habib Ali, Principal Scientific Officer visited COMSATS Abottabad on Dec 1,



2012 to evaluate the progress of ongoing project entitled "Wheat Improvement by the use of Targeted Genomic Approaches" the project has completed its first two years and its progress was found satisfactory. Onsite monitoring of PSF-NSLP funded projects at Peshawar was conducted on 11.12.2012 by PSF team, accompanied by Prof. Dr. M. Saqlan Naqvi,

member of Technical Committee on NSLP Endowment Fund. A total of nine (08) projects were monitored, two at Agriculture University Peshawar and six at Nuclear Institute for Agriculture (NIFA), Peshawar. The progress of all the projects was rated as satisfactory, and some recommendations were made by Prof. Dr. M. Saqlan Naqvi, member of Technical Committee on NSLP.

Onsite monitoring of 12 projects funded by PSF-NSLP at Faisalabad was conducted on March 22-23 2013 by PSF team comprising



Dr. Javed Akhtar, Director NIAB /Member NSLP Board of Governors-NSLP havig discussion with PI

of Dr. Mirza Habib Ali, Principal Scientific Officer-NSLP and Mr. Nasir Mahmood Khokhar, Senior Scientific Officer-NSLP. The PSF team was accompanied by Prof. Dr. Muhammad Arshad, Member of Technical Committee on NSLP Endowment Fund to monitor projects at NIAB (03) and NIBGE (01), while Dr. Javed Akhtar, Director NIAB /Member NSLP Board of Governors-NSLP and Dr. Shahnaz Adeeb, Head Animal Sciences Division, NIAB joined the team for monitoring of eight (08) at University of Agriculture Faisalabad.

The Projects funded under PSF-NSLP Endowment Fund at Lahore were monitored by Dr. Mirza Habib Ali, Principal Scientific Officer-NSLP on April 8-9, 2013. A total of five (05) projects, two at University of the Punjab and three at FC College University, Lahore were monitored. All the projects were found running satisfactorily.

During the monitoring progress of the projects was examined and problems faced by the Researchers were discussed and ways to solve these problems related to PSF were also discussed. The progress of all the projects was rated as satisfactory.



Five (05) projects being funded at Sind Agriculture University, Tandojam were monitored by Dr. S. Lal Shah, Chief Scientific Officer on May 26-28, 2013. The projects were found in order and PIs discussed their problems related to the project execution which were resolved during monitoring.

1.2.7 Principal Investigators' Convention

In order to further monitoring and evaluation process, a two day Principal Investigators' Convention was arranged on June 11-12, 2013 at Islamabad Hotel, Islamabad to bring PIs and Subject Experts at one platform. NSLP aims at the applied research for the benefit of farmer community by establishing collaboration amongst the scientists, progressive farmers, agri-industrialists and other stakeholders. The PI's Convention was aimed at getting update on the progress of research conducted under NSLP projects as well as exchange of ideas to meet national needs for economic development. Main objectives of the Convention were as under;

- To bring together Principal Investigators (PIs) and subject experts under one roof
- To improve the quality of agricultural research in general and specifically in PSF-NSLP funded projects.
- To find possible solution of difficulties faced by PIs during the project execution
- To identify the gaps in existing scientific knowledge through discussion sessions
- To help scientists select priority areas of research in agriculture sector
- To avoid repetition of research work by sharing research projects with fellow scientists

In Convention, the issues addressed were; (i) to evaluate technical and fiscal progress of ongoing projects, (ii) to resolve issues/problems faced by PIs during project execution, and (iii) to provide guide lines for the future undertakings in research projects. A total of 51 PIs were

invited to present their research project work, of which 36 participated in the convention. A list of participating PIs alongwith title of their projects is placed at **Annexure-IX**. A panel of subject experts and members of technical committee were invited to review progress of projects, panel discussions and idea generation. During the session some recommendations were put forward by the participants such as; (i) need based research should be encouraged to pass on domino effect of science to the society, (ii) sharing of equipment between different research organizations should be encouraged, (iii) projects of applied nature be prioritized and encouraged for funding with effective joint collaboration between different agencies to avoid the duplication of work, (iv) publications and patents produced from PSF projects should have acknowledgement to PSF, (v) social media group be created by NSLP team for professional networking and communication among scientists, and (vi) effective mechanism be evolved to pass on new technologies developed to the end-users.



*Prof. Dr. Manzoor H. Soomro flanked by Mr. Richard T. Drennan,
Principal Investigators and other dignitaries*

1.3 SCIENCE PROMOTION

1.3.1 Institutional Support Programme

One of the functions of the Foundation is to support the emerging R&D Organizations/Universities to strengthen their laboratories. During the report period, no case was entertained due to shortage of funds.

1.3.2 Financial Assistance for Holding Science Conferences, Seminars, Symposia and Workshops

Another function of the Foundation is to provide funding for holding conferences/seminar /symposia/ workshops etc. In year 2012-13, an amount of Rs.3.185 million was released to

various institutions for organizing 32 conferences seminars and workshops on important scientific topics listed below:

Sr. No	Title of Conference	Name of Organizers	Amount Released (Rs.)
1.	International Conference on “ <i>Robotics and Artificial Intelligence (ICRAI)</i> ” on October 22-23, 2012 at EME College, NUST, Rawalpindi	Dr. Mahmood Anwar Khan College of Electrical and Mechanical Engineering (EME) National University of Science and Technology (NUST) Rawalpindi	Rs.100,000/-
2.	“ <i>8th International Conference on Emerging Technologies 2012</i> ” on October 8-9, 2012 at Islamabad Hotel, Islamabad	Prof. Dr. Aamer Iqbal Bhatti Muhammad Ali Jinnah University Islamabad	Rs.75,000/-
3.	“ <i>Bio Con-2012</i> ” on July 9-11, 2012 at University of Karachi, Karachi	Prof. Dr. Nikhat Ahmed Chairperson, Department of Biochemistry, University of Karachi Karachi	Rs.100,000/-
4.	Second National Phycological Conference on “ <i>Algae for Mankind</i> ” on 15-17 October, 2012 at Department of Botany, University of Karachi Karachi	Dr. Aliya Rehman Department of Botany, University of Karachi Karachi	Rs.100,000/-
5.	“ <i>13th Biennial International Conference of Pakistan Physiological Society</i> ” on 7-9 September, 2012 at Saidu Medical College, Swat	Prof. Dr. Taj Muhammad Khan Saidu Medical College SWAT	Rs.100,000/-
6.	“ <i>11th International and 23 National Chemistry Conference-2012</i> ” on 15-17 October, 2012 at University of Peshawar, Peshawar	Prof. Dr. Hasan Mahmood Khan, Director, NCE in Physical Chemistry, University of Peshawar, Peshawar	Rs.100,000/-
7.	“ <i>13th International Symposium on Natural Product Chemistry</i> ” on September 22-25, 2012 at International Centre for Chemical and Biological Sciences, University of Karachi, Karachi	Prof. Dr. M. Iqbal Choudhary, Director, HEJ Research Institute of Chemistry, University of Karachi Karachi	Rs.200,000/-
8.	“ <i>7th All Pakistan Engineering Conference (APEC 2012) and 2nd All Pakistan Business Festival (BizFest 2012</i> ” on November 9 th to 11 th , 2012 at GIK Institute, Topi, KPK	Mr. Shams Mawji President, IET GIKI Chapter, Institute of Engineering and Technology GIKI Student Chapter, GIK Institute, Topi,	Rs.50,000/-

9.	“Livestock Feeding Strategies to Mitigate Seasonal Shortage and Natural Disastrous Conditions” on 15 th November, 2012 at Circuit Hous, SIBI	Dr. Ghulam Muhammad Khetran, Farm Superintendent, Beef Production Research Centre, Sibi	Rs.90,000/-
10.	“3 rd International Symposium on Biomedical Materials: Recent Advances and Challenges” on 18-20 th , December, 2012 at Interdisciplinary Research Centre in Biomedical Materials (IRCBM) CIIT Lahore.	Dr. Arif Anwar Chaudhry, Incharge IRCBM, Interdisciplinary Research Centre in Biomedical Materials (IRCBM) CIIT Lahore	Rs.100,000/-
11.	“Bioclean Coal Technologies” A step towards the use of indigenous resources of coal on 7-8 th November, 2012 at National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad	Dr. M. Afzal Ghauri Principal Scientist National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad	Rs.60,000/-
12.	“Energy 2012” (One-Day Multi Topic International Symposium on Energy) on October 06, 2012 at CECOS University, Peshawar	Prof. Dr. Azzam ul Asar Dean of Engineering CECOS University Peshawar	Rs.100,000/-
13.	“Annual Entrepreneurship Conference: LCL Learn, Create, Lead 2012” on October 22, 2010 at National Library Auditorium, Islamabad	Mr. Sadaf Niaz Project Manager Entrepreneurship Development Institute, Islamabad	Rs.100,000/-
14.	“4 th South Asian International Conference on Emerging Knowledge Economy in the 21 st Century: Opportunities & Challenges” on December 05-07, 2012 at Pearl Continental, Bhurban, Muree.	Prof. Dr. Qaisar Abbas Dean Faculty of Business Administration COMSATS Institute of Information Technology Islamabad	Rs. 200,000/-
15.	“4 th Italian Pakistani on Relativistic Astrophysics” on February 15-17, 2013 at NUST Centre for Advanced Mathematics and Physics, Islamabad	Dr. Ibrar Hussain Assistant Professor National University of Science and Technology-SEECS, Islamabad	Rs.75,000/-
16.	“1 st International Conference on Global Environmental Science” on December 04-05, 2012 at Government College University, Faisalabad.	Dr. Farhat Abbas Chairman, Department of Environmental Sciences, Government College University, Faisalabad	Rs.100,000/-
17.	“The 15 th IEEE International Multi Topic Conference (INMIC)” on December 13-15, 2012 at Hotel Margalla, Islamabad	Dr. Saad Naeem Zafar Dean, Faculty of Computing, Riphah International University, Main Campus, Islamabad	Rs.150,000/-

18.	<i>“International Conference on ‘Frontiers of Information Technology (FIT, 10th in Series’ on 17-19, December 2012 at Serena Hotel, Islamabad</i>	Dr. Khizar Hayat Associate Professor/Head Computer Science Department, COMSATS Institute of Information Technology, Abbottabad	Rs.100,000/-
19.	<i>“International Workshop on Air Quality Monitoring and Global Warming Trends in Pakistan” on November 15-16, 2012 at National University of Science and Technology (NUST), Islamabad</i>	Dr. Muhammad Fahim Khokhar Assistant Professor National University of Science and Technology (NUST) Islamabad	Rs.75,000/-
20.	<i>“VisioSpark 2012” on December 08, 2012 at COMSATS Institute of Information Technology, Wah Cantt.</i>	Dr. Ehsan Munir COMSATS Institute of Information Technology, Wah Cantt	Rs.150,000/-
21.	<i>“1st International Conference on Future Perspectives of Food Processing Industry in Pakistan” on December 11-12, 2012 at Government College University, Faisalabad</i>	Dr. Muhammad Umair Arshad Department of Food Sciences Government College University, Faisalabad	Rs.100,000/-
22.	<i>“IEEE International Conference on Open Source Systems & Technologies (ICOSST-12)” on December 20-22, 2012 at University of Engineering and Technology, Lahore</i>	Prof. Dr. Waqar Mahmood Director Al-Khawarizmi Institute of Computer Science University of Engineering and Technology, Lahore	Rs.50,000/-
23.	<i>“Association for Excellence in Medical Education Conference 2013 and 16th AKU Symposium” on January 25-27, 2013 at Aga Khan University, Karachi</i>	Prof. Dr. Umar Ali Khan Pro Vice Chancellor Isra University Islamabad	Rs.100,000/-
24.	<i>“Teachers Training Workshop: Lab Methods in Genetics” on January 28-February 01, 2013 at Quaid-i-Azam University, Islamabad</i>	Dr. Sajid Malik Assistant Professor Department of Animal Sciences Quaid-i-Azam University Islamabad	Rs.40,000/-
25.	<i>“9th Biennial International Conference of Pakistan Society for Microbiology” on December 28-31, 2012 at University of Karachi, Karachi.</i>	Prof. Dr. Shahana Urooj Kazmi Chairperson Department of Microbiology University of Karachi Karachi	Rs.100,000/-
26.	<i>“MatTech’13 National Symposium on Materials Technology” on February 01-03, 2013 at GIK Institute of Engineering Sciences</i>	Ms. Arfa Khan President, American Society of Materials, GIK Institute of Engineering Sciences and	Rs.50,000/-

	and Technology, Topi.	Technology, Topi	
27.	<i>"2nd International Conference of Value Addition and Innovation in Textiles (CONVITEX, 2013)"</i> on March 18-19, 2013 at National Textile University, Faisalabad	Dr. Rashid Masood Chairman Department of Textile Processing, National Textile University Faisalabad	Rs.75,000/-
28.	<i>"Conference on Energy and Sustainability"</i> on 27 th April, 2013" at NED University of Engineering and Technology, Karachi	Prof. Dr. Mubashir Ali Siddiqui Chairman, Department of Mechanical Engineering, NED University of Engineering & Technology, Karachi	Rs.100,000/-
29.	<i>"National Training Workshop on Synthesis and Characterization of Nanostructured Materials with Novel Morphologies"</i> on February 18-21, 2013 at NIBGE, Faisalabad	Dr. Waheed S. Khan Principal Scientist National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad	Rs.70,000/-
30.	One Day National conference on <i>"Knowledge Economy; Role of Engineers & Scientists"</i> on March 14, 2013 at University of Engineering and Technology, Peshawar.	Engr. Syed Asif Ali Shah Director ORIC & TIC University of Engineering & Technology Peshawar	Rs.75000/-
31.	<i>"International Scientific Spring-2013"</i> on March 11-15, 2013 at National Centre for Physics, Quaid-i-Azam University, Islamabad.	Dr. M. Aslam Baig Head Laser Plasma Physics Quaid-i-Azam University, Islamabad	Rs.150,000/-
32.	<i>"1st International Conference on Wireless Sensor Networks for Developing Countries (WSN4DC'13)"</i> on 24-26 April, 2013 at Mehran University of Engineering & Technology, Jamshoro	Dr. B. S. Chowdhry Dean, Faculty of Electrical, Electronic and Computer System Engineering Mehran University of Engineering & Technology, Jamshoro	Rs.150,000/-
Total:			Rs.3,185,000/-

1.3.3 Financial Support to Scientific Societies for Holding Scientific Conferences and Publication of Scientific Journals

The Foundation provides funds for Scientific Societies for holding their regular conference, meetings and publication of scientific journals in various disciplines. During the period, an amount of Rs.1.0 million was released to 08 societies/journals:

Sr. No.	Name of Society/Journal	Amount of Grant
1.	Islamic Countries Society of Statistical Sciences	Rs.50,000/-
2.	Pakistan Thalassaemia Welfare Society	Rs.100,000/-
3.	Pakistan Botanical Society	Rs.200,000/-
4.	The Chemical Society of Pakistan	Rs.250,000/-
5.	Pakistan Mathematical Society	Rs.75,000/-
6.	Pakistan Society of Nematologists	Rs.200,000/-
7.	Pakistan Oral & Dental Journal	Rs.75,000/-
8.	International Journal of Phycology & Phycochemistry	Rs.50,000/-
Total:		Rs.1,000,000/-

1.3.4 Awards and Fellowships

PSF provides a limited number of research fellowships to those M.Phil and PhD scholars who do not have any other source of income. During the year, no new request was accepted because of shortage of funds, however, an amount of Rs.0.27 million was released to 04 cases already approved during previous year.

1.3.5 Financial Support for Scientific Survey

The Foundation also provides funds for the scientific surveys to collect data on important scientific issues/problems. During the year, an amount of Rs.0.108 million was released to Institute of Biomedical and Genetic Engineering (IBGE), Islamabad for a scientific survey entitled "*Epidemiological Genetic Survey of Dementia in Pakistani Population*".

2.0 SCIENCE POPULARIZATION

Need of promotion and popularization of science and technology for economic growth and for improving the quality of life of a nation can never be denied. Even so, an irrational use of science and technology has also contributed to the current environmental, social and economic problems faced by humanity in the 21st century. The dream of scientific and technological development leading to economic self-reliance cannot come true unless all the segments of the society realize the importance of science and technology. Popularization of science through non-formal science education activities can play an important role for creating science awareness among the masses. Need is to initiate sustainable and mega

programmes for motivating the students of our formal schools to study science from the grass roots level.

Under the action plan of the National Science Policy 1984 and National STI Policy 2012, the Government has assigned the task of popularization of science at grass root level to Pakistan Science Foundation. Most of the PSF science popularization programs were initiated in 1987-88. These programmes are organized outside the formal education system particularly for the students to motivate them towards science education. The primary objective of the activities is to increase society's understanding of science. Popularization of Science is broadly understood as the system of measures aimed at the dissemination, appropriation and valuing of science and technology goods, which include critical thought, ideas and values, the history and sociology of scientific knowledge, how science is practiced, and the results of scientific research and technological development. It aims to involve individuals in the excitement of science, in order to increase the public understanding of science through the use of interactive exhibits and every day life examples. Public should be able to see the link between science and technology that has penetrated into every aspect of our lives.

To achieve the objective of increased science awareness, PSF is undertaking a number of programs including:

- Science Caravan (Mobile Science Exhibition)
- Establishment of Science Centre, Museums, Herbaria & Planetaria.
- Strengthening of the Laboratories of the Govt. High School of Rural Areas
- Organization of S&T Fairs and Traveling Expos.
- Organizing Science Poster, Essay and Quiz Competitions.
- Holding Popular Science Lectures.
- Donation of Popular Science Magazines and Scientific Books to Schools Universities and S&T Organizations.
- Preparation and Dissemination of Scientific Literature in the form of Leaflets, Posters, Booklets and Brochures.
- Financial Assistance for Publication of Scientific Books.
- Financial Assistance for Science Popularization activities of the other organizations.
- Use of Inquiry Based Science Education “la main ala pate”-LAMAP for motivation in students towards science education.
- Establishment of Science Clubs in High Schools.

These activities play a significant role in capacity building of the students for adapting and thinking upon the modern scientific inventions and technologies. In addition, popularization of science also helps to enhance personal satisfaction and self-esteem in the population. At present, with the growing importance that science and technology has taken on in all arenas of social life, the popularization of science is increasingly becoming a very significant strategic issue. Detail of the activity is given below;

2.1 Science Popularization Activities

2.1.1 Science Caravans (Mobile Science Exhibition)

Science Caravans are meant for organizing Mobile Science Exhibitions for the students and general public. Science Caravan is a specially designed truck which carries a consignment of scientific and technological concepts displayed through simple exhibits, colorful diagrams and photographs, specimens along with their write-ups, inflatable Planetarium system and working models on various subjects. The science exhibition is installed in a central school/college and the students from the neighboring schools as well as general public visit these exhibitions. The visits are arranged in collaboration with the relevant Directorate of Education. Through these exhibitions, efforts are made to develop the skills of students to think and solve every day problems by application of science and technology in their daily life because a country's ability to develop more sustainably depends on the capacity of its people and institutions to understand complex scientific phenomena and development issues so that they can make the right development choices. Within its institutional framework, PSF stresses upon stimulating and motivating the students towards scientific and technological studies for playing their appropriate role in our social development.

All narration are bilingual (Urdu and English) and accompanied with simple illustrations. Microscopes, computers, laser holograms and working models reflecting various phenomena of physics, chemistry, mathematics and biology through simple exhibits and planetarium/film shows are the main components of Caravan Exhibitions. At present nine Science Caravan Units are in operation. Eight units are stationed in the four provinces (two for each) and one is stationed at Islamabad.

All Caravan Units continued their activities throughout the report period and organized Caravan Exhibitions in various schools countrywide. Summary of exhibitions is given below:

Summary of Exhibitions by PSF Science Caravans

Caravan Unit	No of Days	No of Schools	No of Visitors
Federal Unit	73	147	19,487
KPK Units	137	146	47,187
Punjab Units	40	43	10,087
Sindh Units (Sukkur, Tandojam)	154	194	39,694
Balochistan Units (Quetta, Jaffarabad)	67	65	20351
Total:	471	595	136,806

Detail of the Caravan Exhibitions carried out by all Caravan units is placed at **Annexure-X**.

2.1.2 22nd Intra & Inter Board Science Essay and Poster Competitions

Organizing Science Essay & Poster Competitions are regular and very successful activities of the Foundation. PSF in collaboration with all Boards of Intermediate and Secondary Education (BISE) of the country organizes the Competitions between the students of high schools each year. So far, the Foundation has conducted 22nd Essay & Poster contests in which thousands of students have participated from all over the country. In the first phase, the Boards of Intermediate & Secondary Education arrange Science Essay and Poster Competition within their jurisdiction on the theme approved by PSF and submit the results of the Intra Board level to the Foundation. After receipt of the results from all Boards. PSF organizes “Inter Board Contest” (the final) at PSF Head Office, Islamabad each year. Judges consisting of professors, scientists and artists evaluate the essays and posters received from all over the country for best three positions (winner of the winners).

To encourage the students, PSF awards merit certificates and cash prizes to the winner students. The amount of prize money for the best three students of Intra Board level is Rs.5,000/-, Rs.3,000/- and Rs.2,000/- and that for Inter Board level (Final) is Rs.10,000/-, Rs.6,000/- and Rs.4,000/- respectively.

This year the theme of Science Essay Competition is “*Hydrogen as Energy Source*” while the theme for Science Poster Competition is “*Waste Generation and Management*”. PSF’s 22nd Annual Intra Board Science Essay and Poster Competitions were completed in all boards (BISE) of the country. Cash prizes were awarded to the winner students. Detail of the winner students is placed at **Annexure-XI** and **Annexure-XII**, respectively.

2.1.3 Donation of Scientific Literature to High Schools

Donation of Popular Science Magazines and Scientific Books is one of the regular and important activities for science popularization. 18,000 copies of Popular Science magazine "Monthly Global Science" were distributed to 1500 schools during the report period. In addition, more than 12000 copies of scientific brochures were also distributed among the students through science caravans. Scientific Journal "*The Fountain*" published by The Light Publishing Turkey was provided to Caravan offices, PASTIC offices and PMNH.

2.1.4 Financial Assistance to High Schools and Other Organizations

In addition to its own Science Popularization activities, PSF provides financial assistance to high schools/other institutions for their science propagation activities. PSF also helps the schools in strengthening of the Laboratories. During the report period, an amount of Rs.714,000/- was sanctioned to 13 schools and S & T organizations. List of the schools and organizations provided with financial assistance is placed at **Annexure-XIII**.

2.1.5 Popular Science Lecture (Cataract Awareness)

In collaboration with National Academy of Young Scientists PSF Science Caravan Units organized one day Awareness Campaign on Cataract. The details are as follows;

i. Federal Unit

Arranged one day free Cataract Awareness Camp on 30th August, 2012. Mr. Ahsan Ullah, Ph.D Scholar from QAU, Islamabad delivered a detailed lecture on human eye and its diseases including Cataract. More than 200 students and teachers participated in this lecture with their keen interest.

ii. Punjab Unit

Science Caravan, Punjab Unit also organized One Day Cataract Awareness Campaign in Education Zone High School, Faisalabad with the Collaboration of NAYS on 30th August 2012. 150 students and general public participated in this event.

iii. Balochistan Unit

Balochistan Unit Quetta organized Cataract Awareness Programme in collaboration with LRBT Quetta on 30th August 2012. The Head of LRBT Quetta Dr. Saeed and Dr. Azizullah, Dr. Usman Badini Dr. Muhammad Khan Tareen attended the programme. More than 150 students participated in the event.

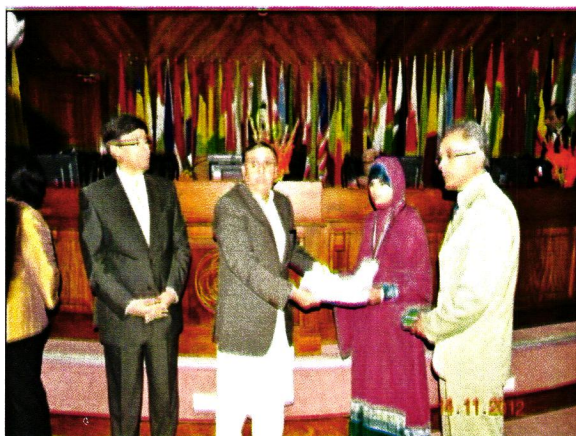
iv. Sindh (Tandojam) Unit.

Science Caravan Sindh Unit-II, Tandojam in Collaboration with South Asian Research and Resources Centre (SARRC), Pakistan organized one day Cataract Awareness Campaign on

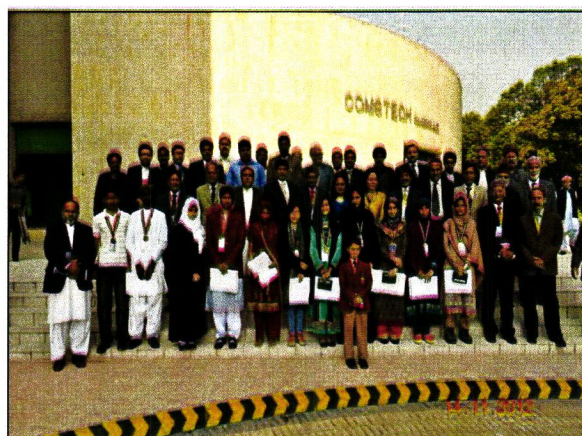
05.09.2012 at Govt. High School No.2, Tandojam. About 90 students and general public participated in the exhibition.

2.1.6 World Science Day for Peace and Development Celebrations

A number of programmes were arranged for commemoration of the World Science Day for Peace and Development (WSDPD). The purpose of the WSDPD is to renew the national as well as international commitment to science for peace and development and to stress the use of science for the benefit of the society. The Day was celebrated on November 14, 2012 at COMSTECH and PSF Auditorium. Federal Minister for Science & Technology, Mir Changez Khan Jamali was the Chief Guest of the Occasion. A large number of people including Scientists, media persons, teachers and students actively participated in the function. The Chief Guest and the Chairman, PSF also awarded prize to winner students of the 21st Annual Inter Board Science Essay and Poster Competition for the year 2011-12. PSF Science Caravan Units also celebrated the event by organizing exhibition in schools of their respective provinces.



Winner students receiving Certificates and Medals



Group Photo of participants of the Ceremony with guests

i. Federal Unit:

Keeping in view the upcoming event of world Science Day, the Science Caravan Federal Unit displayed PSF Publications and arranged Planetarium Show for students and General Public on occasion of “National Culture for Democracy” at Lok virsa Islamabad w.e.f 7-11 Nov 2012. More than four thousands of students and general Public visited the PSF Stalls and they have been briefed about the Importance of Science and Technology and PSF activities for Science Promotion and Popularization were highlighted. Dr. Khalil Ahmed Ibupoto, Member Science also visited the PSF stalls and received Souvenir from the Chief Guest Senator Jhangir Baddar. PSF Science Caravan Federal Unit also arranged Science Exhibition at National Museum of Science and Technology Lahore on Occasion of world Science Day

for Peace and development on 14.11.2012. More than one thousand of students and general public visited the exhibition.

ii. Khyber PakhtunKhwa Unit:

Science Caravan KPK Unit arranged a programme to celebrate World Science Day for Peace and Development on November 10, 2012 with the collaboration of Agricultural University Public School and College for Boys Peshawar. The Unit arranged Science Film Shows and Planetarium Shows for the students of the school. In this regard, a walk was also arranged. In these shows and walk for Science about 540 students and 23 teachers of the schools took part.

iii. Sindh Unit, Sukkur

Science Caravan Sindh Unit, Sukkur arranged science caravan exhibition at Govt. Boys High School, Thari Mir Wah, Distt Khairpur Mirs and celebrated the World Science Day for Peace and Development at the same venue on 10 Nov. 2012. 300 students participated during the event. There they arrange Science Awareness programme for the students, teachers and general public.

iv. Balochistan Unit, Quetta

Science Caravan Balochistan Unit, Quetta has arranged Science awareness programme on “World Science Day for Peace and Development” on 10th November 2012, at Al Sadiq Public Model School Quetta. Science Caravan Balochistan Unit Quetta also participated in Educational Expo arranged by AFAQ (Association for Academic Qualities) at Law College Quetta on 10.11.2012. The large number of students and general public participated in Educational Expo on the occasion of World Science Day.

v. Balochistan Unit, Jaffarabad

Science Caravan Balochistan Unit, Jaffarabad arranged “World Science Day “in Govt. High School Haq Bahoo, Usta Mohammad on 10.11.2012. A speech competition was organized on this occasion, Teachers and Students Participated in Speech Competition from All the School of Tehsil Usta Mohammad and the winners were awarded with prizes. 250 students and teachers from 5 schools participated in the event.

vi. Punjab Unit:

To celebrate the day, special arrangements were made at PSF Science Centre, Faisalabad on 14.11.2012. One-Day Science exhibition was organized with various programme like scientific panels were arranged and both the hall (Physical and Natural) was opened for students and general public. 235 students from two schools visited the exhibition.

2.1.7 Inquiry Based Science Education Programme in Pakistan

In connection with Inquiry Based Science Education (IBSE) “*La Main a La Pate-LAMAP* (Hands on)” in Pakistan; to review the outcomes of previously organized three International Training Workshops by PSF and to distribute the cheques for establishment of Science Clubs and incentive for teachers associated with LAMAP, a review meeting was organized on December 20, 2012 in PSF Auditorium. The already registered teachers & their students participated in the meeting and the science teachers as new participants were also been entertained. In total 70 teachers and 55 students participated in the meeting. During the meeting, teachers gave the feedback, discussed the difficulties facing in implementing IBSE in their classes and schools. They also suggested for further implementation of LAMAP activities in Pakistani schools. To assess the vision of students of LAMAP associated schools, LAMAP activities/hands on were performed by students in presence of observers & teachers during the meeting. Two resource Persons from NISTE evaluated the activities performed by the students.

A formal closing session was arranged. Dr. Manzoor H. Soomro, Chairman PSF, Dr. Shahnaz A. Riaz , DG, FDE, Mr. Abdul Waheed, Director (Training) FDE, Mr. Nadeem Ahmed, Assistant Director/Focal Person (Training), Dr. Khalil Ahmed Ibupoto, Member Science PSF, Mr. Riazul Islam, Member Finance, PSF were present on the occasion. At the end, Cheques were distributed among the Heads of 8 schools for establishment of science clubs (2nd phase) in their schools and 12 LAMAP associated teachers were also granted financial incentives to run these clubs. On this occasion, eights Schools got Rs.25,000/- each grant for Science Club in 2nd Phase. Name of Schools are given below:

S. No.	Name of School
1.	IMS, Near Mughal Market, I-8/1, Islamabad
2.	IMS, (Boys VI-X), I-10/2, Islamabad
3.	IMCB, F-7/3, Islamabad
4.	FGBS, Lohibhair, Islamabad
5.	IMS (Boys) Rawal Dam, Islamabad
6.	FGGSS, QAU Colony, Islamabad
7.	FGGSS, Tarlai, Islamabad
8.	IMCG, Thanda Pani, Islamabad

During the second meeting nine schools of Islamabad, associated with LAMAP were visited to observe the implementation of IBSE in the classroom by team of experts from PSF on 28-31 May, 2013.

2.1.8 Development Activities

- **Strengthening of Science Centre Faisalabad**

During the report period, new Models/Planetarium set and two working models of Dinosaurs were provided to the Science Centre, Faisalabad, which partly funded by UNESCO-PNCU.

- **Establishment of Science Clubs in Schools**

Science Clubs have been established in 08 LAMAP associated schools of Rawalpindi, Islamabad and surrounding areas. Grant amounting to Rs.25,000/- to each of the schools was released for purchase of scientific material and lab equipment. The Relevant Training was also provided to the teachers of these schools.

2.1.9 New Initiatives

- **International Traveling Expo on Energy “*Energy, for a Sustainable World*”**

PSF started arranging International Travelling Expos in 2008 in collaboration with Embassy of France in Pakistan and Centre Sciences-Orleans-France. In this regard, Expos on the themes of Mathematics, Environment, Biodiversity and Chemistry have already been held in various cities and towns of Pakistan. PSF has also MoU with Centre Science, Orleans-France for arranging and co-producing Expos in Pakistan. The year 2012 was declared as “*International Year of Sustainable Energy for all*” by United Nations. To create awareness about the importance of Energy and related issues, especially among young generation, this Expo was prepared by Centre Sciences with support of other stakeholders.

In Pakistan, the expo was arranged by Pakistan Science Foundation in collaboration with Embassy of France in Pakistan and Centre Sciences, Orleans-France during March-April, 2013. It travelled from Islamabad, to Muzaffarabad (AJK), Peshawar, Swat, Gujrat, Hyderabad and was concluded at Quetta and provided a great opportunity to the students, faculty members, researchers and general public to get firsthand knowledge about various forms of Energy, ways to enhance the Energy Resources and their proper uses for the national development.

Islamabad: The Expo was started on 1st March 2013 at National Centre for Physics, QAU Islamabad and continued till 7th March, 2013. During this, large number of students, teachers and general public participated. Approximately 2350 students from 12 schools participated in the event. The Launching Ceremony of the Expo was held on 7.03.2013 at National Centre for Physics, QAU Islamabad. Mir Changez Khan Jamali, Federal Minister for Science & Technology was the Chief Guest of the occasion. The French Ambassador Mr. Philippe Thiebaud, Mr. Akhlaq Ahmed Tarar, Federal Secretary MoST, Dr. Ashfaq Ahmed, Eminent Scientist, Dr. Manzoor H. Soomro, Chairman PSF, Dr. Khalil Ahmed Ibupoto, Member Science and some distinguished scientists were also present.

Muzaffarabad: The next station of the expo was The University of Azad Jammu & Kashmir, Muzaffarabad (AJK) w.e.f. 11-15 March 2013. The expo was inaugurated by Dr. Khalil Ahmed Ibupoto, Member Science, Pakistan Science Foundation together with Dr. Ghulam Ghous, Acting Vice Chancellor AJK University, Muzaffarabad on 11.03.2013 at Central Library of the university. On this occasion, Prof. Dr. Mohammad Rustam Khan, Registrar AJK University and Raja Muhammad Khurshid Khan, Controller of Examination, AJK University, Mr. Haider Zaman Khatak, Member Finance, PSF and Dr. Naushaba Atta, Principal Scientific Officer, PSF were also present. Approximately 200 students and faculty member of University and Researchers and media personnel participated in opening ceremony, in which 4280 students from 16 schools, teachers and researchers participated. The closing of the expo was held on 15.03.2013. Mr. Mian Abdul Waheed Advocate, Minister for Education (Schools) AJK was the Chief Guest of the occasion. Mr. Mian Abdul Waheed also greatly appreciated the efforts of Pakistan Science Foundation for its Science Promotion activities and he also assured his full cooperation in this National Cause for popularization and promotion of science.

Peshawar: The Expo on Energy for a sustainable world was held at University of Engineering & Technology Peshawar. This expo was inaugurated by Sayyad Imtiaz Hussain Gillani, Vice Chancellor Khyber Pakhtunkhwa University of Engineering & Technology, Peshawar as chief guest on March 18, 2013. The Expo on Energy for a sustainable world was ended at University of Engineering & Technology Peshawar on March 22, 2013. This Expo was visited by Mr. Dr. Khalid Islam, Director General, Pakistan Council for Renewable Energy & Technologies (PCRET) as a chief guest along with Member Science PSF Dr. Khalil Ahmed Ibupoto and French Counselor Dr. Frederic Bessat. About 2500 students and teachers from 18 schools visited the expo.

Swat: After successful events at Islamabad, Muzaffarabad and Peshawar, the Expo arrived at Mingora, Swat, where it was opened on 25.03.2013 at Swat Public School & College Rahim Abad, Mingora Swat by Prof. Muhammad Imran, Chairman, BISE Swat. A large number of students, teachers, High educational authorities and media personnel were also present during the event. Mr. Mahboob Khan, PSO, PSF briefed about the objectives of the Expo to all the participants. The Expo was concluded on 30th March, 2013 at Swat where Dr. Khalil Ahmed Ibupoto, Member Science and Dr. Naushaba Atta were there to conduct it. About 4070 students and 20 schools participated in the Expo at Swat.

Gujrat: The Expo at Gujrat was arranged from 31st March 2013 to 5th April 2013 and its Opening Ceremony was held on 2nd April, 2013 at UOG's Murgazar Colony College for Women. Prof. Dr. Muhammad Nizam-ud-din Vice Chancellor of the University was the Chief Guest of the occasion. Dr. Khalil Ahmed Ibupoto Member Science PSF and Mr. Abdul Rauf, SSO/Coordinator and some other distinguished guests were also present. The closing of Expo was held on the same venue on 5th April, 2013. The closing ceremony was presided over by Dr. Manzoor H. Soomro. Prof. Dr. Mohammad Nizamuddin in his closing address to the Travelling Expo thanked PSF for holding this type of valuable and informative Expo in collaboration with the French Embassy. At this occasion, Dr. Mudassar Iqbal Director ORIC addressed the students and motivated them towards Research in Alternate Energy Sources. A total 3895 students, teachers and general public visited the Expo.

Hyderabad: The inaugural ceremony was held on April 09, 2013 at Dr. N. A Baloch Model School, Old Campus Hyderabad, which was the second last station of the Expo. Dr. Nazir Ahmed Mughul, Vice Chancellor was the Chief Guest, His Excellency Mr. Christian Ramage, Consul General of France in Karachi, and Prof. Dr. B.S Chaudhry and Dr. Khalil Ahmed Ibupoto, Member Science, Pakistan Science Foundation Islamabad, Head of Schools, teachers, Students and Media delegates also attended the inaugural ceremony. H.E. Consul General of France to Pakistan Mr. Christian Ramage lauded the efforts of PSF for promotion and popularization of science in the young generation. The Dr. Nazir Ahmed Mughal in his presidential address said "It is hoped that the Expo will provide a great opportunity to the students, faculty members, researchers, and general public to get firsthand knowledge about various forms of Energy, ways to enhance the Energy Resources and their proper uses for the national development". The closing ceremony of the International Expo on Energy titled "The Traveling Expo *"Energy for sustainable world"* was held on April 13 2013 at Dr. N. A Baloch Model School, Old Campus Hyderabad. About 2555 students, teachers, university Students visited the Expo. Besides, general public also visited the Expo and admired the PSF

and the Embassy of France for taking initiative to create awareness of Energy among the public specially the students.

Quetta: The final destination of Expo was Quetta where it was inaugurated on 16th April 2013 by Eng. Ahmad Farooq Bazai, Vice Chancellor, BUIITEMS. The closing ceremony of the International Expo was held on April 20, 2013 at Arifa Karim Randhawa Expo Center BUIITEMS, Quetta. Mr. Philippe Thiebaud, Ambassador of France to Pakistan was the chief guest. Dr. Manzoor H. Soomro, Chairman, PSF and Eng. Ahmad Farooq Bazai V.C BUIITEMS Quetta were also present. About 4860 students, teachers, university Students visited the Expo. Total Number of students, Teachers and General Public visited the expo is 24,510.

- **Training Session on French Traveling Expo on Energy titled “Energy, for a Sustainable World” in Afghanistan**

Resource Person from PSF (Mr. Mahboob Khan, PSO) provided training to the teachers and Learning Facilitators of Various schools of Kabul, Afghanistan to operate and handle the Traveling Expo on Energy. The Officer got training from Centre Sciences-CCSTI France and also conducted training session at Islamabad. The Embassy of France in Islamic Republic of Afghanistan run Esteqlal and Malalai high schools (separate for boys and girls respectively). Mr. Olivier Huynh Van, Deputy Head of Cooperation French Embassy desired to display the same Expo to the students of the above mentioned schools and invited some experts from PSF to train the teachers of the schools whom will have to present the scientific exhibition on energy to the students. Accordingly, Mr. Mahboob visited Kabul, Afghanistan to impart training to the teachers w.e.f. 20-23 May, 2013. Mr. Philippe Seloudre, Chief of the project cooperation and cultural section of the Embassy Kabul thanked the PSF for cooperating in the training of the teachers and said that it will be a very useful activity for the students of the two schools.

- **Science Popularization Activities in Khyber Agency**

PSF organized Science popularization activities for the students of Khyber Agency in collaboration with UNESCO. Science Caravan Peshawar Unit arranged the activities in Govt. Higher Secondary School, Jamrud, Khyber Agency w.e.f. 15-30 April, 2013 with activities such as; Science Caravan Exhibitions, Planetarium and Film shows, Speech Competitions, Quiz Competitions, Distribution of Scientific literature, Science Clubs in selected schools, and Teacher Training Sessions on Inquiry Based Science Education.

In Exhibition, 3006 students and 295 teachers participated. In addition, scientific books/literature including Science Encyclopedia, Master Disaster Kits, Master Disaster DVD's and posters were also distributed among different schools of the Agency.

For the establishment of Science Clubs in Khyber Agency, a brief session was arranged at GHHS, Jamrud on 20.04.2012, in which Heads and Science Teachers of Agency participated. The session was conducted by Mr. Mahboob Khan, PSO (P&D), PSF and he briefed the participants about Science Clubs activities and 13 schools were registered for Science Clubs. Use and Implementation of Inquiry Based Science Education programme la main a la pate (LAMAP) in Pakistan as well as in Khyber Agency, a one day Training Session for Science Teachers of Khyber Agency was arranged on 27.04.2013. Two resource Person from PSF briefed and introduced the participants about LAMAP and give details of the activities carried out by PSF under this programme and various Hands on activities related to different scientific themes were done. At the end, Feedback from the participants was also taken. All the participants really appreciated the efforts of Pakistan Science Foundation and emphasized that these types of activities should be arranged in future also to change the old scientific culture in the country.

- **Participation of Pakistani Students in London International Youth Science Forum (LIYSF)-2012**

Pakistan Science Foundation, under its Science Popularization activities in collaboration with British Council sponsored five young science students for Participation in London International Youth Science Forum (LIYSF) which was a two week residential event held at Imperial College London from 16 to 30 August, 2012. Dr. Manzoor H. Soomro, Chairman PSF lead & guided the participants and discussed possible collaboration for science popularization & promotion activities with the organizers of LIYSF. There were different events, lectures and demonstrations from leading scientists, visits to industrial sites, research centers, scientific institutions and organizations, including world class laboratories and universities. Activities of the LIYSF-2012 were; Lectures and demonstrations from leading scientists, Seminars, debates and discussions on scientific topics of world concern, visits to industrial sites and research facilities, academic research centres in London, Oxford and Cambridge, Science Museum and the Natural History Museum.



Group Photo of LIYSF participants-2012

2.1.10 Award of “*Les Palmes Academiques*” to the Chairman, PSF by Embassy of France

PSF in collaboration with Embassy of France is working for promotion and Popularization of Science throughout the country. Major of them are; (i) annual travelling expos across the country, (ii) inquiry-based science programmes in schools, (iii) participation of PSF Officers in LAMAP International Seminars, Training session in France, and (iv) holding of meetings/visits of French Experts in Pakistan. In recognition PSF contributions in the field of science and technology (S&T), French Govt. announced French Civil Award “*Les Palmes Academiques*” (the Order of Academic Palms) for PSF’s Chairman, Dr. Manzoor H. Soomro.



Dr. Manzoor H. Soomro, Chairman, PSF receiving French Civil Award

2.1.11 Wings for Science in Pakistan (Karachi)

Pakistan Science Foundation arranged interaction of a two member team named “*Wings for Science*” of France, consisting of Ms. Clémentine Bacri and Mr. Adrien Normier with Pakistani scientists and students on 27.04.2013. The Wings is traveling the world on their own small plan for promotion of science education. They visited International Centre for Chemical and Biological Sciences, HEJ, Karachi and met with Prof. Dr. M. Iqbal Chaudhary, the well-known scientist and researcher. The video clips recorded by the Wings for Science will be displayed on the web TV of Paris Science Museum. Prof. Pierre Lena, President, LAMAP Foundation/Member, Academei des sciences, Paris-France is Mentor of this project. One objective is to provide local public research projects with an exclusive airborne capability. Interaction of student of ETN School, Korangi was arranged, where the students from primary level of higher level performed hands of activities to demonstrate science, through La main a la pate-Inquiry Based Science Education (IBSE). Intel Education, Pakistan also participated in the activities.



Prof. Dr. Khalil Ahmed Ibupoto addressing at ceremony of “Wings for Science” in Karachi

Mr. Amir Fancy, Managing Trustee, ETN welcomed the Guests. Dr. Khalil Ahmed Ibupoto, Member Science, PSF informed that Pakistan Science has signed MoU with French Academy of Science for promotion and popularization of science in Pakistan. Other speakers included, Mr. Jean Francoise Chenin, Director, Alliance Francaise, Ms. Khadija Bashir, Intel Education and Coordinator of Programme, Mr. Abdul Rauf. Previously, the wings for science

travelled to Chilli, Peru, Guyana, Canada, Greenland, Island, Luxemburg, Australia, Malaysia, Cambodia, Vietnam and India, where they recorded short movies on the themes including Analysis and protection of the Lake biodiversity, Localize the futures areas of fog collectors, Better understanding of the site , Mangrove Study of the cetacean in the St Laurent river, Study of the health status and chlorophyll level of the forest, Assess the iceberg and study over the climatic change.

2.1.12 Donation of Schools Bags among Deserving Pakistani Students

A little eight years old Chinese boy Mr. Li Ximin donated 1000 school bags alongwith pencil boxes through performing charity concerts for deserving Pakistani students. PSF was contacted through Embassy of Pakistan in Beijing (China) for distribution of these bags among deserving children in rural areas of the country. In this regard, PSF received 80 schools bags and Chinese family consisting of Mr. Long Li (Father), Mrs. Tian Ru Tang (Mother) and Mr. Ximin Li (Son) also visited Pakistan for donation and distribution of schools bags. To encourage the students towards education, PSF in collaboration with embassy of Pakistan in China organized “School Bags & Stationary distribution Ceremony” at IMSG (I-X) NHC, Bhara kahu, Islamabad on 18.03.2013 and at IMSG (I-X) Model town Humak, Sehala Sector, Islamabad on 19.03.2013 with the coordination of Federal Directorate of Education, Islamabad. The Bags were distributed by a Chinese family i.e Little Master Ximin Li and his parents among Pakistani students. Speaking at the bags distribution ceremony at the school in Humak, Dr. Ibupoto called upon Pakistan philanthropists to follow the example set by the Chinese boy. He said the bags contain all the educational material needed by a nursery level child. While speaking to the Chinese guests at PSF, the Foundation Chairman, Prof. Dr. Manzoor H. Soomro, said the donation by Chinese kid reflects the bond of Pak-China Friendship which is getting strengthened with every passing day not only at government level also at people to people level. He said this initiative will inspire many others to help the poor children anywhere in the world. While, the Remaining bags will be distributed throughout in Pakistan by Science Caravan Units.



Little Chinese boy distributing School Bags among Pakistani student



Group photo of students with Chinese boy, his parents and Dr. Khalil Ahmed Ibupoto, Member Science, PSF

2.1.13 Round Table Discussion on “Geology and Mineral Resources of Pakistan” Organized at PSF

Under PSF-French Collaborative programmes, Federal Minister for Science & Technology, H.E. Mir Changez Khan Jamali, and The French Ambassador to Pakistan, H.E. Mr. Philippe Thiebaud, opened a roundtable-discussion on the 23rd of November 2012, dedicated to “Geology and Mineral Resources of Pakistan” at PSF. The round-table was jointly organized by Ministry of Science and technology, Pakistan Science Foundation and the French Embassy in Pakistan. Experts from Geological Survey of Pakistan (GSP), Centre of Excellence in Geology, Peshawar, CIIT participated in the discussion. The objective was to gather international and Pakistani experts, academics and professionals to discuss the prospects and challenges of the mineral sector development in Pakistan.



Federal Minister for S&T, Mir Changez Khan Jamali and French Ambassador Mr. Philippe Thiebaud preside over “Round Table” meeting on Geology and Mineral Resources of Pakistan at PSF

2.1.14 Other Activities

- **Shifting/Inauguration of PSF Science Caravan Jaffarabad Unit and Distribution of Computers among the schools**

One Science Caravan Unit was shifted from Quetta to Govt. High School Rustum Khan Jamali, Usta Muhammad, Jaffarabad on 16 Oct. 2012. On 10th Feb, 2013 a formal inauguration of the caravan office was held at Jaffarabad and H. E. Mir Changez Khan Jamali, Federal Minister for Science and Technology honored the occasion as the Chief Guest. Dr. Manzoor H. Soomro, Chairman PSF and some Senior Officers from PSF were also present during the occasion. Mir Changez Khan Jamali, addressed the audience and said that without Science & Technology, a country can not progress. He also appreciated the efforts of PSF for popularization and promotion of Science & Technology and admired the efforts of PSF in remote areas of Balochistan. Dr. Manzoor H. Soomro talking to media highlighted the activities of PSF at National level and briefed the media that PSF is continuously striving for Popularization and Promotion in the country even in backward and remote areas. In this regard, establishment of Science Caravan Jaffarabad Unit is a step forward for the progress of remote areas of Balochistan in the field of science & technology and he also appreciated the efforts of Mr. Abdul Khalique, Incharge Caravan Unit Jaffarabad for Popularization of science in this remote area in such hard circumstances. Mr. Zafar Shah, Deputy Commissioner Jaffarabad was also present on the occasion. Approximately, 1045 people attended the ceremony including higher educational authorities, teachers, students and general public. Moreover, PSF also distributed computers and printers among 12 schools of the Govt. Sector of Tehsil Usta Muhammad, Distt. Jaffarabad during the event.

- **Participation in DAWN Education Expo-2013**

PSF, PASTIC and PMNH participated and displayed their publications in DAWN Education Expo held on 2-3 Feb, 2013 at Pak- China centre, Islamabad and visitors were briefed about the services of these organizations and free literature (books & Brochures) were distributed among the visitors. Science Caravan Federal Unit also arranged Planetarium Show during the event. More than 4,000 people visited these stalls.



Participation of PSF and PASTIC officers in Dawn Education Expo-2013

- **A group of Teachers from ITA visited PSF**

A group of 20-25 teachers from ITA (Idar-e-Taleemo Agahi) visited PSF on 21.02.2013. A meeting of the group was conducted with Principal Scientific officer, Science Popularization section, PSF and presentation about PSF activities and Inquiry Based Science Education (LAMAP) were delivered by Mr. Abdul Rauf, SSO.

- **Training Workshop for PSF Science Caravans**

In connection with traveling Expo on energy and to review/plan the progress of caravan units, a Training workshop and Review meeting of Science Caravans was conducted on 27-28 Feb, 2013. All the technical staff of caravan units participated. The purpose of the meeting was to discuss the activities of science caravan and issues were also discussed. In the first day, all caravan units gave their presentation and described their activities in their related areas. While on the same day, presentations and training session was also arranged to enhance their professional skills, like media coverage and news items, facilitation skills, operating and handling of electric equipment, photography, financial matters (Purchasing and invoicing). On the 2nd day, i.e. 28.02.2013. Mr. Mahboob Khan, PSO PSF gave the training on handling/arranging, opening and unpacking of the International Traveling Expo on Energy titled "Energy, for a sustainable world" at National Centre for Physics (NCP) QAU Campus , Islamabad.

2.1.15 Signing of MoUs

- **PSF, Technology Times** (Media Ventures Pvt. Ltd) signed MoU of Cooperation on 7.08.2013 to promote science and technology in the country.
- **PSF and PRC (Pink Ribbon Campaign)** signed MoU on 07.02.2013 at Serena Hotel, Islamabad for mutual collaborative activities like promotion of research on breast cancer, and involvement of PSF Science Caravan with mobile mammographic units of PRC and collaboration for organizing Breast Cancer awareness seminars and lectures at higher educational institutes.
- **PSF and Intel Pakistan** joined hands to promote scientific activities in the country on 5.03.2013. Mr. Akhlaq Ahmad Tarar, Secretary, MoST was the Chief Guest of the Occasion.

2.1.16 Award/Cash Prizes to Winner of Intel National Science Fair-2013

PSF honoured the Grand Winners of Intel National Science Fair-2013 with cash award at a ceremony at PSF. PSF Chairman Dr. Manzoor H. Soomro was the Chief Guest of the Occasion. Scientists from different organizations, students, teachers, parents and media persons were presents on the occasion. The winners participated in International Science and Engineering Fair in Arizona, USA in May.

2.1.17 Winners of “EssayCon-2013” Award

The winners of Essay Contest titled “*EssayCon*” jointly organized by PSF, PCST, CACF, Pakistan Science Club and Weekly Technology Times, were awarded prizes at PSF. The essay contest was aimed to promote S&T and encouraging young talent. Those who spoke on the occasion included Dr. Manzoor H. Soomro, Chairman, PSF, Dr. N. M. Butt from Preston Institute of Science and Nano-technology, Dr. Mudassar Asrar, Chairperson PCST, and Syed Paras Ali Mustafa Zaidi, Editor of Technology Times.

2.1.18 Participation in International Training Workshops/Seminars

- i. Mr. Abdul Rauf, SSO and Coordinator Caravan participated in seminar/workshop in innovative teaching & learning of science through IBSE for science educators from developing countries in Penang, Malaysia w.e.f 01.10.2012 to 05.10.2012, and in International Symposium on Science Education at University of Helsinki w.e.f. 10-19 June, 2013.
- ii. Ms. Zaiban Farooq, Assistant Director (Caravan), PSF participated in seminar on “System of Intellectual Property and Development of Science & Technology,

Trade & Economy For Developing Countries” in Qingdao-China w.e.f. 10.10.2012 to 06.11.2012.

2.1.19 Future Plans

- Organizing International Exhibition on Water in Pakistan (in collaboration with French Embassy, Pakistan/UNESCO)
- Training of PSF officers from Centre Sciences-Orleans, France (by support of French Embassy)
- International Training Workshop of Pakistani Teachers on IBSE
- Foreign Trainings of PSF Officers on IBSE
- Strengthening of Science Centre, Faisalabad
- Organizing National Youth Science Forum
- Strengthening of Science Caravans
- Enhancement of all Science Popularization activities.

3.0 INTERNATIONAL LIAISON

3.1 Collaboration with International Bodies

Liaison with Foundations, Academies, Science Centres, Museums and International bodies around the world provide many benefits and challenges. These include achieving greater awareness of a diverse, complex and interdependent world, exchange of expertise and professional development through undertaking collaborative research projects. During the period under report, 15 proposals of PSF, PASTIC & PMNH for S&T collaboration with Turkey, Argentina, European Union, Uzbekistan, Mexico and Russia were forwarded to MoST for consideration under various S&T Protocols/Agreements/MoUs signed by the Government of Pakistan.

3.1 Other International activities

Following MoU's were taken up with MoST/ concerned International bodies

- i. MoU between Pakistan Science Foundation (PSF), Islamabad and National Science Foundation (NSF), Sri Lanka
- ii. Protocol on cooperation in Science and Technology between the Scientific and Technological Research Council of Turkey (TUBITAK) and Pakistan Science Foundation
- iii. MoU between Pakistan Science Foundation, Islamabad and Economic Cooperation organization-Institute of Environmental Science & Technology (ECO-IEST), Iran.

4.0 PLANNING AND DEVELOPMENT ACTIVITIES

4.1 Activities under Development Budget

The on-going Development Project "Participation of Scientists and Technologists in International Science Conferences, Seminars, Workshops and Trainings Abroad (Phase II)" is aimed at providing financial assistance to Pakistani scientists, technologists, doctors and engineers working in R&D organizations and educational institutions as well as Ph. D students for (i) Participation and presentation of research papers in International conferences, seminars & workshops abroad; (ii) Attending short term (1-2 weeks) specialized training courses or obtaining training on specialized laboratory equipment in laboratories of the advanced countries, and (iii) Undertaking a part of research work for which facilities are not available in Pakistan.

During the year 2012-13, an amount of Rs.5.0 million were allocated under the PSDP while Rs.4.5 million was released to the project and spent on the project activities. A total of 276 requests were received from scientists and technologists of the country. After comprehensive scrutiny as per eligibility criteria, 140 requests were presented in 06 meetings of Travel Grant Award Committee (TGAC). Out of these, 44 were recommended by the Committee, whereas, 31 scientists/technologists availed the grant (Annexure-XIV) and 13 could not proceed abroad due to visa problems or other reasons.

4.2 New Development Project Submitted to MoST:

PC-I of following PSDP project with revised cost and scope was submitted to MoST for the consideration/approval of DDWP/CDWP.

Sr. No	Project Title	Duration (Months)	Amount (Rs. in million)	Status
i.	Establishment of PASTIC S&T Information Kiosks/Cells in the selected Universities of Pakistan	36	55.0134	PC-I was forwarded for the consideration of DDWP forum on 27 th March, 2013. PC-I will be presented and defended in the forthcoming DDWP meeting as and when convened.

4.3 Other Activities

- **Submission of Important Reports to MoST/ Planning Commission:**
 - Information / Material for Documentary Film
 - Fixing of Targets and Submission of Regular Report on Achievements of the Same regarding Development projects
 - Monthly Monitoring Report of the R&D Activities
 - Interior Decoration of MoST Building at Constitution Avenue
 - Vision and Roadmap of the New Cabinet

- **Technical Views/ Comments on the PC-Is received from MoST**

Technical views/comments on the following projects were submitted to MoST for onward submission to Planning Commission.

- Establishment of a Cell at PCST for Implementation of the National Science, Technology and Innovation Policy-2012
 - Establishment of Mohatta Palace Museum Complex, Karachi (President Directive)
 - The Hybrid Planetarium for Education and Entertainment
-
- **Replies to the Senate/National Assembly Questions**
 - Starred National Assembly Question's Diary. No. 27, Group 3rd, 48th Session moved by Mrs. Munira Shakir, MNA " Will the Minister for Science & Technology be pleased to state: The steps taken by the Government to promote Science and Technology during the last four years till date".

 - Starred National Assembly Question's Diary. No. 04, Group 15th, 49th Session Moved by Ms. Qudsia Arshad, MNA "Will the Minister for Science & Technology be pleased to state: (i) the names of the departments /institutions working under the Ministry at present alongwith purpose and objectives there: and (ii) whether the said departments / institutions are fulfilling their purposes and objectives: if not, the reasons thereof?

 - Starred National Assembly Question's Diary. No. 25, Group 5th, 50th Session Moved by Mrs. Anusha Rahman Khan Advocate, MNA "Will the Minister for Science & Technology be pleased to state: (i) the number of the subordinate and attached departments functioning under the Ministry at present alongwith the functions thereof

separately; (ii) the achievements gained by those departments during the last five years separately; (iii) the year-wise development and non-development budget allocated and released to each of the said departments during the said period; and (iv) whether performance of each of those departments/ institutions was evaluated particularly with regard to its targets set and achievements gained during the said period; if so, the details thereof?

**II. PAKISTAN MUSEUM OF NATURAL HISTORY
(PMNH)**

Pakistan Museum of Natural History (PMNH), a subsidiary organization of Pakistan Science Foundation. It has four principal divisions namely, Botanical Sciences Division, Zoological Sciences Division, Earth Sciences Division and Public Services Division. The first three divisions are engaged in the collection, identification and research activities related to plants, animals, fossils, rocks and minerals resources of Pakistan respectively; while the latter is responsible for mass education and popularization of natural history.

1.0 Natural History Research

PMNH researchers carried out field work in various localities of Sindh, Punjab, Khyber Pukhtoonkhwah, Gilgit-Baltistan and Azad Jammu and Kashmir. Research activities under three national collaborative research projects and one PSF-funded research project were carried out. Natural history specimen related to animals, plants, rocks, minerals and fossils etc were collected and identified during the reporting period. Some 57 research articles were published by PMNH scientists of which 18 were published in national and 39 in international journals. Ten popular articles on various natural history topics were published. PMNH scientists produced 14 technical reports on their collaborative research projects.

1.1 Botanical Sciences Division

1.1.1 Field Work

- Carried out field tour to Lahore, Chakwal, Dir, KP; Neelum & Jhelum rivers, Trarkhal, Athmaqam, Neelum Valley, AJK; Logar River, Kahmard, Bamyian, Doab & Surkhab rivers of Afghanistan for the collection of algal samples. More than 800 algal samples were collected.
- Carried out 4 days' field work in Mirpur area, AJK for the study of Fungi.
- Conducted field work in Manglot and Nizampur Wildlife Park (KPK) for the collection of higher plant species and baseline studies of Manglot and Nizampur Wildlife Park (KPK). During the field work more than 100 plant specimens were collected.
- Conducted field visit to Gilgit-Baltistan valleys for the collection of higher plant species and baseline studies of CKNP (Central Karakoram National Park Gilgit-Baltistan) under the MAB programme.
- Carried out 3 days' field work in Sargodha and adjacent areas and collected 90 plant specimens.

1.1.2 Laboratory Work

- Identified 750 herbarium specimens of different higher plants families.
- Catalogued about 700 plants of the Higher Plants Herbarium.
- Carried out palynological and anatomical studies for correct identification of higher plants.

- Maintained the Higher Plants Herbarium, Mycological Herbarium and Phycological Herbarium.
- Indexed 399 fungi samples in Index Register, 763 samples of Macro fungi were rearranged, 234 samples of fungi preserved in air tight plastic bags.
- More than 800 algal species were identified.
- Identified more than 350 plant specimens from Cholistan and Muzaffarabad area along with the digitization of more than 200 specimens for the Higher Plants Herbarium.
- Photographed more than 300 plant samples from Manglot, Gilgit-Baltistan and Muzaffarabad.
- More than 800 micro-photographs of algal samples were made under light microscope.
- Maintained Botanical Garden & Nursery for general visitors as source of education.

1.1.3 National Research Projects and Reports

Research activities under PSF-funded project entitled “Studies on algae of major rivers of Punjab, Pakistan with special emphasis on its consumption by economically important fishes” continued.

1.1.4 National Collaborative Projects

- Baseline studies of algae/phytoplankton and aquatic vegetation of Southern and Gilgit-Baltistan through Pakistan Wetland Programme.
- Baseline studies of algae/phytoplankton and aquatic vegetation of Jhelum and Neelum Rivers, AJK through Hagler Bailly Pvt. Ltd.
- Baseline studies of algae/phytoplankton and aquatic vegetation of four different Rivers Kahmard, Bamyian, Doab and Surkhab rivers of Afghanistan through Hagler Bailly Pvt. Ltd.

1.1.5 New Research Projects submitted

Submitted the following research project proposals to PSF for funding

- Taxonomic and ethnobotanical study of Gilgit-Ghizer districts, Gilgit-Baltistan.
- Botanical Drug Repository of Pakistan at PMNH.

1.1.6 Publications

National:

- Munir, M., Hussain, A., Haq, I, Qureshi, R., Munazir, M., Arshad, M and Leghari, M.K. 2012. Callogenesis Potential of Cotyledonary Explants of *Althaea rosea* L. from Pakistan. Special Issue Pak. J. Bot., 44: 271-275.
- Ahmad, S. 2012. A study of poisonous plants of Islamabad. Pakistan Journal of Scientific and Industrial Research. Series B, vol. 55, no. 3: 129-137.
- Munir, M., Qureshi, R., Arshad, M., Chaudhry, A.K. and Leghari, M.K. 2012. Taxonomic study of Bacillariophyta from Kallar Kahar Lake Chakwal, Punjab Pakistan. Pak. J. Bot., 44(5): 1805-1814.

- Wazarat, A. and M. K. Laghari. 2012. Taxonomic Study of Freshwater Algae of Trarkhal, District Sudhnoti, Azad Kashmir. *International Journal of Phycology and Phychochemistry*. Vol. 8(1): 27-40.
- M. Munir, R. Qureshi, M. K. Laghari, M. Arshad and Chaudhry, A.K. 2013. Taxonomy of some Pennate Diatoms from Kallar Kahar Lake, District Chakwal, Pakistan. *The Journal of Animal & Plant Sciences*, 23(2): 457-463.
- Khattak, A.Z., M. K. Laghari, Wazarat, A., Ahmad, I., Gilani, S.A., Khan, A. M., Sherwani, S. K., Khan, M. U. 2013. Monthly Variation of Freshwater Algae of Trarkhal District Sudhnoti, Azad Kashmir during 2011. *IJAPR*, 4(7):1973-1983.
- F. Shahina, K. Firoza, G. Mehreen, J. Salma and M.I. Bhatti. 2012. Molecular characterization of root-knot nematodes with five new host records from Pakistan. *Pak. J. Nematol.*, 30(2): 129-141, 2012
- Khanum, R., Mumtaz, A.S., Kumar, S. 2013. Predicting Impacts of Climate Change on medicinal Asclepiads of Pakistan using Maxent Modeling. *Acta Oecologica*. 49:23-31.
- Abbas, M. F., S. Hameed, A. Rauf, Q. Nousheen, A. Ghani, A. Qadir and Zakia, S. 2012. Incidence of six viruses in Potato growing areas of Pakistan. *Pak. J. Phytopath.* 24(1):44-47.
- Zakia, S., Z.Y. Najma, Y. Mehwish, H.A. Ishfaq, N. A. Abbasi, M. Nasir. 2012. Standardization of Micropropagation Techniques for Aloe vera, a pharmaceutically important Plant. Accepted for publication in *Pak. J. Pharmc. Sci.*

International

- Khan R A, Khan MR, Sahreen, S. 2012. Protective effect of *Sonchus asper* extracts against experimentally-induced lung injuries in rats. *Experimental and Toxicologic Pathology*. 64(7-8):725-731.
- Khan RA, Khan MR, Sahreen, S., Shah NA, Khan AM, Bukhari J, Rashid U, Ahmad B, Shabbir M, Saeed N, Jan S, Afsar T. 2012. Protective effects of various fractions of *Launaea procumbens* on molecular markers in rat kidney. *African Journal of Pharmacy and Pharmacology*. 6(3): 157-161.
- Khan RA, Khan MR, Sahreen, S., Ahmed M. 2012. Evaluation of phenolic contents and antioxidant activity of various solvent extracts of *Sonchus asper* (L.) Hill. *Chemistry Central Journal*. 6:12.
- Khan RA, Khan MR, Sahreen, S., Shah NA, Khan AM, Bukhari J, Rashid U, Ahmad B, Shabbir M, Saeed N, Jan S, Afsar T. 2012. Protective effect of *Launaea procumbens* against KBrO₃ induced nephrotoxicity in rats. *African Journal of Pharmacy and Pharmacology*. 6(5): 317-321.
- Khan RA, Khan MR, Sahreen, S., Shah NA, Khan AM, Khan YM, Bukhari J, Rashid U, Ahmad B, Shabbir M, Saeed N, Jan S, Afsar T. 2012. Amelioration of kidney function markers by *Sonchus asper* butanolic extract against KBrO₃-induced toxicity in rat. *Journal of Medicinal Plants Research*. 6(7): 1224-1228.
- Khan RA, Khan MR, Sahreen, S., Shah NA. 2012. Phytotoxic characterization of various fractions of *Launaea nudicaulis*. *Journal of Medicinal Plants Research*, 6(8):1403-1406.
- Khan RA, Khan MR, Sahreen, S. 2012. Assessment of flavonoids contents and in vitro antioxidant activity of *Launaea procumbens*. *Chem. Central Journal*. 6:43.

- Khan RA, Khan MR, Sahreen, S., Shah NA, Ahmad B, Khan AM. 2012. Alteration of renal function by potassium bromate (KBrO₃): Protective effects of *Launaea procumbens*. African Journal of Pharmacy and Pharmacology. 6(19): 1400-1404.
- Khan RA, Khan MR, Sahreen, S., Shah NA, Khan AM, Khan YM, Bukhari J, Rashid U, Ahmad B, Shabbir M, Saeed N, Jan S, Afsar T. 2012. Effect of various fractions of *Launaea procumbens* on antioxidant enzymes in rats liver: Oxidative stress induced by potassium bromate (KBrO₃). African Journal of Pharmacy and Pharmacology. 6(8): 512-515.
- Khan RA, Khan MR, Sahreen, S., Shah NA. 2012. Hepatoprotective activity of *Sonchus asper* against carbon tetrachloride-induced injuries in male rats: a randomized controlled trial. BMC Complement. and Alternative Medicine, 12:90.
- Khan RA, Khan MR, Ahmed M, Sahreen, S., Shah NA, Shah MS, Bukhari J, Rashid U, Ahmad B, Jan S. 2012. Hepatoprotection with a chloroform extract of *Launaea procumbens* against CCl₄-induced injuries in rats. BMC Complementary and Alternative Medicine, 12:114.
- Khan RA, Khan MR, Sahreen, S. 2012. Protective effects of *Sonchus asper* against KBrO₃ induced lipid peroxidation in rats. Lip. Health & Disease, 11:164.
- Khan RA, Khan MR, Sahreen, S. 2013. Attenuation of CCl₄-induced hepatic oxidative stress in rat by *Launaea procumbens*. Experimental and Toxicologic Pathology. 65(3):319-326.
- Khan RA, Khan MR, Sahreen, S. 2013. Protective effects of *Sonchus asper* (L.) against KBrO₃-induced oxidative stress in rat testis. Pakistan Journal Pharmaceutical Sciences, 26(3):567-570.
- Waheed A, Bibi, Y, Nisa, S., Chaudhary, F M, Sahreen, S., Zia, M. 2013. Inhibition of human breast and colorectal cancer cells by *Viburnum foetens* L. extracts *in vitro*. Asian Pacific Journal of Tropical Disease. 3(1):32-36.
- Khan RA, Khan MR, Shah NA, Sahreen, S., Siddiq P. 2013. Modulation of carbon tetrachloride-induced nephrotoxicity in rats by n-hexane extract of *Sonchus asper*. Toxicology and Industrial Health. Online.
- Sahreen, S., Khan RA, Khan MR. 2013. Ameliorating Effect of Various Fractions of *Rumex hastatus* Roots against Hepato- and Testicular Toxicity Caused by CCl₄. Oxidative Medicine and Cellular Longevity. Article ID 325406.

Book Chapter and Popular Articles published

- Chapter published in Indian Book entitled “Biodiversity Communities and Climate Change” by Rizwana Khanum. TERI press New Delhi. 03-03-2013.
- “*Phaphoondi-Dost bhi Dushman bhi*” (in Urdu) Published in Global Science Karachi, Edition 182, March, 2013
- “*Phaphoondi Dost ya Nuksaankaar*” (in Urdu) Published in Technology times Islamabad, Volume IV No. 3, January 14-20, 2013
- “*Podaxis pistillaris* - Khumbi sales in Umerkot, Sindh, Pakistan” Online
- “*Battarrea phalloides* (Dicks.)Pers., the sandy stiltball mushroom-a new record from Pae forest Sakrand, Shaheed Benazir Abad Sindh, Pakistan”. Online:
- “Traditional medicinal plants an indigenous source of healthcare”. Technology Times, February 20, 2013.
- “Botanicals as alternative medicines”. Technology Times, February 11-17, 2013.
- “Honey the panacea of many ills”. Technology Times, April 22 – May 05, 2013.
- “UNESCO MAB in perspective of Pakistan”. Technology Times, May, 2013.

- “Essential oils, a Gateway to Sustainable Agriculture” Techn. Times, March, 2013.

Technical Reports

Prepared the following technical reports for Pakistan Wetlands Programme;

- Baseline studies of phytoplankton of Rangla Wetland Complex District Muzaffargarh Rangla lake, Bherywali lake, Kutu Wali lake, Jaran Wali lake, Khary lake and Hanswali lake.
- Baseline studies of phytoplankton of Ghurszy lake, Gilgit-Baltistan.
- Baseline studies of phytoplankton of Kharfaq fall lake, Gilgit-Baltistan.
- Baseline studies of phytoplankton of Shigar lake Skardu, Gilgit-Baltistan.
- Baseline studies of phytoplankton of Shandoor lake, Gilgit-Baltistan.
- Baseline studies of phytoplankton of Gahkuch marshland, Gilgit-Baltistan.

1.1.7 Seminars/Trainings/Workshops/Organized

Organized an exhibition and seminar on medicinal and aromatic plants at PMNH in collaboration with National Rural Support Program (NRSP), Swat and MEDA-USAID on 17th June, 2013. Stalls from different Herbal pharmaceutical companies, distributors and research organizations were displayed. Students, researchers, and people from different walks of life visited these stalls. Six professionals, scientists, and professors delivered presentations on the medicinal and aromatic plants and their commercial potential. Almost 130 participants from various organizations and herbal medicine sector participated the symposium.

1.1.8 Conferences/Workshops attended and Papers Presented

- Attended a 20 days International training course on High Efficient Plant Factory Technology organized by Graduate School of Chinese Academy of Agriculture Science, Beijing, China during November 10-30, 2012.
- Participated in International Training course on Fruit cultivation in protected field and orchard machinery/ Mushroom Cultivation at China held from 23rd June to 12th July, 2013.
- Attended a 3- days training course on GIS from 9th to 11th October, 2012 at PMNH.
- Attended a 1-day training course on GIS on 21st June, 2013 at PMNH.
- Attended in house lectures in PMNH including GIS & DNA Barcoding
- Participated in two days Phycological Workshop on Algal collection & Recent Taxonomy of Chlorophycota on 25th September 2012 at Department of Botany, GC University, Lahore, in collaboration with HEC & PSF.
- Participated in three days second National Phycological Conference, Algae for Mankind from October 15-17, 2012 organized by Department of Botany, University of Karachi, in Collaboration with HEC & PSF.

- Attended 33rd Congress of Zoology, Islamabad on April 2-4, 2013.
- Attended and presented paper at the “4th International Conference /workshop on Plant Ecology and Dendrochronology at Federal Urdu University of Arts, Science and Technology, Karachi, held from November 5-9, 2012.
- Attended and presented paper in the 12th National and 3rd International Botanical Sciences Conference on September 1-3, 2012 organized by Pakistan Botanical Society at Quaid-i-Azam University, Islamabad.
- Attended and presented paper in workshop on Botanical Gardens in Baragali Summer Campus, University of Peshawar, on June 14-16, 2013.
- Attended and delivered lecture in the National Conference on Climate Change and Bio resources of Pakistan on March 21-22, 2013 at Department of Botany, Federal Urdu University of Arts, Sciences and Technology, Karachi.
- Attended and delivered lecture in the 1st National Conference on “Poverty Alleviation through Sustainable Management of Plant Diversity” from September 29-30, 2012 organized by the Institute of Plant Sciences and Biodiversity, University of Swat at Baragali Summer Campus.
- Participated in the two days workshop on Algal Collection & Recent Taxonomy of Chlorophycota on 25-26 September, 2012 at Botany Department, GC University, Lahore.

1.1.9 Display Activities

PMNH educational stalls were displayed on the following occasions:

- AAN Farmers Sharing Mela, on December 18-20, 2012 in NARC. More than 2000 farmers, students, scientists and general public participated, FAO representatives visited the stall.
- PSF/PMNH stall in 2nd Pak-China Business Forum-Industrial Exhibition 23-26 March, 2013
- PMNH stall on the occasion of World Environment Day-2013 at NARC jointly organized by ICIMOD, PARC and PSF on 5th June, 2013.
- Second National Women at Work Festival at Fatima Jinnah Park H-9, Islamabad.
- Spring Festival/ Annual landscape and Flower Show 2013 organized by Cantonment Board, Kharian.

1.1.10. Services Rendered to Other Organizations

- Guided 6 Ph. D. students as co-supervisor from Islamia College/Chartered University, Peshawar, Sindh University, Jamshoro, Arid Agriculture University, Rawalpindi, Quaid-e-Azam University, Islamabad, COMSATS Institute of Information Technology, Abbottabad, National University of Science and Technology (NUST), Islamabad.

- Guided 4 M.Phil students from Hazara University, Mansehra, University of Muzaffarabad, Arid Agriculture University, Rawalpindi and Islamia College/Chartered University, Peshawar.
- Evaluated thesis and conducted viva-voce examination of 2 M. Phil. students of University of Peshawar, and 1 of Quaid-e-Azam University, Islamabad.
- Identified algal samples of 3 M.Sc. Student guided from Hazara University and University of Azad Jammu & Kashmir, Muzaffarabad.
- Guided BS Biosciences students about herbarium techniques, research planning and report writing.
- Provided advisory services regarding establishment of Botanical Garden to different Schools and Colleges of Rawalpindi-Islamabad.

1.1.11. Other Activities

- Scientists at BSD also worked as Node Manager of BGN-GBIF.
- An officer worked as PMNH Focal person for Science.com and FM Radio Programme.
- An officer prepared and compiled material for all sorts of periodical progress reports and PSF Newsletter etc.
- One officer worked as Focal Person for news articles of PMNH for technology times and other newspapers.
- One officer worked as Coordinator for documentation work in connection with 40 years celebration of PSF.
- One officer received Research Productivity Award 2012 awarded by PCST.
- Prepared and submitted to PSF a PC-I on Establishment of Molecular and Phytochemistry Lab at PMNH.

1.2 Earth Sciences Division

1.2.1 Field Work

- Carried out 5 days field work in Districts Swat, Bunair & Shangla for the collection of rock samples for research and display and rock garden, PMNH.
- Carried out field work in Hyderabad area from 19-11-2012 to 5-12-2012 for collaborative research work with Paris Museum of Natural History, France along with Centre for Pure and Applied Geology, University of Sindh, Jamshoro and PMNH.

1.2.2 Laboratory Work

Identified and Catalogued:

- 435 Rock Samples
- 400 Brachiopods specimens
- 830 Gastropods specimens

- 540 Bivalves specimens
- 1030 Vertebrate fossils

1.2.3 Publications

National

- Iqbal, N., Yaseen, A., Lashari, A.R., Usmani, P. and Ahsan, N. 2011. Some Palycepod Fossils from Chorgali Formation, Nurpur Area, Central Salt Range, Pakistan. *Sindh Univ. Res. Jour. (Sci. Ser.)* 43(2): 181-184.
- Yaseen, A., Rajpar, A.R., Munir, M., Roohi, G., Rehman, K. 2011. Micropaleontology of Lockhart Limestone (Paleocene), Nilawahon Gorge, Central Salt Range, Pakistan. *Journal of Himalayan Earth Sciences*, 44 (2): 9-16.
- Roohi, G., Raza, S.M. and Akhtar, M. 2013. Hypoplasia in Fossil Mammals and its Paleocological Importance. *Proceedings of 33rd Pakistan Congress of Zoology (International)*. Pp. 343-344.
- Rana, T.M., Rajpar, A.R., Solangi, S.H., Agheem, M.H., Yaseen, A., Solangi, A. Laghari. 2012. The Palaeo-salinities of the depositional water during the deposition of Kussak Formation of Cambrian age exposed at Salt Range, Pakistan. *Sindh University Journal*. Vol: 44, pp. 731-740
- Rana, T.M., Rajpar, A.R., Solangi, S.H., Agheem, M.H., Yaseen, A., Solangi, A.A., Laghari, A. (2012). The Palaeo-Salinities of the Depositional Water during the Deposition of Kussak Formation of Cambrian age, Exposed at Salt Range, Punjab, Pakistan. *Sindh Univ. Res. Jour. (Sci. Ser.)*, 44 (4): 731-734.

International

- Martin, W. Hautmann, M., Hermann, E., Ware, D., Roohi, G., Rehman, K., Yaseen, A., Bucher, H. 2012. Olenekian (Early Triassic) bivalves from the Salt Range and Surghar Range, Pakistan" *Palaeontology*, Vol. 55, Part 5, 2012, pp. 1043–1073.
- Hermann, E., Hochuli, P.A., Bucher, H., Roohi, G., 2012. Uppermost Permian to Middle Triassic Palynology of the Salt Range and Surghar Range, Pakistan, *Review of Palaeobotany and Palynology* Volume 169, Pages 61–95.
- Brühwiler, T., Bucher, H., Ware, D., Hermann, E., Hochuli, P., Roohi, G., Rehman, K., Yaseen, A. 2011b. Smithian (Early Triassic) ammonoids from the Salt Range, Pakistan, *Special papers in Paleontology* (Accepted for publication).
- Hermann, E., Kurschner, W., Hochuli, P.A., Goudemand, N, Ware, D., Bucher, H., Roohi, G. 2012. Palynofacies analysis of the Permian-Triassic transition in the Amb section (Salt Range, Pakistan): implications for the anoxia on the South Tethyan Margin. *Journal of Asian Earth Sciences Paleontology* (Accepted for publication).
- Bouilhol, P., Schaltegger, U., Chiaradia, M., Ovtcharova, M., Stracke, A., Burg, J.P. & Dawood, H., 2011. Timing of juvenile arc crust formation and evolution in the Sapat Complex (Kohistan–Pakistan). *Chemical Geology*, vol. 280 (3-4), pp. 243-256. doi: 10.1016/j.chemgeo.2010.11.013
- Hermann, E., Hochuli, P.A., Méhay, S., Bucher, H., Brühwiler, T., Ware, D., Hautmann, M., Roohi, G., Rehman, K., Yaseen, A. Organic matter and palaeoenvironmental signals during the Early Triassic biotic recovery: the Salt Range and Surghar Range records. *Sedimentary Geology* 234 (2011), 19-41

- Bruhwiler, T., Bucher, H., Roohi, G., Yaseen, A., Rehman, K. 2011. A new early Smithian ammonoid fauna from the Salt Range (Pakistan). *Swiss Journal of Paleontology*. Volume 130, Number 2, 187-201.
- Bouilhol, P., Burg, J.P., Bodinier, J.L., Schmidt, M.W., Bernasconi, S.M, Dawood, H. 2012. Gem olivine and calcite mineralization precipitated from the subduction derived fluids in the Kohistan Arc-Mantle (Pakistan). *Canadian Mineralogist*, Vol. 50: 1291-1304.
- Hermann, E., Kürschner, W.M., Hochuli, P.A., Ware, D., Weissert, H., Bernasconi, S.M., Roohi, G., Rehman, K., Goudemand, N. and Bucher, H. 2013. Evidence for atmospheric carbon injection during the end-Permian extinction. *Geology*. 41: 579-582.
- Flynn, L. J., Lindsay, E. H., Pilbeam, D., Raza, S. M., Morgan, M. E., Barry, J. C., Badgley, C. E., Behrensmeyer, A. K., Cheema, I. U., Rajpar, A. R. and Opdyke, N. D. The Siwaliks and Neogene Evolutionary Biology in South Asia.
- Barry, J. C., Behrensmeyer, A. K.; Badgley, C. E.; Flynn, L. J.; Peltonen, H.; I. U. Cheema.; Pilbeam, D.; Lindsay, E. H.; Raza, S. M.; Rajpar, A. R. and Michele E. Morgan. The Neogene Siwaliks of the Potwar Plateau, Pakistan.

Popular Articles

- “Up to 5.3 million years old wood fossils discovered” published in weekly newspaper ‘The Technology Times’ on 17th December 2012.

Technical Reports

- Prepared and submitted report on PSF funded project “Sedimentological studies of Datta Formation, Western Salt Range, Pakistan”

1.2.4. Seminars/Symposia/ Training/Workshop Organized

- Organized GIS training workshop for PMNH officers on 21st June, 2013. Dr. Sajid Rashid Ahmed, Head of the Department of GIS at the University of Punjab Lahore imparted the training.

1.2.5. Seminars/Symposia/Training/Workshop attended

- Attended meeting/round table discussion on “Geology and Mineral Resources of Pakistan” with PSF, French and Afghanistan delegation for future prospects of collaboration with Pakistan and Afghanistan and France.
- Attended International workshop on Geosciences Information System for Natural Hazard Management from 12 February, 2013 to 15 February 2013 at University of Peshawar.
- Attended /worked for 33rd Pakistan Congress of Zoology held on April 2-4, 2013.
- Prepared brochures of 1st announcement seminar entitled “Sustainable utilization and management of natural resources of Pakistan” and other official work related to seminar.
- Arranged Nature Photography Competition on Biodiversity Day May 22, 2013.
- All the scientists of Earth Science Division attended three days training workshop on GIS at PMNH in October, 2012.
- All ESD Scientists Participated in the technical session of “World Science Day for Peace and Development” on November 14, 2012 at COMSTECH Islamabad.

- An officer carried out Micro-Paleontological research work at the Institute of Geology, University of Punjab, Lahore from 24th January to 3rd February, 2013.

1.2.6. Display Work

- A Diorama of rocks, minerals and fossils is prepared; wherein, the representative rocks such as sedimentary, Metamorphic, igneous rocks and their associated economic minerals are displayed.
- Displayed wood fossils in the galleries of Earth Science Division.
- Model of *Baluchitherium* was inaugurated by Minister for Science and Technology on 24th October 2012.
- Prepared brochure material for *Baluchitherium*.
- A souvenir shop was opened in the premises of Virtual Orientation Gallery in PMNH
- Write-up of wood fossils of Pakistan is completed and is presented with the specimens.
- Prepared display write-ups of rock & mineral specimens for display in Urdu & English.
- Completed new rock & mineral display in PMNH gallery.

1.3. Zoological Sciences Division

1.3.1. Field Work

- Carried out field work of Mansehra and adjoining areas on 17-21 September, 2012 for the collection of reptiles and amphibians. A total of 25 specimens of very rare and endemic species of reptiles were collected.
- Collected 42 specimens of butterflies from Margalla Hills.
- Conducted five days field studies of Neelum-Jhelum rivers to assess impact of Neelum-Jhelum Hydroelectric Power Project. Ten benthic macro invertebrate samples from different ecological zones of the area were collected.
- Carried out field work on distribution range and population status of large carnivores in Northern areas of Pakistan in September-October, 2012.
- A team of scientists carried out 5 days field study in Nizampur (district Nowshera) in collaboration with KPK Wildlife Department for the baseline and biodiversity studies of the Manglot and Nizampur Wildlife Parks from 30th April 2013 to 4th May 2013. Collected 35 specimens of lizards, 03 specimens of snakes, and 07 specimens of frogs and toads.
- A team of scientists carried out fourteen days field activity in Central Karakorum National Park, Gilgit-Baltistan in connection with Man and Biosphere (MAB) programme from June 26, 2013 to July 09, 2013.
- Collected a rare fish specimen from Nowshera, a new record for Pakistan.

1.3.2 Laboratory Work

Received 14 specimens of large and meso-mammals from Maragzar Zoo, Islamabad, Luibher Wildlife Park, Rawalpindi and Bansra Gali Wildlife Park, Murree.

- Mounted and labeled 313 specimens of fruit flies from Thailand.
- Sorted and identified 1796 insect specimens belonging to 35 families of different order collected through Malaise trap during Manglot Wildlife Park Nizampur field work.

- Sorted and identified more than 2000 marine fishes, present in 600 jars, from the donated samples of Zoological Survey Department.
- Classified & catalogued 3460 insects, 126 mammals, 3149 birds, 277 snakes, 415 lizards, 145 turtles and 466 amphibians assigning PMNH catalog numbers.
- Systematically arranged 661 bird specimens.
- Catalogued, rearranged and digitized 572 small mammals, and 300 insects.
- Photographed 3424 specimens of different Coleopteran specimens.
- Entered 126 specimens of insects in BGN Database.
- Separated 13 morphs from Evaniidae barcoded Ensign wasps and prepared taxonomic descriptions of two species.
- Seven species of Coleoptera were newly recorded from different locations of Pakistan.
- Sorted out more than 350 insect specimens donated by Natural History Museum Florence, Italy
- Starched 120 specimens of butterflies donated by Natural History Museum Florence, Italy
- Skinning, cleaning and tanning of Whale Shark (from Karachi), Elephant (from Islamabad zoo) for stuffing were continued.
- Prepared 300 study skins of mammal's specimens procured from Zoological Survey department Karachi.

1.3.3 National and International Research Projects

- Research work on Carabidae of Northern Pakistan (continued).
- Barcoding of Evaniidae of Pakistan (continued).

1.3.4 Collaborative Research Project

The following activities were undertaken by PMNH as MAB country Secretariat in collaboration with UNESCO;

- Activated National MAB Committee-Pakistan.
- Established MAB Secretariat.
- Declaration of Ziarat Juniper Biosphere Reserve.
- Prepared TORs for review of Lal Suhanra National Park.
- Studies for new Biosphere Reserve (Central Karakoram Biosphere Reserve).
- Preparation for establishment of MAB chairs at two universities.

1.3.5. Publications

National

- Goursi U. H., Awan, M.S., Minhas, R. A., Ali, U., Kabir, M. and Dar, N.I. 2012. Status and Conservation of Indian Rock Python (*Python molurus molurus*) in Deva Vatala National Park, Azad Jammu and Kashmir. Pakistan J. Zool., vol. 44(6), pp. 1507-1514.

International

- Schätti, B. Kucharzewski, C. Masroor, R and Rastegar Pouyani, E. 2012. *Platyceps karelini* (Brandt, 1838) from Iran to Pakistan and revalidation of

Coluber chesneii Martin, 1838 (Reptilia: Squamata: Colubrinae). *Revue suisse de zoologie* 119 (4): 441-483.

- Masroor, R., and K. Mebert. 2012. Geographic distribution: *Natrix tessellate* (Dice snake). *Herpetological Review*, 43(4):621.
- Bauer, A. M., Masroor, R., Titus-McQuillan, J., Heinicke, M., Daza, J. D., and Jackman, T. R. 2013. A preliminary phylogeny of the Palearctic naked-toed geckos (Reptilia: Squamata: Gekkonidae) with taxonomic implications. *Zootaxa*, 3599(4): 301-324.
- Mebert, K., Masroor, R., and Choudhry, M.J.I. 2013. The Dice Snake, *Natrix Tessellata* (Serpentes: Colubridae) In Pakistan: Analysis Of Its Range Limited To Few Valleys In The Western Karakoram. *Pak. J. of Zoology*, 45 (2): 395-410.
- Khisroon, M., Farooqi, J. and Masroor, R. 2013. Systematic, ecology and distribution of Caucasian rock agama, *Paralaudakia caucasia* in district Chitral, Khyber Pakhtunkhwa Province, Pakistan. *PUTAJ Sciences* 19: 107-126.
- Kabir, M., Awan, M.S. and Anwar, M. 2013. Distribution range and population status of common leopard (*Panthera pardus*) in and around Machiara National Park, AJ&K. *International j. Conservation Science*, vol. 4 (1) 3-12.
- Amir S. A., Tanaka F., Pirezada J. A. S. and Iwatsuki Y. 2012. First records of two sparid species, *Diplodus omanensis* and *Pagellus affinis* (Perciformes: Sparidae) from Pakistan. 37(3) of *Cybium*, July 2013.
- Siyal F.K. and Amir S.A. 2012. Length-weight Relationship and Relative Condition Factor (Kn) of Silver Pomfret, *Pampus argenteus* in Pakistani Waters. *J. Fish. Soc. Taiwan*, 2012, 39(2): 83-90
- Panhwar S. K., Liu Q., Amir S.A. and Kalhoro, M.A. 2012. Performance comparison between logistic and generalized surplus-production models applied to the *Sillago sihama* fishery in Pakistan. *J. Ocean Univ. China*, Vol. 11, Issue 3, pp 401-407

1.3.6 Technical Reports

- Mehmood, K. 2013. Baseline studies of Butterflies of Manglot Wildlife Park and Nizampur Wildlife Park
- Masroor, R. 2013. Environmental Baseline studies on the amphibians and reptiles of Manglot Wildlife Park and Nizampur Wildlife Park, Nowshera, Khyber Pakhtunkhwa. Khyber Pakhtunkhwa Wildlife Department, Ministry of Climate Change, PMNH and United Nations Pakistan, 27 pages.
- Mishkat Ullah, 2013. Baseline report on Insect's fauna of Nizampur, District Nowshera, Khyber Pakhtunkhwa.
- Asif, M. 2013. Baseline Studies of Mammals at Nizampur Wildlife Park, Nowshahra.
- Asif, M. 2012. Prepared check lists of mammalian and Avian fauna of Ziarat, Balochistan with current IUCN & CITIES status for MAB programme.
- Kabir, M. 2012. Camera trapping of Large Carnivores in Broghil (Chitral, Khyber Pakhtoonkhwa) and Qurumber (Ghizar, Gilgit Baltistan) National Park, 12 pages.
- Kabir, M. 2012. Diversity of carnivore in and around the Deosai National Park (DNP) Skardu, Gilgit Baltistan, 09 pages.
- Kabir, M. 2013. Baseline study of Avian Fauna of Manglot and Nizampur Wildlife Parks, Nizampur KPK province, 25 pages.

1.3.7 Seminars/Symposia/Congress/Workshop Organized

- Organized the 33rd Pakistan Congress of Zoology in collaboration with PMAS University of Arid Agriculture, PSF, MoST, UNESCO, IUCN, WWF, etc. About 1,500 persons attended the Congress and over 560 research papers were presented.
- Celebrated International Biodiversity Day in collaboration with MoST, PSF and International Centre for Integrated Mountain Development (ICIMOD) on 22nd June, 2013.

1.3.8 Seminars/Symposia/Trainings/Workshops attended

- All officers of ZSD (BS-17-19) attended one day workshop of Basics of GIS application held at PMNH.
- Participated in “Wildlife Conservation Day, 2012” organized by QAU and American embassy Islamabad.
- Provided training entitled “Use of GPS and camera trapping” to students at Department of Animal Sciences QAU, 2012.
- Provided training entitled “Genetic sample collection and camera trapping of wildlife” to wildlife staff of Deosai National Park, GB, w.e.f. Oct 2nd -4th 2012.
- Completed the training course on Entomological Research in Protected Areas at Natural History Museum Florence, Italy.
- Attended “2012 National Conference on Biotechnology and Microbiology” (1st NCOBAM) held in Bara Gali campus of the University of Peshawar.

1.3.9 Display Activities

- Preparatory work for display of Whale Shark at Display center, PMNH, Islamabad.

1.3.10 Services Rendered to Other Organizations

- Identified 478 fruit flies specimens for M.Sc. (Hon) Agriculture Entomology students of Faculty of Agriculture, University of Poonch AJK.
- Identified ten species of butterflies belonging to Margalla Hills for Mr. Bertrand Greschel amateur French butterfly collector.
- Facilitated the academic staff & foreign delegates of Karakorum International University, GB, students from Arid Agriculture University Rawalpindi, Quaid-i-Azam University (QAU) Islamabad, Karakoram International University (KIU), Agricultural University Peshawar and International Islamic University Islamabad on their visit to PMNH.
- Assisted a student of Arid Agriculture University Rawalpindi Department of Entomology for his M.Sc (Hons) research.

1.3.11 Other Activities

- Mr. Rafaqat Masroor of ZSD was awarded Pakistan Council for Science and Technology Research Productivity Award 2012-13.

1.4 Public Education and Display (Public Sciences Division)

1.4.1 Exhibits Developed/Stalls Organized

- **Completion of Rocks & Minerals Diorama**
Rocks & Minerals Diorama made-up of fiber glass cast to give the real look of Igneous, Sedimentary and Metamorphic rocks structure, was completed. After the completion of the display selected original specimens of igneous, sedimentary and metamorphic rocks were placed in the respective shelves.
- **Stuffing and Display of Whale Shark**
The preservation and stuffing of the 40 feet long whale shark brought from Karachi in February, 2011 reached near to its completion. This largest fish is being prepared for display in the PMNH Display Centre with financial aid from UNESCO. It will be opened for the public after formal inauguration soon.
- **Inauguration of Souvenir Shop**
A souvenir shop was established in the Display Centre. Specially made items such as Caps, T-shirts, Mugs, Key chains, Wall clock, Table clock, Post card and stationary are kept on sale. It was inaugurated on 14th September 2012.
- **Wide Screen Display**
As a part of improvement/up-gradation of the Display Centre a wide screen display was installed in the VOG to provide scientific information in the forms of movies, documentaries and different types of presentations to the visitors.
- **Inauguration of the life size display of *Baluchitherium* and Blue Whale Skeleton**
Federal Minister for Science and Technology (S&T) Mir Changez Khan Jamali inaugurated the life size displays of *Baluchitherium* (the largest land mammal on earth) and Blue Whale Skeleton at PMNH premises on 24th October 2012. The inaugural ceremony was attended by a large number of scientists, educationists and students.
- **PMNH stall at National Festival of Culture & Democracy at Lok Virsa.**
PMNH participated in the National Festival of Culture & Democracy” from 8th to 11th November, 2012, by exhibiting specimens of stuffed animals, plants, mushrooms, rocks, fossils and minerals. PMNH staff also distributed brochures and leaf lets among the people for information related to natural environment.
- **Art Exhibition to Mark 25 years of Montreal Protocol**
To mark the 25 years of Montreal Protocol, PMNH jointly organized an Art Exhibition and Prize Distribution Ceremony of Art Competition on the topic of “Ozone is our Friend” with Ozone Cell, Ministry of Climate Change and Funkor Childart Center, Islamabad on December 13, 2012.
- **Display of PMNH Scientific Literature at Dawn Education Expo**
PMNH displayed Research publications, brochures, leaflets and other educational material in the Dawn Education Expo at Pak-China Friendship Cultural Center, Islamabad from February 2-3, 2013. Students from different educational intuitions from the twin cities and huge number of general public visited the stall.
- **Display of Educational Stall at Cantonment Board Kharian Cantt**
PMNH participated in Spring Festival, Kharian Cantt. by establishing an educational stall from 27th to 29th March, 2013. Many Educational Institutions and different departments under the control of Kharian garrison arranged beautiful

stall and landscaping to highlight the importance of flowers. PMNH exhibited variety of medicinal and edibles mushrooms, plants, stuffed animals, specimens of gems crystals and rocks.

- **Participation in Pak-China Business Forum Industrial Exhibition**

PMNH participated in Pak-China Business Forum Industrial Exhibition from 23rd to 26th March, 2013 at Pak-China Friendship Cultural Center, Islamabad. The stall was jointly shared by PSF and PASTIC. Stuffed animals, gem stones and displayed medicinal & edible mushrooms and plants attracted large number of general public along with children and students.

- **Stall of PMNH at NARC on World Environment Day, 2013**

PMNH displayed the stall of stuffed animals, rocks, fossils, minerals and plants at NARC to participate in the World Environment Day at 5th June, 2013, which was jointly organized by PSF, PARC, ICIMOD and others. The purpose of this event was to make aware the people, especially students about the changes in our environment due to human activities.

1.4.2 Additional Activities (Design and Display)

- Designed title page of Book/s (Biodiversity of Pakistan) /reports and poster, brochures of *Baluchitherium* and *Blue Whale* etc
- Designed wall clocks for souvenir shop
- Completed painting (art work) of VOG Dome and paint work of interior VOG.
- Prepared inaugural plates and fixed on stones for *Baluchitherium*, *Blue Whale* skeleton exhibits and also prepared and fixed foundation stone plate of PMNH building
- Designed Digital banner, Stage banner, Road Side banner, Folder, Invitation card for “World Science Day for Peace and Development” celebrated jointly by MoST, PSF & UNESCO on November 14, at COMSTECH, Islamabad
- Design brochure on “Natural Sciences Linkages Programme” for PSF.
- Designed banners, invitation cards, smart banner, certificates for “Project Formulation Workshop” organized by PSF on 24-26 June, 2013 at Swat.
- Designed invitation card, banners for celebrations of International Biodiversity Day activities on 22nd May 2013.
- PSD, PMNH in collaboration with FM-91.6, Islamabad recorded display commentary both in Urdu & English for Audio Commentary Equipments donated by UNESCO by providing rewrite scripts.
- Provided photography services to PMNH, PSF, PASTIC and MoST for various seminars, conferences, workshops, meetings and other functions.

1.4.3 Important Visits to PMNH

- A 15-member Chinese delegation of scientists headed by CAS President Dr. Chunli Bai, from Chinese Academy of Sciences (CAS) visited Pakistan Museum of Natural History (PMNH) on July 17, 2012.
- Two members Indian delegation of the Department of Science & Technology, India visited PMNH with officials of MoST on 6th of September, 2012.

- A delegation of Indian Department of Higher Education, India visited the Museum on 7th of September, 2012.
- Four members foreign delegation related to International Centre for Integrated Mountain Development, Nepal and Dept. of Geology, University of Leicester (UK) visited PMNH display galleries on 28th September 2012.
- A delegation comprising of Eng. Laurent KOCH, Cooperation Attaché for Higher Education & Science from Embassy of France, Pakistan, Dr. Didier Julienne, French Geologist, Dr. Sonia Darracq, Ambassador of France, Afghanistan and Advisor, Polytechnic University of Kabul and Dr. Atiq Sediqi Environmental Advisor for the Ministry of Mines of Islamic Republic of Afghanistan, visited PMNH on 23rd November, 2012.
- Ms. Emerita F. Torres, Second Secretary Economic Officer from the Embassy of the USA visited PMNH on 26th November, 2012. She visited the galleries and exhibits of PMNH. She also met with the Senior Operational Manager, PMNH and discussed matters related to science and technology in Pakistan.
- French Scientist Dr. Gregoire Matais from Paris Museum of Natural History, France and Prof. Dr. Sarfraz Hussain Solangi, Director, Institute of Applied Earth Sciences, University of Sindh Jamshoro visited PMNH on 3rd December, 2012. They visited different galleries and repositories of Earth Sciences.
- Secretaries, Forest & Wildlife Department and Livestock & Dairy Development Department, Government of Balochistan visited PMNH on 5th December, 2012. They visited different galleries and laboratories of the Museum. The PMNH scientists briefed them about the PMNH functions, collection, achievements, displays and future plans.
- Prof. Muhammad Jahanzeb Khan, Vice Chancellor, University of Swat, Khyber Pakhtoonkhwa, visited PMNH on December 6, 2012. Chairman, PSF was also present during the visit. Vice Chancellor of University of Swat visited the different galleries. He said that these displays are the unique informative source of informal education.
- Mr. Mukthir Hussain Soomro, Secretary Education, Govt. of Sindh visited PMNH on 21st December, 2012.
- Mr. S.M. Inamullah, Former Ambassador of Pakistan, Lt. General Zahid Hussain Khan HI (M) (Retd.), Managing Director, Foundation Power Company and Mrs. Farkhanda Afzal, M.D. National Trust for Disable Division, Govt. of Pakistan visited PMNH 19th February 2013.
- Ms. Hina Tayaba, Vice Chancellor Pakistan Institute of Fashion Designing, Lahore and Ms. Nudrat Gillani, Principal Pakistan Institute of Fashion Designing, Islamabad visited PMNH on February 8, 2013. They visited different galleries in the presence of senior scientist and exhibits designer.
- Fourteen members of Islamabad Horticulture Society visited PMNH display galleries on 8th May, 2013. All members were surprised and expressed that it is not only the museum but also the unique source of informal education for the students of all levels.

- Senate Standing Committee Member (Dr. Karim A. Khawaja) visits PMNH display galleries on 22nd June, 2013.

1.4.4 Educational Services

- **PMNH joined the World Museum Community**
PMNH has become the part of world museums society by joining the International Council of Museum (ICOM) as an Institutional Member. ICOM has a network of 20000 museums, 30000 experts in various fields and 171 active National Committees around the world. PMNH has received Institutional Membership Cards which will enable the PMNH officers to enter museums around the world either free of charge or at discounted rate.
- **International Museum Day celebrated**
PMNH celebrated International Museum Day on 18th May, 2013. PMNH allowed free entry to the visitors on International Museum Day, 2013. PMNH sent information for poster and related activities in PMNH to ICOM for their website.
- **International Biodiversity Day celebrated**
International Biodiversity Day is observed throughout the world on 22nd May of each year. This year, PMNH celebrated International Biodiversity Day with theme of this year “Water and Biodiversity” along with Nature Photography, Drawing and Art Poster Competition and Symposium. More than 100 students from 25 schools of Islamabad and Rawalpindi participated in the event.
- **UNESCO donated Audio Equipments received**
UNESCO donated Audio Commentary Equipments to PMNH to facilitate the Museum visitors during their visit and provide live commentary in both Urdu and in English about the different galleries. These audio equipments were inaugurated by the Dr. Kozue Kay Nagata, UNESCO Country Director on 13th March, 2013.
- **Museum Timings for visitors increased**
Public visiting hours were changed to from 9.00 am to 8.00 pm from 1st of July 2012. After the change in Museum display hours positive response from the general public was seen and an increase in the number of visitors has taken place.

1.4.5 PMNH Website

- Regular updating of PMNH website was carried out.
- Responded to the queries of persons visiting the PMNH website.

1.4.6 Number of Visitors to Display Galleries

The number of visitors to PMNH from July 2012 to June 2013 stood at 73680 people including 51369 students and teachers, 30430 general visitors and 159 foreigners.

2.0 INTERNATIONAL LIAISON

- International collaboration with Global Biodiversity Information Facility (GBIF) was continued during the reporting period.

3.0 PLANNING AND DEVELOPMENT

- PC-I on “Completion of the remaining six blocks of PMNH building and strengthening of research and display activities of PMNH” was completely revised.

III. Pakistan Scientific & Technological Information Centre (PASTIC)

PASTIC is an ISO 9001: 2000 Certified S & T Information Provider and is the oldest organization in the field of S&T information management and dissemination serving as a gateway for access to and delivery of global S&T information catering to the needs of the researchers in all areas of Science and Technology. Users of PASTIC services include researchers, entrepreneurs, academicians, scientists, engineers, industrialists, policy makers and planners. Collaboration with different organizations and agencies enhances the scope of information that is offered to clients and helps PASTIC to respond to the diverse needs of a broad community of users.

PASTIC National Centre is housed in its own building at Quaid-e-Azam University Campus, Islamabad with a comprehensive collection of publications in different fields of Science and Technology and information resources. Its six Sub-Centres are working in different cities, viz. Karachi, Lahore, Peshawar, Quetta, Faisalabad and Muzaffarabad all having access to global information resources and capable of disseminating information to their users. Its sanctioned strength is 164 including Technical and Administrative Staff.

1.0 Aims and Objectives

- To acquire, process and disseminate scientific and technological information to the researchers.
- To provide bibliographic information service and document supply service.
- To interact with regional and international S & T information agencies/networks.
- To develop inter-library cooperation, resource sharing at national level.
- To train information personnel in contemporary techniques and methods of information handling.
- To develop and strengthen the National Science Reference Library.
- To compile and publish reference information publications.

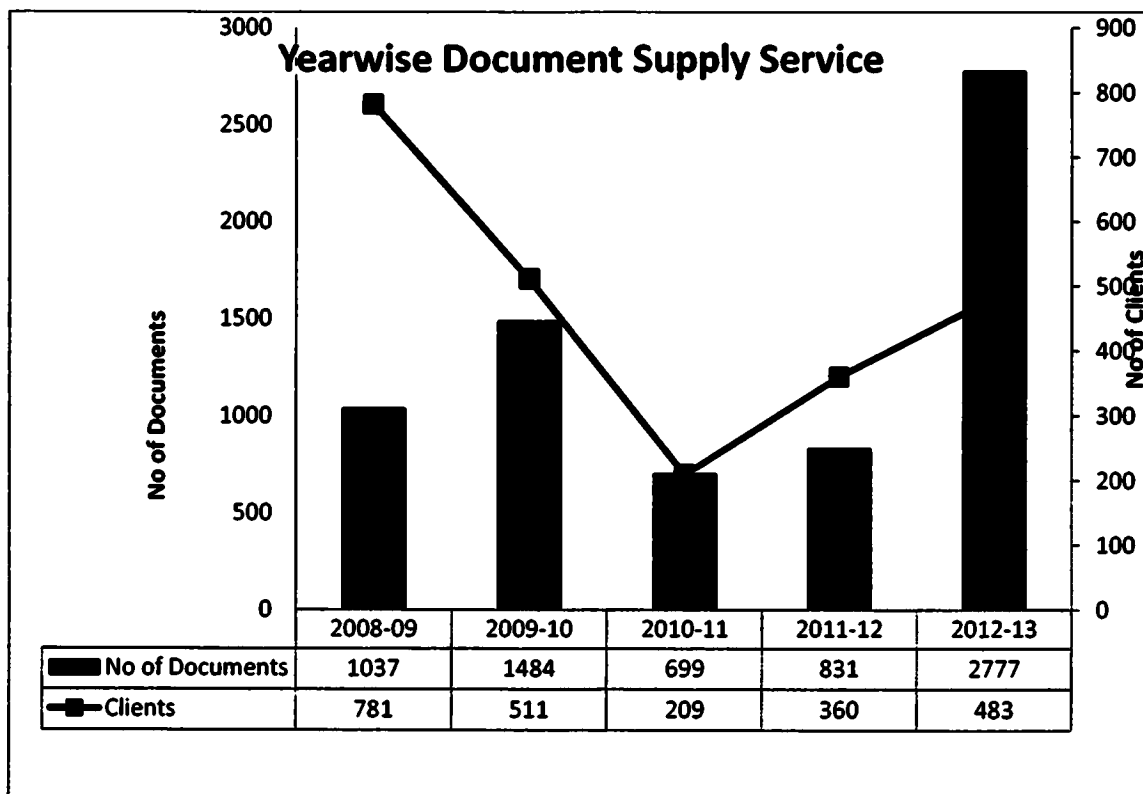
2.0 Activities and Services

PASTIC is a multidisciplinary national S&T information centre and its services and activities are aimed at fulfilling needs of its users by providing the latest information in all fields of Science & Technology. The information services provided by PASTIC are those which are essential for undertaking research and development for socio-economic uplift of the country. The activities undertaken during the period, July 2011 to June 2012 are briefly described below:

2.1 Document Procurement and Supply Service

Under the Document Procurement and Supply Service, requests were received from different R&D organizations for supply of reprints of research articles, conference papers and reports,

etc. In order to fulfill the demand of clients reprints of 2777 S&T documents were procured and supplied to 483 R&D workers from 60 organizations during the year 2012-13. Major user organizations included Quaid-i-Azam University, Islamabad; Pir Mehr Ali Shah-Arid Agriculture University, Rawalpindi; Azad Jammu and Kashmir University, Muzaffarabad; National University of Science & Technology, Islamabad; PCSIR Labs; NIAB, Faisalabad; University of Punjab, Lahore, University of Balochistan, Quetta; University of Karachi, Karachi ; University of Agriculture, Faisalabad; Abbott Laboratories Karachi; Federal Urdu University of Arts, Science & Technology, Karachi; Jinnah Postgraduate Medical Centre, Karachi; NED University of Engineering & Technology, Karachi; University of Peshawar, Peshawar; Sanofi-aventis Pharmaceutical Pakistan Limited, Karachi; BUITEMS, Quetta; Sardar Bahadur Khan Women University, Quetta; University of Sindh, Jamshoro; Agriculture College, Quetta; Nuclear Institute for Food and Agriculture, Tarnab, Peshawar; National Centre of Excellence in Physical Chemistry, Peshawar; KPK Agricultural University, Peshawar; KPK University of Engineering & Technology, Peshawar; Government College University, Lahore; University of Engineering & Technology, Lahore; King Edward Medical University, Lahore; National Development Complex, Islamabad and National Textile University, Faisalabad.



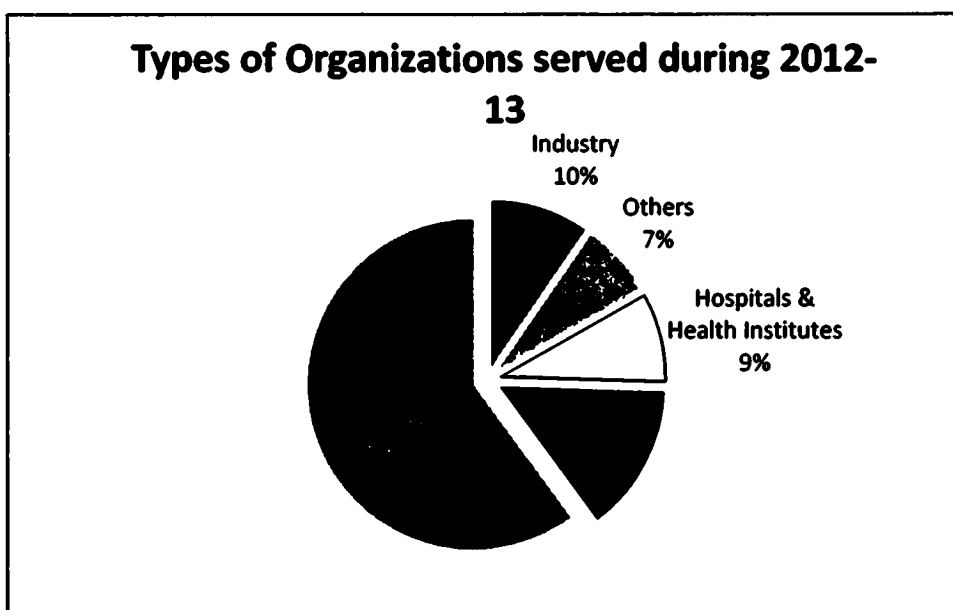
The Union Catalogue of the S&T libraries of Pakistan compiled by PASTIC was mainly used for locating the literature available in local libraries. The major local sources and libraries contacted for cooperation and sharing their resources in providing literature included.

1. Aga Khan University, Karachi
2. Allama Iqbal Medical College, Lahore
3. Ayub Agricultural Research Institute, Faisalabad
4. HEJ Research Institute of Chemistry, Karachi
5. Institute of Public Health, College of Community Medicine, Lahore
6. Kahuta Research Laboratories, Rawalpindi
7. KPK Agricultural University, Peshawar
8. LEJ National Science Information Centre, Karachi
9. National Agricultural Research Centre, Islamabad
10. National Institute of Health, Islamabad
11. Nuclear Institute for Agriculture & Biology, Faisalabad
12. Nuclear Institute for Food & Agriculture, Peshawar
13. Pakistan Forest Institute, Peshawar
14. Pakistan Medical Research Council, Islamabad
15. PCSIR Laboratories, Lahore
16. PCSIR Laboratories, Peshawar
17. PINSTECH, Islamabad
18. Quaid-i-Azam University, Islamabad
19. Sheikh Zayed Hospital, Lahore
20. University of Agriculture, Faisalabad
21. University of Karachi, Karachi
22. University of Peshawar, Peshawar
23. University of the Punjab, Lahore

For foreign procurement of articles following main libraries were used during the period:

1. National Library of Medicine, USA,
2. British Library, London, UK
3. National Library of Australia
4. NISCAIR, India

To expedite the procurement process PASTIC uses e-mail contacts so that information delivery is quick and delays are minimized. Major breakup of the types of user organizations is as follows:



2.2 Bibliographic Information Service/Literature Search

PASTIC has access to international online and offline S&T bibliographic and full text databases through subscription. Literature search is carried out for searching abstracts / references and full text articles from these databases and supplied to users according to their research topics on request. A total of 882,828 references/abstracts on various S&T topics were supplied to 5019 researchers and other users from 180 organizations during the period under review. Both the number of abstracts as well as the number of users of this service has increased over the years. The information requested by the users was provided by searching the following online databases.

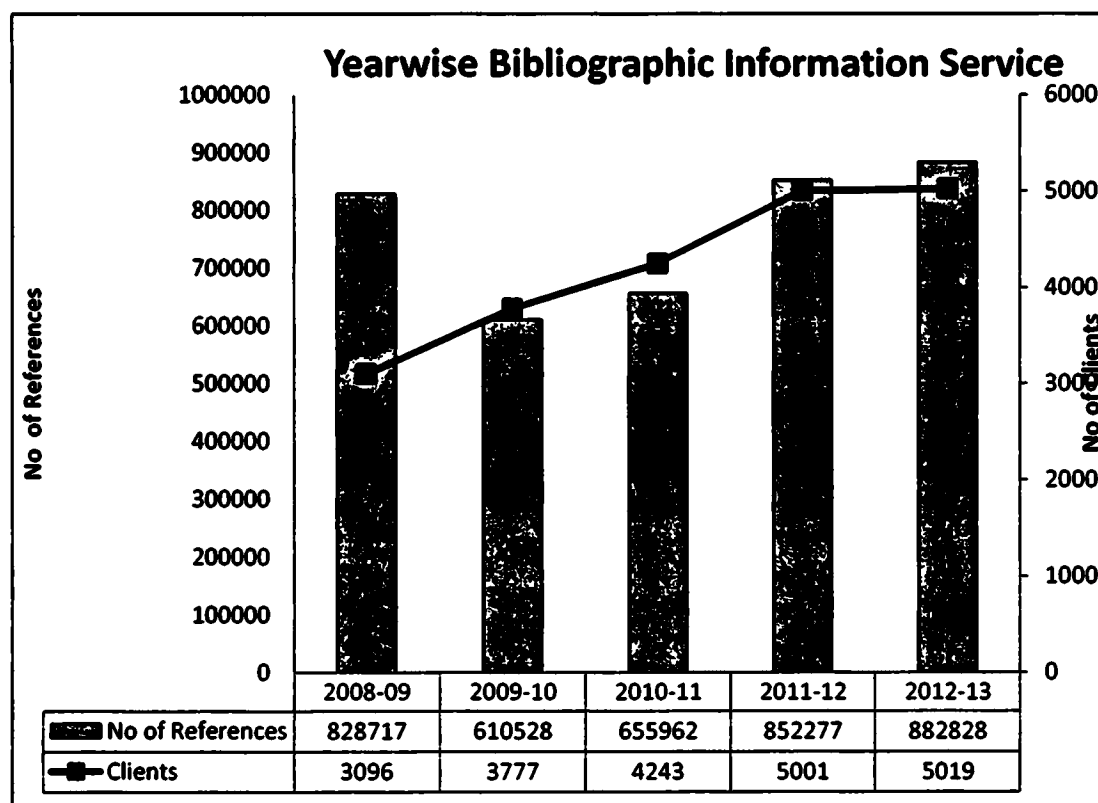
1. Medline (Health & Medicine)
2. Life Science (Biology)
3. Poltox (Pollution & Toxicology)
4. Wilson Applied Science & Technology (Applied Sciences & Engineering)
5. Derwent Biotech. Abstracts (Biotechnology)
6. Proquest (Full text) (Physics)
7. INSPEC (Physics)
8. Sociological Abstracts (Sociology)
9. Sociofile (Sociology)
10. Science Citation Index
11. Compendex Site Enhance (Engineering & Technology)

12. Food Science & Technology Abstracts
13. CSA Pollution Abstract Online (Environmental Pollution)
14. Current Contents: Physical, Chemical & Earth Sciences
15. Ulrich's International Periodical Directory
16. Pharmaceutical Abstracts International

In order to strengthen the bibliographic information service and information resources of PASTIC, each year new databases are purchased or the subscription of the earlier databases is renewed depending on the demand from the researchers in various disciplines. During the year 2012-13, following online bibliographic databases were subscribed / purchased.

1. Biological and Agricultural Index Plus
2. Wilson Applied Science and Technology Full Text
3. Wilson Social Sciences Full Text

The following graph shows the progress for the last five years, both number of references supplied and the number of users have increased during 2012-13.



2.3 Abstracting and Indexing Service (Pakistan Science Abstracts)

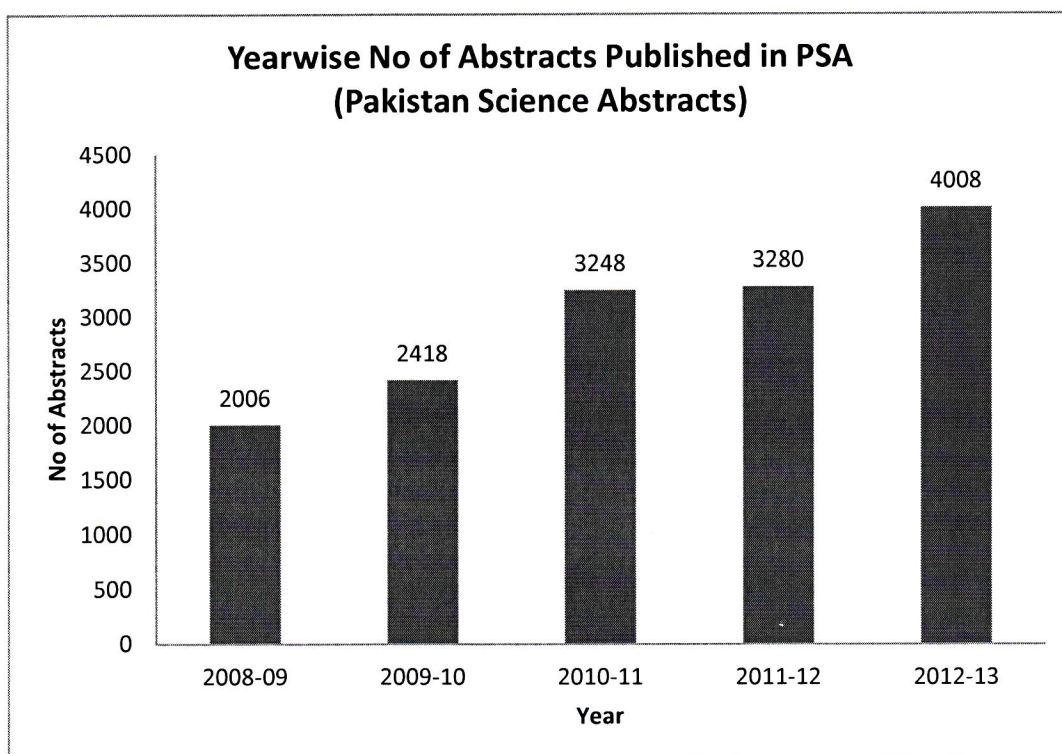
PASTIC provides abstracting and indexing service by publishing an abstracting journal entitled “Pakistan Science Abstracts” in ten different scientific disciplines, which serves as a secondary information source to give support to research and development activities in the country. The scientific information generated in Pakistan or abroad and published in Pakistani S&T journals is documented in the form of abstracts along with detailed author and keyword index in this secondary journal.

In order to provide easy and quick access to this resource, PASTIC has developed an in-house software application to create an online database of Pakistan Science Abstracts, which was over PASTIC website for search. Email notification about the launching of this database application was sent to all 13004 PASTIC registered members. In addition printing of Pakistan Science Abstracts (PSAs) 2011 Volume 49 of all ten scientific disciplines remained in progress.

Compilation of Pakistan Science Abstracts (PSAs) 2012 Volume 50 of all ten scientific disciplines remained in progress. 4000+abstracts are ready to be imported into the database. Compilation of Pakistan Science Abstracts (PSAs) 2013 Volume 51 was also started in all following ten scientific disciplines.

1. Agricultural Sciences
2. Animal Sciences
3. Biochemistry & Biotechnology
4. Chemical & Pharmaceutical Sciences
5. Earth & Environmental Sciences
6. Information Communication & Engineering Sciences
7. Mathematics & Statistics
8. Medical Sciences
9. Physics
10. Plant Sciences

Following is the year-wise progress in the number of articles abstracted



2.4 Technology Information Service

Technological Information Service is aimed at facilitating growth, potential and competitiveness among SMEs at national and international level, build effective coordination between R&D Sector and Industry for enhancing Innovations, Competitiveness and development & promotion of indigenous technologies and organizing Technology based exhibitions and seminars to promote Science & Technology. This service is rendered by Technology Information Section for R&D Workers, Engineers and Entrepreneurs, SMEs and Industrialists. PASTIC in collaboration with the Institute of Research Promotion initiated a programme of University Industry Partnership (UIP) for building effective linkages between universities, R&D Institutions and Industrial Sector. Under this programme following Seminars and Exhibitions were organized along with other relevant activities.

1. UIP Seminar on Innovative Technologies for Sportswear Sector- Ensuring Competitiveness, Sialkot, 7th November, 2012
2. UIP Seminar on Developing Local Food Additives/Preservatives, Lahore, 22nd November, 2012.
3. Invention to Innovation Summit, University of Punjab, 9-10th April, 2013



Dr. Akram Shaikh, Director General, PASTIC visiting stalls at Invention to Innovation Summit, University of Punjab, 9-10th April, 2013

Five issues of the bimonthly Trade and Technology news bulletin entitled “Technology Roundup” were published and five issues of this news bulletin were brought out online.

2.5 PASTIC National Science Reference Library

PASTIC National Science Reference Library is aimed at providing reference and referral services to the users and strengthening of all the services of PASTIC particularly document supply service, bibliographic information service, abstracting and indexing service, technological information service, etc. In this context strengthening of library resources, acquisition of published library material and library automation activity remained in progress. PASTIC library has built up a collection of more than 8,825 books on natural & applied sciences, over 1575 titles of national & international S&T journals and 9100 miscellaneous documents and reports.

During 2012-13, PASTIC library received 583 issues of National and International Journals along with 30 reports and miscellaneous documents, which were processed and shelved for use. Correspondence was made for the acquisition of Pakistani Scientific Journals on complimentary/exchange basis, for strengthening of the information resources. 5267 users visited PASTIC Library for reference purpose, reading & photocopying services and internet browsing. 12 issues of fresh arrivals of PASTIC Library were brought out. Development of

Union Online Public Access Catalogue (OPAC) of the libraries of S&T organizations of MoST was initiated.

2.6 Reprographic Service

PASTIC has a Reprographic Section (Printing Unit) at its National Centre at Islamabad which provides reprographic services to PASTIC as well as other Science & Technology and R&D Organizations of the country. The facilities range from composing, designing, layout, plate making, offset printing and binding for all types of printing products in Single/Multi-Colors for its own printing requirements and for providing printing services to other S&T organizations. During the period under review 103 printing jobs were undertaken for 08 organizations.

PASTIC also completed its development project entitled “Strengthening and Enhancement of the Reprographic Services of PASTIC”. Main objective of the project was to enhancing the printing quality and capability of PASTIC press by introducing state of the art new machinery and equipment. For this purpose a heavy duty printing machine Heidelberg Speedmaster SM 74-2 was acquired. Air Conditioners were purchased and installed in the press for creating suitable working and operating environment for this printing machine.



Heavy Duty Printing Machine Heidelberg Speedmaster SM 74-2

Other equipment purchased included; High Capacity Automatic Folding Machine, Perfect Binding Glue Machine, Computers P-IV, Laptop Computers, Scanners, Digital Camera, Laser Printers, Color Laser Printer, Photocopier and CCTV Cameras Security System. Acquisition of the state of the art new machines & equipment is a step forward towards self sustainability and commercialization of services for revenue generation. Public private partnership will also be enhanced for commercializing the services.



3.0 International Liaison

PASTIC is the National Focal Point of some Regional/International Information Centres and Networks viz., SAARC Documentation Centre (SDC), WHO/CEHANET, and is the National distributor for UNESCO developed library management software WINISIS. The following collaborative activities were carried out during the year 2012-13.

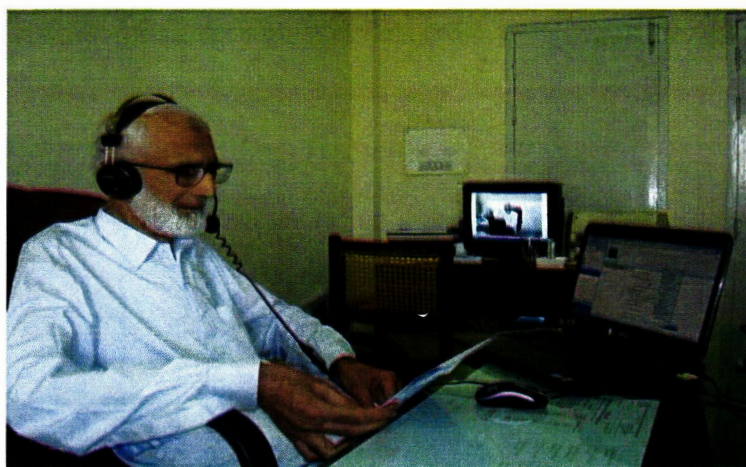
3.1 UNESCO

PASTIC is responsible for the distribution of UNESCO developed software/package such as WINISIS and also provides training on this package and ABCD (Automation of Libraries and Documentation Centers) which is a multilingual, open source, web application for the management of libraries. WINISIS Package was supplied to 16 librarians and information professionals during the year 2012-13. Besides, one workshop was organized for providing training on this package and ABCD software.

3.2 SAARC Documentation Centre (SDC)

SDC is a regional centre of SAARC acting as an effective information system for exchange of information in various fields of S&T among the member states. SDC also develops human resource development programmes in the Member States in the area of information management systems and services. The following main activities were undertaken by PASTIC during the year 2012-13.

- PASTIC participated in the 8th SDC-NFP Coordinators Meeting, which is held every year by SDC to review the activities of past year and plan new activities/ projects for the coming year. The Meeting was held on 29-30 August, 2012 at Royal Institute of Management (RIM), Thimphu, Bhutan. Mr. Mohammad Aqil Khan, Additional Director (STI) PASTIC was nominated to participate in the meeting in his capacity of SDC-NFP Coordinator from Pakistan. However, he could not travel to Bhutan for attending the meeting due to budget constraints and virtually participated in the meeting through Skype services.



Mr. Mohammad Aqil Khan, Additional Director (STI) PASTIC & SDC-NFP Coordinator, Pakistan attending the meeting via skype.

- Activities of exchange of information with SAARC Documentation Centre were carried out for fulfilling the information requirements of Scientists and R&D workers.
- 22 Different titles of research and abstracting journals of 2011 covering major disciplines of science and technology being published by National Institute of Science Communication and Information Resources (NISCAIR) were received free of cost.
- Efforts were made for availing the training opportunities offered by SDC under its Human Resource Development programme. Six employees from PASTIC and Islamia University of Bahawalpur were sent to India for training under SDC training opportunities and fellowship programme. Four officers availed five weeks training opportunity in Information Technology for Information Management and one officer availed one week training on Library Automation using KOHA. One Assistant Professor of the Department of Library and Information Science, Islamia University of Bahawalpur, Bahawalpur availed the opportunity of six months programme of Fellowship for Research and Advanced Training (FRAT).

3.3 Bilateral Cooperation

- A proposal for bilateral cooperation under EU 7th Framework Programme for Research and Technological Development 2007-13 was prepared and submitted.

- A proposal for collaboration between PASTIC and All Russian Scientific and Technical Information Institutes of Russian Academy of Sciences (VINITI) was prepared and submitted.
- A proposal for bilateral cooperation between PASTIC and Islamic Educational Scientific and Cultural Organization (ISESCO) was prepared and submitted.
- In order to establish liaison with counterpart organizations of PASTIC, 34 counterpart organizations were identified for liaison.

4.0 PASTIC Information Service Stalls at the Doorstep of Users

In order to create awareness about S&T information services, PASTIC regularly organizes Awareness Seminars and Service stalls in Universities, R&D institutions and Conferences, Symposia, Seminars etc. During 2012-13, 48 PASTIC Service Stalls were arranged in Karachi, Faisalabad, Lahore, Quetta, Muzaffarabad Peshawar and Islamabad. The aim of organizing the service stalls was to provide S&T information services at the doorstep of the Universities and other institutions to facilitate faculty members, researchers and R&D workers. PASTIC Services received a big boost through these stalls and a large number of users availed the services. As a result of this service promotional activity, 1516 new members were added to PASTIC Services Users Membership Database. Detail of these Stalls is as follows:

Islamabad

Sr.#	Date	Venue
1	01/09/12	12 th National 3 rd International Conference of Botany, QAU,
2	12/09/12	EU Funding under 7 th Framework Programme, PSF.
3	10/01/13	PASTIC Lawn, QAU Campus.
4	7-11/10/12	National Culture for Democracy Festival, Lok Virsa, Shakarparian
5	9-13/10/12	VASSCAA-6 International Exhibition, Pak China Friendship Centre
6	2-3/02/13	10 th Dawn Education Expo, Pak China Centre
7	6-10/03/13	2 nd National Women at Work Festival, F-9 Park,
8	23-26/03/13	2nd Pak-China Business Forum Industrial Exhibition
9	2-4/04/13	33 rd Pakistan Congress of Zoology (International)

Lahore

Sr.#	Date	Venue
1.	16-11-12	Iqra University
2.	20-03-2013	COMSATS Institute of Information Technology
3.	19-03-2013	Foreman Christian College
4.	18-03-2013	Government College University
5.	15-03-2013	University of the Punjab

Karachi

Sr.#	Date	Venue
1.	31/08/12	Applied Chemistry, University of Karachi
2.	22-25/09/12	HEJ, at 13 th International Symposium on "Natural Product Chemistry"
3.	07-08/11/12	Federal Urdu University, during 1 st International symposium on "New Horizons of Microbiology"
4.	07-10/01/13	HEJ, University of Karachi at Symposium on "Molecular Medicine"
5.	17-18/01/13	KIBGE, University of Karachi, during "Project Formulation Workshop"
6.	02/02/13	Dept of Chemistry, University of Karachi, at World Cancer Day.
7.	22/03/13	Department of Civil Eng. NED University on World Water Day

Faisalabad

Sr.#	Date	Venue
1.	28/09/12	Faculty Of Agriculture, University of Agriculture
2.	03/10/12	Ayub Agricultural Research Institute
3.	04-10/12	07 days Stall Activity at University of Agriculture during Kisan Mela
4.	23/10/12	Science Block at Government College University
5.	12/11/12	Ayub Agricultural Research Institute during Seminar on Date Palm
6.	13/11/12	Faculty of Science University of Agriculture on World Science Day
7.	19/12/12	Main Library National Textile University
8.	15-16/01/13	02 days Stall Activity at GCU-Fsd during Green Expo
9.	12/03/13	Faculty of Agriculture University of Agriculture
10.	22/05/13	Main Library National Textile University
11.	28/05/13	Faculty of Agriculture University of Agriculture
12.	29/05/13	Faculty of Sciences University of Agriculture

Azad Jammu & Kashmir

Sr.#	Date	Venue
1.	11-12/07/12	Poonch University of Azad Kashmir, Rawalakot
2.	17-18/04/13	Medical Collage Muzaffarabad
3.	15/05/2013	City Campus University of AJ&K, Muzaffarabad

Peshawar

Sr.#	Date	Venue
1.	17/10/12	One Day S&T Exhibition at PCSIR Laboratories Complex Peshawar
2.	7-8/11/12	Centre for Disaster Management (CDPM) University of Peshawar
3.	17-18/11/12	2-Days S&T Exhibition at PCSIR Laboratories Complex Peshawar,
4.	04/02/13.	NCE In Geology University of Peshawar during World Cancer day"
5.	19/02/13	Dept of Physics at SBBWU Peshawar
6.	20/02/13	NCE In Physical Chemistry, University of Peshawar
7.	19-22/03/13	International Expo on Energy at University of Engineering & Technology

8	09/04/13	University of Peshawar during Science Forum 2013
9	22-23/04/13	S&T Exhibition organized by Directorate of Science & Technology, DOST
10	30/04/13	University of Engineering & Technology
11	15-16/05/13	University of Peshawar during Mega Science Exhibition 2013”

Quetta

Sr.#	Date	Venue
1.	10-11-2012	LAW College, on World Science Day.

5.0 MoUs Signed

A MoU was signed between PASTIC and Riphah International University, (RIU) Islamabad on December 14, 2012. The purpose of this MoU was to develop cooperation and collaboration with Riphah International University for launching information security awareness, trainings and collaborative research to promote digital content security at country cyber space through development of National Information Security (NIS) forum and to share information resources of the two institutions for promotion of R & D culture in Pakistan for promoting University Industry Partnership for indigenous industry needs.



In addition, proposals of signing MoUs with Mehran University of Engineering and Technology (MUET) Jamshoro and signing agreement with M/S Ufone are in pipeline for strengthening the services of PASTIC.

6.0 Human Resource Development (Workshops & Seminars)

Another important activity of PASTIC is to impart training to information professionals on computer applications for library automation and information management as well as organization of workshops and seminars on related diverse topics. In addition to the

Seminars/Symposia mentioned under Technology Information Service the following seminars/workshops/trainings were also organized by PASTIC;

1. A training workshop on “Total Library Solution in Present Era” was organized at PASTIC National Center, from 11-15 Feb., 2013. 22 Library & Information Professionals across the country were trained through this workshop. Prof. Dr. Masoom Yasinzai, Vice Chancellor, QAU, Islamabad was the Chief Guest. Total Library Solution is a suite of full featured open source software packages used by many libraries for automation and digitization purposes.
2. A training workshop on “Library and Information Management” was organized at National Institute of Historical and Cultural Research (NIHCR), Quaid-i-Azam University Campus, Islamabad in collaboration with NIHCR from 24th to 25th April, 2013. Dr. Eitezaaz Ahmad, Dean Social Science, & Ms. Nageen Ainuddin, Director PASTIC, jointly chaired the Inaugural Session. Ms. Kausar Sohail, Syed Habib Jafri & Mr. Nisar Ahmad were the trainers from PASTIC. The participants were mostly from various social sciences Departments of the QAU. WINISIS package was also distributed amongst the participants.
3. One day seminar on “Access to Global Information Resources through PASTIC S&T Information Services” was organized by the PASTIC Sub-Center Peshawar at the Shaheed Benazir Bhutto Women University Peshawar, Larama campus on 23rd Feb. 2013. Director General PASTIC Dr. Akram Shahik & Dr. Mah.Nazir (Dean of faculty & Social Sciences) was the guest of Honor of the event.
4. One day “PASTIC-NTU Joint Seminar on Intellectual Property Rights” was organized at National Textile University, Faisalabad on 4th April, 2013. Dr. A.K. Baloch, Pro-Rector, was the Chief Guest while Dr. Muhammad Akram Shaikh, D.G. PASTIC and Mr. Tahir Feroze, D.G, Intellectual Property Rights were the Guests of Honour. 60 participants attended the Seminar. The significance of IPR covering patents, copyrights and trademarks was highlighted in the seminar for awareness of researchers and industry.
5. Seminar on “Awareness of PASTIC Information Services” was organized at Bahria University, Islamabad on 2 May, 2013, which was attended by students, researchers & faculty members. Presentations were given to the participants on “Using PASTIC Information Services” & “Advanced Web Searching Techniques”.
6. Seminar on “Awareness of PASTIC S & T Information Services” was organized at the PMAS University of Arid Agriculture, Rawalpindi on 04 June, 2013, which was attended by more than 80 research scholars and faculty members. Dr. Rai Niaz Ahamd, Vice Chancellor was the Chief Guest.
7. A Seminar on “Access to Global Information Resource through PASTIC Information Services” was organized at University of Azad Jammu & Kashmir, Muzaffarabad on 8th May, 2013.

7.0 Publications

Following Publication activities were carried out;

- **Pakistan Science Abstracts**

In-house software application was developed by IT Section to create online database of Pakistan Science Abstracts. After maturity, application was launched over PASTIC website for search. Email notification about the launching of this database application was sent to all 13004 PASTIC registered members. Printing of Pakistan Science Abstracts (PSAs) 2011 Volume 49 of all ten scientific disciplines remained in progress

Compilation of PSAs 2012 Vol. 50 of all ten scientific disciplines remained in progress. 4000+abstracts are ready to be imported in the database. Compilation of PSAs 2013 Vol. 51 was also initiated.

- **Union Catalogue**

Serial holding data of 11 libraries was acquired. Data entry and verification was done into the indigenous online database application for Union Catalogue. Records of 206141 Journal issues were entered in the database. 12000+ online searches were made by the users through this database.

- **Proceedings of Training Workshops**

Proceedings of training workshops on “Library & Information Management” held at University of Azad Jammu & Kashmir, Muzaffarabad from 14 – 16 December, 2011 and

at Quaid-e-Awam University of Engineering, Science and Technology, Nawabshah from 5-7 March, 2012 were compiled.

- **Directory of Scientific periodicals of Pakistan**

Directory of Scientific periodicals of Pakistan was updated and final Print of the manuscript of Directory of Scientific Periodicals of Pakistan is ready for printing which contains bibliographic information about 459 Pakistani S & T periodicals with new added features.

- PASTIC Annual Report of 2011-12 was compiled.
- Twelve issues of fresh arrivals of PASTIC Library were published.
- Five issues of Trade and Technology news bulletin entitled “Technology Roundup” were published electronically/online.
- Coordinated in bringing out PSF quarterly/monthly Newsletter.

In-House Databases

Correspondence was made with 496 S&T organizations, institutions and departments for acquiring new data for updating different in-house Databases of PASTIC. Response with new data was received from 48 organizations, which was entered in the following-house databases.

- ⌘ Database of Scientific Societies of Pakistan
- ⌘ Database on Serial Holdings of S&T libraries of Pakistan
- ⌘ Database of the Libraries of S&T and R&D organizations of Pakistan
- ⌘ Database on S&T Seminars and Conferences organized in Pakistan (2000 onward)
- ⌘ Database on Completed and On-going S&T projects in Pakistan (2000 onward)

8.0 Other Activities

- Various delegates of students from Sindh Agriculture University, Tandojam; Islamia University, Bahawalpur; Government College University, Lahore; Quaid-i-Azam University, Islamabad and officers of various organizations of Federal Government visited PASTIC. Presentation was delivered to the visiting delegates and they were taken around the facilities of PASTIC. Such visits were arranged for projection of PASTIC and promotion of its services.



- Renovation work of PASTIC building was carried out.
- Two development projects namely “Upgradation of PASTIC National Science Reference Library” and “Establishment of PASTIC S&T Information Kiosks/Cells in the selected Universities of Pakistan” were prepared and submitted.
- PASTIC participated in celebrating “World Science Day for Peace and Development” and “World Cancer Day” by organizing PASTIC Stalls and awareness seminars in different cities.
- PASTIC Sub-Center, Peshawar, Pakistan Institute of Chemical Engineering & Premium Education Consultants jointly organized Quiz and Poster Competition on Global Warming and Clean Water on April 30th, 2013. Students from all major universities & colleges of Peshawar participated in the event.
- PASTIC Sub-Center, Peshawar in collaboration with NAYS, Science Society University of Peshawar and Sarhad University organized a ‘Science Forum 2013’ on April 9th, 2013, at University of Peshawar, Peshawar.
- PASTIC provided its expert/consultative services to Pakistan Engineering Council for Accreditation of different engineering programmes of various universities of Pakistan and to Higher Education Commission of Pakistan for curriculum development in the area of Computer Software Engineering.
- The Deputy Director Peshawar Sub-Center attended 2 Quarterly Review meetings in October, 2012 & February, 2013) regarding Commercialization activities of MoST at Islamabad
- A number of meetings were held by PASTIC Officers in the National Center /Sub-Centers with the various Chambers of Commerce & Industry for possible collaboration

IV. ORGANIZATION AND ADMINISTRATION

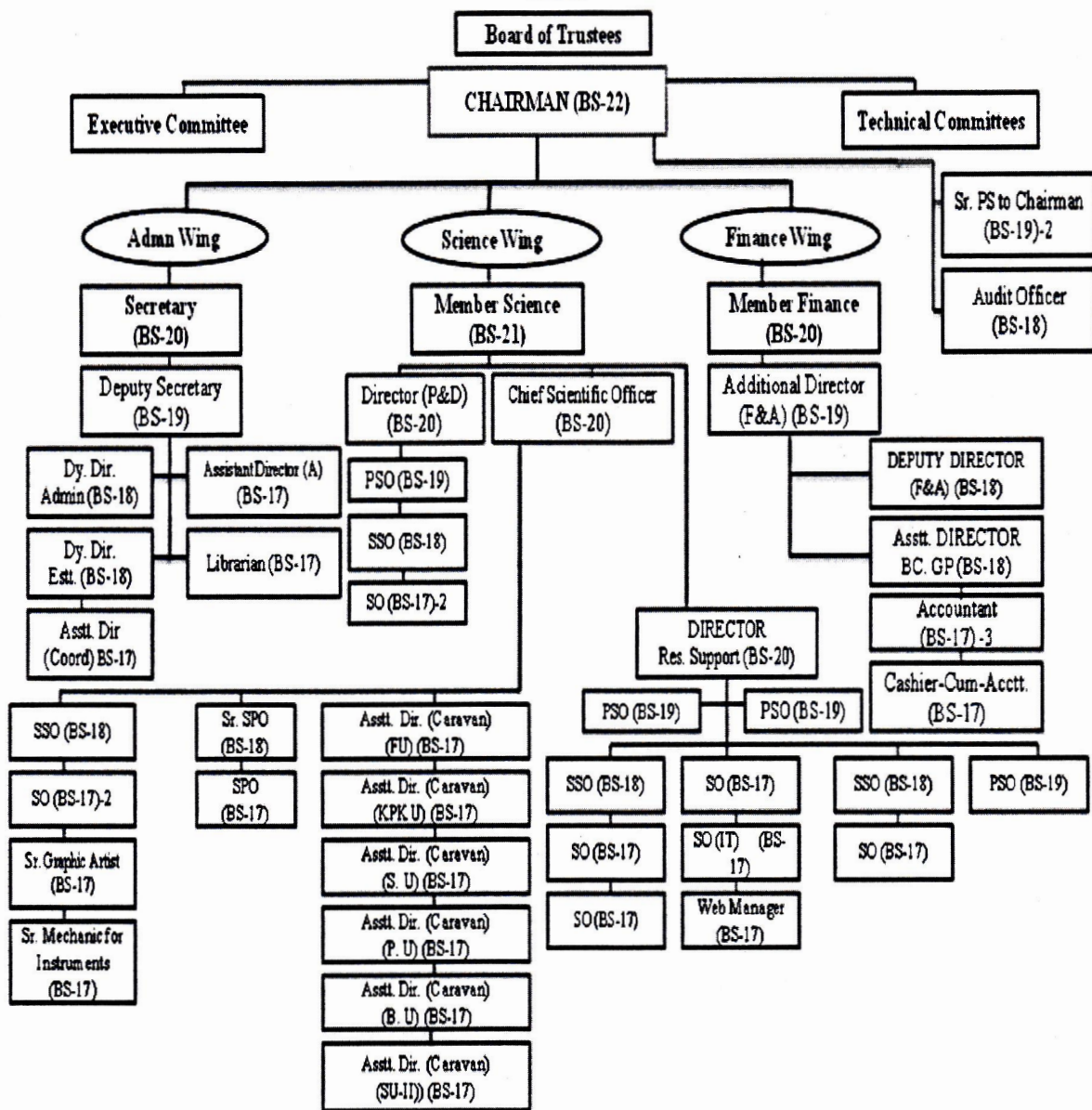
The organizational structure of Pakistan Science Foundation, Pakistan Museum of Natural History and Pakistan Scientific & Technological Information Centre is given in the forthcoming pages. The staff position in the Foundation, PMNH and PASTIC during the report period is as under:

1.0 PSF Sanctioned Posts and Organizational Chart

Sr. No	Name of Post	BPS	Sanctioned Strength
1.	Chairman	22	1
2.	Member Science	21	1
3	Member Finance	20	1
4	Director (RS)	20	1
5	Director (P&D)	20	1
6	Secretary	20	1
7	Chief Scientific Officer	20	1
8.	Additional Director (F&A)	19	1
9.	Principal Scientific Officer	19	4
10	Deputy Secretary	19	1
11.	Sr. PS to Chairman	19	2
13.	Sr. Scientific Officer	18	3
14.	Sr. Science Promotion Officer	18	1
15	Dy. Director (F&A)	18	1
16.	Dy. Director (Admn/Estt)	18	2
17.	Internal Audit Officer	18	1
18	Asstt. Director (Finance)	18	1
19	Scientific Officer	17	8
20.	Scientific Officer (IT)	17	1
21	Asstt. Director (Admn)/Coordination	17	2
22.	Accountant	17	3
23.	Asstt. Director (Caravan)	17	6
24	Science Promotion Officer	17	1
25	Web Manager	17	1
26.	Sr. Graphic Artist	17	1
27.	Mechanic for Instruments	17	1
28.	Cashier-cum-Accountant	17	1
12.	Librarian	17	1
29.	Asstt. Scientific Officer	16	10
30	Superintendent	16	2
31.	Audit & Accounts Assistant	16	2
32	Graphic Artist	16	1
33	Stenographer	16	8
34	Photographer	16(S.S)	1
35	Calligrapher	16(S.S)	1

36	Planetarium Assistant	16(S.S)	4
37	Driver-cum-Mechanic	16(S.S)	5
Sub Total:-			84
38	Science Assistant (Caravan)	14	14
39.	Science Assistant	14	5
40.	Technical Assistant (IT)	14	1
41.	Assistant	14	5
42.	Stenotypist	14	4
43.	Planetarium Assistant	11	5
44.	Driver-Cum-Mechanic	11	4
45.	Carpenter	9/11	1
46.	Electrician	7/11	1
47.	UDC	9	3
48	LDC/Typist	7	12
49	Driver/D.R	4/5/6/7	18
50.	DMO	5	1
51.	Naib Quasid	1/2/3/4	19
52.	Mali	1/2/3/4	2
53	Caravan Attendant	1/2/3	9
54	Security Guard	1/2/3/4	15
55	Sanitary Worker	1/2/3	4
S. Total:-			123
G. Total:-			207

PAKISTAN SCIENCE FOUNDATION
ORGANIZATIONAL CHART
2012-13



2.0 PMNH Sanctioned Posts and Organizational Chart

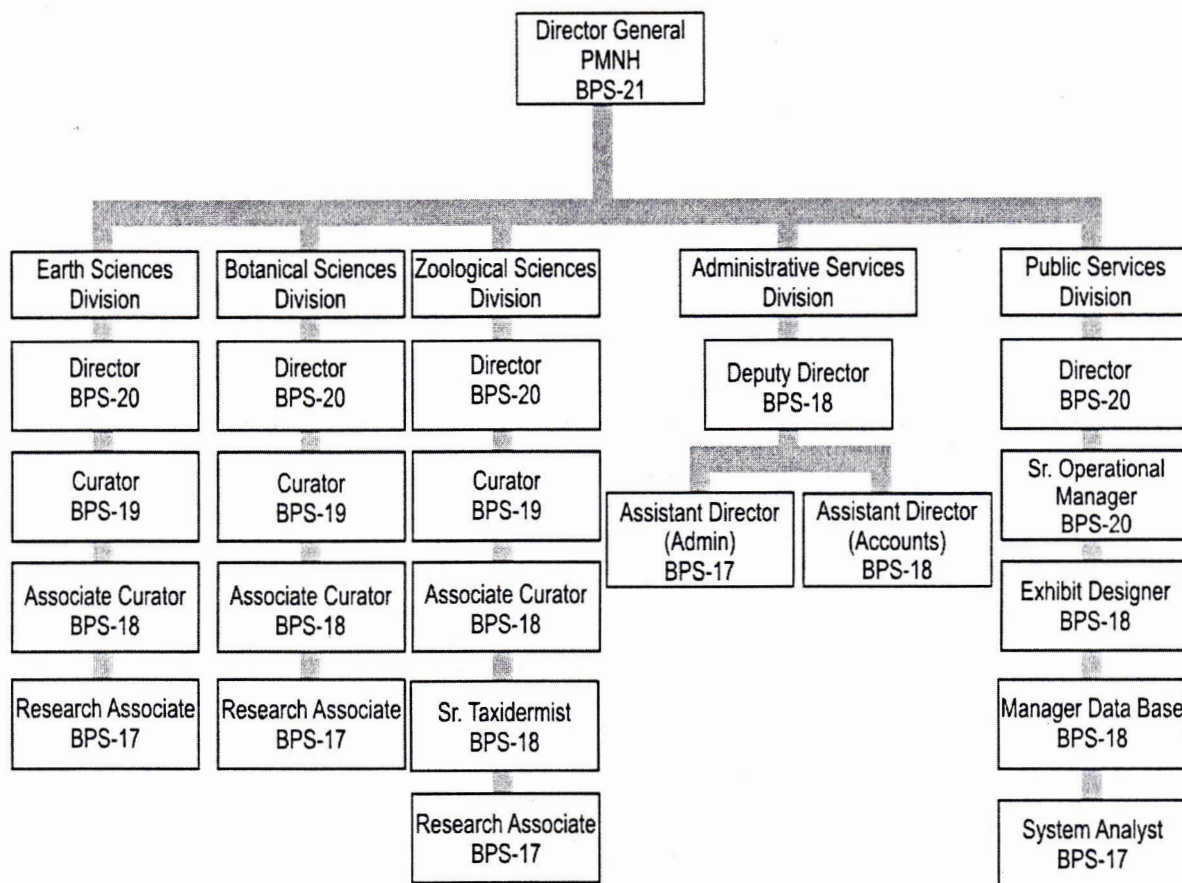
Sr. No.	Name of Post	BS	No. of Posts
1.	Director General	21	1
2.	Director	20	4
3.	Sr. Operational Manager	20	1
4.	Curator	19	5
5.	Associate Curator	18	7
6.	Exhibit Designer	18	1
7.	Deputy Director (Admin)	18	1
8.	Manager Data Base	18	1
9.	Sr. Taxidermist	18	1
10.	Assistant Director (Accounts)	18	1
11.	Assistant Director (Admin)	17	1
12.	Research Associate	17	1
13.	System Analyst	17	1
14.	Accountant	17	2
15.	Librarian	17	1
16.	Assistant Research Associate	16	2
17.	P. A to Director General	16	1
18.	Associate Artist	16	2
19.	Teacher Guide	16	1
20.	Accounts Assistant	16	1
21.	Taxidermist	16	1
22.	Superintendent	16	1
23.	Sr. Modeler	16	1
24.	Casting Staff	16	1
25.	Fossil Technician	16	1
26.	Stenographer	16	3
27.	Supporting Staff	1-15	81
			142

<u>Officers</u>	Total	Filled	Vacant
BS-16 & above	61	48	13
<u>Staff</u>			
BS-15 & below	81	67	14
Total	142	115	27

PAKISTAN MUSEUM OF NATURAL HISTORY

ORGANIZATIONAL CHART

2012-2013



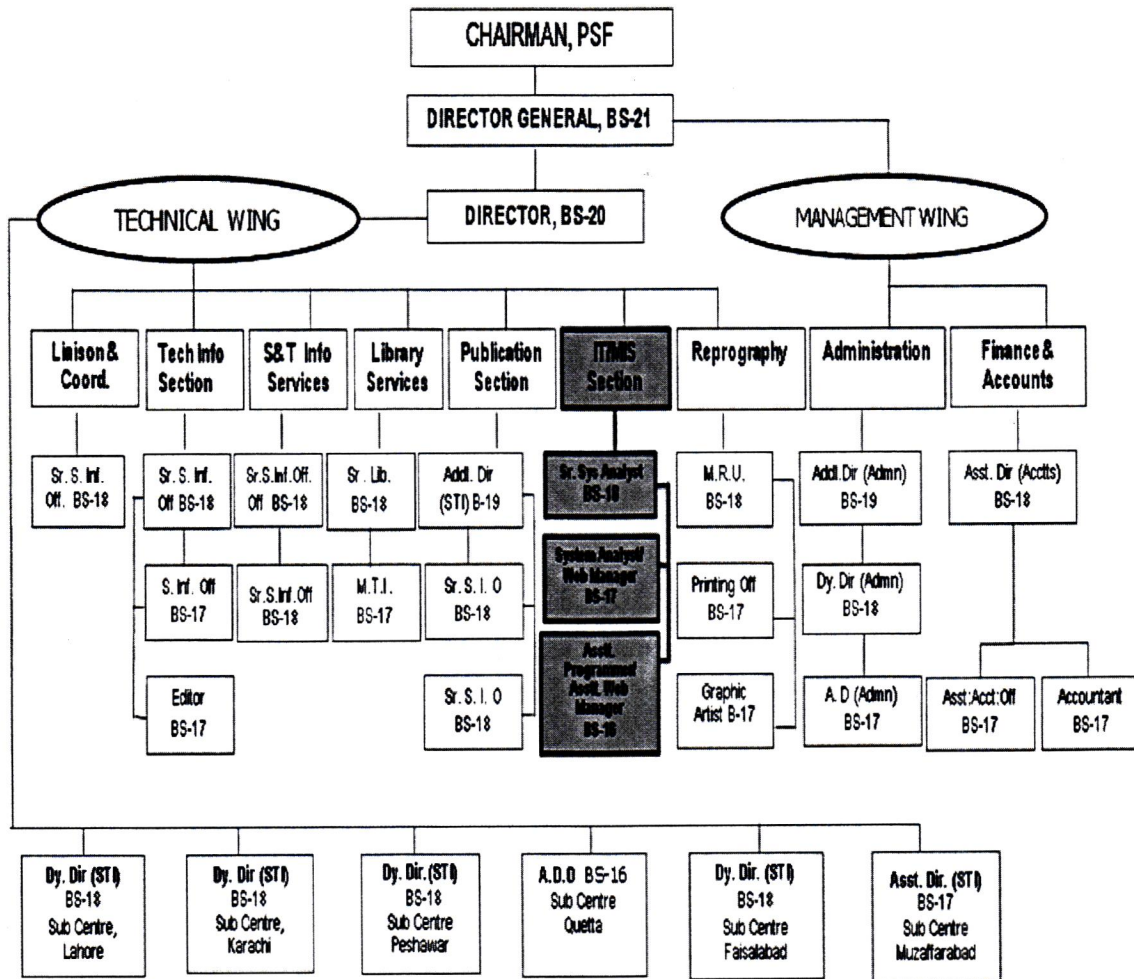
3.0 PASTIC Sanctioned Posts and Organizational Chart

Sr.#	BS	Designation	Total
1	21	Director General	1
2	20	Director	1
3	19	Additional Director (A&F)	1
4	19	Additional Director (STI)	1
5	18	Deputy Director (STI)	4
6	18	Manager Reprographic Unit	1
7	18	Senior System Analyst	1
8	18	Senior Librarian	1
9	18	Senior Scientific Information Officer	9
10	18	Deputy Director (Admin)	1
11	18	Assistant Director (Accounts)	1
12	18	PS to D.G	1
13	17	Assistant Director (STI)	1
14	17	Scientific Information Officer	3
15	17	System Analyst	1
16	17	Web Manager	1
17	17	Manager Technology Information	1
18	17	Printing Officer	1
19	17	Graphic Artist	1
20	17	Assistant Director (Admn)	2
21	17	Technology Information Officer (Marketing)	1
22	17	Editor	1
23	17	Assistant Accounts Officer	1
24	17	Accountant	1
25	16	Superintendent (Admin)	2
26	16	Assistant Scientific Information Officer	3
27	16	Assistant Documentation Officer	1
28	16	Assistant Programmer	3
29	16	Data Processing Assistant	1
30	16	Assistant Web Manager	1
31	16	Assistant Manager Reprographic Unit	1
32	16	Assistant Printing Officer	4
33	16	Stenographer	2
34	16	Assistant Accounts	1
Sub Total			57

Detail of Sanctioned Strength in BS-15 & Below as on 27-11-2013

Sr.#	BS	Designation	Total
1	15	Senior Data Control Assistant	1
2	14	Data Control Assistant	4
3	14	Layout Artist	1
4	14	Marketing/Field Assistant	1
5	14	Graphic Assistant	1
6	14	Mechanical Supervisor	1
7	14	Senior Offset Printer	2
8	14	Assistant	6
9	14	Sub Librarian	1
10	14	Stenotypist	2
11	12	Library Assistant	1
12	12	Data Entry Operator	4
13	11	Technician	1
14	11	Offset Printer	3
15	11	Technical Assistant	1
16	9	Upper Division Clerk	9
17	9	Senior Carpenter	1
18	7	Electrician	1
19	7	Assistant Offset Printer	2
20	7	Lower Division Clerk	11
22	6	Drivers	2
23	5	Bindery Assistant	2
24	5	Offset Machine Assistant	1
25	4	Drivers	6
26	4	Duplicating Machine Operator	1
27	4	Dispatch Rider	1
28	3	Head Mali	2
29	3	Record Sorter	1
30	3	Photo Attendant	1
31	3	Patent Attendant	1
32	3	Security Guard	4
33	3	Qasid	4
34	2	Naib Qasid	4
35	2	Security Guard	2
37	2	Qasid	1
38	2	Photo Attendant	1
39	2	Patent Attendant	1
40	2	Library Attendant	2
41	1	Bindery Helper	1
2	1	Sanitary Workers	3
43	1	Mali	1
44	1	Security Guard	2
45	1	Naib Qasid	9
Sub Total			107
Grand Total			164

ORGANIZATIONAL CHART OF PASTIC



**V. PHOTO GALLERY AND PRESS
CLIPPING, 2012-13**

1.0 PSF Photo Gallery & Press Clipping



Students excitement after visiting Planetarium



Students viewing through Microscope during Exhibition



Briefing about Solar System and Constellation inside planetarium



Students are being briefed about scientific models



Glimpse of walk for Science at Jaffarabad



Plasma models being observed by guests



Students are watching Scientific Documentary



Briefing about Science Caravan Activities



Slide show about planets inside planetarium



Students busy in reading scientific panels



Inauguration of Expo on Energy at NCP Islamabad



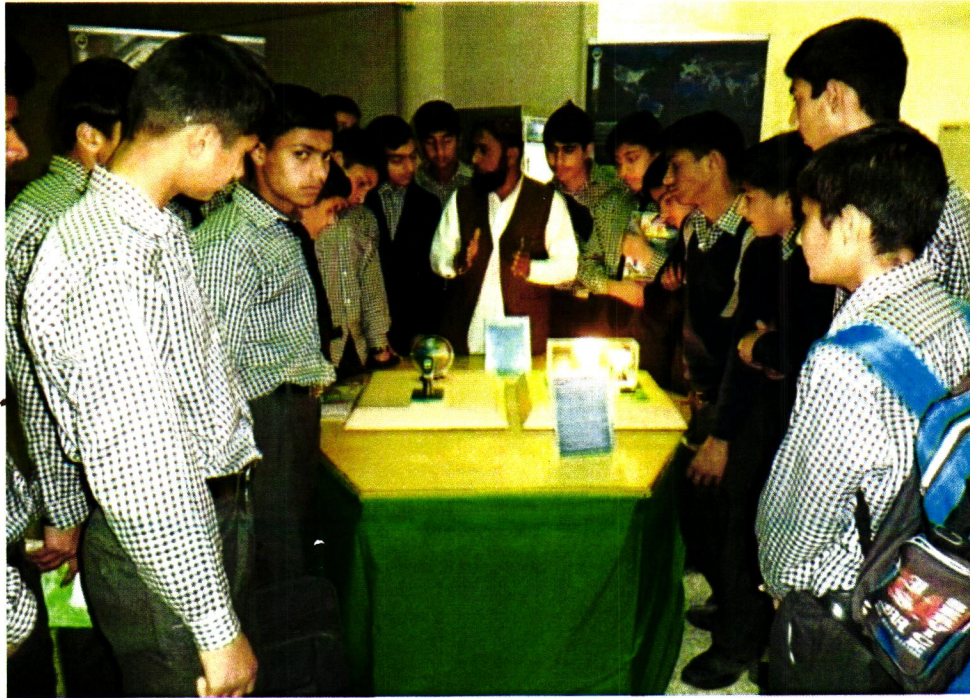
Distinguished Guests visiting Expo at Islamabad



Inauguration of Expo by Dr. Khalil Ahmed Ibupoto, MS, PSF & Dr. Ghulam Ghous, Acting V.C, AJK, University Muzaffarabad



Distinguished guests are being briefed about Expo (Muzaffarabad)



Students are being briefed about Expo (Muzaffarabad)



Dr. Federic Bessat, French Counselor is being briefed about Expo at UET, Peshawar



Mr. Mehboob Khan PSO is briefing about Expo at Swat



Inauguration of Expo on Energy by Sayyed Imtiaz Hussain Gilani Vice Chancellor, UET, Peshawar



Dr. Khalil Ahmed Ibupoto, MS, PSF addressing the Audience at Hyderabad



Mr. Philippe Thiebaud, Ambassador of France, Dr. Manzoor H. Soomro, Chairman PSF, Eng Ahmad Farooq Bazai, V.C BUITEMS visiting the Expo at Quetta



Mr. Philippe Thiebaud, Ambassador of France distributing prize to the student for delivering speech on ENERGY at Quetta



Resource Person from NISTE evaluating IBSE in Pakistan during Review meeting at PSF



Resource Person from NISTE evaluating IBSE in Pakistan during Review meeting at PSF



Students during Review meeting at PSF



Students showing keen interest in scientific models during the Review meeting



Review Meeting on IBSE (visits of some LAMAP associated schools)



Review Meeting on IBSE (visits of some LAMAP associated schools)



World Science Day Celebration by PSF Caravan Units/Science Centres



World Science Day Celebration by PSF Caravan Units/Science Centres



World Science Day Celebration by PSF Caravan Units/Science Centres



World Science Day Celebration by PSF Caravan Units/Science Centres



Popular Science lecture (Cataract Awareness)



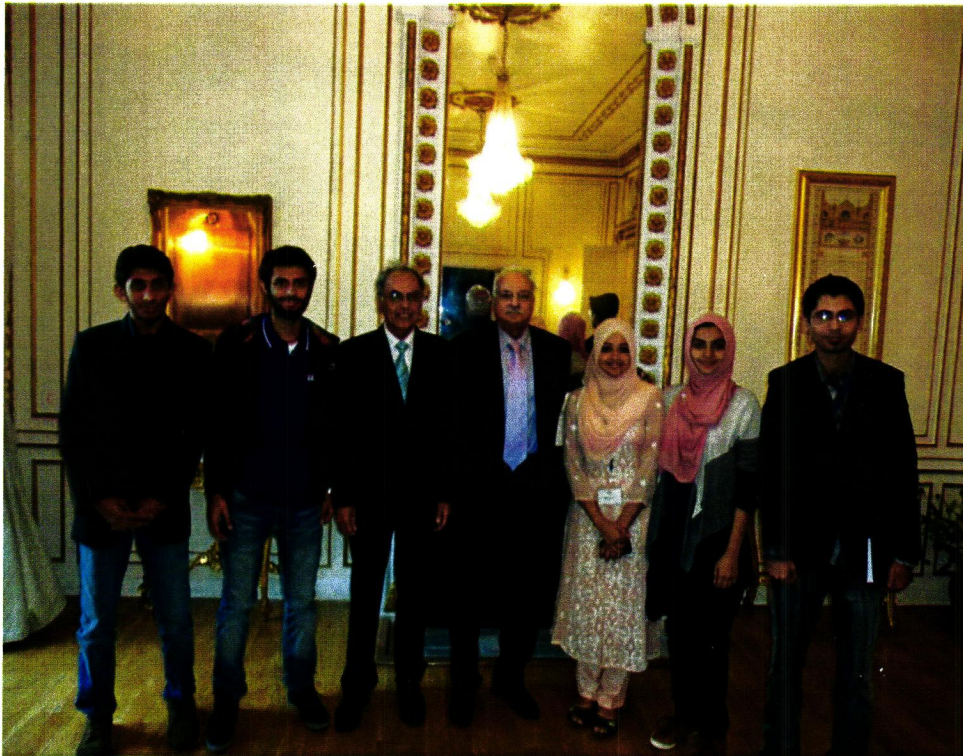
Popular Science lecture at Quetta



Students watching scientific documentary



LIYSF Students holding Pakistani Flag in front of Imperial College, London, UK



Meeting with Pakistan High Commissioner for UK Mr. Wajid Shamsul Hasan during LIYSF participation



Federal Minister for S&T, Mir Changez Khan Jamali inaugurating Science Caravan Jaffarabad Unit



A group photo of the Participants of Round Table meeting on Geology and Mineral Resources of Pakistan at PSF

Dateline Islamabad

Thursday
December 22, 2011

Introductory
Price: Rs 10
Pages 16

Pakistan, France ink MoU for promotion of science

■ MUNIR AHMED

ISLAMABAD — Pakistan Science Foundation (PSF) and Centre Sciences — CCSTI, France Wednesday signed a Memorandum of Understanding (MoU) for promotion of science.

Federal Minister for Science and Technology Mir Chaudhry Khan Jamali was the chief guest at the MoU signing ceremony at the PSF.

PSF Chairman Dr Manzoor H. Soomro and CCSTI-France Deputy Director Guy Antoine Dufourd signed the agreement on behalf of their respective organisations.

French Ambassador Philippe Thiebaud and Secretary Ministry of Science and Technology Ikhlaq Ahmad Tarar were also present on this occasion, who witnessed the agreement signing.

Federal Minister speaking on the occasion said promotion of Science and Technology was need of the hour for socio-economic development of the country.

He hoped the MoU would help students and youth in arousing their interest in science and awareness of Science and Technology.

He said the government was already promoting science in the rural areas to educate masses on important issues such as climate change, environment degradation and as to how to respond in case of any natural calam-

ity and disasters.

He said Pakistan People's Party (PPP) had to its credit the establishment of PSF in 1973 by Shaheed Zulfiqar Ali Bhutto.

Since then, promotion of science has been the PPP government a priority, and bilateral collaborations have paved a path for technical partnerships, he added.

French Ambassador Thiebaud addressing on the occasion highlighted Pak-France collaborative programmes. He said signing of this MoU was evidence of Pakistan and France strong bilateral relations, which would be further strengthened in future.

Secretary Ministry of Science and Technology Ikhlaq Ahmad Tarar thanked the French Embassy for accepting the proposal of collaboration in the field of S&T.

Tarar said France had always been a trusted friend of Pakistan, adding, the MoU would augur well in strengthening science base in the country.

PSF Chairman Dr Soomro highlighting the PSF science promotional activities said PSF subsidiary departments Pakistan Museum of Natural History and Pakistan Scientific and Technological Information Centre were playing a very important role in promotion of science in the country.

Dr Soomro said PSF had also signed MoUs with media organisations for free broadcast of documentaries and programmes on science and technology. Another agreement was signed with an NGO Strengthening Participatory Organisation (SPO) to work with community organisations for popularization of science. Unesco is collaborating in this initiative to reach-out to common people in 73 districts of the country.

The present MoU will develop cooperation and collaboration for promotion and popularization of science through mutual collaborative activities, which can result in betterment of the economic condition of the masses.

Under the present MoU, the PSF and the CCSTI would work together for sharing of expertise with each other, co-production, and organization of travelling exhibitions, arranging professional trainings and capacity-building workshops, conferences and various types of events for the promotion and popularization of science in the country.

The other components of the MoU include the training for project implementation, development of tools, exchange of information, feedback and innovative projects and exchange and joint production of teaching materials like literature, videos, and other data for designing of common activities.



SIGNING: PSF Chairman Dr Manzoor H. Soomro (L) and CCSTI-France Deputy Director Guy Antoine Dufourd signing an MoU, for the Popularisation of Science and its Promotion through Mutual Collaborative Activities and Training. — INP

FOUNDED BY QUAID-I-AZAM MOHAMMAD ALI J

DAWN

.com Vol. LXV No. 350 Islamabad, Muharram 26, 1433 Thursday, Decen

MoU signed

ISLAMABAD, Dec 21: Pakistan Science Foundation (PSF) and Centre Sciences-CCSTI, France signed a Memorandum of Understanding (MoU) on Wednesday.

Federal Minister for Science and Technology Mir Changez Khan Noon was the chief guest at the MoU signing ceremony. French Ambassador Philippe Thiebaud and Secretary Ministry of Science and Technology Ikhtlaq Ahmad Tarar were also present on the occasion.

PSF Chairman Dr Manzoor H Soomro and CCSTI-France Deputy Director Guy Antoine Dufourd signed the agreement on behalf of their respective organisations. —A Reporter

Pakistan OBSERVER

Thursday

Pakistan, France sign MoU for promotion of science

STAFF REPORTER

ISLAMABAD—Pakistan Science Foundation (PSF), Ministry of Science and Technology, Government of Pakistan and Centre Sciences (C.S.T.) France on Wednesday signed a Memorandum of Understanding (MoU) for promotion of science in a ceremony at PSF. Federal Minister for Science and Technology, Mr. Chaudry Khuram ul-Waqar was the chief guest at the MoU signing ceremony, said a press release.

French Ambassador Mr. Philippe Herveaud and Secretary of Science and Technology, Mr. Khilaf Ahmad Latif were also present on the occasion who witnessed the agreement signing.

PSF Chairman Dr. Manzoor El-Soussi and C.S.T. France Deputy Director Mr. Jean Antoine Dubut and signed the agreement on behalf of their respective organizations. Additionally on the occasion, Mr. Latif said promotion of science and technology was need of the hour for socio-economic development of the country.

He stated that the MoU will help students and other in raising their interest in science and awareness on science and technology. He also emphasized the need for focusing on education

in science and technology in all aspects of the country.

French Ambassador Mr. Herveaud, while signing on the occasion, lauded Pakistan's scientific programmes. The signing of the MoU was evidence of bilateral Franco-Pakistani relations, which would be strengthened in future.

Secretary, Ministry of Science and Technology, Dr. Khilaf Ahmad Latif thanked the French Minister for accepting the proposal for duration of the field work in technology.

Mr. Latif said France had a long and fruitful record of collaboration with Pakistan. The MoU would serve as a mechanism for strengthening scientific relations.

PSF Chairman Dr. Soussi lauded the science promotion efforts. He said that on the occasion, Pakistan Minister for Science and Technology and French Deputy Director signed a joint MoU for promotion of science in the country. He said the development and collaboration of science and technology will be the primary concern of the government. He said the MoU will help in raising the interest of the youth in science and technology. He also emphasized the need for focusing on education

FRIDAY, DECEMBER 22, 1971

Statesman

Thursday
December 22, 1971

Pak, France sign MoU for promotion of science

ISLAMABAD (Pakistan Science Foundation (PSF), Ministry of Science and Technology, Government of Pakistan and Centre Sciences (C.S.I.) France on Wednesday signed a Memorandum of Understanding (MoU) for promotion of science in a ceremony at PSF.

Dr. A. M. Khan, Minister of Science and Technology, Mr. M. Mansoor H. Khan, Chairman of PSF and Mr. M. Iqbal Hussain, Secretary, Ministry of Science and Technology, Mr. Alain Aumont, Director of PSF, were present on the occa-

sion, who signed the MoU.

PSF was founded in 1967 and is headed by Mr. M. Mansoor H. Khan, Director General. The agreement is for a period of five years.

Mr. Aumont said that the MoU is a landmark in the history of Pakistan and will be a boon for the country.

He hoped that the MoU will help in increasing the level of science and technology in Pakistan.

Under the agreement:

1. The MoU will help in increasing the level of science and technology in Pakistan.

2. The MoU will help in increasing the level of science and technology in Pakistan.

3. The MoU will help in increasing the level of science and technology in Pakistan.

He also emphasised the need for more education and science and technology for development of the country.

French Ambassador, The Ambassador on the occasion highlighted the Pak-France collaborative programme.

He said signing of this MoU is a landmark in the history of Pakistan and France relations, which would be a boon for the country.

Secretary, Ministry of Science and Technology, Mr. M. Iqbal Hussain, thanked the France Embassy for accepting the proposal of collaboration in the field of science and technology. -A-

DAILY EXPRESS



THURSDAY, DECEMBER 22, 2011

اسلام آباد: کوٹلی، ایف 11، 204 | قیمت: 26 روپے | فون: 011-3331433 | 2011ء 7 جولائی 2065ء - فون: 8-2879123 صفحات: 12 قیمت: 10 روپے

پاکستان، فرانس میں سائنس کے فروغ اُساتذہ کی تربیت کا معاہدہ

صنعتی ترقی کیلئے تحقیق اوزی ہے، چمکیز جمالی: اتھارون بڑھانا ہے جسے فرانس کی سنی

اسلام آباد (پریس) - فرانس میں سائنس کی تعلیم کو فروغ دینے کے لیے پاکستان اور فرانس کے مابین ایک معاہدہ طے کیا گیا ہے۔ اس معاہدے کے تحت فرانس پاکستان میں سائنس کی تعلیم کو فروغ دینے کے لیے ایک نئی اسکیم شروع کرے گا۔ اس اسکیم کے تحت فرانس پاکستان میں سائنس کی تعلیم کو فروغ دینے کے لیے ایک نئی اسکیم شروع کرے گا۔ اس اسکیم کے تحت فرانس پاکستان میں سائنس کی تعلیم کو فروغ دینے کے لیے ایک نئی اسکیم شروع کرے گا۔

جرڈاں شہروں سے شائع ہونے والا پہلا مکمل مقامی اخبار

راولپنڈی، اسلام آباد

تقریباً 100
تقریباً 100

روزنامہ

میراج

راولپنڈی
زاہد فاروق ملک

تعمیرات 26، عمرہ المرام 1433، 22 نومبر 11، 9، 2067 ب صفحات 8 قیمت 8 روپے

1



اسلام آباد، پاکستان سائنس فاؤنڈیشن اور فرانس کے سائنس دانوں کے وفد کے ساتھ

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351
ج 53
بھارت 26 نومبر 2011ء 1433ھ 22 ستمبر 2011ء 2066ھ

اقتصادی ترقی کیلئے سائنس دانوں کی کافرورش وقت کی ضرورت ہے

پاکستان کی معیشت کو ترقی دینے کے لیے سائنس دانوں کی کافرورش وقت کی ضرورت ہے۔ سائنس دانوں کی کافرورش وقت کی ضرورت ہے۔ سائنس دانوں کی کافرورش وقت کی ضرورت ہے۔

پاکستان کی معیشت کو ترقی دینے کے لیے سائنس دانوں کی کافرورش وقت کی ضرورت ہے۔ سائنس دانوں کی کافرورش وقت کی ضرورت ہے۔ سائنس دانوں کی کافرورش وقت کی ضرورت ہے۔

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پتلی جمان

پتلی جمان کی کافرورش وقت کی ضرورت ہے۔ سائنس دانوں کی کافرورش وقت کی ضرورت ہے۔ سائنس دانوں کی کافرورش وقت کی ضرورت ہے۔

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SUKKUR - Saturday, February 04, 2012, Rabi-ul-Awwal 11, 1433

Expo on "It's all about Chemistry" concludes

By Ghaffar Mahar

KHAIRPUR: The Traveling Expo on It's all About Chemistry ended at Shah Abdul Latif University, Khairpur on Friday. The Expo was organized by Pakistan Science Foundation in collaboration (PSF) with Embassy of France and Scientific, Technical, Industrial and Cultural Centre France. Prof Dr. Nilofer Shaikh Vice Chancellor SAIU, Khairpur presided the closing ceremony. On this occasion, Dr. Nilofer Shaikh said that this is the third expo which is organized by the Pakistan Science Foundation and it is for the educate the students and as well as masses. She said that, She feel very rejoice that Shah Abdul Latif University, Khairpur is on the top priority of Pakistan Science Foundation. She further said that, Pakistan Science Foundation should arrange

these types of lectures, seminars, expos etc at schools, colleges because the students of universities come from schools. She said that it is a great effort of PSF to organize the media workshop on Scientific Reporting & Writing. Prof Dr. Ghulam Raza Bilal Pro-Vice Chancellor Shikarpur Campus hailed the PSF for organize such meaningful expo on chemistry and said that we can educate our public through organize these types of expos. He said that it is amazing that more than 6000 students and general public paid visit to expo.

Dr. Manzoor Hussain Soomro Chairman Pakistan Science Foundation very grateful to the management of SAIU to support in organize such fruitful expo and in his address elaborated that concept of organizing such type of events. Dr. Yasmeen Fatima

Dean faculty of Natural Science SAIU, Khairpur said that every country has got developed by the help of science. She said that this expo was very interest full and meaning full and these types of expo increase the education of public. Mr. Irtan Ahmed Shaikh Assistant Director PSF said that in this expo more than 6000 students and public and more than 35 schools and colleges have paid visit. On this occasion, Prof Dr. Shafique Ahmed Aram the Focal Person of the expo thanked all the Professors, faculty Members, Media Persons, students and all participants to attend the expo. He also thanked to Pakistan Science Foundation to arrange such fruitful expo at SAIU, Khairpur. Notable number of Professors, Teachers, Researchers, students and others attended the closing ceremony of Expo.

The Nation

PSF's Expo ends at Shah Latif University

| Organisation asked to hold more such
events in future

ABDUL GHAFFAR MAHAR

KHAIKPUR - An Expo, organised by Pakistan Science Foundation, on the title of "It's All About Chemistry" concluded at Shah Abdul Latif University on Friday.

Vice Chancellor Prof Nilofer Shaikh attended the ceremony as the chief guest.

On this occasion, Dr Nilofer said that the PSF has organised expo for third time, educating the students and citizens. She urged the Foundation to arrange such events at school and college level. She said it is a great effort of the PSF to organise the workshop on Scientific Reporting and Writing.

Pro Vice Chancellor

Shikarpur Campus Prof Dr Ghulam Raza Bhatti hailed the PSF for organising such meaningful expo. He said, "We can educate citizens through organising such events." He further said the encouraging fact that more than 6,000 students and citizens paid visit to the expo.

Chairman Pakistan Science Foundation Dr Manzoor Hussain Soomro thanked the SALU management for holding such fruitful expo. Dean faculty of Natural Science, Dr Yasmin Faz Kazi said that every country in the world has attained progress with the help of science.

She said that the expo was very interesting and meaningful.

بالاتی سنہ ۲۰۱۲ میں اردو کا پہلا اور کثیر الاشاعت



07 فروری 2012

سائنس کے فرد میں میڈیا اہم کردار ادا کر سکتا ہے، ڈاکٹر منظور سومرو

جائزہ خلیفہ — اور میں شہید ہونے والی جرمنی کی ایک روزہ ٹریڈنگ ورکشاپ سے خطاب کرتے ہوئے ڈاکٹر منظور سومرو نے کہا ہے کہ سائنس کے لوگوں کو سائنس کے شعور کی بجائے ایلیٹ ٹیلنٹس کو فروغ دینا ضروری ہے۔ ان کی تعریفوں کی بجائے ان کی مہارتوں اور کامیابیوں پر توجہ دینی چاہیے۔

ڈاکٹر سومرو نے کہا کہ سائنس کی ترقی کا دار سائنس میں علم ہے، اس لیے سائنس کی ترقی کے لیے سائنس کی ضرورت اور اہمیت کو اجاگر کرنے کی ضرورت ہے۔ ان کا کہنا ہے کہ سائنس کی ترقی کے لیے سائنس کی ضرورت اور اہمیت کو اجاگر کرنے کی ضرورت ہے۔ ان کا کہنا ہے کہ سائنس کی ترقی کے لیے سائنس کی ضرورت اور اہمیت کو اجاگر کرنے کی ضرورت ہے۔

ان کا کہنا ہے کہ سائنس کی ترقی کے لیے سائنس کی ضرورت اور اہمیت کو اجاگر کرنے کی ضرورت ہے۔ ان کا کہنا ہے کہ سائنس کی ترقی کے لیے سائنس کی ضرورت اور اہمیت کو اجاگر کرنے کی ضرورت ہے۔ ان کا کہنا ہے کہ سائنس کی ترقی کے لیے سائنس کی ضرورت اور اہمیت کو اجاگر کرنے کی ضرورت ہے۔

سائنسی شہوتی بیداری کیسے میری اپنی مردانہ کوکے

سائنسی شہوتی بیداری کیسے میری اپنی مردانہ کوکے... (The text in this section is extremely faint and difficult to read, appearing to be a collection of small, illegible characters or a very low-quality scan of a document.)

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The Nation

Tuesday, February 7, 2012

Need to promote science journalism



STIKKUR. A workshop was organized by Inter Global Human Development Society Broadcasters, and Information Officers, attended the first workshop primarily to dis-

Pakistan Science Foundation (PSF) on "Scientific Reporting & Writing" for the Journalists of the remote areas at Kofhi hall, Shah Abdul Latif University (SALU) on Monday. The workshop kicked off with a brief overview of science journalism, focusing on scientific reporting and biodiversity with its meaning and more importantly, its relevance and significance in today's world. More than 60 media persons from electronic and print media, teachers of Mass Media Studies, that the workshop was needed to create a ground for the promotion of science education, science culture among the Media men and students. He said that IGHDS is a registered not-for-profit organization working for journalists' capacity building and strengthening freedom of information since 2007.

The final session was dedicated to practical skills. The recommendations at workshop said that the journalists should file only authentic news based on information given in writing by the researchers to avoid confusion. The teachers should create interest and

Speaking on the occasion, Chairman PSF Dr Manzour H. Soomro said that science needed a prominence in media in developing countries, because science and technology are essential to development. He also recommended that journalists' curriculum should include information about how journalists covering scientific issues can use social media as a source of information and as a way of distributing stories. Chief Executive Officer IGHDS, Dr Shakil Ahmed Jamil said awareness among children at secondary level regarding the importance of science for socio-economic development. It was further said that news organizations should appoint and assign dedicated specialized journalists for scientific and technology news reporting. Referring to the shortcomings on the part of scientists, the workshop recommended that scientists should write scientific features in simple language, while journalists specially belonging to remote areas should be trained in the topics like report writing and communication skills.

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Traveling Expo opened in Multan

MULTAN - International Traveling expo on Chemistry opened on 15 Feb at Bahauddin Zakariya University, Multan for nine days. Major objective is to attract the young generation toward science education by delivering complex scientific phenomena through simple hands on activities. The theme of the Expo is Chemistry and its role in our daily life because Chemistry is considered very difficult and dry subject resulting less interest of the students.

The Expo is jointly organized by Pakistan Science Foundation (PSF), Embassy of France, and BZU, Multan. Speaking at the occasion, H.E. Ambassador of France to

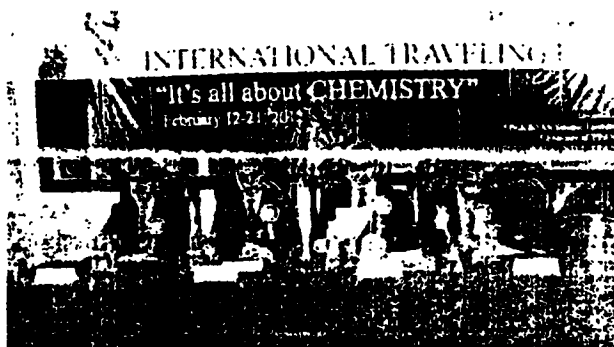
Pakistan, Mr. Philippe THIEBOUT highlighted the role of Science and Techno in national development and role of Exhibitions for popularization of science in the society. He added that France paid special focus to the science education at primary level, which is necessary skill and mental development of the children. Interacting with the students, he expressed support of his office for the education and research activities.

Prof. Dr. Manzoor Soomro, Chairman, PSF thanked the audience about the activities undertaken by PSF for promotion popularization of science in the country. He highlighted the role traveling Expo

in creating science awareness in the students. He emphasized the need of Quality Based Science education at grass root level, and ensured best possible support from Pakistan Science Foundation to the student and teacher in science popularization activities.

Prof. Dr. Saad Khawaja Ahamd M.T. I.T.I. lauded the programmes of the University for M.A. research for socio-economic development of the country. He mentioned that female enrollment in BZU is very encouraging and appreciated the female student for their interest in Science and technology. He added that the Expo is a great opportunity for the student and general public to get fresh and knowledge about Chemistry and its application in our daily life.

Ms. Farhat Rasool, Chief Scientific Officer, thanked the BZU, Embassy of France and all the participants and students for making their time for the Expo. She encouraged the students and invite them to maximize their participation in the Expo. The expo "It's all about Chemistry" is prepared by Centre Sciences, France in partnership with Pakistan from January to March, 2012. It will be traveling from Karachi to Islamabad, Lahore, Dera Ghokhar and Multan in 20 days. Further it will go to Faisalabad, Bahawalpur, Islamabad, Sindh, Balochistan and will be concluded in Quetta on 3 March, 2012. (Special)



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Wednesday 15 February 2012

(جلد 22) اریح 15 فیبروری 2012 ع بمطابق 22 ربیع الاول 1433 هـ (شمارو 192) قیمت 12 روپيا

عمرڪوٽ ۾ سائنسي نمائش شروع، شاگردن جي پريزور شرڪت

<p>عمرڪوٽ: پاڪستان سائنس فائونڊيشن پاران عمرڪوٽ ۾ سائنسي نمائش شروع ٿي. ان موقعي تي پاڪستان سائنس فائونڊيشن جي اسٽيٽ سائنس ڊپارٽمينٽ سومرو پڌاڻو ڏيکاري ڏنو. انهيءَ موقعي تي ڪر، جديد تعليم ۽ محنت ڏيڻ چاهيون ٿا.</p>	<p>عمرڪوٽ: پاڪستان سائنس فائونڊيشن پاران عمرڪوٽ ۾ سائنسي نمائش شروع ٿي. ان موقعي تي پاڪستان سائنس فائونڊيشن جي اسٽيٽ سائنس ڊپارٽمينٽ سومرو پڌاڻو ڏيکاري ڏنو. انهيءَ موقعي تي ڪر، جديد تعليم ۽ محنت ڏيڻ چاهيون ٿا.</p>
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مسلم نشاۃ ثانیہ کی آواز

Tuesday 14th February, 2012

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اسلام آباد

ایڈیٹر انچیف: غلام اکبر

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قیمت 8 روپے

تعمیراتی ادارت 150 روپے

جلد 18، صفحہ 21، تاریخ 1433ھ، 14 فروری 2012، 4 مئی 2012، شمارہ 94



پاکستان ٹاؤن شپ کا افتتاح میں خواجہ القاسم فرانسس سرگپس، شمالی اے این او اور سکول سسرال پریشین ہی
 سائنس ٹاؤن شپ کے زیر اہتمام کیسٹری پرائیکٹس کا ٹرنس طلباء میں شعور جاگزا کر گئی
 فرانس میں سائنس تنظیم برائری لیول سے پڑھانا شروع کر دی جاتی ہے، فرانس میں سسرال

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Expo on It's all about Chemistry concludes at SALU

By Muhammad Hassan
Phulpoto

KHAIRPUR: A 12 day long exhibition titled "It's all about Chemistry" concluded at the Shah Abdul Latif University (SALU) Khairpur on Friday. The Pakistan Science Foundation (PSF) in collaboration with the Center of Sciences France organized the Expo to provide knowledge about the role of Chemistry in the daily life to students and the general public. The Expo aimed to increase the interest of youths in chemistry and to create enthusiasm for a creative future of chemistry.

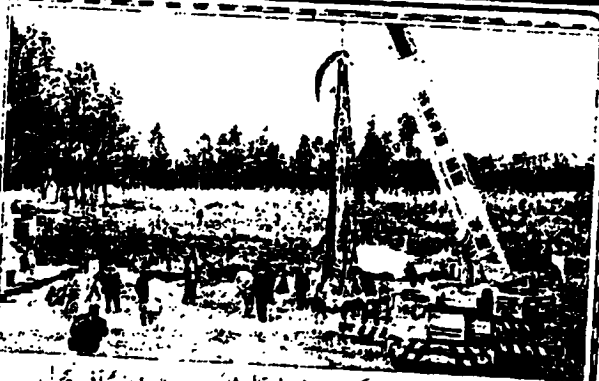
While addressing the concluding ceremony of the Expo, Vice Chancellor of Shah Abdul Latif University (SALU) Khairpur Professor Dr Nilofer Shaikh appreciated the PSF for the promotion of science and highlighted how education in the different subjects of science is being imparted in the SALU. She said that the teachers as well as students both need to be aware about the new developments and breakthroughs in science and

that they should also adopt the modern methods of learning science. Chairman of PSF Dr Manzoor Soomro briefed about the activities undertaken by the PSF for the promotion of science in the educational institutions of Pakistan. Dr Soomro said that a majority of students and teachers are not being attracted to the subject of chemistry which they find complex. It is with this understanding that the PSF in collaboration with the partners is making efforts to win due recognition and importance which the subject deserves, he said. He emphasized on the need for inquiry-based science education at grass root level and assured the best possible support by the PSF to the students and teachers in science promoting activities. On the occasion, Assistant Director of PSF Sukkur Irfan Ahmed Shaikh said that the Expo was a great opportunity for the students and general public to get knowledge about Chemistry and its applications in the daily life. Among others Dr Ghulam Raza Bhatti also addressed on the occasion.

THE DAILY JANG PUNJAB

جنگ راولپنڈی

پتہ: 25، بلاک 1433، 18 فروری 2012ء، پاکستان، 206۔ نمبر 48



اسلام آباد کراچی کے ساحل پر چکری جانے والی وکیل شادک: پانچ ہزار ٹن آف تھیل ہسٹری میں تھیل کر کے لیے۔ ریٹائرمنٹ کے لیے۔

کراچی ساحل سے ملنے والی وکیل شادک جنوب کرے۔ سیزیم میں دھکی جائے گی

روٹیشنل شادک سے تھیل کر کے 4 سے 6 ہزار ٹن کے ذرا کھنڈے منظر پر

اسلام آباد (ایس ایس نیوز)۔ کراچی کے ساحل پر پندرہ روز قبل بحری حالت میں چکری جانے والی وکیل شادک کو پاکستان سیزیم سٹیم ٹرک میں ڈھکی جائے گی۔ تھیل کر کے لیے تھیل ہزاروں سے کھلی اور حکومت میں ڈھکی جائے گی۔ 42 ٹن کی اورانی بائرنیل سے چھوٹے تھیل شادک کو جس کے ذرا کی اورانی تھیل بڑی حد تک تھیل میں تھیل سے تھیل۔ پاکستان سائنس فاؤنڈیشن کے چیف سائنس دان اور انجینئر 11، 12، 13، 14، 15، 16، 17، 18، 19، 20، 21، 22، 23، 24، 25، 26، 27، 28، 29، 30، 31، 32، 33، 34، 35، 36، 37، 38، 39، 40، 41، 42، 43، 44، 45، 46، 47، 48، 49، 50، 51، 52، 53، 54، 55، 56، 57، 58، 59، 60، 61، 62، 63، 64، 65، 66، 67، 68، 69، 70، 71، 72، 73، 74، 75، 76، 77، 78، 79، 80، 81، 82، 83، 84، 85، 86، 87، 88، 89، 90، 91، 92، 93، 94، 95، 96، 97، 98، 99، 100، 101، 102، 103، 104، 105، 106، 107، 108، 109، 110، 111، 112، 113، 114، 115، 116، 117، 118، 119، 120، 121، 122، 123، 124، 125، 126، 127، 128، 129، 130، 131، 132، 133، 134، 135، 136، 137، 138، 139، 140، 141، 142، 143، 144، 145، 146، 147، 148، 149، 150، 151، 152، 153، 154، 155، 156، 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پاکستان سیزیم سٹیم ٹرک

پاکستان سیزیم سٹیم ٹرک... (Detailed text about the truck and its specifications)



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مسلک اشاعت کے 71 سال

SATURDAY, 18 FEBRUARY

DAILY NAWA-I-WAQT
RAWALPINDI
ISLAMABAD

روزنامہ

نوائے وقت

راولپندی اسلام آباد اور ملتان کی ایک شائع ہوتی ہے



اسلام آباد میں ریلوے لائنوں کی تعمیر کے لیے ایک بڑے پیمانے پر کام جاری ہے

SHARK TALE

After Edward Maya Whale Shark reaches Islamabad

The fish will be preserved in the Pakistan Museum of Natural History

A 12-metre long whale shark, which was spotted in the Kara-Bati area of Arabian Sea (Pakistan) has been brought to the sea capital on Friday and placed in the Pakistan Museum of Natural History (PMNH). The giant whale shark was seen on February 10 in the Kara-Bati area in western territory of Arabian Sea by the fishermen. According to them, it was alive at that time but motionless. It, however, died before they started hauling towards sea shore.

Addressing a news briefing here at PSF Chairman Prof. Dr Manzoor H. Siddiqui said that the said whale was brought to the Fish Harbour on February 17, 2012. It was confirmed for Rs200,000. The auctioneer who purchased the fish managed

to save the whale shark from being sold to the foreign buyers. The fish was brought to the sea capital on Friday and placed in the PMNH.

On the instructions, PMNH remained in close touch with the Fish Harbour Authority and Fisheries Department. With consent of stakeholders, it was decided that the unique specimen should be preserved in the Museum for research and for education. The briefing about the steps being taken by the authorities in this regard, he said. Director General PMNH managed to send a team of scientists and technicians from Pakistan Museum of Natural History to Karachi. The team

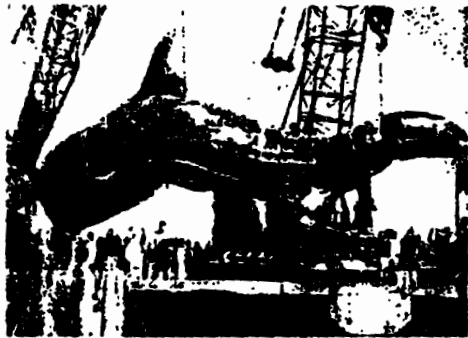
started the preservation process. The main objective was to preserve the specimen from being perished. The first phase of the task was successfully completed in record two days. The skin and skeleton of the specimen was preserved and recovered. It will be preserved in Pakistan Museum of Natural History for its long term preservation and display, he said. He informed that the process will take at least 4 months. It then will be reconstructed, mounted and displayed for general public as an icon of biodiversity of Pakistan. The tissues of the organs of the specimen have been preserved for the laboratory analysis in future and for accurate age determination of the specimen.



Taxidermist's dream

From the ocean to country's national heritage

The whale shark, shifted from Karachi to Natural History Museum Islamabad, will be prepared for display in six months



BIG FISH: The shark being pulled out of the water in Karachi (left); the carcass being wrapped for transport to Islamabad (right)



● USAMA ZAFAR
ISLAMABAD

In its journey from becoming a dead fish on the Karachi shore to a national heritage, the 40-foot-long whale shark was transferred to the Pakistan Museum of Natural History here on Friday.

Once it is preserved, a procedure being followed in Karachi,

The preservation will include taxidermy, stitching or mounting a dead animal's hide for display, which will cost Rs2.5 million. In addition to that, the whale shark's skeleton would separately be treated with chemicals.

The process is being carried out by a team of experts, who

...the whale shark's carcass was wrapped for transport to Islamabad. We had expressed the desire...

TRIBUNE

Tuesday

FEBRUARY 21, 2012

SCIENCE FORUM

Four students to represent Pakistan in London

ISLAMABAD: Four Pakistani students will participate in the London International Youth Science Forum (LIYSF), 2012 scheduled to be held between August 16 and August 30.

The selection of participants included student interviews that were held at the Pakistan Science Foundation (PSF); the committee was headed by PSF Chairman Prof. Dr Manzoor Soomro.

PSF Spokesperson Rehana Batool said the visit to London is being conducted under its science promotion and popularisation programme. PSF and the National Academy of Young Scientists (NAYS).

Over 222 students from all across Pakistan applied for the forum, while 20 shortlisted students were interviewed from which four will be selected. APN

Shawwal al Mukarram 22 - 28, 1433

September 10 - 16, 2012

Pak students fly national flag high at London science forum

STAFF REPORT (BB): Five Pakistani young scientists (science students) participated in the world famous science forum "10th International Youth Science Forum (IYSF) 2012".

The two-week forum was organized at the Imperial College London in August last and has been organized in the UK for the last over 50 years.

The Pakistani students had participated for the first time in the forum on the initiative of Pakistan Science Foundation (PSF).

These students include Fatima Sajid of Army Medical College, Rawalpindi, Zameer Sabir of Quetta Medical School and Umar Mirza of (ICSI), Awas Ahmed from University of Agriculture, Faisalabad and Fahad Sohrab from Mawlana Wahidullah Islamic University Peshawar, such a message received here from London.

The theme of the year's forum was "The Human Planet". The IYSF provided a superb opportunity to participants of ages between 17-21 years to meet and interact with young scientists from all over the world, to exchange ideas, to learn scientifically and culturally and to discuss and debate



one of the major issues presently confronting the world and scientific community.

BUSINESS RECORDER

Islamabad, Tuesday 21 February 2012, 28 Rabi-ul-Awwal 1433

Four Pakistani students to participate in LYSE-2012

RECORDER REPORT

ISLAMABAD: Four Pakistani students for the first time will participate in London International Youth Science Forum 2012 (LIYSF-2012) to be held from August 16-30, 2012 in London.

For selection of the participants of the Forum, interviews of the students were conducted by a committee comprising eminent scientists of the country, headed by Pakistan Science Foundation Chairman Prof Dr Manzoor H Soomro held at the PSF.

Under its science promotion and popularisation programme, PSF and National Academy of Young Scientists (NAYS) are arranging the first ever visit of Pakistani students aged from 17-21 years. Some 222 students of the universities from all over the country had applied for attending the Forum and 20 short listed students were interviewed of them four students were selected after the interviews, who will represent Pakistan in the forum.

The LIYSF is an educational forum created, owned and operated by Educational Cultural Exchanges (International) Ltd, having its registered office at Royal Parade Mews, Kent, BR7 6TN. The event is regularly organised on annual basis, since 2009. "London International Youth Science Forum-2012 (LIYSF-2012)" is going to be held on 16-30 August, 2012 at Imperial College, London. Main activities scheduled in the Forum, are lectures, demonstration visits to industrial sites, research centers, scientific institutions and organisations. Each year more than 100 students from all over the world gather for 15 days, which help them understand each other's customs and culture. The PSF under its science popularization programme undertake a number of activities with special focus on the youth. PSF will sponsor visit of four students to participate in LIYSF-2012.

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★★★★★★

پاکستان کے روزنامہ راولپنڈی

ABC
CERTIFIED

بلاغ تصدیق شدہ شایعات

THE DAILY JANG RAWALPINDI

روزنامہ

جنگ راولپنڈی

12-10-10

میر ظہیر الرحمن

54 جلد

28 ستمبر 2012ء 1433ھ 21 اگست 2012ء 8 ستمبر 2012ء

51 نمبر

پاکستان سائنس دانوں کی 4 نو جوانوں کو لندن
 میں سائنس دانوں کی طرف سے جوہری
 اسلام آباد (اے پی پی) وزارت سائنس
 بین الاقوامی کا ذیلی ادارہ پاکستان سائنس فائونڈیشن 4
 نو جوانوں کو لندن انٹرنیشنل جوہر سائنس فونڈیشن شرکت
 میں بھجوائے گا۔ جہاں میں بی ایس ایف اور ڈاکٹریٹ میں
 سہرو نے تیار کر رکھا ہے جو 222 نو جوانوں میں
 ہوئی جس میں سے 22 نو جوانوں کی شہادت لگے گی
 کسی چرچان کا اعلیٰ سطح کی کمیٹی نے اطلاع دی۔

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لاہیستی اشاعت جا 65 سال

DAILY HILAL-E-PAKISTAN KARACHI

عوام جو آواز

کراچی

روزانہ

ہلال پاکستان

Regd. No: S.B. 261

پیر 22 جنوری 2012ء سنہ 27 صفر المظفر 1433ھ (سال - 65) شمارو 80 قیمت - 7 روپيا

سنڌ جي ادارن کي سائنس پنهنجي ڪلچر ۾ شامل ڪرڻي پوندي

زمعي يونيورسٽي پر هڪ مستقل سائنس سينٽر قائم ڪيو ويو آهي. جنهن ذريعي سائنس کي ترقي ڏني ويندي
۽ ائين ئي تيزي سان سائنس ۾ ترقي ڪري رهي آهي. انهن چئلمنهنجي منهن ڏين ٿا ترقي ڪرڻي پوندي
هي آهي اهي سائنس جي ترقي ۾ يونيورسٽي سان مالي سهڪار ۽ جان ۽ مناشا پر پنهنجو حصو شامل ڪيو آهي

سنڌ يونيورسٽي ۾ سائنس ۾ ترقي ڪرڻي پوندي. سنڌ يونيورسٽي ۾ سائنس ۾ ترقي ڪرڻي پوندي.
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شخصيتي پر حڪومت ۾ ڪم ڪرڻي پوندي.
سنڌ زمعي يونيورسٽي ۾ سائنس ۾ ترقي ڪرڻي پوندي.
سنڌ يونيورسٽي ۾ سائنس ۾ ترقي ڪرڻي پوندي.
سنڌ يونيورسٽي ۾ سائنس ۾ ترقي ڪرڻي پوندي.
سنڌ يونيورسٽي ۾ سائنس ۾ ترقي ڪرڻي پوندي.



سنڌ يونيورسٽي ۾ سائنس ۾ ترقي ڪرڻي پوندي. سنڌ يونيورسٽي ۾ سائنس ۾ ترقي ڪرڻي پوندي.

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شہزاد

روزنامہ

اینٹ آباد

جلد 8 قیمت 4 روپے نمبر 36
 جنت الہدایہ 19 مارچ 2012ء تاریخ 1433ھ



پاکستان سائنس ماڈرنائزیشن کے لیے تمام سائنس دانوں کی توجہ سے مہنگے اور حالات سازگار سائنس کریم کی...

پاکستان سائنس ماڈرنائزیشن اور سائنس دانوں کی توجہ سے مہنگے اور حالات سازگار سائنس کریم کی...
 سائنس دانوں کی توجہ سے مہنگے اور حالات سازگار سائنس کریم کی...
 سائنس دانوں کی توجہ سے مہنگے اور حالات سازگار سائنس کریم کی...

46
 Scientific Technical and Cultural Centre
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Int'l Travelling Expo opens in Islamabad

Staff Report

ISLAMABAD: The International Traveling Expo 'It's all about Chemistry' opened at Allama Iqbal Open University (AIU) on Wednesday.

Pakistan Science Foundation (PSF) in collaboration with the embassy of France in Islamabad and Scientific, Technical, Industrial and Cultural Centre (CSTI), France has arranged the Expo, prepared by Centre Sciences-France, UNESCO and partners, for providing a first-hand picture of the role of chemistry in daily life to students and general public.

The Expo is aimed at increasing the interest of young people in Chemistry and to generate enthusiasm among students to take chemistry as a subject of their studies.

The expo started its journey in Pakistan from Karachi in January and after travelling through Tandojam, Khairpur, DG Khan, Multan, Lahore, Manshara, Peshawar and Swat has reached Islamabad from where it would travel to Sibi and conclude in Quetta.

Study of Chemistry is crucial in addressing challenges such as global climate change, in providing sustainable sources of clean water, food energy and in well-being of people.

The science of chemistry and its applications produce medicines, fuels, metals and virtually all other manufactured products.



ISLAMABAD: Women visit a stall during Travelling EXPO 'It's all about Chemistry' at Allama Iqbal Open University.

PSF Chairman Prof Dr Manzoor Soomro inaugurated the 3-day Expo while French Attache for Cooperation Gilles Angles, AIU Faculty Sciences Dean Prof Dr Nida Khan and AIU Chemistry Department's Chairperson Prof Dr Nafisunnisa Rashid were also present on this occasion.

The displays of the expo include Black and White Chemistry, Molecules in Action, Nature Returns with a bang, Intelligent Textiles, Dress Up in Materials that Heal Automatically, Oil bases or Water based paint, Pure air at home, What's Coming in my Saucer, Town Water or Field Water, Experts against Fraud, When Art and Science Meet, Molecular Motors, Bio-fuels for Green Driving and Responsible Farming etc.

Dr Manzoor Soomro highlighted the PSF programmes and activities for promotion of science in the country for mental development of the nation and socio-economic development of the country.

He said PSF's subsidiary organisation, Pakistan Museum of Natural History is playing an important role in imparting education on natural sciences through exhibitions.

He appreciated French embassy for its cooperation to PSF in its different programmes as well as providing opportunity of higher education to students of far flung areas of Pakistan through its scholarship programme.

French Attache for Cooperation Gilles Angles thanked PSF and AIU for hosting the International Travelling Expo in Islamabad.

BUSINESS RECORDER

Islamabad, Thursday 29 March 2012, 5 Jamadi-ul-Awwal 1433

Traveling expo on chemistry commences at AIOU

TAHIR AMIN

ISLAMABAD: The International Traveling Expo titled "It's all about Chemistry" started here at Allama Iqbal Open University (AIOU) on Wednesday aimed at increasing interest of young people in the chemistry.

Pakistan Science Foundation (PSF), the Embassy of France in Islamabad and Scientific, Technical, Industrial and Cultural Centre (CCSTI) France arranged the expo in collaboration with Centre Sciences-France and Unesco.

PSF Chairman Professor Dr Manzoor H Soomro inaugurated the three-day expo while French Attache for Cooperation Gilles Angles, AIOU faculty of Sciences Dean Professor Dr Noshad A Khan and AIOU Chemistry Department's Chairperson Professor Dr Naghmana Rashid were also present on the occasion.

Speaking on the occasion, Dr Manzoor H Soomro highlighted the PSF programmes and activities for promotion of science and socio-economic development of the country.

Dr Soomro said AIOU and PSF had common grounds, both were reaching the masses at their doorsteps for achieving their objectives of education and promotion of science and technology to bring Pakistan at par with developed countries.

The PSF Chairman said PSF and CCSTI France would continue collaboration in this regard, while MoU's with other institutions of France for promotion of science in Pakistan would be signed.

French Attache for Cooperation Gilles Angles said they were having fruitful cooperation with PSF to promote inquiry based science learning, adding they would like to further strengthen the existing ties.

Angles hoped that the expo in Islamabad would have tremendous response and results like other cities of the country.

The expo started its journey from Karachi in January and after traveling through Faisalabad, Khanpur, DG Khan, Multan, Lahore, Manshera, Peshawar and Swat has reached Islamabad from where it would travel to Sialkot and concluded in Sialkot.

The displays of the expo featured a wide range of chemistry molecules in action, nature minus with a bang, intelligent textiles, dress intelligent, dress intelligently, materials that heal automatically, oil-bases or water based paint, pure air at home, what's going on in my conscience, town water or field water, experts against fraud, chemical motors, bio-fuels for green driving and responsible farming etc.

30.4.15

THE BALOCHISTAN TIMES

Editor-in-Chief: Syed Faseeh Iqbal

ABC Certified Circulation

VI No. 94 Quetta, Jamadi ul Awal, 12 1433 A. H Thursday April 5, 2012, email: dailybtz@yahoo.com/btimesq@gmail.com

Changez Janjali Balochs, Pahstoons in Balochistan stand united

SIB: Any conspiracy to pitch Baloch and Pahstoons in Balochistan would not be allowed to succeed. Both the brotherly nations are leading peaceful life for centuries. No power on earth can separate Balochistan from Pakistan.

These views were expressed by Federal Minister for Science and Technology Changez Janjali after visiting Science Education organization of Pakistan Science Foundation at Exp. Centre here Wednesday.

Members: Pakistan Science Foundation Dr Khairul Ahmud, Nasir Hussain, Zaid, Abdul Khaliq Savai and others were also present.

Changez Janjali appealed to Pakistan Army secret agencies and other organisations to stop process of excessive with Balochistan and its people. We are peaceful people. Tribes living in the province are peaceful. I state a vision of peace is our mission. He said under a conspiracy of killing of teachers and act of terrorism have destroyed the province. Due to closure of schools, young generation is being sent to backwardness.

He appealed to all Baloch to organize for Allah's sake and seek peaceful solution of Balochistan problem to save Baloch nation from backwardness. Government's sincere steps should be reviewed for Balochistan's development and prosperity should be saved.

Answering a question, Changez Janjali said owing to had performance of previous ministers were not able to curb terrorism and other problems. Federal government was working to curb terrorism from Balochistan. He said every efforts are being made to curb terrorism. He said, "Whenever terrorism is for the welfare of the world, it is the duty of the government to take care of it. We are not going to let terrorism flourish in Balochistan and Pakistan. We are not going to let terrorism flourish in Balochistan and Pakistan."

He said, "I am confident that we will be able to curb terrorism in Balochistan and Pakistan. We are not going to let terrorism flourish in Balochistan and Pakistan."

WEDNESDAY 04 APRIL 2012

حکومت سنیسٹینا لوجی کی ترقی و فروغ کیلئے اقدامات کیلئے چنگیز جمالی

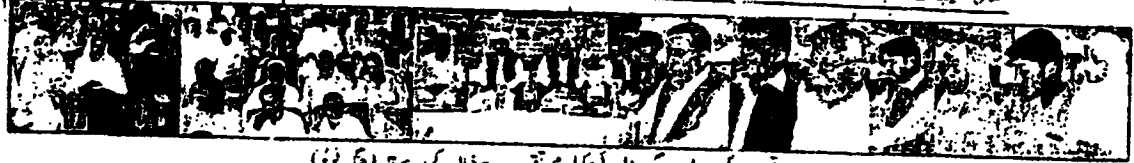
قراچی (جنگ) وفاقی وزیر سنیسٹینا لوجی چنگیز جمالی نے کہا کہ حکومت نے سنیسٹینا لوجی کی ترقی و فروغ کیلئے اقدامات کیلئے چنگیز جمالی کی قیادت میں ایک کمیٹی تشکیل دی ہے۔

جمالی نے کہا کہ حکومت نے سنیسٹینا لوجی کی ترقی و فروغ کیلئے اقدامات کیلئے چنگیز جمالی کی قیادت میں ایک کمیٹی تشکیل دی ہے۔

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وفاقی وزیر سنیسٹینا لوجی چنگیز جمالی (دو نمبر والے ہاتھوں میں) سے خطاب کر رہے ہیں (جنگ) وفاقی

The Nation

Italy to help Pakistan manage over 20m annual solid waste

ISLAMABAD - Stronger linkages between academia and business communities coupled with government support of the two friendly countries - Pakistan and Italy - will lead to capacity building of Pakistan and sustainable management of solid waste in the country.

This was stated by Minister for Science and Technology Mr Changez Khan Jamali while talking to experts and business community of the two countries at University of Rome, Tor Vergata, the other day. According to a message received here on Thursday, the minister along with Chairman Pakistan Science Foundation (PSF) Ir Manzoor Soomro and a team of Pakistan business persons is on a three-day visit to Rome. The delegation spent a busy day meeting management of the university followed by a day-long symposium on solid waste management (SWM) in Italy. The University of Rome showed its desire to enter into an agreement to work together with Ministry of Science and Technology, Government of Pakistan through Pakistan Science Foundation to undertake collaborative research studies on SWM, exchange of experts and students and business communities of the two nations. It was thus agreed in principle to work together and jointly prepare a collaborative programme for European Union funding.

Meanwhile the University of Rome - Tor Vergata and Pakistan Science Foundation will enter into a broad memorandum of understanding (MoU), the university management also shared a draft MoU with Chairman PSF.

Italy to help Pakistan manage its annual solid waste

Staff Report

ISLAMABAD: Stronger linkages between academia and business communities coupled with government support of the two friendly countries will lead to capacity building of Pakistan and sustainable management of solid waste in the country, said Pakistan's Minister for Science and Technology Mir Changez Khan Jamali while talking to experts and business community of the two countries at University of Rome, Tor Vergata the other day.

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(MoU), the university management also shared a draft MoU with PSF chairman.

The experts made presentations on various aspects of solid waste generation, its causes, categorisation, collection and management on scientific basis. It was demonstrated that all the research being done in the area in Italy was cost-based and that the governments were very much involved right from financing the research. Some of the researches being funded by the municipal governments as well as by the industry and private sector involved in manufacturing the needed machinery. Presentations by private sector were also made to the visiting delegation as to how they were benefiting from the S&T research funding of the government.

Subsequently, Pakistan delegation was given a round of the state-of-art research laboratories doing research on SWM. A number of projects in the universities of Rome are being funded by the EU.

Minister Jamali shared the new vision of Science, Technology and Innovation (STI) policy of the government of Pakistan, which he said was emphasising on the problem-oriented research in collaboration with private sector by involving the chambers of commerce and industry across Pakistan. He also invited Italian business people to invest in Pakistan and work together with dedicated researchers of Pakistan. Minister Jamali also spoke to research students of the university and answered their questions with particular reference to Pakistan's softer image.

ECONOMY WATCH

14

Pakistan
OBSERVER

Friday April 27, 2012

Italy to help Pak manage over 20m annual solid waste

STAFF REPORTER

ISLAMABAD - Stronger linkages between Academia and Business Communities coupled with government support of Pakistan and Italy will lead to capacity building of Pakistan and sustainable management of solid waste in the country.

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Continued on Page 14

Italy to help

From Page-13

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پاکستان کی روانگی سے قبل اصلاحیت: ڈاکٹر مجاہد امران

پاکستان کی اصلاحیت کے لیے ڈاکٹر مجاہد امران نے اپنی کتاب 'پاکستان کی اصلاحیت' لکھی ہے۔

روزنامہ جناح لاہور

پاکستان کی اصلاحیت کے لیے ڈاکٹر مجاہد امران نے اپنی کتاب 'پاکستان کی اصلاحیت' لکھی ہے۔

روزنامہ شرقی لاہور

پاکستان کی اصلاحیت کے لیے ڈاکٹر مجاہد امران نے اپنی کتاب 'پاکستان کی اصلاحیت' لکھی ہے۔

روزنامہ دن لاہور

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EU to promote science

ISLAMABAD, Sept 12 — Pakistan was behind in tapping the potential of one of the largest European Union (EU) funded initiatives in the field of science and technology.

"Pakistan is benefiting from only six projects in science and technology areas with EU, whereas in other countries such development initiatives come by millions if not hundreds," said EU delegation official Pierre Mavaudon.

The official who was speaking at the seminar on 'EU Seventh Framework Programme' Wednesday at Islamabad hotel, explained that the EU had thousands of projects worth 55 billion euros.

According to a statement issued by the PSI, internationally the EU was one of the major funding bodies to support numerous programmes and initiatives for research and innovation in both the developed and developing countries.

The EU announced the biggest ever set of calls for proposals (invitations to bid for funds) for research under its seventh year (2007-2013) Seventh Framework Programme (FP7).

He was surprised that researchers, research and development organisations, individual scientists and researchers and universities were not aware about the EU funding under Seventh Framework Programme (FP7).

"I was surprised to hear that a university as big as the National University of Science and Technology (NUST) had not ever heard about the Framework Programme," said Pierre Mavaudon, who stressed on awareness among individuals and officials to reap the fruits. According to the official, although Pakistan was doing a terrific job in few projects collaboration with the EU, it was far behind its neighbour India that was collaborating with the EU.

Special Correspondent

Seminar on EU funding

Scientists to get maximum benefits from latest tech

ISLAMABAD: Federal Secretary for Science and Technology, Ahsan Ali Khan, said Wednesday that a joint consortium between Pakistan and European Union (EU) might help the local scientists community to get maximum benefits from the latest technologies evolved in EU member states.

He was addressing a seminar arranged here by Pakistan Science Foundation (PSF), in collaboration with European Commission Delegation on EU Funding and Grants, Seventh Framework Programme of EU.

Addressing the audience, the Federal Secretary said EU scientists could benefit from the ones in Pakistan. He said such a collaboration would help in the areas of research, innovation, and technology.

Speaking on the occasion, Chairman, PSF, Dr. M. Iqbal, said that the country's scientific and educational institutions could benefit from the latest EU economic cooperation, business and improving the qual-

ity of life. He suggested that the EU support national and innovative projects developed in member states.

The EU suggested every proposal for funding its research and development programmes.

Following the seminar, PSF and the EU delegation will conduct a series of visits to various institutes and departments.

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ship between researchers of EU countries and Pakistan countries.

It would focus on the importance of knowledge and strengthening research capacities in developing countries.

Philippe de Lavoie de Poer, an expert from European Commission will be Resource Person of the Seminar. He will give a presentation on Concept & Objective of FP7 Program and a demonstration on Online submission of EU Projects Proposal.

Philippe is PhD in the field of Biotechnology.

PSF has invited Vice-Chancellors of the universities across Pakistan, Local Persons for EU 7th Framework Programme of EU, and other officials to attend the seminar. He said that the country's scientific and educational institutions could benefit from the latest EU economic cooperation, business and improving the quality of life. He suggested that the EU support national and innovative projects developed in member states.

Life size displays of Baluchitherium at PMNH inaugurated

Our correspondent
Islamabad

Federal Minister for Science and Technology Mir Changez Khan Jamali inaugurated the life size displays of Baluchitherium (the largest mammal on earth) and Blue Whale at Pakistan Museum of Natural History (PMNH).

The ceremony was organised by Pakistan Museum of Natural History (PMNH) a subsidiary organization of Pakistan Science Foundation (PSF) to open these entertainment and informative exhibits ahead of Eidul Azha as a gift to its visitors.

The minister said despite financial constraints, the government is making its all out efforts to promote science and technology in the country. He lauded efforts of PMNH for research, documentation, conservation, preservation and display of natural history of Pakistan.

Mir Changez Khan Jamali said the new addition to displays of the museum would be of immense interest for the students and general public. He called upon scientists to take pro-active role in making Pakistan scientifically strong, which is imperative for socio-economic

development of any country.

Guest of Honour Professor Dr. Qasim Jil said that establishment of PMNH was one of the best initiatives taken by the government for promotion of science and technology.

Earlier, PSF Chairman Professor Dr. Manzoor H. Sumro highlighted the foundation's research funding and science promotion programmes. He said PSF and its subsidiary organizations namely PMNH and Pakistan Scientific and Technological Information Centre (PSTIC) are actively engaged

in promotion of science to make Pakistan technologically self-reliant. The Chairman said "Baluchitherium" is the largest land mammal in the world that lived in Balochistan. It is an extinct species that ever lived on the earth about 25 million years ago, he said, adding it is called "Baluchitherium" because "Baluch" stands for Balochistan and "therium" for beast.

Dr. Sumro said fossils of the giant land mammal, Baluchitherium were first discovered in the Pugh Hills in 1908. The Indian and a few local

BUSINESS RECORDER

Simultaneously published in: Islamabad, Lahore & Karachi
Islamabad, Thursday 15 November 2012, 29 Zilhij 1433

World Science Day

Huge global disparity exists in science-related fields

RECORDER REPORT
ISLAMABAD: Speakers at inaugural ceremony of the World Science Day (WSD) said that developing countries generally spend well below one percent of their gross domestic product (GDP) on scientific research, whereas rich countries devote between two percent and three percent. The number of scientists per million populations in the developing countries is 10 to 30 times less than in developed countries.

They expressed these views while addressing the inaugural ceremony of the WSD celebrated here at Comstedt organised by Pakistan Science Foundation (PSF), Ministry of Science and Technology (MOST) and Unesco to mark the WSD on Wednesday.

Addressing on the occasion Federal Minister for Science and Technology, Mr Changer Khan Jamali said there was huge global disparity in terms of trained human resource in science related fields.

"Most scientific potential is still concentrated in a limited number of countries, which as a result, are holding for themselves the keys to further development especially in advanced fields," said Changer.

The Minister further said profound inequalities continued to divide peoples and the future itself sometimes seemed full of contradictions, uncertainties and doubts. Nations were slower to catch up than in science and human resources, which to improve the human condition of all but



ISLAMABAD: Federal Minister for Science and Technology, Mr Changer Khan Jamali awarding certificates to winners at a ceremony on World Science Day at COMSTEDT here on Wednesday. —APP

the prevalent inequalities deepened.

He said Science for inter-cooperation, transference on global and interdependent social, cultural and political systems.

Unesco Islamabad Director Dr Kozue Nagata said WSD this year's theme was very relevant to Pakistan, which had very good potential in terms of human resources. He said Pakistan needs a broad base of scientific knowledge and it should pay attention on promotion of budget of technology to science.

The Director said PSF was a key player in national science and technology. He said PSF was also a member of Unesco in science, Man and Biosphere Museum and other global programmes.

imbalance and increasing rise to globalisation.

He said the theme for 2012 was "Global sustainability: science, education, innovation" through inter-cooperation, transference on global and interdependent economic, social and political systems.

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science for the benefit of mankind not just war, and also threw light on some hot issues of disaster management, environmental degradation etc.

PSF Chairman Prof Dr Manzoor H Soomro said about 44 percent of Pakistan's population did not have access to health facilities, 50 percent were without safe drinking water and 66 percent were deprived of basic sanitation facilities. Pakistan was 121 in the world on health expenditure per capita and 95th in respect of percentage of population with access to safe drinking water, he maintained.

The Chairman said PSF planned to develop a future road map, which would be in line with the Planning Commission's Vision 2030 and the new Science, Technology & Innovation Policy 2012, which stress on knowledge and innovation as key drivers of future progress.

DAWN

Thursday, November 15, 2012

'Pakistan should allocate more budget for science and technology'

By Our Staff Reporter

ISLAMABAD, Nov 14 (Dawn) — The government should allocate more budget for science and technology, especially in the field of environmental degradation, said a senior government official here on Wednesday.

The official, who is a member of the National Science and Technology Council, said the government should allocate more budget for science and technology, especially in the field of environmental degradation, said a senior government official here on Wednesday.

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BUSINESS RECORDER

Simultaneously published from Islamabad, Lahore & Karachi

rw.brecorder.com

Founded by M.A. Zuberi

Islamabad

World Science Day observed

ISLAMABAD: World Science Day (WSD) observed on Saturday across the country for creating awareness about the benefits of science and technology.

This year's theme for the Day, as declared by UNESCO, is "Science and Global Sustainability, Interconnectedness, Collaboration and Transformation".

Pakistan Science Foundation (PSF) in collaboration with Ministry of Science and Technology (MoST), UNESCO and National Academy of Young Scientists (NAYS) marked the WSD by organising a special event to renew commitment for science and technology for Peace and

On this occasion, Z.A Hashmi awarded medals to scientists and researchers to acknowledge their contributions to science and technology.

The event attended by students, scientists, academicians and public at large.

Talking to AFP, Spokesperson PSF, Fatima Batool said WSD is observed all over the world on November 10 to mark the achievements of people in science and technology. --AFP



تعمیرات 29 مارچ 1433ھ 15 نومبر 2012ء 32-2069 ب

سائنس زمین نالو ترقی کیلئے جی ڈی پی کا 2 فیصد مختص کیا جائے، چنگیز بھٹائی

جی ڈی پی کا 2 فیصد مختص کرنا سائنس کی ترقی کے لیے ایک اہم اقدام ہے۔

اسلام آباد (پبلک)۔ جی ڈی پی کا 2 فیصد مختص کرنا سائنس کی ترقی کے لیے ایک اہم اقدام ہے۔ سائنس کی ترقی کے لیے جی ڈی پی کا 2 فیصد مختص کرنا سائنس کی ترقی کے لیے ایک اہم اقدام ہے۔ سائنس کی ترقی کے لیے جی ڈی پی کا 2 فیصد مختص کرنا سائنس کی ترقی کے لیے ایک اہم اقدام ہے۔

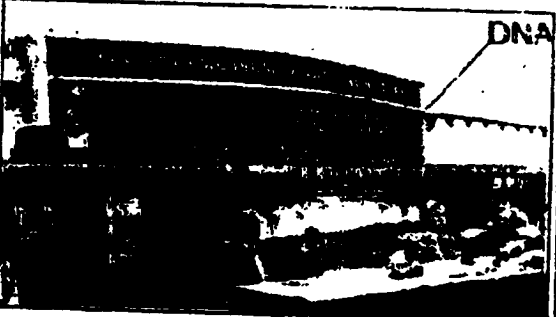
15 چنگیز بھٹائی

غائب کر کے رکھے گئے۔ اس کوئی پرواہی ہو رہی ہے۔ سائنس کی ترقی کے لیے جی ڈی پی کا 2 فیصد مختص کرنا سائنس کی ترقی کے لیے ایک اہم اقدام ہے۔ سائنس کی ترقی کے لیے جی ڈی پی کا 2 فیصد مختص کرنا سائنس کی ترقی کے لیے ایک اہم اقدام ہے۔

میرٹھرواچ 27

ڈیٹا کی غلط پیمائش کی وجہ سے اسلام آباد کی ٹیکسٹوئل مینوفیکچرنگ کمپنی کی ٹیکسٹوئل مینوفیکچرنگ کمپنی

اسٹریٹجک ایئر کونٹریکٹ کی قیمت میں اضافہ کی خبریں سامنے آئی ہیں۔ اس کی وجہ سے اسٹریٹجک ایئر کونٹریکٹ کی قیمت میں اضافہ کی خبریں سامنے آئی ہیں۔ اس کی وجہ سے اسٹریٹجک ایئر کونٹریکٹ کی قیمت میں اضافہ کی خبریں سامنے آئی ہیں۔



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کے بارے میں اس وقت بھی اسٹریٹجک ایئر کونٹریکٹ کی قیمت میں اضافہ کی خبریں سامنے آئی ہیں۔ اس کی وجہ سے اسٹریٹجک ایئر کونٹریکٹ کی قیمت میں اضافہ کی خبریں سامنے آئی ہیں۔ اس کی وجہ سے اسٹریٹجک ایئر کونٹریکٹ کی قیمت میں اضافہ کی خبریں سامنے آئی ہیں۔

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Pakistan OBSERVER

Thursday

March 29, 2012



ISLAMABAD: Visitors at a stall during 'Traveling EXPO, It's all about Chemistry' at Allama Iqbal Open University.

Int'l travelling expo on Chemistry opens at AIU

ISLAMABAD— The International Traveling Expo "It's all about Chemistry" opened here at Allama Iqbal Open University (AIU) on Wednesday.

Pakistan Science Foundation (PSF) in collaboration with the Embassy of France in Islamabad and Scientific, Technical, Industrial and Cultural Centre (CSTIC), France has arranged this Expo, prepared by Centre Sciences France, UNESCO and partners, for providing a full and picture of the role of Chemistry in our daily life to students

and general public.

The Expo is aimed at increasing the interest of young people in chemistry and to create enthusiasm among students to take chemistry as a subject of their studies. The expo started at noon in Pakistan, Karachi, Islamabad and after travelling through Kandahar, Chahap, Doha, Madras, Lahore, Marwar, Peshawar and by at night it will travel to Saidu and continue to Dera

Ismael Khan exhibition

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in science which makes understand our world and life easier. It is scientific study of matter, its properties, interaction with other matter and energy.

Science of Chemistry is critical to some challenges such as climate change, in providing sustainable sources of energy, food, energy and health of all people.

Science of chemistry, applications, products, fact, in lab and in other manufactured APP.

مسلم نشاۃ ثانیہ کی آواز

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اسلام آباد

ایڈیٹر انچیف: غلام اکبر

روزنامہ

لاہور پشاور سے بھی شائع ہوتا ہے

قیمت 8 روپے

شمارہ نمبر 150 اور نمبر

جلد 18، مکمل 21، بیچ الاول 1433ھ، 14 فروری 2012ء، 4 اپریل 2068 ب شمارہ 94



ماسنس فاؤنڈیشن کی ایکسپوزیشن میں خوبصورت ڈرامائی سٹیج پیش کیا گیا اور مظاہرین کو سٹیج پر بھیج کر پیش کیا

ماسنس فاؤنڈیشن کے زیر اہتمام یکم ستمبر پر انٹرنیشنل کانفرنس طلباء میں شہوراجا کرکٹی

فرانس میں ماسنس تنظیم پر تعمیری لیبل سے پوجان شروع کر دی جاتی ہے، فرانس میں

پاکستان ماسنس فاؤنڈیشن سکولوں اور یونیورسٹیوں میں ماسنس کے ذریعے اقدامات کر رہی ہے، تقریب میں ۱۰۰۰

اسلام آباد (الاکھبر نیوز) پاکستان ماسنس فاؤنڈیشن تیار کیا گیا ہے۔ اس کی بنیاد سے ماسنس کے بارے میں بڑھانے اور اس کی ترقی کے لیے کام کیا جا رہا ہے۔ ماسنس کے ذریعے پاکستان میں شہوراجا کرکٹی اور دیگر کھیلوں کی ترقی کے لیے کام کیا جا رہا ہے۔ فرانس میں ماسنس تنظیم پر تعمیری لیبل سے پوجان شروع کر دی جاتی ہے، فرانس میں پاکستان ماسنس فاؤنڈیشن سکولوں اور یونیورسٹیوں میں ماسنس کے ذریعے اقدامات کر رہی ہے، تقریب میں ۱۰۰۰ طلباء اور اساتذہ کی شرکت ہوئی۔ ماسنس کے ذریعے پاکستان میں شہوراجا کرکٹی اور دیگر کھیلوں کی ترقی کے لیے کام کیا جا رہا ہے۔ فرانس میں ماسنس تنظیم پر تعمیری لیبل سے پوجان شروع کر دی جاتی ہے، فرانس میں پاکستان ماسنس فاؤنڈیشن سکولوں اور یونیورسٹیوں میں ماسنس کے ذریعے اقدامات کر رہی ہے، تقریب میں ۱۰۰۰

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جلد 22، شمارہ 15، بروز 2012ء مطابق 22 ربيع الاول 1433ھ مطابق 192، فیسٹ 12، پبلی

Wednesday 15 February 2012

عمر صورت و سائنسی نمائش شروع، شاگردوں جي پرورش سرڪا

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2.0 PMNH Photo Gallery



Secretary, Ministry of Science and Technology, Mr. Akhlaque Ahmed Tarar addressing the inaugural session of the 33rd Pakistan Congress of Zoology at Jinnah Convention Centre, Islamabad



Students participating in Poster competition on Biodiversity Day at PMNH



A view of the stalls of medicinal and aromatic plants and their products at PMNH



Life size model of Baluchitherium, the largest land mammal in the world, at PMNH



Chinese Botanists consulting Higher Plants Herbarium of PMNH



Visit of Indian S & T and Education Delegations to PMNH

3.0 PASTIC Photo Gallery



Glimpses of PASTIC Services Stalls at Islamabad, Faisalabad, Peshawar, Karachi, Quetta & Muzaffarabad.



Prof. Dr. Masoom Yasinzai, Vice Chancellor, QAU, Dr. Manzoor H. Soomro, Chairman, PSF at Inauguration of Training workshop on "Total Library Solution in Present Era" organized at PASTIC National Center, from 11-15 Feb., 2013



Training workshop on "Library and Information Management" organized at National Institute of Historical and Cultural Research (NIHCR), Quaid-i-Azam University Campus, Islamabad



Dr. Muhammad Akram Shaikh, Director General, PASTIC, presenting souvenir to President FCCI at the Seminar on Intellectual Property Rights



Mr. Abid H. K Shirwani, Chief Executive Officer, Institute of Research Promotion, Presented souvenir to Dr. Muhammad Akram Shaikh, Director General, PASTIC.



PASTIC Services Awareness Seminar at Bahria University, Islamabad in May 2013.



Seminar on Access to Global Information Resource through PASTIC Information Services organized at University of Azad Jammu & Kashmir, Muzaffarabad on 8th May, 2013.

VI. AUDITOR'S REPORTS

**1.0 PAKISTAN SCIENCE FOUNDATION
Financial Statements**

ILYAS SAEED & CO.

CHARTERED ACCOUNTANTS

OFFICE # 26, 2ND FLOOR, ROSE PLAZA, I - 8 MARKAZ, ISLAMABAD PH. 051-4102626-27

INDEPENDENT AUDITORS' REPORT TO THE BOARD OF TRUSTEES

Report on the Financial Statements

We have audited the accompanying financial statements of Pakistan Science Foundation, which comprise the statement of financial position as at June 30, 2013 and the related receipt and expenditure statement, statement of cash flows and statement of changes in accumulated fund together with the summary of significant accounting policies and other explanatory notes forming part thereof for the year then ended.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with the approved international financial reporting standards as applicable in Pakistan and the requirements of the Pakistan Science Foundation Act, 1973 and for such internal control as management determines necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with International Standards on Auditing as applicable in Pakistan. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal controls. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of Pakistan Science Foundation as of June 30, 2013 and its financial performance, its cash flows and changes in general fund for the year then ended in accordance with the approved international financial reporting standards as applicable in Pakistan and the requirements of the Pakistan Science Foundation Act, 1973.

The financial statements for the year ended June 30, 2012 were audited by another firm of chartered accountants, who have issued an unqualified report dated 01-11-2012.

ISLAMABAD: 10/09/2013

Ilyas Saeed & Co
CHARTERED ACCOUNTANTS
Engagement Partner: Ilyas Saeed, FCA
ILYAS SAEED & CO.
CHARTERED ACCOUNTANTS
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Islamabad.

**PAKISTAN SCIENCE FOUNDATION
STATEMENT OF FINANCIAL POSITION
AS AT JUNE 30, 2013**

FUNDS AND LIABILITIES	NOTE	2013 <u>Rupees</u>	2012 <u>Rupees</u>
FUNDS			
General fund	3	20,437,979	22,210,164
Development fund	4	8,344,960	9,883,097
Fair fund	5	-	-
ECO science foundation fund	6	-	1,550
Miscellaneous funds	7	2,033,450	2,423,745
		30,816,389	34,518,556
NON-CURRENT LIABILITIES			
Research support grant - Contra	8	145,708,659	156,417,975
Long term security deposits	9	27,300	27,300
		145,735,959	156,445,275
Total Funds & Liabilities		<u>176,552,348</u>	<u>190,963,831</u>
ASSETS			
NON-CURRENT ASSETS			
Property, plant and equipment	10	18,189,672	19,800,255
Long term security deposits	11	1,917,195	1,917,195
Research projects in progress - Contra	8	145,708,659	156,417,975
		165,815,526	178,135,425
FUNDS INVESTMENTS			
Development Fund	4	8,344,960	9,883,097
Fair fund	5	-	-
ECO science foundation fund	6	-	1,550
Miscellaneous fund	7	2,033,450	2,423,745
		10,378,410	12,308,392
CURRENT ASSETS			
Advances	12	323,997	485,599
Cash and bank balances	13	34,415	34,415
		358,412	520,014
Total Assets		<u>176,552,348</u>	<u>190,963,831</u>

The annexed notes from 1 to 18 form an integral part of these financial statements.



TRUSTEE



CHAIRMAN

**PAKISTAN SCIENCE FOUNDATION
INCOME AND EXPENDITURE STATEMENT
FOR THE YEAR ENDED JUNE 30, 2013**

	NOTE	2013 <u>Rupees</u>	2012 <u>Rupees</u>
INCOME			
Grant from federal government	14	158,253,000	153,001,000
		158,253,000	153,001,000
EXPENDITURES			
Statutory scientific functions	15	40,550,000	55,075,480
Administrative expenses	16	119,384,900	99,846,891
Prior year adjustment - depreciation	10	90,285	-
Written down value of asset disposed off		-	13,074
Advances written off		-	90,817
		160,025,185	155,026,262
(Deficit) for the year		<u>(1,772,185)</u>	<u>(2,025,262)</u>

The annexed notes from 1 to 18 form an integral part of these financial statements.



TRUSTEE



CHAIRMAN


**PAKISTAN SCIENCE FOUNDATION
STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED JUNE 30, 2013**

	2013 <u>(Rupees)</u>	2012 <u>(Rupees)</u>
CASH FLOW FROM OPERATING ACTIVITIES		
Deficit for the year	(1,772,185)	(2,025,262)
Adjustments for non cash charges:		
Depreciation	1,610,583	1,675,452
Written down value of disposed asset (vehicle)	-	13,074
Advances Written off	-	90,817
Surplus/(deficit) before working capital changes	<u>(161,602)</u>	<u>(245,919)</u>
Working capital changes (Increase) / Decrease in current assets:		
Advances	<u>161,602</u>	<u>218,619</u>
Net working capital charges	<u>161,602</u>	<u>218,619</u>
Net cash generated from operating activities	-	(27,300)
CASH FLOW FROM INVESTING ACTIVITIES	<u>-</u>	<u>-</u>
Net cash used in investing activities	-	-
CASH FLOW FROM FINANCING ACTIVITIES		
Long term security deposits	<u>-</u>	<u>(32,200)</u>
Net cash from financing activities	-	(32,200)
NET DECREASE IN CASH AND CASH EQUIVALENTS	-	(59,500)
CASH AND CASH EQUIVALENTS AT BEGINNING OF THE YEAR	<u>34,415</u>	<u>93,915</u>
CASH AND CASH EQUIVALENTS AT END OF THE YEAR	<u>34,415</u>	<u>34,415</u>

The annexed notes from 1 to 18 form an integral part of these financial statements.



TRUSTEE



CHAIRMAN


**PAKISTAN SCIENCE FOUNDATION
STATEMENT OF CHANGES IN GENERAL FUND
FOR THE YEAR ENDED JUNE 30, 2013**

PARTICULARS	NOTE	2013 <u>Rupees</u>	2012 <u>Rupees</u>
Opening balance		22,210,164	24,235,426
Deficit for the year		(1,772,185)	(2,025,262)
Closing balance		<u>20,437,979</u>	<u>22,210,164</u>

The annexed notes from 1 to 18 form an integral part of these financial statements.



TRUSTEE



CHAIRMAN

**PAKISTAN SCIENCE FOUNDATION
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED JUNE 30, 2013**

1. THE FOUNDATION AND ITS OPERATIONS

Pakistan Science Foundation is a statutory organization established under Pakistan Science Foundation Act 1973 on February 02, 1973. The main objects are to promote and finance scientific activities having a bearing on the socio-economic needs of the country.

2. SIGNIFICANT ACCOUNTING POLICIES

The principal accounting policies which have been adopted in the preparation of these financial statements are summarized as under.

2.1 ACCOUNTING CONVENTION

These financial statements have been prepared under the historical cost convention.

2.2 BASIS OF PREPARATION

Statement of Compliance

These financial statements have been prepared in accordance with the approved accounting standards as applicable in Pakistan. Approved Accounting Standards comprise of International Financial Reporting Standards (IFRSs) issued by the International Accounting Standards Board (IASB) as applicable in Pakistan and the requirements of the Pakistan Science Foundation Act, 1973. In case, the requirements differ, the provisions or directives of the Pakistan Science Foundation Act, 1973, shall prevail.

2.3 PROPERTY, PLANT AND EQUIPMENT

These are stated at cost less accumulated depreciation except leasehold land which is stated at cost. Cost of tangible assets consists of historical cost and other directly attributable costs of bringing the asset to working condition. Depreciation is charged on reducing balance method at the rates specified in the relevant notes. Depreciation on additions is charged from the month in which the asset is put to use, whereas depreciation on disposals is charged upto the month the asset remained in use.

2.4 INTANGIBLE ASSETS

These are stated at cost less accumulated amortization. Amortization is charged on reducing balance method from the year of commercial use at the annual rate of 10%. Gain or loss, if any, on disposal of intangibles are included in the current income.

2.5 REVENUE RECOGNITION

Grant is recognized on actual receipt basis from the GoP.

2.6 RESTRICTED FUNDS

Funds received directly as grants for development or received as contribution from the donor for specific functions are classified as restricted funds. Restricted funds representing direct grants are classified as grant funds. Expenses incurred out of grant funds are reflected in the notes to the financial statements.

2.7 EXPENDITURE

Expenses are recognized on actual payment basis except non cash expenses such as depreciation and amortization which is charged on accrual basis. Expenses incurred out of restricted funds or grant funds are adjusted against the outstanding balance without being routed through the income & expenditure account.

PAKISTAN SCIENCE FOUNDATION
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED JUNE 30, 2013

	2013 Rupees	2012 Rupees
3. GENERAL FUND		
Opening balance	22,210,164	24,235,426
(Deficit) for the year	(1,772,185)	(2,025,262)
	<u>20,437,979</u>	<u>22,210,164</u>
4. DEVELOPMENT FUND		
Opening balance	9,883,097	11,742,634
Grants received during the year for Participation of scientists and technologists in conferences	4,500,000	3,000,000
	14,383,097	14,742,634
Expenditure incurred during the year	4.1 (6,038,137)	(4,859,537)
Closing balance	<u>8,344,960</u>	<u>9,883,097</u>
REPRESENTED BY:		
Property, Plant & Equipment	4.2 7,748,090	9,225,477
Intangibles	4.3 546,750	607,500
Cash at Bank	50,120	50,120
	<u>8,344,960</u>	<u>9,883,097</u>

4.1 EXPENDITURE INCURRED DURING THE YEAR FOR:

Participation of scientists and technologists in conferences		
TA / DA and evaluation fee	2,940,320	2,802,535
Registration fee	820,463	417,426
Postage and stationery	19,554	30,000
Depreciation	4.2 1,477,387	1,792,037
Amortization	4.3 60,750	67,500
Miscellaneous	178,448	31,823
Living expenses	541,215	518,216
	<u>6,038,137</u>	<u>4,859,537</u>

4.2. PROPERTY, PLANT & EQUIPMENT

PARTICULARS	C O S T			R A T E %	D E P R E C I A T I O N			W D V	
	AS AT JULY 01, 2012	ADDITIONS / (DELETIONS)	AS AT JUNE 30, 2013		AS AT JULY 01, 2012	ADJUSTMENT FOR THE YEAR	AS AT JUNE 30, 2013	AS AT JUNE 30, 2011	
	DEVELOPMENT PROJECTS								
Motor vehicles	6,494,293	-	6,494,293	20	5,696,519	-	1,99,555	5,856,073	638,220
Office equipments	24,950,380	-	24,950,380	15	17,187,676	-	1,164,406	18,152,082	6,598,298
Computer equipments	2,571,218	-	2,571,218	13	2,150,750	-	18,754	2,289,505	281,713
Furniture and fixtures	381,007	-	381,007	6	137,376	-	14,672	152,048	228,959
TOTAL 2013 (Rs.)	34,397,798	-	34,397,798		25,172,321	-	1,417,387	26,689,718	7,348,189

PARTICULARS	C O S T			R A T E %	D E P R E C I A T I O N			W D V	
	AS AT JULY 01, 2011	ADDITIONS / (DELETIONS)	AS AT JUNE 30, 2012		AS AT JULY 01, 2011	ADJUSTMENT FOR THE YEAR	AS AT JUNE 30, 2012	AS AT JUNE 30, 2011	
	DEVELOPMENT PROJECTS								
Motor vehicles	6,494,293	-	6,494,293	20	5,497,075	-	199,444	5,496,519	797,774
Office equipments	24,950,380	-	24,950,380	15	15,817,787	-	1,469,899	17,187,676	7,762,704
Computer equipments	2,571,218	-	2,571,218	13	1,443,654	-	29,754	2,147,750	121,204
Furniture and fixtures	381,007	-	381,007	6	121,768	-	15,664	137,432	243,575
TOTAL 2012 (Rs.)	34,397,798	-	34,397,798		21,380,284	-	1,704,761	22,675,524	8,225,257

PAKISTAN SCIENCE FOUNDATION
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED JUNE 30, 2013

2013
Rupees

2012
Rupees

4.3. INTANGIBLE ASSETS

PARTICULARS	C O S T			R E S I D U E	D E P R E C I A T I O N			W D V	
	AS AT JULY 01 2012	ADDITIONS (DEDUCTIONS)	AS AT JUNE 30 2013		AS AT JULY 01 2012	ADJUSTMENT FOR THE YEAR	AS AT JUNE 30 2013	AS AT JUNE 30 2012	AS AT JUNE 30 2013
Software	750,000	-	750,000	142,500	-	67,750	20,250	54,750	
TOTAL 2013 (Rs.)	750,000	-	750,000	142,500	-	67,750	20,250	54,750	
TOTAL 2012 (Rs.)	750,000	-	750,000	71,000	-	67,500	142,940	607,500	

5. FAIR FUND

Opening balance	-	4,829
Transfer to miscellaneous funds	-	(4,829)
Closing balance	-	-

6. ECO SCIENCE FOUNDATION FUND

Opening balance	1,550	1,550
Transfer to ECOSF	(1,550)	-
Closing balance	-	1,550

7. MISCELLANEOUS FUNDS

Closing balance		
Endowment	576,026	329,426
PSF Mutual Collaboration Activities	916,048	853,865
UNESCO	541,376	1,240,454
	2,033,450	2,423,745

REPRESENTED BY:

Cash at bank	2,036,450	2,426,745
Lender money payable	(3,000)	(3,000)
	2,033,450	2,423,745

8. RESEARCH PROJECTS IN PROGRESS

Opening balance		156,417,975	141,348,376
Add Disbursements during the year	8.1	18,502,273	26,110,239
		174,920,248	167,458,615
Less: Projects completed during the year	8.2	27,164,763	7,245,767
Expenses for projects	8.3	2,046,826	3,794,873
		29,211,589	11,040,640
		145,708,659	156,417,975

8.1 DISBURSEMENTS DURING THE YEAR

Institutional support	-	2,306,740
Biotech: sciences	695,549	3,117,350
Evaluation fee	644,000	593,000
Physical sciences	458,797	683,326
Chemical sciences	2,263,687	295,000
Biological sciences	4,213,302	7,235,188
Earth sciences	184,000	746,402
Environmental sciences	217,539	815,636
Engineering sciences	76,787	534,645
Agricultural sciences	1,767,173	3,740,000
Medical sciences	2,745,892	2,367,241
Math and Computer science	313,294	461,200
Board/Committee meetings	1,402,826	895,133
Utilization of results of research and transfer of technology and pilot plant study	3,516,227	1,819,379
	18,502,273	26,110,239

PAKISTAN SCIENCE FOUNDATION
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED JUNE 30, 2013

2013
Rupees

2012
Rupees

8.2 PROJECTS COMPLETED DURING THE YEAR

Agricultural sciences	-	1,041,000
Chemical sciences	1,103,358	-
Environmental sciences	4,281,754	2,970,000
Biological sciences	2,554,785	1,040,091
Medical sciences	2,386,061	2,185,670
Earth sciences	1,997,023	-
Physics	2,372,214	-
Utilization of results of research and transfer of technology and pilot plant study	12,469,568	-
	<u>27,164,763</u>	<u>7,245,767</u>

8.3 EXPENSES FOR PROJECTS

Institutional support	-	2,306,740
Board/Committee meetings	1,402,826	895,133
Evaluation fee	619,000	593,000
	<u>2,021,826</u>	<u>3,794,873</u>

9. LONG TERM SECURITY DEPOSITS

Zargoon Traders	750	750
Mak Traders	22,000	22,000
EGS Limited	1,550	1,550
PSF Camcon	3,000	3,000
	<u>27,300</u>	<u>27,300</u>

10. PROPERTY, PLANT AND EQUIPMENT

PARTICULARS	2013				R A T E %	DEPRECIATION			WDV AS AT JUNE 30 2013
	C O S T		A S A T J U N E 3 0 2 0 1 3	A S A T J U L Y 0 1, 2 0 1 2		A D J U S T M E N T	F O R T H E Y E A R	A S A T J U N E 3 0, 2 0 1 3	
	A S A T J U L Y 0 1, 2 0 1 2	A D D I T I O N S/ (D E L E T I O N S)							
Land - Leasehold	3,713,418	-	3,713,418	-	-	-	-	3,713,418	
Building	19,484,540	-	19,484,540	5	11,337,637	407,344	11,745,001	7,739,539	
Motor vehicles	9,770,952	-	9,770,952	20	6,821,260	90,285	571,882	2,287,526	
Office equipment	5,508,012	-	5,508,012	15	4,421,293	163,008	4,584,301	923,711	
Science equipment	6,558,040	-	6,558,040	15	4,866,636	253,711	5,120,347	1,437,693	
Furniture and fixtures	3,039,314	-	3,039,314	6	1,676,435	81,773	1,758,208	1,281,106	
Air conditioners	194,974	-	194,974	20	194,185	158	194,343	631	
Library books and films	1,794,815	-	1,794,815	5	946,344	42,424	988,768	806,047	
TOTAL 2013 (Rs.)	58,864,065	-	58,864,065		20,263,810	90,285	1,520,298	31,874,293	18,189,672

10.1. The adjustment represents less depreciation charged during the previous year

PARTICULARS	2012				R A T E %	DEPRECIATION			WDV AS AT JUNE 30, 2012
	C O S T		A S A T J U N E 3 0, 2 0 1 2	A S A T J U L Y 0 1, 2 0 1 1		A D J U S T M E N T	F O R T H E Y E A R	A S A T J U N E 3 0, 2 0 1 2	
	A S A T J U L Y 0 1, 2 0 1 1	A D D I T I O N S/ (D E L E T I O N S)							
Land - Leasehold	3,713,418	-	3,713,418	-	-	-	-	3,713,418	
Building	19,484,540	-	19,484,540	5	10,908,874	428,783	11,337,657	8,146,883	
Motor vehicles	10,215,452	(464,500)	9,750,952	20	6,648,178	(451,425)	6,216,753	2,949,692	
Office equipment	5,508,012	-	5,508,012	15	4,227,514	163,008	4,390,522	1,117,490	
Science equipment	6,558,040	-	6,558,040	15	4,516,133	253,711	4,769,844	1,788,196	
Furniture and fixtures	3,039,314	-	3,039,314	6	1,589,443	81,773	1,671,216	1,362,093	
Air conditioners	194,974	-	194,974	20	191,988	157	192,145	740	
Library books and films	1,794,815	-	1,794,815	5	901,688	42,424	944,112	845,471	
TOTAL 2012 (Rs.)	50,528,565	(464,500)	50,064,065		29,019,783	(451,425)	1,671,452	30,263,810	19,800,551

PAKISTAN SCIENCE FOUNDATION
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED JUNE 30, 2013

	2013 Rupees	2012 Rupees
11. LONG TERM SECURITY DEPOSITS		
Electricity	1,472,195	1,472,195
Gas	145,000	145,000
CMH Rawalpindi	300,000	300,000
	<u>1,917,195</u>	<u>1,917,195</u>
12. ADVANCES		
Advance to staff for vehicles	323,997	485,599
	<u>323,997</u>	<u>485,599</u>
13. CASH AND BANK BALANCES		
Cash in hand	34,415	34,415
	<u>34,415</u>	<u>34,415</u>
14. GRANT FROM FEDERAL GOVERNMENT		
Grant received	158,253,000	153,001,000
	<u>158,253,000</u>	<u>153,001,000</u>
15. STATUTORY SCIENTIFIC FUNCTIONS		
Research support grant	8.1 18,502,273	26,110,239
Exchange of visits of scientists & technologists	-	925,490
Scientific societies and professional bodies	975,282	2,325,000
Scientific conferences, meetings and seminars	3,460,610	4,684,304
Operation of science caravan	4,821,924	4,283,245
Science promotion activities	8,362,465	10,674,538
International liaison	-	510,441
Science fair	1,475,732	2,023,092
Awards, prizes and fellowship	1,275,000	901,000
Innovations & Inventions	1,493,594	325,000
Special scientific survey & collection of statistics	108,120	-
Subscription to international organization and UNESCO coupons	75,000	89,621
Science centre herbaria planetarium	-	2,223,510
	<u>40,550,000</u>	<u>55,075,480</u>
15.1. Research Support Grant includes Rs 25,000/-, Scientific Conferences, Meetings & Seminars includes Rs 100,000/- and Science Promotion Activities includes Rs 72,000/- for which cheques were issued but not presented by the recipients upto June 30, 2013 Resultantly, the said cheques have been lapsed and the amounts stand transferred to GoP		
16. ADMINISTRATIVE EXPENSES		
Salaries and other benefits	95,990,778	78,168,354
Traveling	493,919	499,728
House rent facility	13,613,447	12,016,991
Rent, Rates & Taxes	102,461	120,481
Electricity, Gas & Water	1,228,999	1,193,488
Communication	1,817,529	1,307,720
Printing and stationery	442,558	399,940
Vehicle running and maintenance	2,084,338	2,212,925
Newspapers and magazines	107,359	97,909
Liveries and uniforms	75,000	15,000
Entertainment	166,684	192,618
Repair and maintenance	664,784	1,009,445
Audit fee	52,000	51,000
Legal charges	135,000	175,000
Staff welfare fund	602,515	276,239
Advertisement and publicity	99,427	200,000
Miscellaneous	187,884	214,596.0
Depreciation	10 1,520,298	1,675,452
	<u>119,384,900</u>	<u>99,846,891</u>

PAKISTAN SCIENCE FOUNDATION
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED JUNE 30, 2013

2013
Rupees

2012
Rupees

17. DATE OF AUTHORIZATION FOR ISSUE

These financial statements have been authorized for issue by the Board of Trustees on 10/09/2013

18. FIGURES

In these financial statements figures have been rounded off to the nearest rupee

See



TRUSTEE



CHAIRMAN

2.0 PAKISTAN MUSEUM OF NATURAL HISTORY
Financial Statements

ILYAS SAEED & Co.

CHARTERED ACCOUNTANTS

OFFICE # 26, 2ND FLOOR ROSE PLAZA, I- 8 MARKAZ, ISLAMABAD PH. 051-4102626-27

INDEPENDENT AUDITORS' REPORT TO THE MANAGEMENT

Report on the Financial Statements

We have audited the accompanying financial statements of Pakistan Museum of Natural History, which comprise the statement of financial position as at June 30, 2013 and the related income and expenditure statement, statement of cash flows and statement of changes in accumulated fund together with the summary of significant accounting policies and other explanatory notes forming part thereof for the year then ended.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with the approved international financial reporting standards as applicable in Pakistan and the requirements of the Pakistan Science Foundation Act, 1973 and for such internal control as management determines necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with International Standards on Auditing as applicable in Pakistan. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal controls. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of Pakistan Museum of Natural History as of June 30, 2013 and its financial performance, its cash flows and changes in general fund for the year then ended in accordance with the approved international financial reporting standards as applicable in Pakistan and the requirements of the Pakistan Science Foundation Act, 1973.

The financial statements for the year ended June 30, 2012 were audited by another firm of chartered accountants, who have issued an unqualified report dated 10-09-2012.

ISLAMABAD: 12/09/2013.

Illyas


Illyas Saeed & Co.
CHARTERED ACCOUNTANTS
Engagement Partner: Imran Ilyas, FCA


Head Office: A-1, Sea Breeze Homes, Sher Shah Block, (Bakhat Market), New Garden Town, Lahore
Phones: 011-5861852, 5868849 Fax: 02-42-5856145 Email: illyas@hotmail.com

PAKISTAN MUSEUM OF NATURAL HISTORY
STATEMENT OF FINANCIAL POSITION
AS AT JUNE 30, 2013

FUNDS AND LIABILITIES	NOTE	2013 (Rupees)	Re-stated 2012 (Rupees)
ACCUMULATED FUNDS	3	117,457,469	130,309,692
		<u>117,457,469</u>	<u>130,309,692</u>
ASSETS			
NON-CURRENT ASSETS			
Property, plant and equipment - Development	4	103,577,865	115,812,951
Property, plant and equipment - Non-Development	5	10,316,376	13,496,391
		113,894,241	129,309,341
Long term deposits - PIMS	6	250,000	250,000
CURRENT ASSETS			
Receivables		275,000	673,751
Cash & bank balances	7	3,038,228	76,600
		<u>117,457,469</u>	<u>130,309,692</u>

The annexed notes from 1 to 16 form an integral part of these financial statements.



 (Assistant Director)
 Pakistan Museum of Natural History
 Islamabad


 DIRECTOR GENERAL
 Pakistan Museum of Natural History
 Garden Avenue, Islamabad

**PAKISTAN MUSEUM OF NATURAL HISTORY
INCOME AND EXPENDITURE STATEMENT
FOR THE YEAR ENDED JUNE 30, 2013**

PARTICULARS	NOTE	2013	Re-stated
		(Rupees)	2012 (Rupees)
INCOME			
Grant from Govt - Non-Development	8	86,695,000	82,407,000
Miscellaneous account	9	4,464,452	220,080
		91,159,452	82,727,080
EXPENDITURE			
Non-Development	10	89,860,982	78,550,204
Development	11	12,168,008	11,440,402
Miscellaneous Account	12	1,901,186	223,210
		103,930,176	93,213,816
(DEFICIT)/SURPLUS TRANSFERRED TO GENERAL FUND		(12,770,724)	(10,486,736)

The annexed notes from 1 to 16 form an integral part of these financial statements.


Assistant Secretary (Accounts)
Pakistan Museum of Natural History
Islamabad

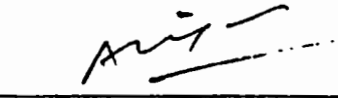

DIRECTOR GENERAL

**PAKISTAN MUSEUM OF NATURAL HISTORY
STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED JUNE 30, 2013**

	2013	Re-stated
	(Rupees)	2012
		(Rupees)
CASH FLOWS FROM OPERATING ACTIVITIES		
(Deficit) for the year	(12,770,724)	(10,486,736)
Adjustments for non-cash changes and other items:		
Depreciation	14,589,478	16,648,332
Loss / (Gain) on sale of fixed assets	753,122	(6,526)
Cash generated from operations before working capital changes:	2,571,877	6,155,071
Working capital changes		
(Increase) / Decrease in receivables	398,751	(673,751)
Net working capital changes	398,751	(673,751)
Net cash generated from operating activities	2,970,628	5,481,320
CASH FLOWS FROM INVESTING ACTIVITIES		
Capital expenditure on Property, plant and equipment	(9,000)	(6,064,727)
Proceeds from sale of Property, plant and equipment	81,500	32,629
Net cash used in investing activities	72,500	(6,032,098)
CASH FLOWS FROM FINANCING ACTIVITIES		
Transfer to government of Pakistan	(81,500)	(32,629)
Net cash (used in) from financing activities	(81,500)	(32,629)
NET INCREASE IN CASH AND CASH EQUIVALENTS	2,961,628	(583,407)
CASH AND CASH EQUIVALENTS AT BEGINNING OF THE YEAR	76,600	660,007
CASH AND CASH EQUIVALENTS AT END OF THE YEAR	3,038,228	76,600

The annexed notes from 1 to 16 form an integral part of these financial statements. *ho*


ASSISTANT DIRECTOR (Accounts)
 Pakistan Museum of Natural History
 Islamabad



DIRECTOR
 Pakistan Museum of Natural History
 Garden Avenue, Islamabad

**PAKISTAN MUSEUM OF NATURAL HISTORY
STATEMENT OF CHANGES IN GENERAL FUND
FOR THE YEAR ENDED JUNE 30, 2013**

PARTICULARS	GENERAL FUND Rupees	TOTAL Rupees
Opening balance as at June 30, 2011 - as previously reported	162,064,914	162,064,914
Net effect of change in accounting policy - note 13	(21,235,857)	(21,235,857)
Closing Balance as at June 30, 2011 - re-stated	<u>140,829,057</u>	<u>140,829,057</u>
Net effect of change in accounting policy - note 13	(16,641,807)	(16,641,807)
Net effect of correction of error - note 14	673,751	673,751
Transferred to Govt	(32,629)	(32,629)
Surplus for the year - as previously reported	5,481,320	5,481,320
Closing Balance as at June 30, 2012 - re-stated	<u>130,309,692</u>	<u>130,309,692</u>
Transferred to Govt	(81,500)	(81,500)
(Deficit) for the year	(12,770,724)	(12,770,724)
Closing Balance as at June 30, 2013	<u>117,457,469</u>	<u>117,457,469</u>

The annexed notes from 1 to 16 form an integral part of these financial statements.


ASSISTANT DIRECTOR
 Pakistan Museum of Natural History
 Islamabad


DIRECTOR GENERAL
 Pakistan Museum of Natural History
 Islamabad

**PAKISTAN MUSEUM OF NATURAL HISTORY
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED JUNE 30, 2013**

1. BACKGROUND AND OBJECTIVE

Pakistan Museum of Natural History (PMNH) is under administrative control of Pakistan Science Foundation (PSF) established under Pakistan Science Foundation Act, 1973 with the objective of promoting and financing scientific activities having a bearing on socio-economic needs of country. Main objective of PMNH is to establish a museum of natural history.

2. SIGNIFICANT ACCOUNTING POLICIES

The principal accounting policies which have been adopted in the preparation of these financial statements are summarized as under:

2.1 CHANGE IN ACCOUNTING POLICY

The policy for property, plant and equipment has been changed from not charging any depreciation to charging the same in line with International Financial Reporting Standards. The effect of change in accounting policy as per IASB "Accounting Policies, Changes in Accounting Estimates and Errors" has been disclosed in note 13.

2.2 ACCOUNTING CONVENTION

These financial statements have been prepared under the historical cost convention.

2.3 BASIS OF PREPARATION

Statement of Compliance

These financial statements have been prepared in accordance with the approved accounting standards as applicable in Pakistan. Approved Accounting Standards comprise of International Financial Reporting Standards (IFRSs) issued by the International Accounting Standards Board (IASB) as applicable in Pakistan and the requirement of the Pakistan Science Foundation Act, 1973. In case, the requirements differ, the provisions or directives of the Pakistan Science Foundation Act, 1973, shall prevail.

2.4 PROPERTY, PLANT AND EQUIPMENT

These are stated at cost less accumulated depreciation except leasehold land which is stated at cost. Cost of tangible assets consists of historical cost and other directly attributable costs of bringing the asset to working condition. Depreciation is charged on reducing balance method at the rates specified in the relevant notes. Depreciation on additions is charged from the month in which the asset is put to use, whereas depreciation on disposals is charged upto the month the asset remained in use.

2.5 REVENUE RECOGNITION

Grant is recognized on actual receipt basis from the Govt. Other income is also recognized on actual receipt basis, as and when received.

2.6 RESTRICTED FUNDS

Funds received directly as grants or received as contribution from the donor for specific functions are classified as restricted funds. Restricted funds representing direct grants are classified as grant funds. Expenses incurred out of grant funds are reflected in the income & expenditure account.

2.7 EXPENDITURE

Expenses are recognized on actual payment basis except non-cash expenses such as depreciation and amortization which is charged on accrual basis.

	2013	Re-stated 2012
3. ACCUMULATED FUNDS	(Rupees)	(Rupees)
Opening balance	130,309,692	130,829,057
Transfer to Government of Pakistan	(81,500)	(72,620)
(Deficit) Surplus for the year	<u>(12,770,724)</u>	<u>(10,486,736)</u>
	<u>117,457,469</u>	<u>130,309,692</u>

PAKISTAN MUSEUM OF NATURAL HISTORY
 NOTES TO THE FINANCIAL STATEMENTS
 FOR THE YEAR ENDED JUNE 30, 2013

4. PROPERTY, PLANT AND EQUIPMENT - DEVELOPMENT

PARTICULARS	2013				2012				W.D.V.
	COST		DEPRECIATION		COST		DEPRECIATION		
	AS AT JULY 01, 2012	ADDITIONS	DELETIONS	AS AT JUNE 30, 2013	RAT E %	AS AT JULY 01, 2012	ADJUSTMENT	FOR THE YEAR	
Land	2,576,000	-	-	2,576,000	-	-	-	-	2,576,000
Building	87,150,893	-	-	87,150,893	5	8,497,212	-	3,932,684	12,429,896
Motor vehicles	5,691,447	-	-	5,691,447	20	2,048,921	-	728,505	2,777,426
Display centre	10,370,351	-	-	10,370,351	10	1,970,367	-	839,998	2,810,365
Refrigerator	8,990	-	-	8,990	10	1,708	-	728	2,436
Audio visual equipment	13,235,840	-	-	13,235,840	30	6,750,278	-	1,945,668	8,695,947
Laboratory equipment	11,778,903	-	(189,750)	11,589,153	30	6,007,241	(122,241)	1,729,174	7,614,074
Computer equipments	10,825,224	-	(1,347,450)	9,477,774	30	5,320,864	(703,706)	1,574,802	6,391,960
Hooks	4,242,784	-	-	4,242,784	20	1,327,402	-	543,076	2,070,479
Furniture and fixture	1,867,967	-	(5,000)	1,862,967	10	354,914	(1,221)	151,272	504,864
Air conditioners	917,850	-	-	917,850	10	174,392	-	74,346	248,737
TOTAL (RS.) - 2013	148,666,249	-	(1,542,200)	147,124,049		12,853,298	(827,368)	11,528,554	13,546,184
									103,577,865

PARTICULARS	2012				2012				W.D.V.
	COST		DEPRECIATION		COST		DEPRECIATION		
	AS AT JULY 01, 2011	ADDITIONS	DELETIONS	AS AT JUNE 30, 2012	RAT E %	AS AT JULY 01, 2011	ADJUSTMENT	FOR THE YEAR	
Land	2,576,000	-	-	2,576,000	-	-	-	-	2,576,000
Building	87,150,893	-	-	87,150,893	5	4,337,545	-	4,139,667	8,497,212
Motor vehicles	5,691,447	-	-	5,691,447	20	1,138,289	-	910,632	2,018,921
Display centre	10,370,351	-	-	10,370,351	10	1,077,035	-	933,322	1,970,367
Refrigerator	8,990	-	-	8,990	10	899	-	909	1,708
Audio visual equipment	13,235,840	-	-	13,235,840	30	3,970,752	-	2,779,536	6,750,278
Laboratory equipment	11,778,903	-	-	11,778,903	30	3,533,671	-	2,473,570	6,007,241
Computer equipments	10,825,224	-	-	10,825,224	30	3,247,567	-	2,273,297	5,520,864
Books	4,242,784	-	-	4,242,784	20	848,557	-	678,845	1,527,402
Furniture and fixture	1,867,967	-	-	1,867,967	10	186,797	-	168,117	354,914
Air conditioners	917,850	-	-	917,850	10	91,785	-	82,607	174,392
TOTAL (RS.) - 2012	148,666,249	-	-	148,666,249		18,412,897	-	14,440,402	17,853,298
									115,812,951

PAKISTAN MUSEUM OF NATURAL HISTORY
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED JUNE 30, 2013

5 PROPERTY, PLANT AND EQUIPMENT - NON-DEVELOPMENT

PARTICULARS	2013					DEPRECIATION				W.D.V.
	COST			AS AT JUNE 30, 2013	RATE %	AS AT JULY 01, 2012	ADJUSTMENT	FOR THE YEAR	AS AT JUNE 30, 2013	AS AT JUNE 30, 2013
	AS AT JULY 01, 2012	ADDITIONS	DELETIONS							
Land	1,050,000	-	-	1,050,000	-	-	-	-	-	1,050,000
Machinery	1,215,683	9,000	(72,211)	1,152,472	20	418,464	(34,469)	158,824	542,819	609,653
Motor vehicles	3,648,926	-	-	3,648,926	20	1,306,529	-	468,479	1,775,009	1,873,917
Furniture and fixture	1,639,515	-	(11,866)	1,627,649	20	537,813	(2,380)	220,214	755,147	872,502
Office laboratory equipmer	4,487,385	-	-	4,487,385	33.3	2,439,417	-	682,588	3,122,005	1,365,380
Computer equipments	4,103,535	-	(236,686)	3,866,849	33.3	194,669	(163,624)	1,299,903	1,330,948	3,535,901
Books	543,412	-	-	543,412	10	102,615	-	44,080	146,694	396,718
Camera	67,300	-	-	67,300	33.3	5,608	-	20,562	26,170	41,130
Baluchitherium Life Size A	1,740,000	-	-	1,740,000	10	14,500	-	172,550	187,050	1,552,950
Whales and elephant skelct	25,000	-	-	25,000	10	4,750	-	2,025	6,775	18,225
TOTAL (Rs.) - 2013	18,520,756	9,000	(320,763)	18,208,993		5,024,365	(200,972)	3,069,224	7,892,617	10,316,376

PARTICULARS	2012					DEPRECIATION				W.D.V.
	COST			AS AT JUNE 30, 2012	RATE %	AS AT JULY 01, 2011	ADJUSTMENT	FOR THE YEAR	AS AT JUNE 30, 2012	AS AT JUNE 30, 2012
	AS AT JULY 01, 2011	ADDITIONS	DELETIONS							
Land	1,050,000	-	-	1,050,000	-	-	-	-	-	1,050,000
Machinery	1,162,683	53,000	-	1,215,683	20	229,097	-	189,367	418,464	797,219
Motor vehicles	3,681,555	-	(32,629)	3,648,926	20	727,456	(6,526)	585,599	1,306,529	2,342,397
Furniture and fixture	1,486,858	152,657	-	1,639,515	20	297,372	-	240,442	537,813	1,101,702
Office laboratory equipmer	4,386,245	101,140	-	4,487,385	33.3	1,461,935	-	477,482	2,439,417	2,047,968
Computer equipments	152,905	3,950,630	-	4,103,535	33.3	9,963	-	143,706	194,669	3,908,866
Books	543,412	-	-	543,412	10	53,637	-	48,977	102,615	440,797
Camera	-	67,300	-	67,300	33.3	-	-	5,608	5,608	61,692
Baluchitherium life size m	-	1,740,000	-	1,740,000	10	-	-	14,500	14,500	1,725,500
Whale & elephant skeleton	25,000	-	-	25,000	10	2,500	-	2,250	4,750	20,250
TOTAL (Rs.) - 2012	12,488,658	4,064,727	(32,629)	18,520,756		2,822,960	(6,526)	2,207,931	5,024,365	13,496,391

PAKISTAN MUSEUM OF NATURAL HISTORY
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED JUNE 30, 2013

	2013 (Rupees)	Re-stated 2012 (Rupees)
6. SECURITY DEPOSITS		
Security Deposits at PMAIS	<u>250,000</u>	<u>250,000</u>
7. CASH & BANK BALANCE		
Cash at bank - Miscellaneous Account	7.1. 3,038,228	76,211
Cash at bank - Development Account	<u>-</u>	<u>389</u>
	<u>3,038,228</u>	<u>76,600</u>
7.1. This amount represents cash kept in current account for miscellaneous receipt & payments and is termed as C13-70		
8. GRANT FROM GOP - NON-DEVELOPMENT		
Grant From Government of Pakistan	<u>86,695,000</u>	<u>82,407,000</u>
9. MISCELLANEOUS ACCOUNT		
Miscellaneous receipts	4,464,452	713,554
Gain on adjustment of fixed asset	<u>-</u>	<u>6,526</u>
	<u>4,464,452</u>	<u>320,080</u>
9.1. Refund against asset price adjustment		
W D V of adjusted asset	<u>-</u>	<u>32,629</u>
Gain on adjustment of fixed asset	<u>-</u>	<u>(26,103)</u>
	<u>-</u>	<u>6,526</u>
10. EXPENDITURE - NON-DEVELOPMENT		
Pay and allowances	53,282,000	41,527,000
Overtime allowance	100,000	90,000
Honorarium	200,000	-
Rent of residential accommodation	11,248,000	10,672,000
Medical expenses	1,500,000	3,916,000
CPI & GII contribution	-	229,000
Gratuity	131,000	148,000
Pension contribution	12,522,000	5,646,000
Leave encasement	500,000	56,000
Ground rent	6,000	6,000
Travelling expenses	106,000	125,000
Repair and maintenance	760,000	520,000
Communication	910,000	521,000
Printing and stationery	110,000	78,000
Electricity, gas and water	740,000	900,000
Entertainment	80,000	60,000
Assistance Package	-	300,000
Vehicle running (PMAIS)	1,685,000	1,173,000
Uniform expenses	40,000	-
Audit Fee	45,000	-
Advertisement	32,000	-
Newspapers and magazines	70,000	70,000
Other function/research activity	2,334,000	9,935,273
Miscellaneous expenses	135,000	750,000
Cost of Other Store	150,000	-
Depreciation	3,069,224	2,207,051
Loss on disposal of fixed assets	105,758	-
	<u>89,860,982</u>	<u>78,551,204</u>

PAKISTAN MUSEUM OF NATURAL HISTORY
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED JUNE 30, 2013

	2013 (Rupees)	Re-stated 2012 (Rupees)
10.1. W D V of fixed assets	119,791	-
Sale proceeds of disposal	(14,033)	-
Loss on disposal of fixed assets	105,758	-

10.2. Medical expense includes Rs 200/-, Communication expense includes Rs 1,366/- and Other functions/research activity expense includes Rs 74,730/- for which cheques were issued but not presented by the recipients upto June 30, 2013. Resultantly, the said cheques have been lapsed and the amounts stand transferred to Govt.

11. EXPENDITURE - DEVELOPMENT FUND

Depreciation	11,520,254	14,440,402
Loss on disposal of fixed assets	647,365	-
Bank balance written off	389	-
	<u>12,168,008</u>	<u>14,440,402</u>
11.1. W D V of fixed assets	714,832	-
Sale proceeds of disposal	(67,467)	-
Loss on disposal of fixed assets	647,365	-

12. EXPENDITURE - MISCELLANEOUS ACCOUNT

Misc Expenses	103,557	968
Geological Symposium	8,807	-
UNESCO Workshop	-	288
PMNH Council	-	30,000
PSF Bio (268)	-	8,000
Biodiversity Symposium	77,155	151,325
MAB Project	94,772	-
33rd Zoology Congress	1,616,554	-
Refund of Function	341	-
Refund of fixed asset to Govt	-	32,629
	<u>1,901,186</u>	<u>223,210</u>

13. EFFECT OF CHANGE IN ACCOUNTING POLICY - PROPERTY, PLANT & EQUIPMENT

The change in accounting policy as disclosed in note 2.1 has been accounted for retrospectively in accordance with International Accounting Standard - 8 'Accounting Policies, Changes in Accounting Estimates and Errors', resulting in adjustment of prior year financial statements. Effect of retrospective application of change in accounting policy are as follows:

13.1. For the year ended June 30, 2012	As at June 30, 2012		
	As Previously Reported Rupees	Effect of Restatement Rupees	As Restated Rupees
Effect on balance sheet			
General Fund	167,513,605	(37,877,661)	129,635,944
Property, Plant & Equipment	167,183,005	(37,877,661)	129,305,344
Effect on income & expenditure statement			
Depreciation	-	16,645,332	
Gain (loss) on disposal of fixed assets	-	(6,526)	
Surplus (Deficit) for the year	5,181,320	(16,641,807)	(11,460,487)

PAKISTAN MUSLIM CH. NATURAL HISTORY
 NOTES TO THE FINANCIAL STATEMENTS
 FOR THE YEAR ENDED JUNE 30, 2013

13.2. For the year ended June 30, 2011

	As at June 30, 2011		
	As Previously Reported Rupees	Effect of Restatement Rupees	As Restated Rupees
Effect on balance sheet			
General Fund	142,064,914	(21,235,857)	140,829,057
Property Plant & Equipment	161,154,907	(21,235,857)	139,919,050
Effect on income & expenditure statement			
Depreciation	-	21,250,047	21,250,047
(Gain) / less on disposal of fixed assets	(4,348)	(14,190)	(18,538)
Surplus / (Deficit) for the year	391,827	(21,235,857)	(20,844,030)

13.3. The effect of change in accounting policy has been restricted to the previous two years due to non availability of data for the earlier years. Had the data been available, the effect of change might have been different for the previous two years. However, the difference would have been negligible and thus, disregarded.

14. CORRECTION OF ERROR

During the year 2012, an aggregate amount of Rs 673,751 was charged to expenses instead of being receivable in nature as advances were given. The effect of the correction is as follows:

14.1 Effect on the statement of financial position	Year ended June 30,		
	2012	2011	2010
Increase / (decrease) in Receivables	673,751	-	-
Increase / (decrease) in General Fund	673,751	-	-
14.2. Effect on income & expenditure statement			
	<u>2012</u>	<u>2011</u>	<u>2010</u>
Increase / (decrease) in Misc. Expenses	(673,751)	-	-
Increase / (decrease) in Surplus / (Deficit) for the year	673,751	-	-

15. DATE OF AUTHORIZATION FOR ISSUE

These financial statements have been authorized for issue by the Board of Trustees on 12/09/2013.

16. FIGURES

In these financial statements figures have been rounded off to the nearest rupee *see*.

[Signature]
 ASSISTANT ACCOUNTS
 General Museum of Natural History
 Islamabad

[Signature]
 DIRECTOR (GENERAL)
 General Museum of Natural History
 Islamabad

3.0 PAKISTAN SCIENTIFIC & TECHNOLOGICAL INFORMATION CENTRE

Financial Statements

ILYAS SAEED & Co.

CHARTERED ACCOUNTANTS

OFFICE # 26 2nd FLOOR, ROSE PLAZA, I-8 MARKAZ, ISLAMABAD. PH: 951-4102626-27

INDEPENDENT AUDITORS' REPORT TO THE MANAGEMENT

Report on the Financial Statements

We have audited the accompanying financial statements of Pakistan Scientific And Technological Information Centre, which comprise the statement of financial position as at June 30, 2013 and the related income and expenditure statement, statement of cash flows and statement of changes in accumulated fund together with the summary of significant accounting policies and other explanatory notes forming part thereof for the year then ended.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with the approved international financial reporting standards as applicable in Pakistan and the requirements of the Pakistan Science Foundation Act, 1973 and for such internal control as management determines necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with International Standards on Auditing as applicable in Pakistan. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal controls. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of Pakistan Scientific And Technological Information Centre as of June 30, 2013 and its financial performance, its cash flows and changes in general fund for the year then ended in accordance with the approved international financial reporting standards as applicable in Pakistan and the requirements of the Pakistan Science Foundation Act, 1973.

The financial statements for the year ended June 30, 2012 were audited by another firm of chartered accountants, who have issued an unqualified report dated 04-10-2012.

ISLAMABAD: 27/6/2013


CHARTERED ACCOUNTANTS
Engagement Partner, Ilyas Saeed & Co.

Head Office: A-1, Sea Breeze Homes, Shershah Block, (Barkat Market) F-7/1, Islamabad. Phone: 3733-7777 above

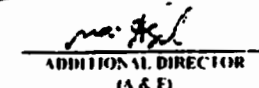
Phones: 042-5861852, 5868849 Fax: 02-02-5856145 Email: info@ilyasaeed.com
Office # 26 2nd Floor, Rose Plaza, I-8 Markaz, Islamabad.

**PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE
STATEMENT OF FINANCIAL POSITION
AS AT JUNE 30, 2013**

FUNDS AND LIABILITIES	NOTE	2013 (Rupees)	2012 (Rupees)
ACCUMULATED FUNDS	3	57,347,424	49,371,035
		<u>57,347,424</u>	<u>49,371,035</u>
ASSETS			
NON-CURRENT ASSETS			
Properties, plant and equipment	4	51,340,749	11,154,862
Advances	5	-	32,552,050
		51,340,749	43,706,917
CURRENT ASSETS			
Cash & bank balances	6	6,006,675	5,664,123
		<u>6,006,675</u>	<u>5,664,123</u>
		<u>57,347,424</u>	<u>49,371,035</u>

The annexed notes form 1 to 14 form an integral part of these financial statements.


ASSISTANT
DIRECTOR


ADDITIONAL DIRECTOR
(A & F)
MUHAMMAD AQIL KHAN
Additional Director (Admin) DDO
PASTIC National Center,
Quaid-i-Azam University Campus,
Islamabad


DIRECTOR GENERAL
Dr. Muhammad Akram Sheikh
Director General, PASTIC
Quaid-i-Azam University Campus,
Islamabad

**PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE
INCOME AND EXPENDITURE ACCOUNT
FOR THE YEAR ENDED JUNE 30, 2013**

PARTICULARS	NOTE	2013 (Rupees)	2012 (Rupees)
INCOME			
Non-development account	-	88,162,000	82,762,000
Reprographic and Documentation	8	2,293,899	2,496,721
Strengthening of Reprography	9	12,438,000	22,977,000
		102,893,899	127,235,721
EXPENDITURE			
Non-development account	10	88,162,000	81,691,442
Reprographic and Documentation	11	2,344,912	7,645,932
Strengthening of Reprography	12	1,601,000	421,950
Depreciation	4	3,202,355	2,237,546
		95,311,075	91,996,870
SURPLUS FOR THE YEAR		7,582,824	51,235,451

The annexed notes from 1 to 14 form an integral part of these financial statements.


ASSISTANT
DIRECTOR


ADDITIONAL DIRECTOR
(A & F)
MUHAMMAD AQIL KHAN
Additional Director (Admin)/DDO
PASTIC National Center,
Quaid-i-Azam University Campus
Islamabad.


DIRECTOR GENERAL
Dr. Muhammad Akram Sheikh
Director General, PASTIC
Quaid-i-Azam University Campus,
Islamabad


**PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE
STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED JUNE 30, 2013**

	2013 (Rupees)	2012 (Rupees)
CASH FLOW FROM OPERATING ACTIVITIES		
Surplus for the year	7,582,824	31,235,151
Prior year adjustment	393,565	-
Adjustments for non cash charges:		
Depreciation	3,202,355	2,237,546
Surplus before working capital changes	11,178,744	33,472,697
Working capital changes:		
(Increase)/Decrease in current assets:		
Advances	32,552,050	(32,552,050)
Net cash generated from operating activities	43,738,794	920,947
CASH FLOW FROM INVESTING ACTIVITIES		
Property, plant and equipment	(43,388,242)	(1,070,558)
Net cash used in investing activities	(43,388,242)	(1,070,558)
NET CHANGE IN CASH AND CASH EQUIVALENTS	342,552	(149,611)
CASH & CASH EQUIVALENTS AT THE BEGINNING	5,664,123	5,813,734
CASH & CASH EQUIVALENTS AT THE END	6,006,675	5,664,123

The annexed notes from 1 to 14 form an integral part of these financial statements.


ASSISTANT
DIRECTOR


ADDITIONAL DIRECTOR
(A & F)
MUHAMMAD AQIL KHAN
Additional Director (Admin) I/O
PASTIC National Center,
Quaid-e-Azam University Campus
Islamabad.


DIRECTOR GENERAL
Muhammad Akram Shaikh
Director General, PASTIC
Quaid-e-Azam University Campus,
Islamabad

**PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE
STATEMENT OF CHANGES IN ACCUMULATED FUND
FOR THE YEAR ENDED JUNE 30, 2013**

PARTICULARS	NOIT	2013 (Rupees)	2012 (Rupees)
Opening balance		49,371,035	18,135,581
Deficit for the year		7,582,824	31,235,151
Prize Year Adjustment		393,564	-
Closing balance		<u>57,347,424</u>	<u>49,371,035</u>

The annexed notes from 1 to 14 form an integral part of these financial statements. *Asa*


ASSISTANT
DIRECTOR


ADDITIONAL DIRECTOR
(A & F)

MUHAMMAD AQIL KHAN
Additional Director (Admin) ODO
PASTIC National Center,
Quaid-i-Azam University Campus
Islamabad.


DIRECTOR GENERAL

Dr. Muhammad Akram Shaikh
Director General, PASTIC
Quaid-i-Azam University Campus,
Islamabad

**PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE
NOTES TO THE ACCOUNTS
FOR THE YEAR ENDED JUNE 30, 2013**

1. BACKGROUND AND OBJECTIVES

Pakistan Scientific and Technological Information Centre (PASTIC) is the premier organization established under the Pakistan Science Foundation Act, 1973 for dissemination of Scientific and Technological Information to the Scientists, Researchers, Engineers, Entrepreneurs, Industry and Citizens of Pakistan.

2. SIGNIFICANT ACCOUNTING POLICY

The principal accounting policies which have been adopted in the preparation of these financial statements are summarized as under:

2.1. ACCOUNTING CONVENTION

These financial statements have been prepared under the historical cost convention.

2.2. BASIS OF PREPARATION

Statement of Compliance

These financial statements have been prepared in accordance with the approved accounting standards as applicable in Pakistan. Approved Accounting Standards comprise of International Financial Reporting Standards (IFRSs) issued by the International Accounting Standards Board (IASB) as applicable in Pakistan and the requirements of the Pakistan Science Foundation Act, 1973. In case, the requirements differ, the provisions or directives of the Pakistan Science Foundation Act, 1973, shall prevail.

2.3. PROPERTY, PLANT AND EQUIPMENT

These are stated at cost less accumulated depreciation except leasehold land which is stated at cost. Cost of tangible assets consists of historical cost and other directly attributable costs of bringing the asset to working condition. Depreciation is charged on reducing balance method at the rates specified in the relevant notes. Depreciation on additions is charged from the month in which the asset is put to use, whereas depreciation on disposals is charged upto the month the asset remained in use.

2.4. REVENUE RECOGNITION

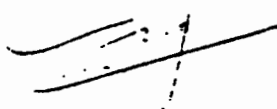
Profits and grants are recognized on actual receipt basis. Other income is also recognized on actual receipt basis.

2.5. RESTRICTED FUNDS

Funds received directly as grants for development or received as endowment from the collaborating partners are classified as restricted / endowment funds. Restricted funds representing direct grants are classified as grant funds.

3. ACCUMULATED FUNDS

	2013 (Rupees)	2012 (Rupees)
Opening balance	49,371,035	18,135,584
Surplus for the year	7,582,824	31,735,451
Prior period adjustment	393,465	-
	<u>57,347,324</u>	<u>49,871,035</u>



PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE
 NOTES TO THE ACCOUNTS
 FOR THE YEAR ENDED JUNE 30, 2013

4. PROPERTY, PLANT AND EQUIPMENT

PARTICULARS	2013				DEPRECIATION			WDV
	C O S T		R A T E	AS AT JUNE 30, 2013	AS AT JULY 01, 2012	FOR THE YEAR	AS AT JUNE 30, 2013	AS AT JUNE 30, 2013
	AS AT JULY 01, 2012	ADDITIONS, (DELETION)						
Building	7,585,261	-	7,585,261	10%	7,227,985	35,728	7,263,713	321,548
Machinery	5,542,070	42,250,442	47,792,512	10%	2,577,578	1,704,797	4,282,375	43,510,137
Motor Vehicles	7,136,470	-	7,136,470	20%	3,918,435	643,607	4,562,042	2,574,428
Computers	7,339,050	-	7,339,050	30%	5,602,874	520,853	6,123,727	1,215,323
Furniture and Fixtures	856,188	-	856,188	10%	535,511	32,068	567,579	288,609
Office Equipments	573,812	-	573,812	10%	318,550	25,526	344,076	229,736
Electric Equipments	1,914,222	1,137,800	3,052,022	10%	1,200,388	80,865	1,281,253	1,770,769
UPS	24,500	-	24,500	10%	2,450	2,205	4,655	19,845
Books	3,046,784	-	3,046,784	10%	1,479,724	156,706	1,636,430	1,410,354
TOTAL 2013 (Rs.)	34,018,357	43,388,242	77,406,599		22,863,495	3,202,355	26,065,850	51,340,749

PARTICULARS	2012				DEPRECIATION			WDV
	C O S T		R A T E	AS AT JUNE 30, 2012	AS AT JULY 01, 2011	FOR THE YEAR	AS AT JUNE 30, 2012	AS AT JUNE 30, 2012
	AS AT JULY 01, 2011	ADDITIONS, (DELETION)						
Building	7,585,261	-	7,585,261	10%	7,188,288	39,697	7,227,985	357,276
Machinery	5,542,070	-	5,542,070	10%	2,248,190	329,388	2,577,578	2,964,492
Motor Vehicles	7,136,470	-	7,136,470	20%	3,113,926	801,509	3,918,435	3,218,035
Computers	6,368,992	970,058	7,339,050	30%	4,858,798	744,076	5,602,874	1,736,176
Furniture and Fixtures	780,188	76,000	856,188	10%	499,880	55,631	555,511	320,677
Office Equipments	573,812	-	573,812	10%	290,188	28,362	318,550	255,262
Electric Equipments	1,914,222	-	1,914,222	10%	1,121,073	79,315	1,200,388	713,834
UPS	-	24,500	24,500	10%	-	2,450	2,450	22,050
Books	3,046,784	-	3,046,784	10%	1,305,606	174,118	1,479,724	1,507,060
TOTAL 2012 (Rs.)	32,947,799	1,070,558	34,018,357		20,625,949	2,237,546	22,863,495	11,154,862

PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE
 NOTES TO THE ACCOUNTS
 FOR THE YEAR ENDED JUNE 30, 2013

5. ADVANCES

Advance for machinery	-	52,552,050
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5.1 This amount was given as advance for the purchase of Reprographic Machinery. During the year the balance payment was made and the Machinery has been capitalized.

6. CASH AND BANK BALANCES

Cash in hand		
Documentation account	9,830	
Cash at bank:		
Reprographic account	4,498,393	4,343,266
Documentation account	1,207,673	1,520,857
Miscellaneous account	290,879	-
	5,996,845	5,864,123
	6,006,675	5,604,123

7. NON-DEVELOPMENT ACCOUNT

Grant	88,162,000	82,762,000
-------	------------	------------

7.1 This represent amount received from Govt for non-development / recurring expenses

8. REPROGRAPHIC AND DOCUMENTATION

Reprography	1,548,780	7,168,965
Documentation	58,043	88,467
Profit on bank account	175,582	154,912
Miscellaneous	511,485	83,957
	2,293,890	7,496,321

9. STRENGTHENING OF REPROGRAPHY

Grant	12,438,000	32,977,000
-------	------------	------------

9.1. This represent development grant from AGR for strengthening and enhancement of reprographic services

10. EXPENDITURE NON-DEVELOPMENT ACCOUNT

Salaries, and allowances	53,431,503	45,229,915
House rent (Residential)	12,005,314	11,396,000
Printing, stationery and consumable stores	243,960	679,776
Newspaper /Book/Journals	65,796	373,655
Entertainment	77,884	60,000
Postage, telegrams, Internet and telephone	1,172,727	1,112,879
Electricity, water and gas	1,286,376	1,205,085
Vehicle running/ fuel charges	1,310,000	900,000
Travelling Allowance (TA/DIA)	199,378	194,000
Medical Facility	1,245,187	600,000
Advertisement	40,000	25,000
Repair and maintenance-office equipment	180,000	194,000
Repair and maintenance-transport	300,000	750,000
Repair and maintenance-furniture & fixtures	50,000	28,000
Repair and maintenance-building	350,000	750,000
Computer expenses (Hardware, software, IT Equipment &	212,909	758,219
Staff welfare funds & Uniforms	328,100	318,000
Conferences, seminars & work shops	186,931	2,115,140
Financial assistance (who expires during service)	500,000	-
Rent Office building	102,000	102,000
Data bases, journals and annual subscriptions	1,727,001	2,982,380
Rational bureau (RISD)	-	560,563
Pension contribution	12,465,582	11,081,000
Foreign expert assistance	-	600,000
Miscellaneous / audit & miscellaneous	201,364	186,000
	88,162,000	81,691,442

PAVING SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE
 NOTES TO THE ACCOUNTS
 ON THE 31 MARCH 2013

10.1. EXPENDITURE NON-DEVELOPMENT ACCOUNT - CENTRE WISE

	Intermed RUBLES	Kerach RUBLES	Lahore RUBLES	Peshawar RUBLES	Quetta RUBLES	Faisalabad RUBLES	Muzarshad RUBLES	2013 RUBLES	2012 RUBLES
PAYMENTS									
Salaries and allowances	40 837 259	5 764 414	2 120 855	1 821 411	1 109 557	138 186	39 621	53 431 593	45 220 915
House rent (residential)	10 061 594	713 460	486 340	241 260	258 780	147 220	7 860	12 885 214	11 496 480
Printing and stationery	191 520	11 933	6 952	8 740	8 740	10 140	6 175	243 960	279 776
Newspapers/books/journals	41 420	5 291	3 350	4 147	4 327	2 991	2 120	63 786	55 655
Entertainment	73 539	1 175	3 179	-	-	3 179	-	80 893	40 000
Communication/Internet	400 927	59 951	34 396	57 540	47 702	50 450	15 761	1 172 227	1 112 979
Electricity, water and gas	1 127 114	60 780	44 473	54 009	-	-	-	1 286 376	1 203 055
Vehicle running/PUL charges	1 195 802	26 450	27 943	26 590	20 635	2 500	-	1 219 000	940 000
Travelling Allowance (TADA)	393 381	-	-	5 947	-	-	-	199 378	194 000
Medical Facult	1 117 636	110 857	-	-	-	6 194	-	1 246 187	694 000
Financial Assistance to Deceased	500 000	-	-	-	-	-	-	12 865 582	11 081 000
Advertisement	40 000	-	-	-	-	-	-	40 000	35 000
Repair and maintenance:									
- Office equipment	151 650	9 700	2 500	-	9 700	9 450	-	186 000	194 000
- Transport	243 970	8 390	11 335	11 995	12 110	12 500	-	300 000	250 000
- Furniture and fixtures	47 600	-	-	-	-	2 400	-	50 000	25 000
- Building	346 820	515	2 865	-	-	-	-	350 000	500 000
Computer expenses	165 209	11 470	11 900	6 900	4 700	8 460	1 250	212 999	252 219
Staff welfare (uniforms/overies	326 433	900	-	775	-	-	-	328 108	318 000
Conferences, seminars and workshops	143 144	445	695	16 210	-	13 367	9 170	186 931	415 140
Rent - office building	-	102 000	-	-	-	-	-	102 000	102 000
Purchase of office equipment	1 000	-	-	-	-	-	-	1 000	-
Purchase of furniture and fixtures	1 000	-	-	-	-	-	-	1 000	-
Data bases, journals and annual subscription	1 727 091	-	-	-	-	-	-	1 727 091	2 952 380
National Bureau (NSD) (Tech Info Service Depart)	-	-	-	-	-	-	-	-	600 000
Foreign expert assistance	-	-	-	-	-	-	-	-	600 000
Miscellaneous - unallocated expenses	122 830	10 188	4 166	11 431	5 353	12 018	1 156	199 364	186 000
	22 412 601	6 925 119	2 758 010	2 376 365	1 478 004	1 334 266	856 335	88 162 000	81 691 442

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PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE
 NOTES TO THE ACCOUNTS
 FOR THE YEAR ENDED JUNE 30, 2013

11. EXPENDITURE REPROGRAPHIC AND DOCUMENTATION

Reprography expense	1,569,344	7,486,783
Documentation expenses	161,397	71,750
Bank charges	-	112
Miscellaneous	614,171	-
Transferred to head office	-	83,957
	<u>2,344,912</u>	<u>7,642,932</u>

12. EXPENDITURE STRENGTHENING REPROGRAPHIC SERVICES OF PASTIC

Establishment Expenditure	1,266,043	361,000
Operational Charges including PNH	125,000	-
Miscellaneous	210,765	60,950
	<u>1,601,808</u>	<u>424,950</u>

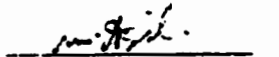
13. DATE OF AUTHORIZATION FOR ISSUE

These financial statements have been authorized for issue by the Board of Trustees on 29/09/2013.

14. FIGURES

In these financial statements figures have been rounded off to the nearest rupee.


 ASSISTANT
 DIRECTOR


 ADDITIONAL DIRECTOR
MUHAMMAD AQIL KHAN
 Additional Director (Admin) PASTIC
 PASTIC National Center,
 Quaid-e-Azam University Campus
 Islamabad.


 DIRECTOR GENERAL
Dr. Muhammad Akram Shaikh
 Director General, PASTIC
 Quaid-e-Azam University Campus,
 Islamabad

ANNEXURES

Pakistan Science Foundation Act 1973

National Assembly of Pakistan

Islamabad, the 2nd February, 1973

The following Acts of the National Assembly received the assent of the President on the 31st January, 1973, and are hereby published for general information:-

ACT NO. III OF 1973

An Act to provide for the establishment of the Pakistan Science Foundation

WHEREAS it is expedient to provide for the establishment of the Pakistan Science Foundation and for matters ancillary thereto;

It is hereby enacted as follows:-

1. Short title, extent and commencement.-(1) This Act may be called the Pakistan Science Foundation Act, 1973.

(2) It extends to the whole of Pakistan.

(3) It shall come into force at once.

2. Definitions – In this Act, unless there is anything repugnant in the subject or context,-

- a). “Board” means the Board of Trustees of the Foundation;**
- (b). “Chairman” means the Chairman of the Foundation; and**
- (c) “Foundation” means the Pakistan Science Foundation established under this Act.**

3. **Establishment of the Foundation.**-- (1) As soon as may be after the commencement of this Act, the Federal Government may, by notification in the official Gazette, establish a Pakistan Science Foundation to promote and finance scientific activities having a bearing on the socio-economic needs of the country.

(2) The Foundation shall be a body corporate by the name of the Pakistan Science Foundation, having perpetual succession and a common seal, with power, subject to the provisions of this Act, to acquire, hold and dispose of property, both movable and immovable, and shall by the said name sue and be sued.

(3) The head office of the Foundation shall be at Islamabad.

4. **Functions of the Foundation.**-(1) The Foundation shall function as a financing agency for --

- (i) the establishment of comprehensive scientific and technological information and dissemination centres;
- (ii) the promotion of basic and fundamental research in the universities and other institutions on scientific problems relevant to the socio-economic development of the country;
- (iii) the utilization of the results of scientific and technological research including pilot plant studies to prove the technical and economic feasibility of processes found to be promising on a laboratory scale;
- (iv) the establishment of science centres, clubs, museums, herbaria and planetaria;
- (v) the promotion of scientific societies, associations and academies engaged in spreading the cause of scientific knowledge in general or in the pursuit of a specific scientific discipline or technology in particular;
- (vi) the organization of periodical science conferences, symposia and seminars;
- (vii) the exchange of visits of scientists and technologists with other countries;
- (viii) the grant of awards, prizes and fellowships to individuals engaged in developing processes, products and inventions of consequence to the economy of the country ; and
- (ix) special scientific surveys not undertaken by any other organization and collection of scientific statistics related to the scientific effort of the country.

(2) The Foundation shall also--

- (i) review the progress of scientific research sponsored by it and evaluate the results of such research;
- (ii) maintain a National Register of highly qualified and talented scientists of Pakistan, including engineers and doctors, in or outside the country and to assist them, in collaboration with the concerned agencies in finding appropriate employment; and
- (iii) establish liaison with similar bodies in other countries.

(3) In the performance of its functions, the Foundation shall be guided on questions of policy by the instructions, if any, given to it by the Federal Government which shall be the sole judge as to whether a question is a question of policy.

5. Board of Trustees.- (1) The general direction, conduct and management of the affairs of the Foundation, including administration of its funds, shall vest in a Board of Trustees consisting of the following members, namely:-

Whole-time members

- (i) the Chairman ;
- (ii) one eminent scientist;
- (iii) the Director of Finance;

to be appointed by the President;

Part-time members

- (iv) the Chairman of the National Science Council;
- (v) four scientists to be nominated by the National Science Council; and
- (vi) eleven eminent scientists to be nominated the President.

(2) The remuneration and other terms and conditions of service of Chairman and the two other whole-time members of the Board shall be such as may be determined by the President.

6. Chairman of the Foundation.- (1) The Chairman of the Board shall be the Chairman of the Foundation and shall be appointed from amongst eminent scientists of the country having experience of research and scientific administration

(2) The Chairman shall, subject to sub-section (3), hold office for a term not exceeding three years and shall be eligible for re-appointment.

(3) The President may at any time terminate the appointment of the Chairman without notice and without assigning any reason.

7. Members of the Board.- (1) The members of the Board, other than the ex-officio member shall, subject to sub-section (3), hold office for a term not exceeding three years and shall be eligible for re-appointment or re-nomination, as the case may be.

(2) A member, other than an ex-officio member, may at any time resign his office by writing under his hand addressed to the President but shall continue to perform his functions until his resignation has been accepted.

(3) The President may at any time terminate the appointment or, as the case may be, nomination of any member of the Board without notice and with out assigning any reason

(As amended vide Ordinance No XIII of 1979, published in the Gazette of Pakistan, Extra, Feb, 24, 1979) Part I,

8. Meetings of the Board.---(1) The meetings of the Board shall be held at least twice a year and shall be presided over by the Chairman or, in his absence by its whole-time scientist member.

(2) All decisions at a meeting of the Board shall be taken by a majority of the votes of the members present and voting.

9. Quorum at the meeting of the Board.—To constitute a quorum at a meeting of the Board not less than nine members shall be present.

10. Executive Committee.— There shall be an Executive Committee consisting of the Chairman and the two other whole-time members of the Board.

11. Delegation of powers.—The Board may, from time to time, delegates to the Chairman or the Executive Committee such of its powers and functions as it may consider necessary.

12. Adhoc Committees.—The Foundation may set up ad hoc committees consisting of university professors and other leading scientists and experts to scrutinize applications for financial assistance for carrying out scientific research submitted to the Foundation by the universities or other institutions or by individual scientific workers or groups of scientific workers and to review ;and evaluate the results of research sponsored by the Foundation.

13. Funds.—The funds of the Foundation shall consist of—

- (a) grants made by the Federal Government and the Provincial Government donations and endowments ; and
- © income from other sources.

14. Budget.—The Foundation shall cause to be prepared and approve a statement of its receipt and expenditure for each financial year.

15. Accounts and audit.—(1) The funds of the Foundation shall be kept in a personal ledger account of the Foundation with the State Bank of Pakistan or with any Branch of the National Bank of Pakistan acting as an agent of the State Bank.

(2) The accounts of the Foundation shall be maintained in such form and manner as the Auditor-General of Pakistan may determine in consultation with the Federal Government.

(3) The accounts of the Foundation shall be audited by one or more auditors who are chartered accountants within the meaning of the Chartered Accountants Ordinance, 1961 (X of 1961), and are appointed by the Foundation in consultation with the Auditor-General of Pakistan.

16. Appointment of officers and servants.—(1) The Foundation may appoint such officers and servants, and engage such consultants or experts, as it may consider necessary for the efficient performance of its functions, on such terms and conditions as it may deem fit.

(2) In fixing the terms and conditions of service of its officers and servants, the Foundation shall as nearly as may be conform to the scales of pay, allowances and conditions of service applicable to the corresponding class of employees of the Federal Government.

17. Annual report.—(1) The annual report of the Foundation, which shall, among other things, clearly bring out the benefits accruing to the nation as a result of the activities sponsored by the Foundation, shall be prepared by the Chairman and submitted, through the Board, to the Federal Government alongwith the audited accounts of the Foundation.

(2) The annual report alongwith the audited accounts of the Foundation shall be laid before the National Assembly.

18. Regulations.—The Foundation may make Regulations for the efficient conduct of its affairs.

19. Repeal.—The Pakistan Science Foundation Ordinance, 1972 (LII of 1972), is hereby repealed.

List of Projects Approved in 2012-13

S. No.	Project Title & No.	P.I. Name, Designation & Address	Total Cost in (in Rs.)
1.	Indigenous Development of Lab. Scale Tube Furnace. PSF/Res/P-KRL/Engg (109)	Mr. Saleem Akhtar Dy. Director Met Div. Dr. A. Q. Khan Research Labs. Rawalpindi.	856,596/-
2.	Compressed Air Powered Bike. PSF/Res/P-HITECU/Engg (113)	Dr. Syed Kamran Afaq Head, Department of Mechanical Engineering HITEC University, Taxila	441,700/-
3.	Design & Implementation of Intelligent Energy Efficient Industrial Process Control System Using Conveyor Belts via Robotic Arm. PSF/Res/S-MUET/Engg (121)	Dr. B. S. Chowdhry Dean, Faculty of Electrical, Electronics & Computer Engineering Mehran University of Engineering & Technology Jamshoro.	1,316,341/-
4.	Cholarine Decay Modeling in a Prototype Distribution Network PSF/Res/C-NUST/Envr (112)	Dr. Imran Hashmi Assistant Professor Institute of Environmental Science & Engineering National University of Science & Technology Islamabad	1,076,083/-
5.	Development of <i>In-Vitro</i> Replication Assays of Hepatitis C Virus from Pakistani Isolates PSF/Res/C-NUST/Med (328)	Mr. Yasir Waheed Demonstrator NUST Center of Virology and Immunology (NCV) Islamabad	1,368,228/-
6.	Vitamin D binding Protein (VDBP) Gene Polymorphism and <i>Diabetes mellitus</i> in a Pakistani Population PSF/Res/S-AKU/Med (336)	Prof. Dr. M. Perwaiz Iqbal Department of Biological and Biomedical Sciences The Aga Khan University Karachi	2,143,836/-
7.	Macroporous Bioceramics Monoliths for Hard Tissue Replacement: Synthesis, Characterization and <i>In-Vitro</i> Analysis PSF/Res/P-COMSATS/Med (296)	Dr. Anila Asif Associate Professor IRCBM, COMSATS Institute of Information Technology Lahore	1,677,213/-

8.	Comparative Study of Vitamins D Level in the Asthmatic and Non Asthmatic Children PSF/Res/S-ZU/Med (301)	Prof. Dr. Anila Jaleel Associate Dean/Chairperson Department of Biochemistry Ziauddin University Karachi	952,068/-
9.	Diabetic Nephropathy and Hypertension: Association of ACE Gene in Pakistani Population. PSF/Res/S-KU/Med (285)	Dr. Syed Muhammad Shahid Assistant Professor Dr. A. Q. Khan Institute of Biotechnology and Genetic Engineering (KIBGE) University of Karachi Karachi	1,942,896/-
10.	Laboratory Based Surveillance of Pneumococcal Disease to Determine the Sensitivity Patterns and Serotype Distribution of <i>Streptococcus pneumoniae</i> in Karachi. PSF/Res/S-JPMC/Med (324)	Ms. Safia Bibi Research Officer Pakistan Medical Research Council (PMRC) Karachi	1,961,000/-
11.	Epidermiology and Genetics of Hereditary Limb Defect in Punjab, Pakistan PSF/Res/C-QU/Med (275)	Dr. Sajid Malik Assistant Professor Department of Animal Sciences Quaid-i-Azam University Islamabad	1,917,396/-
12.	Modulation of Pro/ Inflammatory Molecules, ROS, NO, TNF, TNF- α and IL1- β with New Natural Inhibitors: Treatment of Rheumatoid Arthritis and other Inflammatory Diseases PSF/Res/S-KU/Med (344)	Dr. M. Ahmed Mesaik Assistant Professor Dr. Panjwani Center for Molecular Medicine and Drug Research, University of Karachi, Karachi	1,694,220/-
13.	Effect of Anterior Pituitary Iron Overload in Beta Thalassemia Major Patients PSF/Res/C-QU/Med (276)	Dr. Sarwat Jahan Assistant Professor Department of Animal Sciences Quaid-i-Azam University Islamabad	1,670,556/-
14.	Development of Optical Control Switch Gene Interference Technique as a New Therapeutic Approach for Lung Cancer PSF/Res/C-NORI/Med (330)	Dr. Abida Raza Senior Scientist Nuclear Medicines, Oncology and Radiotherapy Institute Islamabad	1,760,203/-
Total:			20,778,336/-

List of Projects Recommended By Technical Committees in 2012-13

S. #	Project Title & No.	P.I. Name, Designation & Address
1.	Cypermethrin Toxicity and the Effects of Ascorbic and Selenium on Cypermethrin-Induced Oxidative Stress in Juvenile Mahseer (<i>Tor putitora</i>) PSF/Res/C-QU/Bio (453)	Dr. Amina Zuberi Assistant Professor Department of Animal Sciences Quaid-i-Azam University Islamabad.
2.	Antioxidative Effects of Cyanobacterial Extracts on Cultured Human Lymphocytes PSF/Res/P-PU/Bio (497)	Dr. Shahida Hassnain National Distinguished Professor Department of Microbiology and Molecular Genetics University of the Punjab Lahore.
3.	Mitigation of Cryoinjuries to Buffalo Spermatozoa by Enriching the Extender with Plasma Membrane Stabilizing Agents to Improve Fertility Rate with Frozen Semen PSF/Res/P-PMAS.AAU/Bio (515)	Dr. Shamim Akhter Associate Professor Department of Zoology PMAS-Arid Agriculture University Rawalpindi.
4.	Role of Endocytic Adaptor Proteins (Appl1/App12) in Carcinogenesis PSF/Res/C-QU/Biotech (100)	Dr. Sajid Rashid Assistant Professor National Centre for Bioinformatics Faculty of Biological Sciences Quaid-i-Azam University Islamabad
5.	Molecular Analysis of Achromatopsia Associated Genes PSF/Res/C-QU/Biotech (102)	Dr. Muhammad Ansar Assistant Professor Department of Biochemistry Quaid-i-Azam University Islamabad
6.	Mononuclear oxo-vanadium complex with azomethane structural elucidation enzyme inhibition and DNA binding studies PSF/Res/C-QC/Chem (448)	Prof. Dr. Saqib Ali Department of Chemistry Quaid-i-Azam University Islamabad
7.	Evaluation of metal tolerant non-edible crops for public health and economic viability of small farmers PSF/Res/P-AU/Envr (100)	Dr. Muhammad Sabir Assistant Professor Institute of Soil and Environmental Sciences University of Agriculture Faisalabad.

8.	Identification of Risk Factors for Hepatitis C Virus Infection and HCV Genotyping in Hemophiliac Patients of KPK PSF/Res/F-KUST/Med (283)	Sanaullah Khan Assistant Professor Department of Zoology Kohat University of Science and Technology Kohat
9.	Identification and Characterization of Biochemical Markers of Cerebrospinal (CSF) and Serum in Bacterial and Viral Meningitis PSF/Res/S-KU/ Med (299)	Prof. Dr. Nikhat Ahmed Siddiqui Chairperson Department of Biochemistry University of Karachi Karachi
10.	Next Generation Granular Biomedical Ceramics for Rapid Bone Defect Repair PSF/Res/C-CIIT/Med (297)	Dr. Aqif Anwar Chaudhry Assistant Professor Interdisciplinary Research Center in Biomedical Materials COMSATS, Institute of Information Technology Lahore
11.	Characterization of Organic Semiconductor based Electronic and Optoelectronic Devices PSF/Res/ PSF/Res/KPK-UP/Phys (160)	Dr. Mutabar Shah Associate Professor Institute of Physics & Electronics University of Peshawar, Peshawar.
12.	Antimicrobial Treatment of Heat Sensitive Materials via RF-Driven Plasma Jet PSF/Res/C-COMSATS/Phys (161)	Dr. Najeeb-ur-Rehman Assistant Professor COMSATS Institute of Information Technology, Islamabad
13.	Investigation on Thermo-Physical Properties of Nano Fluids prepared by Pulsed Laser Ablation PSF/Res/P-UET/Phys (163)	Prof. Dr. Muhammad Shahid Rafique Chairman Department of Physics University of Engineering & Technology, Lahore
14.	Dielectric Properties of $\text{Cu}_{0.5}\text{Tl}_{0.5}\text{Ba}_2(\text{Ca}_{n-1-x}\text{N}_x)(\text{Cu}_{n-y}\text{M}_y)\text{O}_{2n+4}$ [n=2, 3, 4, 5; x=0.25, 0.5, 0.75, 1.0; N=0, Be, Mg; M=Zn, Ni, Cd, Ti] Superconductors PSF/Res/C-QU/Phys (164)	Dr. Nawazish Ali Khan Associate Professor Department of Physics Quaid-i-Azam University Islamabad
15.	Direct Liquid (Ethanol/ Methanol) Solid Oxide Fuel Cell (DLSOFC) PSF/Res/P-CIIT/Phys (166)	Dr. Rizwan Raza Assistant Professor Department of Physics COMSATS Institute of Information Technology, Lahore
16.	Development of Technology for the Synthesis of Pharmaceutical Raw Materials PSF/ILP/P-PCSIR/Chem (053)	Dr. Salma Rahman Chief Scientific Officer Pakistan Council of Scientific & Industrial Research Lahore.
17.	Development of Eco-Friendly Products as Larvicidal/Insecticidal against Dengue Vector PSF/ILP/P-PCSIR/Envr (055)	Dr. Rauf Ahmed Khan Principal Scientific Officer Centre for Environmental Protection Studies (CEPS), PCSIR Labs. Lahore.

18.	Eco-Friendly Alternative Energy Source from Municipal Solid Waste PSF/ILP/P-PCSIR/Envr (054)	Dr. Muhammad Khalid Iqbal Senior Scientific Officer CEPS, Pakistan Council of Scientific & Industrial Research Lahore.
19.	Making Environmental Friendly Biodegradable Green Plastics and its Commercial Use in Food Packaging Industry PSF/ILP/C-QU/Envr (058)	Prof. Dr. Abdul Hameed Department of Microbiology Quaid-i-Azam University Islamabad
20.	Design and Fabrication of Solar Flash Desalination System under Hydrostatically Sustained Vacuum PSF/ILP/S-PNS/NUST/Engg (059)	Dr. Shafiq-ur-Rehman Assistant Professor Pakistan Navy Engineering College National University of Science & Technology (NUST), Karachi.

Details of Monitoring and Evaluation of On-going Projects in 2012-13**A. Non-Development Budget****a. Semi Annual Technical Reports**

S.No	Project No.	Project Title	Reports
1.	PSF/Res/P-AU/Agr (394)	Evaluation of Dried Citrus Pulp as a Concentrate Source and Its Effect on Growth Performance and Mil Yield in Ruminant Animals.	1 st
2.	PSF/Res/P-AU/Agr (381)	Entomopathogenic Fungi and Diatomaceous Earths for the Control of <i>Triboliumcastaneum</i> (Herbst.) (Coleoptera: Tenebrionidae) on Stored Wheat	2 nd
3.	PSF/RES/P-AU/Bio (367)	Preparation of <i>In-Vitro</i> Passaged Live Attenuated Hydro-Pericardium Syndrome Virus (local isolates) Vaccine	2 nd
4.	PSF/Res/P-PU/Bio (405)	A Contribution to the Rust Flora of AJK (Azad Jammu & Kashmir) and Adjacent Northern Area of Pakistan.	3 rd
5.	PSF/RES/P-AU/Bio (431)	Molecular Epidemiological Study on Paratuberculosis alongwith Pathology of Mesentric Lymphnodes and Intestine in Buffalo and Cattle	1 st
6.	PSF/Res/P-FCC/Bio (434)	Influence of Family History of Type 2 Diabetes Mellitus (T2DM) on Pituitary Gonadal Axis in Adolescent and Young Males	1 st
7.	PSF/Res/P-PMAS.AAU/Bio (446)	Biodiversity and Ecology of Bats and Rodents in the Thorn Forests and Croplands of the Potohar Plateau	2 nd
8.	PSF/Res/C-COMSATS/Bio (447)	Proteome Alterations Associated with <i>Banana Bunchy Top Virus</i> Infection in Banana	1 st
9.	PSF/Res/S-KU/Bio (454)	Study of Cysts of Dinoflagellates, Causing Harmful Algal Bloom (Red Tide) in Sediments of Coastal Areas of Pakistan, North Arabian Sea	1 st
10.	PSF/RES/C-QU/Bio (455)	Collection, Evaluation and Sustainable Utilization of Crucifer Biodiversity in Pakistan	1 st
11.	PSF/RES/C-QU/Bio (455)	Collection, Evaluation and Sustainable Utilization of Crucifer Biodiversity in Pakistan	2 nd
12.	PSF/Res/ P-UAAR/Biotech (93)	Determination of Biological Activities and Micropropagation of <i>P. amplexicaulis</i> : a Popular Medicinal Plant in North Pakistan	1 st

13.	PSF/Res/C-QU/Biotech (99)	Cloning and Characterization of Plastic Degrading Microbial Isolates	1 st
14.	PSF/Res/S-HEJ/Chem (426)	Metabolomics Profiling of Pakistani Healthy Persons, Smokers and Lung Cancer Patients by Modern Mass Spectrometric Tools for the Identification of Biomarker Compounds.	2 nd
15.	PSF/Res/F-UM/Chem (434)	Efficiency of Iron Supported on Porous Material (Prepared from Peanut Shell) for Liquid Phase Aerobic Oxidation of Alcohols.	1 st
16.	PSF/Res/S-SU/Chem (439)	Gas Chromatographic Analysis of Amino Acid in Skin Samples Psoriatic and Arsenicosis Patients.	1 st
17.	PSF/Res/C-NUST/Comp (37)	Enhancing the Scope of Pakistan Science Abstracts (PSA) to Improve Research Infrastructure in Pakistan	1 st
18.	PSF/Res/B-BU/Earth (86)	Basement Shear and Transpression near a Restraining Bend on the Chaman Fault an Investigation of the Structural Kinematics and Seismic Hazard in Northern Baluchistan.	2 nd
19.	PSF/Res/S-PMRC/Med (269)	Health Seeking Behaviour Among Adult Patients Attending OPDs of Public Hospitals in Karachi.	1 st
20.	PSF/Res/C-QU/Phys (152)	Gas Mixture Optimization study of pulsed DC-plasma for Surface Hardening of Metals	2 nd
21.	ILP/038/09	Indigenous Development of Formulation of Radiation Compatible Polypropylene for the Industrial Manufacture of Medical Disposable Syringes	2 nd
22.	PSF/ILP/S-KU/Bio (047)	Molecular Characterization Mass Production and Formulation of Entomopathogenic Nematodes	2 nd

b. First Annual Technical Report

S. No.	Project No.	Project Title
1.	PSF/Res/P-PMAS.AAU/Agr (373)	Biological Studies and Integrated Management of Lentil Wilt in Pakistan.
2.	PSF/Res/P-UET/Agr (376)	Assessment of Agricultural Drought Prone Areas of Pothwar and Agro-Ecological Zoning (AEZ) Using Remote Sensing Techniques.
3.	PSF/Res/S-SAU/Agr (383)	Management of Pests of Chillies in Sindh.

4.	PSF/Res/P-UVAS/Agr (387)	Exploring Nutritional Potentials of <i>Moringa oleifera</i> as Poultry Feed Ingredient.
5.	PSF/Res/P-PMAS.AAU/Agr (395)	Utilization of plant growth promoting rhizobacteria for the induction of systemic resistance in potato seed against bacterial rot disease.
6.	PSF/Res/P-PMAS-/Agr (396)	Studies on Characterization and management of leaf crinkle virus infecting black gram.
7.	PSF/Res/P-AU/Agr (405)	Parasitoid Wasps as Source of Novel Insecticides Molecules.
8.	PSF/Res/P-UVAS/Bio (416)	Estimation of Aflatoxins in Milk and its Control Measures
9.	PSF/Res/S-KU/Bio (422)	Marine Gastropods: Species Identification, Chemotaxonomy and Biochemical Characterization of Medicinally Important Proteins- Hemocyanins
10.	PSF/Res/S-SU/Bio (423)	Taxonomy of Tettigonioidea (Ensifera) of Pakistan
11.	PSF/Res/P-PU/Bio (431)	Molecular Epidemiological Study on Paratuberculosis alongwith Pathology of Mesentric Lymphnodes and Intestine in Buffalo and Cattle
12.	PSF/Res/P-GCU/Bio (436)	Enhanced Production of L-Lysine by Bacteria in Stirred Fermenter for Chick Feed Industry
13.	PSF/Res/P-GCU/Bio (437)	Cloning and Characterization of Alpha Amylase from <i>Thermotoga petrophilla</i> for Textile Industry
14.	PSF/Res/B-PARC/Bio (439)	Epidemiological, serological, haematological and therapeutic studies on ovine nematodiasis in three ecological zones of Balochistan
15.	PSF/Res/P-PMAS.AAU/Bio (446)	Biodiversity and Ecology of Bats and Rodents in the Thorn Forests and Croplands of the Potohar Plateau
16.	PSF/Res/C-COMSATS/Bio (447)	Proteome Alterations Associated with <i>Banana Bunchy Top Virus</i> Infection in Banana
17.	PSF/RES/C-QU/Bio (455)	Collection, Evaluation and Sustainable Utilization of Crucifer Biodiversity in Pakistan
18.	PSF/Res/S-LUMHS/Biotech (101)	Study of Genetic and Molecular Basis of Primary Congenital Glaucoma in Patients of Sindh
19.	PSF/Res/P-CIIT/Chem(416)	Synthesis and Characterization of Novel Composites Based on Carbon Nanotubes and Carbonated Hydroxyapatite
20.	PSF/Res/F-UM/Chem (434)	Efficiency of Iron Supported on Porous Material (Prepared from Peanut Shell) for Liquid Phase Aerobic Oxidation of Alcohols

21.	PSF/Res/P-GCU/Chem (436)	Synthesis, Characterization and Biological Evaluation of Bimetallic Sn (IV) and Pd (II) Complexes with Legands having O-and S-Donor Sites
22.	PSF/Res/S-SU/Chem (437)	Detoxification/Degradation of Organic Pollutants using Enzyme Immobilized Organogel Silica Nanocomposites
23.	PSF/Res/S-SU/Chem (441)	Analytical Application of FT-IR Spectroscopy in the Pharmaceutical Formulations
24.	PSF/Res/P-PU/Earth (82)	Sedimentological Studies of the Lower Eocene Sakesar Limestone Salt Range, Pakistan
25.	PSF/Res/P-PU/Earth (85)	Petrology, Mineralogy, Geochemistry and Economic Geology of the Hangu Formation of Salt Range, Pakistan
26.	PSF/Res/F-GIK/Engg(101)	Development of a GPS & Sensor based Mobile Robot; a Test bed for Research in Autonomous Navigation & GPS Applications
27.	PSF/Res/F-UET/Engg (104)	Design and Development of a Solar Energy Air Type heating system for warming up farm structures and poultry houses in KPK, Pakistan
28.	PSF/Res/C-NUST/Engg (105)	Tribological Performance of Cam/Tappet Interaction in a Direct Acting Overhead Valve Train engine
29.	PSF/Res/P-PU/Envr (97)	Potential use of yeast in decontamination of heavy metals (Cu, Pb, Cr, As, Cd) from polluted water
30.	PSF/Res/ S-KU/Med (278)	Transcription Factor as Potential Molecular Target for Cancer Chemotherapy in Human Pancreatic & Hepatic Cancer Cell Line
31.	PSF/Res/ S-KU/Med (282)	New Approaches to Effective Pain Management: Clinical Potential of GABA Receptors Modulators in the Development of Chronic Pain
32.	PSF/Res/ C-QU/Med (272)	Analysis of Association between TNF-Alpha Gene Polymorphism and Coronary Heart Disease in a Pakistani Population.
33.	PSF/Res/P-AU/Phys (151)	Synthesis of Soft and Hard Ferrites and their Characterization using Laser Induced breakdown Spectroscopy.
34.	PSF/Res/C-QU/Phys (152)	Gas Mixture Optimization study of pulsed DC-Plasma for surface hardening of Metals.
35.	PSF/Res/P-UA/Phys (153)	Analysis of High Frequency Field in Focal or Caustic Region of an Inhomogeneous Slab of Chiral Medium.
36.	PSF/Res/ P-AU/Phys (151)	Synthesis of Soft and Hard Ferrites and their Characterization using Laser Induced

		breakdown Spectroscopy.
37.	PSF/Res/ C-QU/Phys (152)	Gas Mixture Optimization study of pulsed DC-Plasma for surface hardening of Metals.
38.	PSF/Res/ P-UA/Phys (153)	Analysis of High Frequency Field in Focal or Caustic Region of an Inhomogeneous Slab of Chiral Medium.
39.	PSF/ILP/S-KU/Bio (047)	Molecular Characterization Mass Production and Formulation of Entomopathogenic Nematodes

c Second Annual Technical Reports

S. No.	Project No.	Project Title
1.	PSF/Res/P-PU/Bio (410)	Effects of Pesticide Application and Refugia on Pest Control Potential of Spiders Residing Rice Field of Punjab, Pakistan
2.	PSF/Res/C-QU/Chem (419)	Computer Aided Identification and Synthesis of a Glucosidase Inhibitors
3.	PSF/Res/B-BU/Earth (86)	Basement Shear and Transpression near a Restraining Bend on the Chaman Fault an Investigation of the Structural Kinematics and Seismic Hazard in Northern Baluchistan
4.	PSF/Res/P-NUST/Med (274)	Cloning and Characterization of Full Length Dengue Virus Genome of Pakistani Origin

d. Final Technical Reports

S.No.	Project No.	Project Title
1.	P-CABI/Agr (380)	Exploration of Bacloviruses Prevalent in Different Agro-ecological Zones of Pakistan and Their Evaluation against Target Lepidopteron Pests.
2.	PSF/Res/C-QU/Bio (402)	Study of the Microbes and their Role (Ecological Linkages) in most temperate Coniferous Forest Ecozone in Murree hills range
3.	PSF/Res/S-KU/Bio (404)	Isolation and Characterization of Bioactive Proteins/Peptides from Thermophilic Bacteria from Sub-Optimal Habitat
4.	PSF/Res/P-PU/Bio (405)	A Contribution to the Rust Flora of AJK (Azad Jammu & Kashmir) and Adjacent Northern Area of Pakistan
5.	PSF/Res/P-AU/Bio (412)	Evaluation of Sugarcane Polysaccharides and Glycoprotein as Biological Response Modifiers and their Therapeutic Effects on <i>Eimeria</i> Infection in Chickens

6.	PSF/Res/B-PARC/Bio (439)	Epidemiological, Serological, Haematological and therapeutic studies on Ovine Nematodiasis in three Ecological Zones of Balochistan
7.	PSF/Res/P-PU/Earth (242)	Sedimentology Petroleum Bearing Carbonate Rocks of Paleocene Age Kohat Potwar Area of Upper Indus Basin
8.	PSF/Res/C-PINSTECH/Earth (84)	Value Addition to Topaz by Neutron Irradiation
9.	PSF/Res/S-SU/Earth (251)	Paleoenvironmental Study of Early Cretaceous Lower Goru Formation, Sindh Monocline, Lower Indus Basin, Pakistan
10.	PSF/Res/P-AU/Engg (53)	Decision Support System for Better Crop Productivity and Environmental Quality
11.	PSF/Res/P-PCRWR/Engg (80)	Effect of Land Leveling on Land Intensity, Water Use and Water Application Efficiencies
12.	PSF/Res/F-GIK/Engg (97)	Solar Biogas Digester for Anaerobic Processing of Sewage into Biogas and Fertilizer
13.	PSF/Res/P-KRL/Engg(284)	Synthesis and Characterization of Piezo-Electric BaTiO ₃ Crystals
14.	PSF/Res/P-DGFARC/Envr (65)	Pollution in Hadiary Drain its direct and indirect impact on human health through Food Chain
15.	PSF/Res/P-AU/Envr (85)	Studies on Toxic Effects of Metal Mixtures on Fish
16.	PSF/Res/S-PCSIR/Envr (86)	Hydrochemical studies and development of Indigenous Defluoridation Technology for Fluoride Contaminated Groundwater in the Thar Desert Pakistan
17.	PSF/Res/C-PINSTECH/Envr (87)	Measurement of Air-borne radioactive pollutants (Natural and Fallout Radionuclides) in major cities of Pakistan
18.	PSF/Res/F-GU/Envr (90)	Comparative Study on the Role of Castor (Ricinus communis) Cultivars as Phytoremediator
19.	PSF/Res/P-FJWU/Envr (92)	Using GIS Models for Design and Development of Effective Air Quality Management System
20.	PSF/Res/C-QAU/Envr (93)	Removal of Inorganic and Organic Pollutants from water/ industrial wastes by Micellar Enhanced Ultrafiltration (MEUF)
21.	PSF/Res/C--NUST/Envr (95)	Development of Rapid and Robust Analytical Methodologies for Detection of Elemental Containments in Environmental Samples using Laser Induced Breakdown Spectroscopy (LIBS)

22.	PSF/Res/C-QU/Med (255)	Effect of Peripheral Administration of Puberty onset Protein Kisspeptin on Male Sex Hormones and Spermatogenesis in Prepubertal Stages: an <i>in vivo</i> and <i>in vitro</i>
23.	PSF/Res/C-IBGE/MED (271)	Genetic screening of Pakistani population for CYP2D6 genotypes
24.	PSF/Res/ S-PMRC/Med (269)	Health Seeking Behaviour Among Adult Patients Attending OPDs of Public Hospitals in Karachi.
25.	PSF/Res/ S-KU/Med (278)	Transcription Factor as Potential Molecular Target for Cancer Chemotherapy in Human Pancreatic & Hepatic Cancer Cell Line
26.	PSF/Res/S-AKU/Med (232)	Molecular Epidemiology of AIDS in Pakistan
27.	PSF/Res/ S-DUHS/Med (290)	Toxic Metals Lead (Pb) & Cadmium (Cd) & Trace Elements Zinc, (Zn), Copper(Cu), Iron (Fe) & Aluminum (Al) in Mothers Blood, Cord Blood & meconium of New Born from Industrial Areas of Karachi.
28.	PSF/R&D/P-GCU/Phys (246)	AC Magnetic Measurement
29.	PSF/Res/C-QU/Phys (138)	Developing a Prato type processing reactor for Plasma Untidily of Steels.
30.	PSF/R&D/P-GCU/Phys (246)	AC Magnetic Measurement
31.	PSF/Res/ C-QU/Phys (138)	Developing a Prato type processing reactor for Plasma Untidily of Steels
32.	PSF/Res/ P-GCU/Phys (143)	Nonlinear landau Damping in space plasmas with Non -Maxwellian Distribution Function
33.	PSF/Res/ C-PINSTECH/Phys(145)	Fabrication of Nanowires by Electro-chemical deposition in porous Membranes.
34.	PSF/Res/ C-NUST/Phys (147)	Measurement of Dielectric properties of Ceramics (Nano-Ferrites, R2S12 O7 -Er,Ho)
35.	PSF/ILP/038/09	Indigenous Development of Formulation of Radiation Compatible Polypropylene for the Industrial Manufacture of Medical Disposable Syringes.

e. Technical Reports Adopted by Technical Committees

S.No.	Project No.	Project Title	Reports
1.	PSF/Res/F-NIFA/Agr (310)	Effect of Mineral and Organic Nitrogen Yield Nitrogen Deciduous Palm Fruit rchards.	Final Report
2.	PSF/Res/P-AU/Agr (319)	Potential Use of Co ₂ as Foliar Fertilizer for Wheat Yield Enhancement Under Salt Stress Strategies for Future	Final Report
3.	PSF/Res/P-PMAS.AAU/Agr	Biological Studies and	1 st Annual Report

	(373)	Integrated Management of Lentil Wilt in Pakistan	
4.	P-MAS.AAU/Agr (374)	Microbial Conversion of Agricultural Wastes Into Value Added Biofertilizer For Sustainable Legumes-Wheat Cropping System in Pothwar Region	2 nd Annual Report
5.	PSF/Res/P-UET/Agr (376)	Assessment of Agricultural Drought Prone Areas of Pothwar and Agro-Ecological Zoning (AEZ) Using Remote Sensing Techniques	1 st Annual Report
6.	PSF/Res/B-BACP/Agr (379)	Biology, Population Dynamics And Management Of Dubas Bug (<i>Ommatissus Lybicus</i>) On Date Palm In District Pungur, Balochistan	1 st Annual Report
7.	PSF/Res/P-CABI/Agr (380)	Exploration of Baculoviruses Prevalent in Different Agro-ecological Zones of Pakistan and Their Evaluation against Target Lepidopteron Pests	Final Report
8.	PSF/Res/P-AU/Agr (381)	Entomopathogenic Fungi and Diatomaceous Earths for the Control of <i>Tribolium castaneum</i> (Coleoptera: Tenebrionidae) on Stored Wheat	1 st Annual Report
9.	PSF/Res/S-SAU/Agr (383)	Management of Pests of Chilies in Sindh	1 st Annual Report
10.	PSF/Res/P-PMAS.AAU/Agr (395)	Utilization of plant growth promoting rhizobacteria for the induction of systemic resistance in potato seed against bacterial rot disease	1 st Annual Report
11.	PSF/Res/P-PMAS-/Agr (396)	Studies on Characterization and management of leaf crinkle virus infecting black gram	1 st Annual Report
12.	PSF/Res/P-AU/Agr (405)	Parasitoid wasps as source of novel insecticides molecules	1 st Annual Report
13.	PSF/Res/S-AKU/Bio (244)	Effect of Ursodexychoic Acid (UDCA) therapy on <i>In-Vitro</i> Gallbladder Smooth Muscle Contractility	Final Report
14.	PSF/Res/P-PMAS.AAU/Bio (264)	Studies for the Selection of Probiotic Cultures for Yogurt Making	Final Report
15.	PSF/Res/S-KU/Bio (342)	Biology of Edible Crabs (<i>Portunus Pelagics</i> and <i>P. Sanguinolentus</i>) Occurring in	Final Report

		the Coastal Waters of Karachi	
16.	PSF/Res/S-AKU/Bio (377)	Studies on Effects of Indigenous Medicinal Plants on Hypercholesterolemia, Hypertension and Endothelial Dysfunction	Final Report
17.	PSF/Res/S-KU/Bio (404)	Isolation and Characterization of Bioactive Proteins/Peptides from Thermophilic Bacteria from Sub-Optimal Habitat	Final Report
18.	PSF/Res/P-PU/Bio (405)	A Contribution to the Rust Flora of AJK (Azad Jammu & Kashmir) and Adjacent Northern Area of Pakistan	2 nd Annual Report
19.	PSF/Res/P-PU/Bio (410)	Effects of Pesticide Application and Refugia on Pest Control Potential of Spiders Residing Rice Field of Punjab, Pakistan	2 nd Annual Report
20.	PSF/Res/P-UVAS/Bio (416)	Estimation of Aflatoxins in Milk and its Control Measures	1 st Annual Report
21.	PSF/Res/C-QU/Bio (419)	Functional Analysis of a Proteinase Inhibitor Gene Construct for Insect Resistance	2 nd Annual Report
22.	PSF/Res/P-PMAS.AAU/Bio (420)	Ecology, Status and Management of Fisheries in Mangla Dam	Final Technical Report
23.	PSF/Res/P-PMAS.AAU/Bio (446)	Biodiversity and Ecology of Bats and Rodents in the Thorn Forests and Croplands of the Potohar Plateau	1 st Annual Report
24.	PSF/Res/ Biotech /P-NIBGE/Med (50)	Detection of Y-Chromosome Microdeletions Associated with Infertility in Different Geographic/ Ethnic Groups in Pakistan	Final Report
25.	PSF/Res/ Biotech /P-NIBGE/Med (76)	Studies on Genetic Mutations of Low Density Liprotein Receptor Gene (LDLR); Implication in Diagnosis, Prognosis, Treatment and Management of Familial Hypercholesterolemia in Pakistan	Final Report
26.	PSF/RES/S-KU/Biotech (92)	Preconditioning of the stem and progenitor cells to increase their cardiomyogenic potential	1 st Annual Report
27.	PSF/Res/P-PU/Biotech (104)	Production and Characterization of Recombinant Laccase From Locally Isolated <i>Thermophillic geobacillus</i> Strain SBS-4S	1 st Annual Report

28.	PSF/Res/S-HEJ/Chem(426)	Metabolomics Profiling of Pakistani Healthy Persons, Smokers and Lung Cancer Patients by Modern Mass Spectrometric Tools for the Identification of Biomarker Compounds	1 st Annual Report
29.	PSF/Res/S-HEJ/Chem (417)	Studies on Hepatoprotive effects of Bioactive Secondary Metabolites of Plants by using Antioxidant and Relevant Bioassays	1 st Annual Report
30.	PSF/Res/C-PINSTECH/Earth (84)	Value Addition to Topaz by Neutron Irradiation	1 st Annual Report
31.	PSF/Res/B-BU/Earth (86)	Basement Shear and Transpression near a Restraining Bend on the Chaman Fault an Investigation of the Structural Kinematics and Seismic Hazard in Northern Baluchistan	1 st Annual Report
32.	PSF/Res/P-PU/Earth (242)	Sedimentology Petroleum Bearing Carbonate Rocks of Paleocene Age Kohat Potwar Area of Upper Indus Basin	1 st Annual Report
33.	PSF/Res/B-BU/Earth (57)	Facies Distribution, Pale-environmental Analysis and Petroleum Prospects of the Foreland Basin Sediments in the Kirther Fold-belt	Final Report
34.	PSF/Res/S-KU/Earth (76)	Geological, Mineralogical and Geochemical Studies of China Clay Deposits of Nagar Parkar for their Diversified and Value added Industrial Applications	Final Report
35.	PSF/Res/C-PMNH/Earth (79)	Biostratigraphic Zonation of Lockhart Limestone of Paleocene Age in Nilawahan and Kalarwahan Areas of Central Salt Range, Pakistan	Final Report
36.	PSF/Res/C-PMNH/Earth (81)	Sedimentological Studies of Datta Formation in Western Salt Range of Potwar sub-basin	Final Report
37.	PSF/Res/P-AU/Engg(53)	Decision Support System for Better Crop Productivity and Environmental Quality	Final Report
38.	PSF/Res/P-PCRWR/Engg (80)	Effect of Land Leveling on Land Intensity, Water Use and Water Application Efficiencies	Final Report
39.	PSF/Res/F-GIK/Engg (97)	Solar Biogas Digester for	Final Report

		Anaerobic Processing of Sewage into Biogas and Fertilizer	
40.	PSF/Res/F-GIK/Engg (101)	Development of a GPS & Sensor based Mobile Robot; a Test bed for Research in Autonomous Navigation & GPS Applications	1 st Annual Report
41.	PSF/Res/F-UET/Engg (104)	Design and Development of a Solar Energy Air Type heating system for warming up farm structures and poultry houses in KPK, Pakistan	1 st Annual Report
42.	PSF/Res/C-NUST/Engg (105)	Tribological Performance of Cam/Tappet Interaction in a Direct Acting Overhead Valve –Train engine	1 st Annual Report
43.	PSF/Res/P-KRL/Engg(284)	Synthesis and Characterization of Piezo-Electric BaTiO ₃ Crystals	Final Report
44.	PSF/Res/P-DGFARC/Envr (65)	Pollution in Hadiary Drain its direct and indirect impact on human health through Food Chain	Final Report
45.	PSF/Res/P-AU/Envr (85)	Studies on Toxic Effects of Metal Mixtures on Fish	Final Report
46.	PSF/Res/S-PCSIR/Envr (86)	Hydrochemical studies and development of Indigenous Defluaridation Technology for Fluoride Contaminated Groundwater in the Thar Desert Pakistan	Final Report
47.	PSF/Res/C-PINSTECH/Envr (87)	Measurement of Air-borne radioactive pollutants (Natural and Fallout Radionuclides) in major cities of Pakistan	Final Report
48.	PSF/Res/F-GU/Envr (90)	Comparative Study on the Role of Castor (<i>Ricinus communis</i>) Cultivars as Phytoremediator	Final Report
49.	PSF/Res/P-FJWU/Envr (92)	Using GIS Models for Design and Development of Effective Air Quality Management System	Final Report
50.	PSF/Res/C-QAU/Envr (93)	Removal of Inorganic and Organic Pollutants from water/ industrial wastes by Micellar Enhanced Ultrafiltration (MEUF)	Final Report
51.	PSF/Res/C--NUST/Envr (95)	Development of Rapid and Robust Analytical	Final Report

		Methodologies for Detection of Elemental Containments in Environmental Samples using Laser Induced Breakdown Spectroscopy (LIBS)	
52.	PSF/Res/P-PU/Envr (97)	Potential use of yeast in decontamination of heavy metals (Cu, Pb, Cr, As, Cd) from polluted water	1 st Annual Report
53.	PSF/Res/F-PMRC/Med (204)	Treatment of HCV in Traditional Medicine: A scientific Evaluation through Blood Chemistry, Viral Load and level of patient Satisfaction in Pre and Post Treatment State	Final Report
54.	PSF/Res/C-PINSTECH/Med (207)	<i>Helicobacter pylori</i> in Children: Prevalence and Strain Identification	Final Report
55.	PSF/Res/ S-KU/Med (282)	New Approaches to Effective Pain Management: Clinical Potential of GABA Receptors Modulators in the Development of Chronic Pain	1 st Annual Report
56.	PSF/Res/ C-CIIT/ Med (280)	Assessment of Genetic Risk Factors of Glaucoma	1 st Annual Report
57.	PSF/Res/C-IBGE/Med (318)	House Dust Mite Species and Allergen Levels in Pakistan Population :Molecular Characterization and a Phylogenetic Analysis	1 st Annual Report
58.	PSF/Res/C-QU/Med (272)	Analysis of Association between TNF-Alpha Gene Polymorphism and Coronary Heart Disease in a Pakistani Population	1 st Annual Report
59.	PSF/Res/P-NUST/Med (274)	Cloning and Characterization of Full Length Dengue Virus Genome of Pakistani Origin	2 nd Annual Report
60.	PSF/R&D/P-GCU/Phys (246)	AC Magnetic Measurement	1 st Annual Report
61.	PSF/Res/C-QU/Phys (138)	Developing a Prato type processing reactor for Plasma Untidily of Steels	2 nd Annual Report
62.	PSF/Res/C-NUST/Phys (147)	Measurement of Dielectric properties of Ceramics (Nano-Ferrites, R2S12 O7 -Er,Ho)	Final Report
63.	PSF/ILG/002/03	Disbondment of Epoxy Coating & Integrity of Gas Transmission Pipeline	Final Report
64.	PSF/ILG/013/03	Enhancement in Shelf Life of Bread and its allied Products	Final Report

65.	PSF/ILG/016/03	Establishment of Sustainable Model Agriculture Farm in Basol area, Balochistan using Wind Energy and Drip Irrigation System	Final Report
66.	PSF/ILG/018/03	Bio –Ecology and Population Management of House Crow (<i>Corvus splendous</i>) in Islamabad Area	Final Report
67.	PSF/ILG/019/03	Inventory of the Faunistic Diversity of Margallah Hill National Park	Final Report
68.	PSF/ILG/020/03	Development of Aspergillus's Niger variant through Genetic Engineering for Commercial Production of Citric Acid through fermentation of Molasses	Final Report
69.	PSF/ILG/021/03	The Development of mutant strain of Aspergillus's Niger for citric acid fermentation	Final Report
70.	PSF/ILG/023/03	Application of Solar Drying Technology for Apricots Design and Development of Solar Hybrid Dryer (Prototype)	Final Report
71.	PSF/ILG/024/03	Inventory of the Flora of Margalla Hill National Park	Final Report
72.	PSF/ILG/027/03	Production of Iron and Steel from Kalabagh Iron Ore through Direct Reduction Process	Final Report
73.	PSF/ILG/034/03	Design and Manufacturing of Light Weight Composite Reinforced CNG Cylinders.	Final Report
74.	PSF/ILP/038/09	Indigenous Development of Formulation of Radiation Compatible Polypropylene for the Industrial Manufacture of Medical Disposable Syringes.	Final Report

**List of Scientific Publications Produced through PSF Supported Completed
Projects in 2012-13**

S.No	Project No.	Publications
1.	S-KU/Bio (342)	<ol style="list-style-type: none"> 1. Rasheed. S and Mustaquim, J. 2010. Size at sexual maturity, breeding season and fecundity of three-spot swimming crab <i>Portunus sanguinolentus</i> (Herbst, 1783) (Decapoda, Brachyura, Portunidae) occurring in the coastal waters of Karachi, Pakistan. Fisheries Research, Vol. 103, p. 56-62. 2. Rasheed, S and Mustaquim, J. 2009. Some aspects of the reproductive biology of edible crab (<i>Portunus pelagicus</i>) from Karachi coast. Abstracts 29th Pakistan Congress of Zoology, p.126. 3. Rasheed, S and Mustaquim, J. 2007. Population biology of edible crab <i>Portunus pelagicus</i> (Linnaeus) in the coastal waters of Pakistan. Abstracts 27th Pakistan Congress of Zoology, p.126.
2.	S-AKU/Bio (377)	<ol style="list-style-type: none"> 1. Aziz, N., Mehmood, M.H., Siddiqi, H.S., Mandukhail, S.U., Sadiq, F., Mann, W., Gilani, A.H., (2009). Antihypertensive, antidyslipidemic and endothelial modulating activities of <i>Orchis mascula</i>. Hypertension Research, 32: 997-1003. 2. Aziz, N., Mehmood, M.H., Mandukal, S.R., Bashir, S., Raoof, S., Gilani, A.H. (2009) Antihypertensive, antioxidant, antidyslipidemic and endothelial modulating activities of a polyherbal formulation (POL-10). <i>Vascular Pharmacology</i>, 50: 57-64. (This paper was ranked in Top 25 articles of this journal issue). 3. Aziz, N., Mehmood, M.H., Gilani, A.H. et al. Antihypertensive, hypolipidemic and endothelial modulating effect of two poly herbal formulations (ZPTO and ZTO), Proposed journal: Journal of Cardiovascular Pharmacology (Current status: Paper is under preparation)
3.	S-KU/Bio (404)	<ol style="list-style-type: none"> 1. Saleem. F., Asif. M., Ajaz, M. and Rasool, S. A. (2012). Studies on extracellular protein metabolites of thermophilic bacterial strains isolated from local hot spring. J. Chem Soc. Pak. 34(5): 1191-1196. 2. Asad, W., Asif, M. and Rasool, S. A. (2011). Extracellular enzyme production by indigenous thermophilic bacteria: Partial purification and Characterization of α-amylase by <i>Bacillus</i> sp. WA21. Pak. J. Bot. 43(2): 1045-1052.

4.	P-PMAS.AAU/ Bio (420)	<ol style="list-style-type: none"> 1. Mirza, Z.S., et al., Hydrochemical characteristics of the Mangla dam (Pakistan) during massive fish mortality , 2011. 2. Mirza, Z.S., M.S. Nadeem, and M.A. Beg, Population dynamics and biological characteristics of Gibelion catla in Mangla reservoir (Pakistan) 2011. 3. Mirza, Z.S., M.S. Nadeem, and M.A. Beg, Population dynamics and biological characteristics of Common Carp (Cyprinus carpio L., 1758) in Mangla reservoir (Pakistan) Journal of Animal and Plant Sciences, 2011. 4. Mirza, Z.S., M.S. Nadeem, and M.A. Beg, Physico-chemical limnology of the Mangla Dam (Pakistan). Pakistan Journal of Botany, 2011. 5. Mirza, Z.S., M.S. Nadeem, and M.A. Beg, Distribution, abundance and seasonality of ichthyofauna in Mangla dam (Pakistan) 2011. 6. Mirza, Z.S., M.S. Nadeem, and M.A. Beg, Yield predictive models for the Mangla dam fisheries.
5.	C-QU/Chem (270)	<ol style="list-style-type: none"> 1. Farooq Ali Shah, M. Nawaz Tahir and Saqib Ali, (2008). "4-[(2-Fluorophenyl) amino] -4-Oxobutanoic acid" Acta Crystallography, E64, 01661. 2. Farooq Ali Shah, M. Nawaz Tahir, Saqib Ali and M. Akram Kashmiri (2008). "3-(3,5). 3. Dichloroanilinocarbonyl)propionic acid, Acta Crystallography, E64, 0787.
6.	S-SU/Chem (411)	<ol style="list-style-type: none"> 1. L. A. Zardari, M.Y. Khuhawar and A. J. Laghari. (2009). Capillary GC Analysis of Glyoxal and Methylyoxal in the Serum and Urine of Diabetic Patients After use of 2,3-dimethylbutane as derivatizing Regent", Chromatographia, 70, 891-897.
7.	B-BU/Earth (57)	<ol style="list-style-type: none"> 1. Khan, A.S., Kelling, G. Umar, M., Kassi, A.M., (2002). Depositional environments and reservoir assessment of Late Cretaceous sandstones in the south central Kirthar foldbelt, Pakistan. Jour. of Petrol. Geol. 25, 373-406. 2. Abdul Salam Khan, G., Kelling, Muhammad Umar, Akhtar Muhammad Kassi, (2002). Late Cretaceous Pab Formation in central Kirthar foldbelt, Pakistan: ehe influence of flood and storm on the sand body characteristics. Proceedings of the PAPG-SPE Annual Technical Conference 2002. 3. Muhammad Umar, Abdul Salam khan, Henrik Friis, Akhtar Muhammad Kassi and Aimal Khan Kassi (after referee remarks in final stages). Sandstone composition and Provenance of the Pab Formation Khuzdar, Central Kirthar

		<p>Fold Belt Pakistan.</p> <p>4. Muhammad Umar, Abdul Salam khan, Henrik Friis, Akhtar Muhammad Kassi and Aimal Khan Kassi (in final stages). The effects of diagenesis on the reservoir characters and grain fracturing in sandstones of Pab Formation, Kirthar Fold belt Pakistan.</p>
8.	P-KRL/Engg (284)	<p>1. M Shoiab, S Khan, S Aftab, MM Asim and DA Hall; "Measurement of dielectric and ferroelectric properties of acceptor-doped BaTiO₃ ceramics" in proceedings IBCAST 2010; 11-14 Jan 2010, CESAT, Islamabad.</p> <p>2. M Shoab, AHaider, MM Asim and M Farooque; "Comparative Investigation of Barium Titanate Ceramic Synthesized by Conventional Powder and Sol-Gel Technique" I proceedings ASEAN Pakistan Conference of Material Science APCoMS 2008; 15-16 Dec 2008 NUST, Islamabad.</p> <p>3. A Haider, M. Shoaib and M. Farooque; " Effective of calcinations temperature on preparation of doped Barium Titanate ceramics" in proceedings 10th International Symposium on Advanced Materials, 2007; 3-7 Sep. 2007, Islamabad.</p>
9.	S-PCSIR/Envr (86)	<p>1. Rafique,- T., Naseem, S., Usmani, T.H., Bashir, E., Khan, F.A., and Bhangar, Ml., (2009). Geochemical factors controlling the occurrence of high fluoride groundwater in the Nagar Parkar area, Sindh, Pakistan. Journal of Hazardous Materials. Vol. 171(1-3), p.424-430.</p> <p>2. Naseem, S., Rafique, T., Bashir, E., Bhangar, M.I., Laghari, A., and Usmani, T.H., 'Lithological influences on occurrence of high-fluoride groundwater in Nagar Parkar Area, Thar Desert, Pakistan'. Chemosphere Vol. 78 (11), p.1313-1321.</p>
10.	C-QAU/Envr (93)	<p>1. M. A. Khosa, S.S. Shah "UV-Visible Spectrometric study and Micellar Enhanced Ultrafiltration of Alizarin Red S Dye" J. Dispersion Sci. Technol, 2611, 32, 1-7.</p> <p>2. M. A. Khosa and S. S. Shah "Micellar enhanced ultrafiltration of Reactive Black-5 from aqueous solution by cationic surfactants" Dispersion. Sci. Technol. 2011, 32, 1002-1007.</p> <p>3. M. A. Khosa, S. S. Shah and M. F. Nazar "Application of micellar enhanced ultrafiltration for the removal of methylene blue from aqueous solution" Dispersion. Sci, Technol. 2011, 32, 260-264.</p>

11.	C-NUST/Envr (95)	<ol style="list-style-type: none"> 1. Development of a Method for the Determination of Chromium and Cadmium in Tannery Wastewater Using Laser-Induced Breakdown Spectroscopy <i>Journal of Analytical Methods in Chemistry</i>. Volume 2012, Article ID 823016,7 pages, doi:10.115/2012/823016 2. Determination of Total Suspended Particulate Matter and Heavy Metals in Ambient Air of Four Cities of Pakistan, <i>Iranica Journal of Energy & Environment</i> 2 (2): 128-132,2011.
12.	P-AU/Envr (85)	<ol style="list-style-type: none"> 1. Javed, M. 2012. Effects of metals mixture on the growth and their bio-accumulation in juvenile major carps. <i>Int. J. Agric. Biol.</i>, 14 (3): 477 - 480. (I. F.= 0.94) 2. Javed, M. 2012. Effects of zinc and lead toxicity on the growth and their bioaccumulation in fish. <i>Pak. Vet. J.</i>, 32(3): 357-362. (I.F. 1.25).
13.	S-AKU/Med (210)	<ol style="list-style-type: none"> 1. Iqbal MP, Lindblad BS, Mehboobali N, Yusuf FA, Khan AH, Iqbal SP, Hyperhomocysteinemia, folic acid and vitamin B6 deficiencies in apparently healthy Pakistani adults: Is mass micronutrient supplementation indicated in this population? <i>JSPSP</i> 2009;19:308-312. [IF=0.7]. 2. Yakub M, Iqbal MP, Iqbal R: Dietary patterns are associated with Hyperhomocysteinemia in an urban Pakistani population. <i>J. Nutr.</i> 140:1-6, 2010. [IF=4.3]. 3. Yakub M, Iqbal MP: Association of blood lead (Pb) and plasma homocysteine: A cross sectional survey in Karachi, Pakistan. <i>PLoS ONE</i>. 5(7): e11706, 2010. Doi:101371/journal.pone.0011706. [IF=4.35]. 4. Yakub M, Iqbal MP, Kakepoto GN, Rafique G, Memon Y, Azam I, Mehboobali N, Parveen S, Haider G: High prevalence of mild Hyperhomocysteinemia and folate, B12 and B6 deficiencies in an urban population in Karachi, <i>Pakistan. Pa. J. Med. Sci.</i> 26(4):926-29, 2010. [IF=0.2]. 5. Iqbal MP, Yakub M: High blood lead levels compromise the total antioxidant status of normal healthy adults in a population in Karachi. <i>Pak. J. Med. Sci.</i> 27 (2): 371-74, 2011. [IF=0.2]. 6. Yakub M, Moti N, Perveen S, Chaudhry B, Azam I, Iqbal MP: Polymorphisms in MTHFR, MS and CBS gene and homocysteine levels in a Pakistani population. <i>PLoS ONE</i> 2012, in press. [IF=4.35]

14.	P-GCU/Phys (143)	<ol style="list-style-type: none"> 1. M.N.S. Qureshi, S. Sehar and H. A. Shah, (2010) "Landau Damping in space Plasmas with Two Electron Temperature Non-Maxwellian Distribution Functions", Phys. (accepted) (Conference series). 2. M.N. S. Qureshi, S. Sehar and H.A Shah, "Nonlinear Landau Damping with Two Electron Temperature Generalized (r ,q) Distribution Function", J. Fusion Energy.
15.	C-NUST/Phys (147)	<ol style="list-style-type: none"> 1. Ahmad Faraz, Mudasara Saqib, Nisr M. Ahmad Fazal-ur-Rehman, Asghari Maqsood, "Synthesis, Structure, and Magnetic Characterization of $Mn_{1-x}Ni_xFe_2O_4$ Spinel Nanoferrites", Journal of Superconductivity and Novel Magnetism (DOI:10.100/s10948-011-1212-7). 2. Asghari Maqsood, Ahmad Faraz "Synthesis, structure, and Magnetic Characterization of $Mn_{0.5}Mg_{0.5-x}Fe_{2-x}O_4$ spinel nanoferrites", J. Supercond Nov Mag, (DOI: 10.1007/s10948-011-1343-x). 3. Ahmad Faraz and Asghari Maqsood "Synthesis, Structural, Electrical, Magnetic Curie Temperature and Y—K Angle Studies of Mn—Cu—Ni Mixed Spinel Nanoferrites", J Supercond Nov Magn (DOI 10.1007/s10948-011-1319-x). 4. Ahmad Paraz and Asghari Maqsood "Effect of Li^{+} and Cd^{2+} on the Physical Properties of Li-Mixed Spinel Nanoferrites", J Supercond Nov Magn (DOI 10.1007/s10948-011-1368-1). 5. M. AnisurRehman , Muhammad Ali Malic, M. Akram , Kishwar Khan and Asghari Maqsood, (2011) " Proficient magnesium nanoferrites : synthesis and characterizations", Phys. Scr. 83, 015602(6pp). 6. Asghari Maqsood, Kishwar Khan, (2011) "Structural and Microwave Absorption Properties of $Ni_{(1-x)}Co_xFe_2O_4$ (0<x<0.5) Nano-ferrites Synthesized via co-Precipitation route", Alloys and Compd. (doi:10.1016/j.jallcom.2010.12082 509_ . 3393-3397). 7. Kishwar Khan, Asghari Maqsood (2011) "Synergistic microwave and structural studies of C-type $Ho_2Si_2O_7$", J. 6 Alloys and Compound 7509, 6649-6651, (doi:10.1016/j.jallcom.2011.03.126). 8. Maqsood Asghari, Kishwar Khan , M. Anis-ur-Rehman and Muhammad Ail Malik, (2011) "Physical Electrical and Magnetic Properties of Nanocrystalline Zr-Mu-Co Prepared by Co-precipitation route" , J Nano. Reserach 14,115,123. 9. M Anis -ur-Rehman1, Muhammad Ali Malik1, Kishwar Khan2, Asghari Masood, (2011) "Structure, Electrical and

		<p>Magnetic Properties of Nano Crystalline Mg Co Ferrites Prepared by Co-precipitation”, J. Nano Research 14,1-9.</p> <p>10. AsghariMaqsood, Kishwar Khan, M.A.Rehman, M.A Malik, (2011) “Spectroscopic and Magnetic Investigation of Ni-Co Nanoferrites” J. Alloys and Compd. 599, 7493-7497,(doi:10.1016/j.jallcom.2011.04.092).</p> <p>11. Tasawar Javed, Asghari Maqsood, Akhlaq Ahmad Malik, (2011), “Structural, Electrical and Dielectric Properties of Co-Mn Spinel Nanoferrites Prepared by Co-precipitation Technique” , J. Supercond Nov Magn (DOI:1 10.1007/s10948-011-1168-7).</p> <p>12. Asghari Maqsood, Kishwar Khan, Anis-ur-Rehman and M.A Malik (2011) “Structural and Electrical Properties of Ni—Co Nanoferrites Prepared by Co-precipitation Route”, J Superconduct Nov. Magn, 24, 617-622; (DOI 10.1607/s10948—O10-0956-9).</p> <p>13. Anis-ur-Rehman, M.A. Malik, M. Akram, M Kamran, K. Khan, AsghariMaqsood, “Structural and Magnetic Properties’ of Nanocrystalline Mg-Co Ferrites”, J Super. Nov Magn. (DOI: 10.1007/s10948-011-124.4-z).</p> <p>14. Kishwar Khan, Asghari Maqsood, M. A. Rehman, M. A. Malik, M. Akram “Structural, Dielectric and Magnetic Characterization of Nanocrystalline Ni—Co ferrites”, J Supercond Nov Magn, (DOI: 10.1007/s10948-011-124.4-z)</p> <p>15. Asghari Maqsood and M. Anis-ur-Rehman in “Thermophysical properties of Bi-based High—TC Superconductors”, Applications of High-Tc Superconductivity. ISBN 978-953-307-308-8; Edited by AdirLuiz; Publisher: In Tech; June 2011.</p> <p>16. Poster presented in 12th International Symposium on advanced materials ISAM PK, (2011) titled “The Electric and Dielectric Parameters of Polycrystalline Dy₂Si₂O₇”.</p> <p>17. Paper submitted in Journal of Materials Characterization titled “Synthesis, Structural, Electric and Dielectric Spectroscopic Characterization of Polymorphic D-Er₂Si₂O₇”.</p>
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ANNEXURE-V**List of NSLP Projects Recommended by Technical Committee in 2012-13**

Sr.No.	Project Title & No.	Name, Designation & Address of PI	Approved Cost (Rs.)
1.	In-Vivo Evaluation of Anti Sense Poly Phenol Oxidase Gene Construct Under the Control of a Wound Inducible Promoter NSLP/C-QU (77)	Dr. Tariq Mahmood Assistant Professor Department of Plant Sciences Quaid-i-Azam University Islamabad	2,680,356
2.	Isolation, Characterization & Bioremediation Potential of the EPS-Producing Bio-film Bacteria from Brackish & Polluted Irrigation Waters NSLP/P-NIAB (155)	Dr. Muhammad Ashraf Principal Scientist, Nuclear Institute for Agriculture & Biology, Faisalabad	2,435,964
3.	Development of Information Management System for Commercial Broiler and Layer Farm Data. NSLP/P-AU(167)	Mr. Shahid-ur-Rehman Lecturer, Department of Poultry Science, University of Agriculture, Faisalabad	2,155,464
4.	Development & Validation of Technologies for Pesticide Residue Management in Fruit and Vegetable Produce NSLP/KP-NIFA (203)	Dr. Azhar Rashid Senior Scientist Nuclear Institute for Food & Agriculture, Peshawar	2,843,964
5.	Effect of Protein, Probiotics, Vitamin-C & E, on Semen Quantity & Quality, Health Biomarkers and Immunological Status of Retired Male-Layer Breeders after Molting NSLP/P-AU (245)	Prof. Dr. Ijaz Javed Hasan Department of Physiology & Pharmacology, University of Agriculture, Faisalabad	2,357,628
6.	Role of Nucleopolyhedrovirus in Management of Cotton Bollworm (<i>Helicoverpa armigera</i> Hubner) NSLP/P-ZU (246)	Dr. Muhammad Ali Shah Director, Institute of Biotechnology, Bahauddin Zakariya University, Multan	2,094,264
7.	Engineering Maize with Heat Shock Proteins NSLP/P-AU (168)	Dr. Iqar Ahmed Rana Assistant Professor CABB, University of Agriculture Faisalabad	1,989,000
8.	Prevalence & Molecular Characterization of Contagious <i>Caprine pleuropneumonia</i> Isolates in small Ruminants in Khyber Pakhtunkhwa NSLP/KP-AU (219)	Dr. Umar Siddique Chairman, Department of Animal Health, KP Agricultural University, Peshawar	3,999,999
9.	Screening of Cotton Germplasm for Viral Resistance Using DNA Molecular Markers NSLP/S-SAU (231)	Dr. Aneela Yasmin Assistant Professor Department of Biotechnology Sindh Agriculture University, Tandojam	3,989,799

10.	Comparative Susceptibility of Some Indigenous Breeds of Goats to Gastrointestinal Parasitism NSLP/P-AU (235)	Dr. Muhammad Nisar Khan Department of Parasitology University of Agriculture Faisalabad	3,101,616
11.	Integrated Pest Management in Organic Cotton and its Impact on Yield and Lint Quality Characteristics NSLP/S-SAU (242)	Dr. Ghulam Hussain Abro Department of Entomology Sindh Agriculture University Tandojam	3,702,396
12.	To Speed up the Pilot Plant Production of Humic Acid NSLP/S-PCSIR (272)	Mr. Gulzar Hussain Jhatial Director, Fuel Research Institute, PCSIR, Karachi	3,559,866/-
13.	Integrated Management of Brinjal Shoot & Fruit Borer, <i>Leucinodes Orbonalis</i> (Lepidoptera: Pyralidae) NSLP/P-AAR(209)	Dr. Asim Gulzar Assistant Professor Department of Entomology PMAS Arid Agriculture University, Rawalpindi	1,344,156
14.	Studies on Modification and Food Applications of Modified White Sorghum (<i>Sorghum bicolor</i>) Starch NSLP/S-KU (240)	Prof. Dr. Abid Hasnain Department of Food Science & Technology, University of Karachi, Karachi	2,106,606
15.	Molecular Characterization and Antibiotic Susceptibility Testing of <i>Clostridium Perfringens</i> Local Isolates from Healthy and Diseased Animals NSLP/C-IU (249)	Dr. Zahid Iqbal Assistant Professor Isra Veterinary Research Centre, Isra University, Islamabad Campus, Islamabad	3,805,416
16.	Nutrient Management of Deciduous Orchards (Plum) Through Foliar Feeding NSLP/KP-NIFA (253)	Dr. Syed Azam Shah Senior Scientist Nuclear Institute for Food & Agriculture, Peshawar	2,910,264
17.	Development of Breed Identification Marker for Pakistani Dairy Cattle Breeds NSLP/P-UAAR (268)	Dr. Moaen-ud-Din Assistant Professor Faculty of Veterinary & Animal Sciences, PMAS Arid Agriculture University, Rawalpindi	4,423,944
18.	Population Biology and Management of Papaya Mealybug, <i>Paracoccus marginatus</i> - A Threat to Papaya Cultivation in Coastal Areas of Pakistan NSLP/S-SAU (252)	Prof. Dr. Tajwar Sultana Department of Entomology, Sindh Agriculture University, Tandojam	767,448/-
19.	Development of Abiotic Stress Tolerant Rice NSLP/KP-AU (271)	Dr. Asad Jan Associate Professor IBGE, University of Agriculture, Peshawar.	1,676,064
20.	Processing of Fruits and Vegetables and its Utilization in the Development of Value Added Products NSLP/GB-PCSIR (437)	Mr. Faizullah Khan Scientific Officer PCSIR Demonstration Cum Training Centre, Skardu	2,001,444
		Total:	54,134,000

ANNEXURE-VI**Detail of Monitoring & Evaluation of NSLP On-Going Projects in 2012-2013****a. Semiannual Reports**

Sr.No.	Project No.	Project Title	Reports
1.	NSLP/P-UAAR (147)	Biotreatment of Industrially Discharged Azo Dye Contaminants Using Bioaugmentation	1 st
2.	NSLP/KP-NIFA (178)	Development of Innovative Nutraceuticals Products from Indigenous Herbal Ingredients for Improving Socio-Economic Status of the Communities	1 st
3.	NSLP/P-BZU (130)	Breeding for impact of different temperatures on BT cruciferous crops and development of resistance to insecticides in <i>plutella xylostella</i>	1 st
4.	NSLP/P-FCCU (179)	Photochemical and Biotechnological Studies on Antioxidant and Antimicrobial compounds in <i>Lagenaria siceraria</i> (Molina) Standl	1 st
5.	NSLP/P-PU (196)	Development of Gluten Free Flour from Indigenous Sources and its Biological Evaluation on Celiec Patients	1 st
6.	NSLP/S-SAU (142)	Study of the Long Term Impact of Farmer's Field School for Cotton Regarding Integrated Pest Management Practices in Sindh & Punjab Provinces of Pakistan	1 st
7.	NSLP/P-NIAB (164)	Development of High Yielding and Disease Resistant Hybrids of Tomato	1 st
8.	NSLP/P-AU (185)	Evaluation of Some Cereal Derived Polysaccharides and Natural Biological Response Modifiers and their Therapeutic Efficacy Against Coccidiosis in Chicken	1 st
9.	NSLP/P-FCCU (186)	Subterranean Termite Management through Baiting Technology without Environmental Contamination	1 st
10.	NSLP/S-PARC (187)	Occurrence and Control of Nematodes Associated with Fruit Nurseries in Baluchistan	1 st
11.	NSLP/P-NIAB (149)	Improvement of Low Phytate Basmati Rice	1 st

12.	PSF/NSLP/KP-AU (161)	Production of Genetically Engineered Oilseed rape for Enhanced disease Resistance	1 st
13.	NSLP/P-LPRI (151)	Sero-Prevalence and Molecular Diagnosis of Caprine Mycoplasmosis in Different Districts of Punjab”	1 st
14.	NSLP/P-PCSIR (195)	Biosynthetic Pathway and the Appearance of Anthocynins in small Tropical Fruits of Nutraceutical Significance Grown in Pakistan	1 st
15.	NSLP/P-PU (175)	Physical Forms of Feed & Feeding Regimes as a Measure to Combat the Environmental Stress and its Effect on Growth, Performance and Meat Quality in Goats	1 st
16.	NSLP/KP-NIFA (202)	Development of Locally Aadapted Canola (<i>Brassica napus</i> l.) F1 Hybrid using Induced Mutations and Double Haploidy Techniques	1 st
17.	NSLP/KP-NIFA (76)	Development of Slow Acting Toxicant Baits for Elimination of Underground Colonies of Crop & Building Termites	2 nd
18.	NSLP/KP-CIIT (51)	Wheat Improvement by the use of Targeted Genomic Approaches	2 nd
19.	NSLP/P-AU (89)	Comparative evaluation of single phosphate and di calcium phosphate in cows and buffaloes (i) effect on production of health (ii) Treatment of phosphorus associated clinical disorders	2 nd
20.	NSLP/KP- NIFA (128)	Breeding for Bruchids resistance in Mung bean (<i>Vigna radiate</i> L Wlczek)	2 nd
21.	NSLP/KP- NIFA (160)	Improvement of Stevia (<i>Stevia rebaudiana Bertoni</i>) through Induced Mutations and in Vitro Somaclonal Variations	2 nd
22.	NSLP/KP- NIFA (171)	Integrated Management of Peach Flat-Headed Borer, sphenoptera dadkhani (Oben.) Damaging Trees of Stone Fruit Orchards	2 nd
23.	NSLP/C-CIIT (141)	Biological Control of Blast & Bakanae Diseases of Rice by Using Improved Formulation of Native Bio-antagonists	2 nd

24.	NSLP/S-KU (134)	AM Fungi as Potential Biocontrol Agent for Crop Improvement and Bioprotectant Against Root-Knot Nematodes	2 nd
25.	NSLP/S-SAU (40)	Assessment of Pesticide Residues form Selected Vegetables through Traditional Processing.	3 rd
26.	NSLP/S-KU (65)	Application of Biopesticides Entomopathogenic Nematodes in Vegetable Fields Affected with Root Knot Nematodes	3 rd
27.	NSLP/P-UAAR (74)	Pre and Post-harvest Treatment of Food Grade Chemicals to Improve Peach Fruit Quality and Shelf-Life”	3 rd
28.	NSLP/P-AU (78)	Escalating the Feed Value of Wheat Straw through Ensiling with Rumen Digesta as an Inoculant in Ruminant Animals	3 rd
29.	NSLP/KP-NIFA (76)	Development of Slow Acting Toxicant Baits for Elimination of Underground Colonies of Crop & Building Termites	3 rd
30.	NSLP/C-CIIT (79)	Field Evaluation of Biopesticides/Bio-inoculants for Red Rot (<i>Colletotrichum falcatum</i> Went) Suppression & Enhanced Sugarcane Production	3 rd

b: First Annual Reports

Sr. No.	Project No.	Project Title
31.	NSLP/S-KU (134)	AM Fungi as Potential Biocontrol Agent for Crop Improvement and Bioprotectant Against Root-Knot Nematodes
32.	NSLP/KP-NIFA (160)	Improvement of Stevia (<i>Stevia rebaudiana Bertoni</i>) through Induced Mutations and in Vitro Somaclonal Variations
33.	NSLP/S-KU (140)	Assessment of Groundwater Quality and Soil Salinity in Parts of Thatta District, Sindh: Impact of Recent Floods on Agricultural Productivity and Options to Manage Salinity in Irrigated Lands

34.	NSLP/P-AU (120)	Budgeting Dietary Protein and Carbohydrate Fractions: a Practical Approach to Escalate Rumen Dynamics for Maximizing Productive Potential of Dairy <i>beetal</i> Goat”
35.	NSLP/P-AU (109)	Studies on the Effect of Estrogen and Progesteron Along With Insulin in <i>In Vitro</i> Gonadotrophin Secretarion from Buffalo Adenohypophysis
36.	NSLP/P-UAAR (147)	Biotreatment of Industrially Discharged Azo Dye Contaminants Using Bioaugmentation
37.	NSLP/P-PU (196)	“Development of Gluten Free Flour from Indigenous Sources and its Biological Evaluation on Celiec Patients”
38.	NSLP/P-FCCU(179)	Phytochemical and Biotechnological Studies on Antioxidant and Antimicrobial compounds in <i>Lagenaria siceraria</i> (Molina) Standl
39.	NSLP/S-PARC (187)	Occurrence and Control of Nematodes Associated with Fruit Nurseries in Baluchistan
41.	NSLP/KP-AU (161)	Production of Genetically Engineered Oilseed rape for Enhanced disease Resistance
42.	NSLP/P-FCCU (186)	Subterranean Termite Management through Baiting Technology without Environmental Contamination
43.	NSLP/S-SAU (142)	Study of the Long Term Impact of Farmer’s Field School for Cotton Regarding Integrated Pest Management Practices in Sindh & Punjab Provinces of Pakistan
44.	NSLP/P-PCSIR (195)	Biosynthetic Pathway and the Appearance of Anthocynins in small Tropical Fruits of Nutraceutical Significance Grown in Pakistan
45.	NSLP/KP-NIFA (178)	Development of Innovative Nutraceuticals Products from Indigenous Herbal Ingredients for Improving Socio-Economic Status of the Communities”

c: Second Annual Reports

Sr. No.	Project No.	Project Title
46.	NSLP/S-KU (65)	Application of Biopesticides Entomopathogenic Nematodes in Vegetable Fields Affected with Root Knot Nematodes
47.	NSLP/P-UAAR (74)	Pre and Post-harvest Treatment of Food Grade Chemicals to Improve Peach Fruit Quality and Shelf-Life

48.	NSLP/KP-NIFA (82)	Development Of Package Technology For Poultry Feed Irradiation In Pakistan” was received during the report period
49.	NSLP/KP-NIFA (76)	Development of Slow Acting Toxicant Baits for Elimination of Underground Colonies of Crop & Building Termites
50.	NSLP/C-CIIT (79)	Field Evaluation of Biopesticides/Bio-inoculants for Red Rot (<i>Colletotrichum falcatum</i> Went) Suppression & Enhanced Sugarcane Production
51.	NSLP/KP-CIIT(51)	Wheat Improvement by the use of Targeted Genomic Approaches
52.	NSLP/P-AU(78)	Escalating the Feed Value of Wheat Straw through Ensiling with Rumen Digesta as an Inoculant in Ruminant Animals
53.	NSLP/KP- NIFA (128)	Breeding for Bruchids resistance in Mung bean (<i>Vigna radiate</i> L Wicizek)

d. Final Reports

Sr. No.	Project No.	Project Title
54.	NSLP/P-FCCU(121)	Increasing Phosphorus use Efficiency in Wheat Through Genetic Engineering

ANNEXURE-VII**List of Scientific Publications through NSLP Supported Projects in 2012-13**

Sr. No.	Project No.	Publications
01.	NSLP/P-NIBGE (19)	1. Sarwar, M.K.S., M. Y. Ashraf, M. Rahman and Y. Zafar. 2012. Genetic variability in different biochemical traits and their relationship with yield and yield parameters of cotton cultivars grown under water stress conditions. Pakistan Journal of Botany 44 (2): 515-520.
02.	NSLP/P-PU (53)	1. Jabeen K, Javaid A, Ahmad E, Athar M (2011). Antifungal compounds from <i>Melia azedarach</i> leaves for management of <i>Ascochyta rabiei</i> – the cause of chickpea blight. Natural Product Research 25(3): 264-276.
03.	NSLP/S-SAU (40)	<p>1. Saghir Ahmed Sheikh, Shafi Muhammad Nizamani, Benish Nawaz Mirani and N. Mahmood. 2013. Decontamination of Bifenthrin and Profenofos residues in edible portion of bitter gourd (<i>Momordica charntia</i>) through house hold traditional processing methods. Journal of Food Science and Technology Letters 4 (1): 32-35.</p> <p>2. Aasia Akbar Panhwar and Saghir Ahmed Sheikh. 2013. Assesement of pesticide residues in cauliflower through gas chromatography uECD and high performance liquid chromatography (HPLC) analysis. International Journal of Agriculture Science and Research 3 (1): 7-16.</p> <p>3. B. N. Mirani, S.A. Sheikh, S. M. Nizamani, M.J Channa and A. A. Panhwar. 2012. Effectiveness of traditional food processing on bifenthrin and profenofos residues in bitter gourd peel. Int. J. of Biology and Life Sciences 3(2): 5-12.</p> <p>4. S. A. Sheikh, M. Shahnawaz, S. M. Nizamani, Mujahid Laghari, Aasia Panhwar and Shahid Abbas. 2012. Impact of traditional processing on pesticide residues in onion. International Journal of Modern Agriculture, 1 (1): 1-12.</p>
04.	NSLP/P-FCCU (121)	1. Naz. F, A. Maqbool, K.A.Malik., 2013, Dedradation of legume phytate in soil using fungal phytase., Pakistan Journal of Botany., 45(3):1017-1022.
05.	NSLPS-KU(65)	1. Shahina, F., K.A. Tabassum, J. Salma and G. Mehreen (2012). Redescription of <i>Steinernema litorale</i> Yoshida, 2004 (Nematoda: Steinernematidae) from Pakistan on the basis of morphometric, ITS1-5.8S-ITS2 28S (D2/D3) and mitochondrial rDNA region. Int. J. Nematol, 22,

(1& 2), 81-93.

2. Salma, J. and F. Shahina (2012). Mass production of eight Pakistani strains of entomopathogenic nematodes (Steinernematidae and Heterorhab). Pak. J. Nematol., 30(1): 1-20.
3. Mehreen, G. and F. Shahina (2012). Determination and biocontrol potential of endemic entomopathogenic nematodes through cluster analysis. Pak. J. Nematol., 30(2): 87-99.
4. Shahina, F., K. Firoza, G. Mehreen, J. Salma and M.I. Bhatti (2012) Molecular characterization of root-knot nematodes with five new host records from Pak. J. Nematol., 30 (2): 129-141.
5. Shahina, F., and J. Salma (2012). Biological control of root-knot nematode of tomato (*Solanum lycopersicum* L.) (urdu version).
6. Shahina, F., and G. Mehreen (2012). Biological control of root-knot nematode of okra (*Abelmoschus esculentus* L.) (urdu version).
7. Kazmi, A.R., K.A. Tabassum and F. Shahina (2013). Characterization of symbiotic bacteria associated with *Steinernema abbasi* (strain 507), *S. siamkayai* (strain 157) and *Heterorhabditis bacteriophora* (strain 1743). Pak. J. Nematol., 31 (1), 11-19.
8. G. Mehreen and F. Shahina (2013). Intraspecific variations and phylogenetic relationships among heat tolerant strains of *Steinernema siamkayai* (Rhabditida: Steinernematidae) from Pakistan. Pak. J. Nematol., 31 (2), 105-123.
9. J. Salma and F. Shahina (2013). Survival analysis of infective juveniles of Pakistani EPN strains (Steinernematidae and Heterorhabditidae) for mass production. Pak. J. Nematol., 31 (2), 105-123.
10. Shahina F. and G. Mehreen (2013). A Geographical Survey of Endemic Entomopathogenic Nematodes (Steinernematidae and Heterorhabditidae) as Inferred from Ribosomal DNA Sequences of the ITS1-5.8S-ITS2 Region from Pakistan (Proceed. of the Biodiversity conference) in press.

List of Patents Registered under NSLP Supported Projects in 2012-13

S. No.	Project No.	Patent
1.	NSLPS-KU (65)	<ol style="list-style-type: none">1. Pak patent No. 140579: Shahina Fayyaz, Asim Rehan Kazmi, Tabassum Ara Khanum, Mehreen Gulsher and Salma Javed A process for preparation of bio-pesticides using <i>Xenorhabdus nematophila</i> (strain HAM,-10) against wax moth larvae and vine mealy bug in Pakistan.2. Pak patent No. 140580: Shahina Fayyaz, Tabassum Ara Khanum, Salma Javed and Mehreen Gulsher A process for preparation of bio-pesticides from <i>Photorhabdus luminescens</i> against <i>Galleria mellonella</i> larvae and subteranean termite (Termitidae: <i>Macrotermis</i>).3. Pak patent No. 140622: Shahina Fayyaz, M.H. Soomro, Tabassum Ara Khanum and Erum Iqbal. A Process of preparation of a bio-pesticide from <i>Steinernema pakistanense</i>, <i>S. asiaticum</i>, <i>S. feltiae</i>, and <i>Heterprhabditis indica</i> Entomopathogenic nematodes.4. Pak patent No. 141035: Shahina Fayyaz, M.H. Soomro, Tabassum Ara Khanum, and Ismail Bhatti A process of Preparation of rearing diet for <i>Galleria mellonella</i> larvae, used for Isolation and Mass Production of Beneficial Organisms.5. Pak patent No. 141095: Shahina Fayyaz, Tabassum Ara Khanum and Asim Rehan Process of using three entomopathogenic nematodes as a biopesticides against subteranean termite <i>Microtermis</i> spp. (Isoptera: Macrotermitidae).6. Pak patent No. 141447: Shahina Fayyaz, M.H. Soomro and Salma Javed. A process of preparation <i>in vitro</i> and <i>in vivo</i> methods for mass production of entomopathogenic nematodes as a biological control agent, alternative to chemical control.

		<p>7. Pak patent No. 141641: Shahina Fayyaz and Tabassum Ara Khanum. A process of preparation of a bio-pesticide from <i>Oscheius andrasyii</i>, an entomopathogenic nematodes from Pakistan.</p> <p>8. Pak patent No. 141630: Shahina Fayyaz, Tabassum Ara Khanum and M.H. Soomro. Method for Biological Control of insect pests by <i>Phasmarhabditis pakistanensis</i> n.sp. a new entomopathogenic nematode.</p> <p>9. Pak patent No. 141515: Shahina Fayyaz and Tabassum Ara Khanum. Method for suppression of plant parasitic nematode through entomopathogenic nematodes <i>Steinernema</i> and <i>Heterorhabditis</i>.</p>
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List of Scientists Participated in P.Is Convention-2012

Sr. No	Project Title and No.	Name and Address of PI
1.	Evaluating Milk Performance of Local and Exotic Cattle Breeds through SNP detection NSLP/P-UVAS (47)	Prof. Dr. Masroor Elahi Babar, Chairman, Department of Livestock production, UVAS Lahore
2.	Escalating the Feed Value of Wheat Straw through Ensiling with Rumen Digesta as an Inoculant in Ruminant Animals NSLP/P-AU (78)	Prof. Dr. Muhammad Sarwar, Director, Institute of Animal Nutrition & Feed Technology, University of Agriculture Faisalabad
3.	Development of Package of Technology for Poultry Feed Irradiation in Pakistan NSLP/F-NIFA (82)	Dr. Aurang Zeb Principal Scientist, Nuclear Institute for Food & Agriculture, Tarnab Peshawar
4.	Comparative evaluation of single phosphate and di calcium phosphate in cows and buffaloes (i) effect on production of health (ii) Treatment of phosphorus associated clinical disorders. NSLP/P-UAF (89)	Dr. Ghulam Muhammad, Department of Clinical Medicine & Surgery, University of Agriculture, Faisalabad
5.	Budgeting Dietary Protein and Carbohydrate Fractions: a Practical Approach to Escalate Rumen Dynamics for Maximizing Productive Potential of Dairy beetal Goat NSLP/P-AU (109)	Dr. Muhammad Aasif Shahzad, Assistant Professor, Institute of Animal Nutrition and Feed Technology, University of Agriculture Faisalabad.
6.	Studies on the Effect of Estrogen and Progesteron Along With Insulin in <i>In Vitro</i> Gonadotrophin Secretion from Buffalo Adenohypophysis NSLP/P-AU (120)	Dr. Nafees Akhtar, Associate Professor, Department of Theriogenology, University of Agriculture Faisalabad.
7.	Sero-Prevalence and Molecular Diagnosis of Caprine Mycoplasmosis in Different Districts of Punjab NSLP/P-LPRI (151)	Dr. Waseem Shahzad Livestock Production Research Institute, Bahadurabad Okara
8.	Physical Forms of Feed & Feeding Regimes as a Measure to Combat the Environmental Stress and its Effect on Growth, Performance and Meat Quality in Goats PSF/NSLP/P-AU (175)	Prof. Dr. Muhammad Younas, Chairman, Department of Livestock Management, University of Agriculture Faisalabad
9.	Evaluation of Some Cereal Derived Polysaccharides and Natural Biological Response Modifiers and their Therapeutic	Dr. Masood Akhtar, Associate Professor, Department of Parasitology University of

	Efficacy Against Ciccidiosis in Chicken PSF/NSLP/P-AU (185)	Agriculture Faisalabad.
10.	Investigation on Fertility-Related Biomarkers in Buffalo Semen to Reduce Male Factor Loss (MFLs) NSLP/C-NARC (213)	Dr. S. Murtaza Hasan Andrabi, Senior Scientific Officer, Animal Sciences Institute, NARC Islamabad
11.	Development of Information Management System for Commercial Broiler and Layer Farm Data PSF/NSLP/P-AU (167)	Mr. Shahid-ur-Rehman, Lecturer, Department of Poultry Science, University of Agriculture, Faisalabad
12.	Identification of Chemically Defined Extenders for Cryopreservation of Buffalo Bull Spermatozoa NSLP/P-UAAR (35)	Dr. Shamim Akhter, Department of Zoology, PMAS Arid Agriculture University, Rawalpindi
13.	Production of Germplasm and Breeding Material of Wheat for Drought and Heat Tolerance NSLP/P-BARI (4)	Dr. Muhammad Tariq, Director, Barani Agricultural Research Institute Chakwal
14.	Natural compounds from allelopathic Trees as Antifungal Agents against <i>Ascochyta rabiei</i> (PASS) PSF/NSLP/P-PU (53)	Dr. Arshad Javaid Lecturer of Mycology and Plant Pathology, Punjab University Lahore.
15.	Application of Biopesticides Entomopathogenic Nematodes in Vegetable Fields Affected with Root Knot Nematodes NSLP/S-KU (65)	Dr. Shahina Fayyaz Director, National Nematological Research Centre University of Karachi Karachi
16.	Pre and Post-harvest Treatment of Food Grade Chemicals to Improve Peach Fruit Quality and Shelf-Life NSLP/P-UAAR(74)	Prof. Dr. Nadeem Akhtar, Chairman, Department of Horticulture, PMAS Arid Agriculture University Rawalpindi
17.	Development of Slow Acting Toxicant Baits for Elimination of Underground Colonies of Crop & Building Termites NSLP/F-NIFA(76)	Dr. Abid Fareed, PS/Head Entomology Division, Nuclear Institute for Food & Agriculture, Tarnab Peshawar
18.	Study of the Long Term Impact of Farmer's Field School for Cotton Regarding Integrated Pest Management Practices in Sindh & Punjab Provinces of Pakistan NSLP/S-SAU (142)	Dr. Zaheeruddin Mirani Associate Professor, Department of Agricultural Extension Education & Short Courses, Sindh Agriculture University Tandojam
19.	Breeding for Bruchids resistance in Mung bean (<i>Vigna radiate</i> L Wlczek) NSLP/KP- NIFA (128)	Dr. Gul Sanat Shah, Nuclear Institute for Food and Agriculture (NIFA) Tarnab, Peshawar.
20.	Phytochemical and Biotechnological Studies on Antioxidant and Antimicrobial	Dr. Dildar Ahmad, Associate Professor

	compounds in <i>Lagenaria siceraria</i> (Molina) Standl” NSLP/P-FCCU (179)	Department of Chemistry, Forman Christian College University, Ferozpur Road Lahore
21.	AM Fungi as Potential Biocontrol Agent for Crop Improvement and Bioprotectant Against Root-Knot Nematodes NSLP/S-KU (134)	Dr. Feroza Kazi, National Nematological Research Center, University of Karachi, Karachi
22.	Assesment of Groundwater Quality and Soil Salinity in Parts of Thatta District, Sindh: Impact of Recent Floods on Agricultural Productivity and Options to Manage Salinity in Irrigated Lands NSLP/S-KU(140)	Prof. Dr. Viqar Husain, Department of Geology, University of Karachi
23.	Development of Innovative Nutraceuticals Products from Indigenous Herbal Ingredients for Improving Socio-Economic Status of the Communities” PSF/ NSLP/KP-NIFA (178)	Dr. Ihsan ullah, Nuclear Institute for Food & Agriculture, Tarnab Peshawar
24.	Biotreatment of Industrially Discharged Azo Dye Contaminants Using Bioaugmentation NSLP/P-UAAR (147)	Dr. Azeem Khalid Associate Professor, Department of Environmental Sciences, PMAS Arid Agriculture University Rawalpindi
25.	Improvement of Low Phytate Basmati Rice NSLP/P-NIAB (149)	Dr. Zia-ul-Qamar Senior Scientist, Nuclear Institute for Agriculture and Biology Faisalabad,
26.	Development of High Yielding and Disease Resistant Hybrids of Tomato NSLP/P-NIAB (164)	Dr. Muhammad Yussouf Saleem, Principal Scientist, Nuclear Institute for Agriculture and Biology, Faisalabad
27.	Production of Genetically Engineered Oilseed rape for Enhanced disease Resistance NSLP/KP-AU (161)	Dr. Muhammad Sayyar Khan, Assistant Professor, Institute of Biotechnology & Genetic Engineering, KP Agricultural University, Peshawar
28.	Development of locally adapted canola (<i>brassica napus</i> l.) F1 hybrid using induced mutations and double haploidy techniques NSLP/KP-NIFA (202)	Mr. Iftikhar Ali, Principal Scientist, Nuclear Institute for Food & Agriculture, Tarnab, Peshawar
29.	Breeding for impact of different temperatures on bt cruciferous crops and development of resistance to insecticides in <i>plutella xylostella</i> ” NSLP/P-BZU (130)	Dr. Shafqat Saeed Assistant Professor, Department of Entomology, Bahauddin Zakariya University Multan

30.	Role of Nucleopolyhedrovirus in Management of Cotton Bollworm (<i>Helicoverpa armigera</i> Hubner) NSLP/P-BZU (246)	Prof. Dr. Muhammad Ali Shah, Director, Institute of Biotechnology, Bahauddin Zakariya University, Multan
31.	Isolation, Characterization & Bioremediation Potential of the EPS-Producing Bio-film Bacteria from Brackish & Polluted Irrigation Waters NSLP/P-NIAB (155)	Dr. Muhammad Ashraf, Principal Scientist, Nuclear Institute for Agriculture & Biology, Faisalabad
32.	Development & Validation of Technologies for Pesticide Residue Management in Fruit and Vegetable Produce NSLP/KP-NIFA (203)	Dr. Azhar Rashid, Senior Scientist, Nuclear Institute for Food & Agriculture, Peshawar
33.	Integrated Pest Management in Organic Cotton and its Impact on Yield and Lint Quality Characteristics NSLP/S-SAU (242)	Dr. Ghulam Hussain Abro Professor, Department of Entomology, Sindh Agriculture University, Tandojam
34.	Engineering Maize with Heat Shock Proteins. NSLP/P- AU (168)	Dr. Iqrar Ahmad Rana, Assistant Professor, CABB, University of Agriculture Faisalabad
35.	Prevalence & Molecular Characterization of Contagious <i>Caprine pleuropneumonia</i> in small Ruminants in Khyber Pakhtunkhwa NSLP/KP-AU (219)	Dr. Umar Siddique, Chairman, Department of Animal Health, KP Agricultural University, Peshawar.
36.	To Speed up the Pilot Plant Production of Humic Acid. NSLP/S-PCSIR (272)	Mr. Gulzar Hussain Jhatial Director, Fuel Research Institute, PCSIR, Karachi

Detail of Science Caravan Exhibitions in 2012-13

FEDERAL UNIT:			
Exhibition Sites	Dates	No. of School	No. of Students
Science Caravan Exhibition at Govt. High School, Ghari Afghanan, Taxilla	17.09.2012 to 20.09.2012 & 24.09.2012	10	1500
Planetarium Show at Institute of Space Technology, Islamabad	04.10.2012 to 07.10.2012	15	1800
Science Caravan Exhibition at Govt. High School, Mohra Syeda, Murree	08.10.2012 to 13.10.2012	17	2000
science caravan exhibition at National Museum of Science and Technology, Lahore	13.11.2012 to 18.11.2012	15	1920
science caravan exhibition at Falcon House Secondary School, Mandra	15.10.2012 to 20.10.2012	03	2000
science caravan exhibition at NCP, Islamabad	December 19, 2012	23	400
science caravan exhibition at DAWN Education Expo, Islamabad	2-3 Feb, 2013	08	2000
science caravan exhibition at Sir Syed Memorial Society, Islamabad	Feb, 2103	10	500
Planetarium Show at Loke virsa, Islamabad	November 13-18 , 2012	10	1500
science caravan exhibition at Islamabad Public School Muzaffarabad AJK	23-24 Feb 2013	10	1600
International Expo on Energy at AJK University, Muzaffarabad	11-15 March 2013	26	4267
	Total:	147	19487
PUNJAB UNIT:			
Govt. Model High School, Noushera, Khushab	04-11 October, 2012	14	1700
Govt. H S S Kallar Kahar & Govt. G H S S, Bochal Kalan, Chakwal	11-20 October, 2012	21	1705
Community School & College, UAF, Faisalabad	10-13 December, 2012	02	995
Laboratory Higher Secondary School (Girls), UAF, Faisalabad	17-21 December, 2012	01	1575
Govt. Model High School, Bhakkar	18-26 March, 2013	04	3175
Laboratory Higher Secondary School (Boys), UAF, Faisalabad	16-19 April, 2013	01	937
	Total:	43	10087

SINDH UNIT			
Science Caravan Exhibition at Govt. High School, Taluka Kingri, Distt Khairpur	20.09.2012 to 08.10.2012	22	2750
Science Caravan Exhibition at Govt. High Schools(boys & girls), Lakhi Ghulam Shah, Distt Shikarpur	10.10.2012 to 24.10.2012	21	4200
science caravan exhibition at Govt Boys High School, Thari Mir Wah and Taluka Wada, Distt Khairpur Mirs	30.10.2012 to 17.11. 2012	27	2855
science caravan exhibition at Govt. Boys Higher Secondary School taluka Mehar Distt. Dadu	09.12.2012 to 20.12.2012	20	3550
science caravan exhibition at Govt. Girls Higher Secondary School taluka Mehar Distt. Dadu	03.01.2013 to 12.01.2013	09	2950
science caravan exhibition at Govt. (Boys/Girls) High School Karoondi taluka Faiz Gunj Distt. Khairpure Mirs	21.01.2013 to 08.02.2013	35	4170
Science Exhibition at Govt. Boys/ Girls high/ Higher secondary School Sehwan Sharif	24-9-2012 to 05-10-2012	09	4020
Science Exhibition World space week celebrate by Mehran University of engineering and Technology (MUET) Jamshoro	08.10.2012 to 10.10.2012	--	2000
Science Exhibition at Govt. Boys / Girls high/ higher S Secondary School Nagarparkar and Chachro District Tharparkar	20-11-2012 to 08-12-2012	19	3675
Science Exhibition at Govt. Boys/ Girls high/ higher Secondary School Sindhri District Mirpur Khas	07-01-2013 to 17-01-2013	11	1985
Science Exhibition at Govt. Boys/ Girls high/ higher Secondary School Hala District Mitiari	11-02-2013 to 20-02-2013	24	4484
Inaugural ceremony of wings for Science at Education Trust Nasra (ETN) School Korangi Karachi	26-4-2013 to 27-04-2013	--	500
Total:		194	39694
KPK UNIT:			
Science Caravan Khyber Pakhtunkhwa (KPK) Unit Peshawar celebrated Independence Day at Agricultural University Public School (Girls) Peshawar by arranging Science Film and Planetarium shows	14.08.2012	--	630
Science Caravan Exhibition at Govt. Model High School, Ahl, Distt. Mansehra	03.09.2012 to 15.09.2012	22	2500

Science Caravan Exhibition at Govt. Model High School, Kotli Bala Distt. Mansehra	30.10.2010 to 04.12.2010	09	4304
Science Caravan Exhibition at Govt High school (Boys & Girls), Dhadar (Distt. Keachi Bolan)	16.09.2012 to 29.09.2012	11	2250
Science Caravan Exhibition at Govt. High School (boys), Paru Jabba, Distt. Nowshera	11.10.2012 to 20.10.2012	12	2161
Participated in Disaster Management Exhibition, Joint Venture of PSF, CDPM-University of Peshawar and ACF- Pakistan	07-08 Nov, 2012	-	12000
participated in two days S&T exhibition at PCSIR Labs	17,18.11. 2012	-	2630
Science Caravan Exhibition at Latambar, Karak	03.12.2012 to 12.12.2012	10	1764
Science Caravan Exhibition at GGHSS- Chokara, Karak	13-23 December, 12	16	2300
Science Caravan Exhibition at GHS Muhammad Nari, Charsadda	14-23 Jan, 2013	15	1760
Science Caravan Exhibition at GHSS- Battagram, Charsadda	24.01.2013 to 02.02.2013	09	1600
Science Caravan Exhibition at GHS Billitang, Kohat	18.02.2013 to 04.03.2013	09	1950
EXPO on Energy at UET, Peshawar	18-22 March 2013	05	3200
EXPO on Energy at SPS College Swat	23-30 March 2013	17	3216
Science Caravan Exhibition at GHSS Jamrud Khyber Agency	15-30 April 2013	15	3300
S &T Exhibition at PCSIR Labs Peshawar	22-23 April 2013		1850
AUPS&C (Girls) Agriculture University Peshawar		01	1000
Total:		146	47,187
BALUCHISTAN UNIT			
Science Caravan Exhibition at the schools of Tehsil Usta Muhammad, Distt. Jaffarabad	13.11.2013	20	4413
Science Caravan Exhibition at Dera Murad	7.01.2013	17	5359
Inauguration of Science Caravan Jaffarabad Unit Usta Muhamma	10.02..2013	10	1230
Science Exhibition at Sibi Mela	18.02.2013	08	5037
Science Caravan Exhibition at Gawadar	23.03.2013	12	4032
Total:		67	20351

Detail of 22nd Intra Board Science Essay Competition, 2012-13

S. No	Name of Winner Student	Name of School and Address	Board	Essay Languages	Position
01	M. Usama Habib	City Public School Gujranwala	Gujranwala	English	1 st
02	Namra Babar	The city School Daska	Gujranwala	English	2 nd
03	Khuram Shahzad	Workers Welfare School Peoples Colony, Gujranwala	Gujranwala	English	3 rd
04	Kiran Fatima	Green Dots High School Shadman Road, Faisalabad	Faisalabad	English	1 st
05	Asma Shaheen	Laboratory Girls High School University of Agriculture, Faisalabad	Faisalabad	English	2 nd
06	Abu Bakar Noor-ul-Hassan	Anmol Public Boys High School Gulshan-e-Rafique, Faisalabad	Faisalabad	English	3 rd
07	Ahmad Ali	Feroz Memorial School & College Baffa Mansehra	Abbottabad	English	1 st
08	Hajra Zia	Hazara PS & College Haripur	Abbottabad	English	2 nd
09	Saima Nawaz	Quaid-e-Azam PS & College Sector #2 KTS Haripur	Abbottabad	English	3 rd
10	Payal	Bright Future High School Shahbaz Town Hyderabad	Hyderabad	English	1 st
11	Rahul Kumar	Govt. Darul Uloom High School Tando Muhammad Khan	Hyderabad	English	2 nd
12	Tooba Khan	Govt: (N) S.K Rahim Girls High School Hyderabad	Hyderabad	English	3 rd
13	Tayyaba	Govt: Girls Hih School Latifabad#10 Hyderabad	Hyderabad	Urdu	1 st
14	Mehwish	Jinnah Mission High School Hyderabad	Hyderabad	Urdu	2 nd
15	Fazila	Bright Future High School Shahbaz Town Hyderabad	Hyderabad	Urdu	3 rd
16	Amaar	Bright Future High School Shahbaz Town Hyderabad	Hyderabad	Sindhi	1 st
17	Wajeaha	H.M Khoja Girls High School Society Nawabshah	Hyderabad	Sindhi	2 nd
18	Yousra Malik Sheikh	Pak-Cal School Latifabad Hyderabad	Hyderabad	Sindhi	3 rd
19	Eman Farooq	Qadims Lumiere Abdara Road University Town Peshawar	Peshawar	English	1 st
20	Sundis Jamshid	Qadims Lumiere Abdara Road University Town Peshawar	Peshawar	English	2 nd
21	Fatima Sadia	Qadims Lumiere Abdara Road University Town Peshawar	Peshawar	English	3 rd

22	Irsa Arif	Govt Model Muslim Girls High School Kalma Chowk Multan	Multan	English	1 st
23	Mariyam Nadeem	Worker Welfare School for Girls Multan	Multan	English	2 nd
24	Natasha Ashraf	Saint Marry,s Convent H/S Multan Cantt	Multan	English	3 rd
25	Sidrah Rani	Govt. Degree College For Women Thothal Mirpur (Ajk)	Mirpur (Ajk)	Urdu	1 st
26	Qirat Mehrban	Govt. Girls Higher Secondary school Chitterpari Mirpur (Ajk)	Mirpur (Ajk)	Urdu	2 nd
27	Danyal Hussain	Govt. Pilot Model Secondary School Mirpur (Ajk)	Mirpur (Ajk)	Urdu	3 rd
28	Aqduis Naeem	Cadet College Plandri Distt. Sudhnuti Mirpur (Ajk)	Mirpur (Ajk)	English	1 st
29	Kaynat Tanveer	Govt. Girls Degree Collge Panjeri Bhimber	Mirpur (Ajk)	English	2 nd
30	Zermina Khizer	Govt. Girls Degree Collge Panjeri Bhimber	Mirpur (Ajk)	English	2 nd
31	Samee Afzal	Cadet College Plandri Distt. Sudhnuti Mirpur (Ajk)	Mirpur (Ajk)	English	3 rd
32	Faiza Amjad	Mirpur Science College for Girls 46 Sector B-2 Mirpur (Ajk)	Mirpur (Ajk)	English	3 rd
33	Muhammad Hamza Bangash	Cadet College Kohat	Kohat	English	1 st
34	Hasnain Hamid	Cadet College Kohat	Kohat	English	2 nd
35	Sajid Shah	Hangu Institute of Science & Technology Hangu	Kohat	English	2 nd
36	Nayyer Azam	Cadet College Kohat	Kohat	English	3 rd
37	Muhammad Kashif Fahim	Akram Khan Durrani College Bannu	Bannu	English	1 st
38	Romana Minhaj	Govt. Girls High School No.1, Lakki Marwat	Bannu	English	2 nd
39	Muhammad Zohaib	Akram Khan Durrani College Bannu	Bannu	English	3 rd
40	Shahid Ashraf	Govt. H/S Kotla Haji Shah Layyah	D.G.Khan	Urdu	1 st
41	Hafiz M. Ishaq	Superior Science H/SS M.Garh	D.G.Khan	Urdu	2 nd
42	Jasha Fatima	Govt. Girls H/S Central Model D.G.Khan	D.G.Khan	Urdu	3 rd
43	Kashif Ramzan	Govt. Girls H/S Mulla Quaid Shah Old D.G.Khan	D.G.Khan	Urdu	3 rd
44	Fatima Kamal	The City H/SS Parko M.Garh	D.G.Khan	English	1 st
45	Syed Jarar Bukhari	Govt. H/SS Mithan Kot Rajanpur	D.G.Khan	English	2 nd
46	Talha Akram	Govt. H/SS Ladhana	D.G.Khan	English	3 rd
47	Abdul Jabar	Govt. Comp. D.G Khan	D.G.Khan	English	3 rd
48	Bisma Shaikh	Model School Shah Abdul Latif University Khairpur	Sukkur	English	1 st
49	Summera Zia	Rotary Public School Sukkur	Sukkur	English	2 nd

50	Sadaf Naz	Mari Gas Higher Secondary School daharki	Sukkur	English	3 rd
51	Ameer Fatima	The Punjab Girls High School Sector C-1 Township Lahore	Lahore	Urdu	1 st
52	Maryam Shakir	The Quest High School Vandala Road Sir Shahab Park Shahdara Town Lahore	Lahore	Urdu	2 nd
53	Aqsa Amjad	National Model Higher Secondary School Sargodha Road Sheikhpura	Lahore	Urdu	3 rd
54	Amina Sharif	Govt. Girls High School Pattoki Distt. Kasur	Lahore	Urdu	3 rd
55	Ayesha Noor	Mansoor Model Girls High School Multan Road Lahore	Lahore	English	1 st
56	Zahra Ilyas	Govt. Comprehensive School for Girls Wahdat Road Lahore	Lahore	English	2 nd
57	Sidra Anjum	Divisional Public School Sector A-II Block No.3 Township Lahore	Lahore	English	2 nd
58	Bisma Pir Dad	Mansoor Model Girls High School Multan Road Lahore	Lahore	English	3 rd
59	Shahneel Fatima	Mansoor Model Girls High School Multan Road Lahore	Lahore	English	3 rd
60	Hafsa Ahmed	The Punjab Girls High School Sher Shah Road Kot Khawaja Saeed Lahore	Lahore	English	3 rd
61	Fatima Khawar	The Punjab Girls High School Sher Shah Road Kot Khawaja Saeed Lahore	Lahore	English	3 rd
62	Arfa Ghazanfar	Govt. Girls High School Tajpura Scheme Lahore Cantt.	Lahore	English	3 rd
63	Rawaha Bin Iqbal	Rangers Public Schools & Colleges Super High Way Toll Plaza Karachi	Karachi	English	1 st
64	Iqra Beenesh	Iqra Huffaz Girls Secondary School Al-Hamrah Socity Karachi	Karachi	English	2 nd
65	Maham Shafiq	Bahria Model School Campus-2 Majeed SRE Karachi	Karachi	English	3 rd
66	Anum Hayat	Bahria Model School Campus-2 Majeed SRE Karachi	Karachi	Urdu	1 st
67	Uswa Ahmad Hashmi	Bahria Model School 1 Majeed SRE Karachi	Karachi	Urdu	2 nd
68	Summaiya Sundus	Green Flag Public School (Girls Campus) Karachi	Karachi	Urdu	3 rd
69	Hafiza Asna Siddique	Iqra Huffaz Girls Secondary School Block-B, North Nazimabad Karachi	Karachi	Sindhi	1 st
70	Syeda Minhal Bukhari	Metropolis School for Girls Campus-111, Karachi	Karachi	Sindhi	2 nd

71	Kailash Kumar	Customs Public School P.E.C.H.S. Karachi	Karachi	Sindhi	3 rd
72	Haris Ashraf	Sanai School System Sargodha	Sargodha	English	1 st
73	Tahreem Fatima	Sanai School System Sargodha	Sargodha	English	2 nd
74	Munazza Zahid	The Educator 93 Shaheen Park Sargodha	Sargodha	English	3 rd
75	Aman Ali Shah	SZABIST International College Larkana	Larkana	English	1 st
76	Imtiaz Ali	Cadet College Larkana	Larkana	English	2 nd
77	Sagar Kumar	Cadet College Larkana	Larkana	English	3 rd

List of Winner Students of 22nd Inter Board Science Essay Competition

A. ENGLISH LANGUAGE				
Sr. #	Name of winner Student	Name & Address of School	Amount	Position
1.	Nayyer Azam	Cadet College Kohat	Rs.10000	1 st
2.	Bisma Shaikh	Model School Shah Abdul Latif University Khairpur	Rs.6000	2 nd
3	Hajra Zia	Hazara PS & College Haripur	Rs.4000	3 rd
B. URDU LANGUAGE				
1.	Amina Sharif	Govt. Girls High School Pattoki Distt. Kasur	Rs.10000	1 st
2.	Shahid Ashraf	Govt. H/S Kotla Haji Shah Layyah	Rs.6000	2 nd
3.	Sidrah Rani	Govt. Degree College For Women Thothal Mirpur (Ajk)	Rs.4000	3 rd
C. SINDHI LANGUAGE				
1.	Kailash Kumar	Customs Public School P.E.C.H.S. Karachi	Rs.10000	1 st
2.	Amaar	Bright Future High School Shahbaz Town Hyderabad	Rs.6000	2 nd
3.	Syeda Minhal Bukhari	Metropolis School for Girls Campus-111, Karachi	Rs.4000	3 rd

Detail of 22nd Intra Board Science Poster Competition, 2012-13

S.No.	Name of Winner Student	Name of School and Address	Board	Position
1.	Umaiza Wazir	Govt. Islamia Girls High School Daulat Gate Multan	Multan	1 st
2.	Muhammad Zubair Javaid	Govt. English Medium Model High School Jahanian Khaneval	Multan	2 nd
3.	Mohammad Hammad Arshad	Garrison Cadet School Mumtazabad	Multan	3 rd
4.	Hajra Syed	Quaid-e-Azam PS & College Sector 2 KTS Haripur	Abbottabad	1 st
5.	Mahnoor Javed	International PS & College Havelian	Abbottabad	2 nd
6.	Syeda Farhat Naqvi	Hazara PS & College Haripur	Abbottabad	3 rd
7.	Shakeela	Govt. Girls High School Old Wehadat Colony Hyderabad	Hyderabad	1 st
8.	Abdul Hammad	Pakistan Pilot High School Latifabad #6 Hyderabad	Hyderabad	2 nd
9.	Laiba	Jinnah Mission High School Hyderabad	Hyderabad	3 rd
10.	Omama Ali	Qadims Lumiere Abdara Road University Town Peshawar	Peshawar	1 st
11.	Zainat Ejaz	Qadims Lumiere Abdara Road University Town Peshawar	Peshawar	2 nd
12.	Naima Ali	Qadims Lumiere Abdara Road University Town Peshawar	Peshawar	3 rd
13.	Misbah Hayat	Govt. Girls Higher Secondary School 316 G.B Toba Tek Singh	Faisalabad	1 st
14.	Farzeen Kalsoom	City Star Public High School Faisalabad	Faisalabad	2 nd
15.	Fiza Khan	Green Dots High School Shadman Road Faisalabad	Faisalabad	3 rd
16.	Suleman Gill	Saint John's Boys High School Narowal	Gujranwala	1 st
17.	Maimoona Saleem	New Cantt Public High School Saikot	Gujranwala	2 nd
18.	Naheed Akhtar	Kids House English Girls High School Gujranwala	Gujranwala	3 rd
19.	Muneeba Ansar	Govt. Girls High School F/1 Mirpur (Ajk)	Mirpur (AJK)	1 st
20.	Muhammad Waseem Sheikh	Govt. High School Dahri Thothal Mirpur (Ajk)	Mirpur (AJK)	2 nd
21.	Muhammad Arbaz Ikram Khan	Cadet College Palandari (Ajk)	Mirpur (AJK)	2 nd

22.	Iqra Zafar	GGHS F/1 Mirpur (Ajk)	Mirpur (AJK)	3 rd
23.	Mohsin Shabbir	Govt. Hih School Dehri Thothal (Chandral) Mirpur (Ajk)	Mirpur (AJK)	3 rd
24.	Abu Bakar Ameer	Govt.Comp DG Khan	DG Khan	1 st
25.	Rukhsar Mateen	Govt. Girls H/SS DG Khan	DG Khan	2 nd
26.	Muhammad Nadeem	Govt.Comp DG Khan	DG Khan	3 rd
27.	Noor Fajar	Govt. Girls Central Model School DG Khan	DG Khan	3 rd
28.	Zunaira	Apwa Excellent High School Sukkur	Sukkur	1 st
29.	Zubair Ahmed	Bahria Foundation College Ranipur	Sukkur	2 nd
30.	Um-e-Ammarah	S.M.A High School Bunder Road Sukkur	Sukkur	3 rd
31.	Khansa Qadir	Divisional Public School and College Muree Road Rawalpindi	Rawalpindi	1 st
32.	M Abdul Wasay Awan	Divisional Public School and College Muree Road, Rawalpindi	Rawalpindi	2 nd
33.	Hafsa Aslam	Divisional Public School and College Muree Road Rawalpindi	Rawalpindi	3 rd
34.	Shadman Khan	Akram Khan Durrani College Bannu	Bannu	1 st
35.	Sohail Khan	Army Public School and College System Bannu Cantt	Bannu	2 nd
36.	Muhammad Zohaib Khan	Akram Khan Durrani College Bannu	Bannu	3 rd
37.	Mahnoor Bukhari	St: Joseph Convent High School Kohat	Kohat	1 st
38.	Raheel Jan	St: Joseph Convent High School Kohat	Kohat	2 nd
39.	Waqas Riaz	St: Joseph Convent High School Kohat	Kohat	2 nd
40.	Shahzeb	Fauji Foundation Model School Lachi	Kohat	3 rd
41.	Areasha Nasir	Fauji Foundation Model School Lachi	Kohat	3 rd
42.	Amna Mehboob	Govt. Girls High School Governor's House Lahore	Lahore	1 st
43.	Maria Jabeen	Govt. Central Model Higher Secondary School for Girls Gulberg-III, Lahore	Lahore	2 nd
44.	Hassaan Tahir	London Academic Plan School Margzar Colony Multan Road Lahore	Lahore	3 rd
45.	Faiza Rauf	IDA RIEU School for The Deaf Karachi	Karachi	1 st

46.	Nabeel Ahmed	ABSA School & college for The Deaf Karachi	Karachi	2 nd
47.	Hina Abu Baker	IDA RIEU School for The Deaf Karachi	Karachi	3 rd
48.	Mahnoor Aftab	Islamic Alta vista Girls High School 220-A, Satellite Town Sargodha	Sargodha	1 st
49.	Tahreem Abdullah	Bahria Foundation School 257/258, Pir Muhammad Colony University Road Sargodha	Sargodha	2 nd
50.	Muhammad Asad Ali	Bahria Foundation School 257/258, Pir Muhammad Colony University Road Sargodha	Sargodha	3 rd
51.	Aftab Khan	Govt. Pilot Higher Secondary School Larkana	Larkana	1 st
52.	Sarah Nadeem	Govt. Saint Joseph High School Larkana	Larkana	2 nd
53.	Anmool Badaruddin	Govt. Saint Joseph High School Larkana	Larkana	3 rd

ANNEXURE-XIII**List of Schools/Organizations Provided Financial Assistance in 2012-13**

S. No.	Name of Schools/College	Purpose	Amount
1.	Govt. Degree college Mastung (Balochistan)	Purchase of Computers	Rs.100,000/-
2.	Govt. Higher Secondary School Bhawana District, Chiniot	Purchase of Science Lab. Equipment	Rs.50,000/-
3.	Govt. Girls High School Bhaddar, Gujrat	Purchase of Science Lab. Equipment	Rs.50,000/-
4.	Govt. Higher Secondary School Darbelo District Naushahro Feroze (Sindh)	Purchase of Science Lab. Equipment	Rs.50,000/-
5.	Shehzad Public School Subhral Soon Valley District Khushab	Purchase of Computers	Rs.50,000/-
6.	Govt. Girls High School Bharwal, Tehsil Kharian District Gujrat	Purchase of Science Lab. Equipment	Rs.50,000/-
7.	Govt. Higher Secondary School Setharja District Khairpur	Purchase of Science Lab. Equipment	Rs.50,000/-
8.	Govt. High School Ali Raza Abad Lahore City	Purchase of Science Lab. Equipment	Rs.50,000/-
9.	Govt. Higher Secondary School Talpur Wada Distt. Khairpur	Purchase of Science Lab. Equipment	Rs.50,000/-
10.	14 th All Pakistan Science Fair 2013 on 15-17 Feb, 2013 at GIK Institute of Science and Technology, Topi	Medals and Shields for winners	Rs.50,000/-
11.	National Museum of Science & Technology, Lahore	Prize money to the winner students of annual Science Competition, 2012	Rs.50,000/-
12.	National Centre for Physics Islamabad	For NCP Winter Camp, 2012	Rs.50,000/-
13.	Financial Support to attend "Modern topics in Condensed Matter Physics" In Mr. Usman Hassan, SO, NCP.	For attending International conference at Singapore	Rs.30,000/-
14.	Partial Travel Sponsorship to Mr. Aftab Ahmad, School of Biological Science University of Punjab, Lahore	Partial Travel Sponsorship	Rs.34,000/-
		Total:	Rs.714,000/

List of Scientists availed Travel Grants under Development Budget in 2012-13

Sr. #	Name and Address of Applicant	Title of the Conference / Date Duration & Venue/ T. Course	Amount Approved (Rs.)
1.	Mr. Sajjad Ashraf Research Officer PMRC Research Centre Punjab Medical College, Faisalabad. TG- II (558)/12	The 30 th World Congress of Biomedical Laboratory Sciences” from 18-22 August, 2012 held at Berlin, Germany. “ <i>Evaluation of diagnostic potential of acute and latent stage TB specific antigens</i> ”	206,171
2.	Mr. Shoaib-ur-Rehman Assistant Professor Department of Biotechnology, Abdul Wali Khan University Mardan (AWKUM), Palosa Campus. TG- II (561)/12	1 st Istanbul-Eurasian Regional Congress of Biological psychiatry” from 27-31 May, 2012 at Istanbul, Turkey. “ <i>Molecular Genetics of Autosomal Recessive Mental Disorders in Consanguineous Pakistani Families</i> ”	186,354
3.	Mr. Amjad Hussain Research Fellow HEJ, Research Institute of Chemistry, University of Karachi, Karachi, Karachi. TG- II (631)/12	“XXVI National Chemistry Congress with International participation” from 01-06 October 2012 at Mugla University, Turkey. “ <i>Anticancer and a-Chymotrypsin Inhibiting Diterpenes and Triterpenes from Salvia Leriaefolia.</i> ”	176,423
4.	Mr. Jam M. Kashif Petroleum Engineer Plot # 18, St # 6, HDIP, H 9/1 Islamabad. TG- II (656)/12	KSEG International Symposium on Geophysics for Discovery and Exploration, ICC,” from 19-21 September, 2012 at Jeju, Republic Korea . “ <i>Porosity Evolution through wireless logs and cores of Injra-01 and Nuryal-02 Western Potowar, Upper Indus Basin, Pakistan</i> ”.	170,000
5.	Ms. Shehnaz Zakia Research Associate PMNH, Islamabad. TG- II (670)/12	International Training Workshop on High Efficient Plant Factory Technology” from 09-29 September, 2012 at Beijing, China. “Nil”	121,153
6.	Dr. Sharifullah Associate Professor School of Electrical Engineering & Computer Sciences (SEECs), NUST, Islamabad. TG- II (679)/12	14 th International Conference on Asia-Pacific Digital Libraries” from 12-15 November, 2012 at Taipei, Taiwan. “ <i>Exploiting Semantics in Subject-based Searching of DSpace</i> ”	166,049
7.	Mr. Samiullah Ph. D (Scholar).	International Conference on Advances in Plant Sciences (ICAPS 14-18 2012, Thailand)” from	142,694