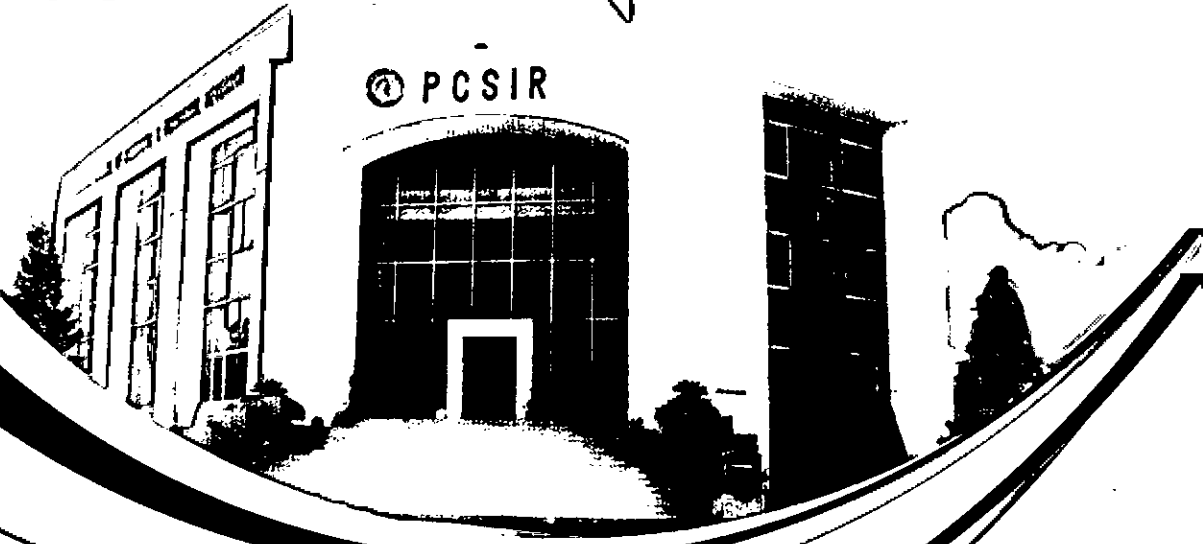




PCSIR



ANNUAL REPORT 2017 - 2018

**PAKISTAN COUNCIL OF SCIENTIFIC
AND INDUSTRIAL RESEARCH**

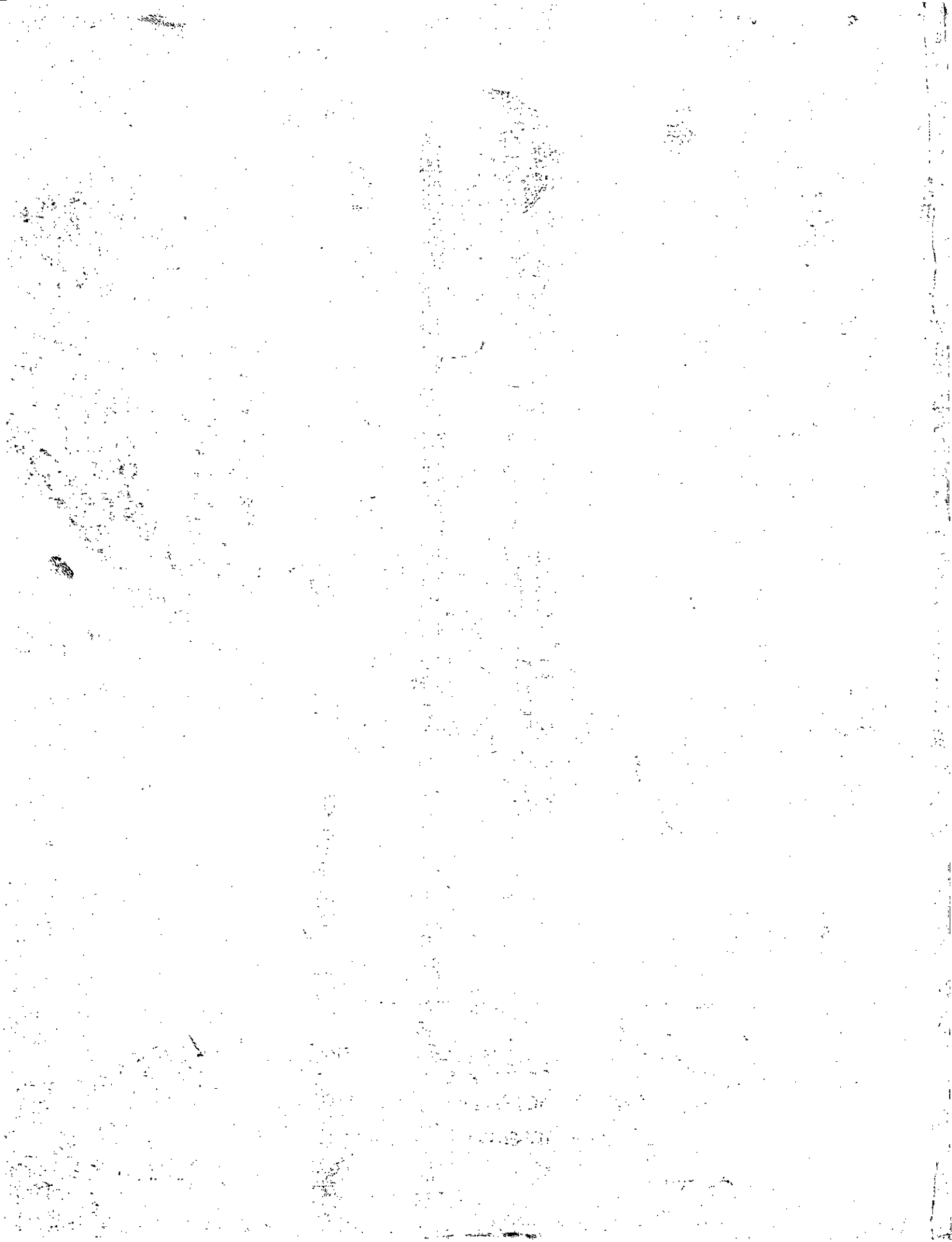
PCSIR Head Office, Islamabad

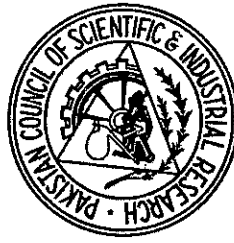
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PCSIR

ANNUAL
REPORT
2017-2018

Pakistan Council of Scientific & Industrial Research
Ministry of Science & Technology
Government of Pakistan

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April, 2019



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MESSAGE FROM THE CHAIRMAN

I am pleased to transmit the Pakistan Council of Scientific and Industrial Research (PCSIR) 2017-18 Annual Report. Being the premier public sector research organization of the country, PCSIR is committed to support and advance the industrial development. It is committed to uplift the industrial sector by establishing Science, Technology & Innovation Park (STIP) at PCSIR Lahore. Establishment of Science and Technology Park is the dire need for integrated innovative system at national level. PCSIR has instigated the establishment of Science, Technology and Innovation Park (STIP) for sustainable economic development at PCSIR Laboratories Complex Lahore.

I am pleased to report that in 2017-18, with the help of dynamic team, 70 industrial need based projects were undertaken out of which 40 have been completed. In order to strengthen the industrial linkages, efforts were made to fortify linkages with industry and academia for undertaking demand driven R&D for which PCSIR visited Chambers of Commerce & Sector Specific Trade Associations including Surgical Instruments Manufacturers Association of Pakistan (SIMAP), Sialkot, Faisalabad Chamber of Commerce & Industry (FCCI), Vehari Chamber of Commerce & Industry (VCCI), Gujranwala Chamber of Commerce & Industry (GCCCI) and Lahore Chamber of Commerce & Industry (LCCI). Organizational linkages with other public sector counterparts are being enhanced to share human & material resources with an aim of creating synergies for the development of industrial sector and to meet the national strategic requirements. PCSIR collaborated with Pakistan Ordinance Factories (POF) Wah, Pakistan Aeronautical Complex (PAC) Kamra and Heavy Industries Taxila (HIT).

As a part of PCSIR's programme to enhance international liaison, a Delegation from the Republic of the Gambia visited PCSIR in September, 2017. During the meeting, PCSIR offered cooperation in human resource development through tailored made training courses for students and professionals from Gambia. The head of Gambian delegation Mr. Yaya Sireh Jallow appreciated the offer and indentified areas for cooperation such as skill development for food processing and preservation, dehydration techniques, value addition and testing facilities for food products especially marine food products.

Apart from the regular diploma and certificate courses, PCSIR Laboratories/ Training Institutes are conducting various number of trade related training courses in collaboration with Federal/ Provincial Vocational Training Authorities as per demand of the local industry which includes NAVTTC, Punjab Skill Development Fund (PSDF), Sindh TEVTA, FATA Development Authority and Baluchistan TEVTA, Quetta.

PCSIR, being premier R&D organization of Pakistan is striving hard towards the capacity building of the people as the socio-economic development is directly linked with the development of Human Capital. The potential to plan and manage the development activities can only be enhanced among the people once they are organized and have access to necessary skills. PCSIR under the visionary management initiated a "Community Uplift Programme" through capacity building of the local people in the areas of Swat, Chitral and Gilgit Baltistan. These areas are rich in fruit production and nature has gifted tremendous environment for world's best fruits having matchless taste. PCSIR initiated a training programme for the Value Addition of Fruits and Vegetables to mitigate the fruit losses by engaging local social groups. In this connection, two trainings were arranged in Chirtal region on Fruit Preservation and Processing.

Remaining true to its core purpose, I have no doubt that the PCSIR, in partnership with academia and industrial partners, can play a leading role in contributing the value of the research to scientists, students and to the wider public in future.

Dr. Shahzad Alam
Chairman, PCSIR



INTRODUCTION



INTRODUCTION

Mandate

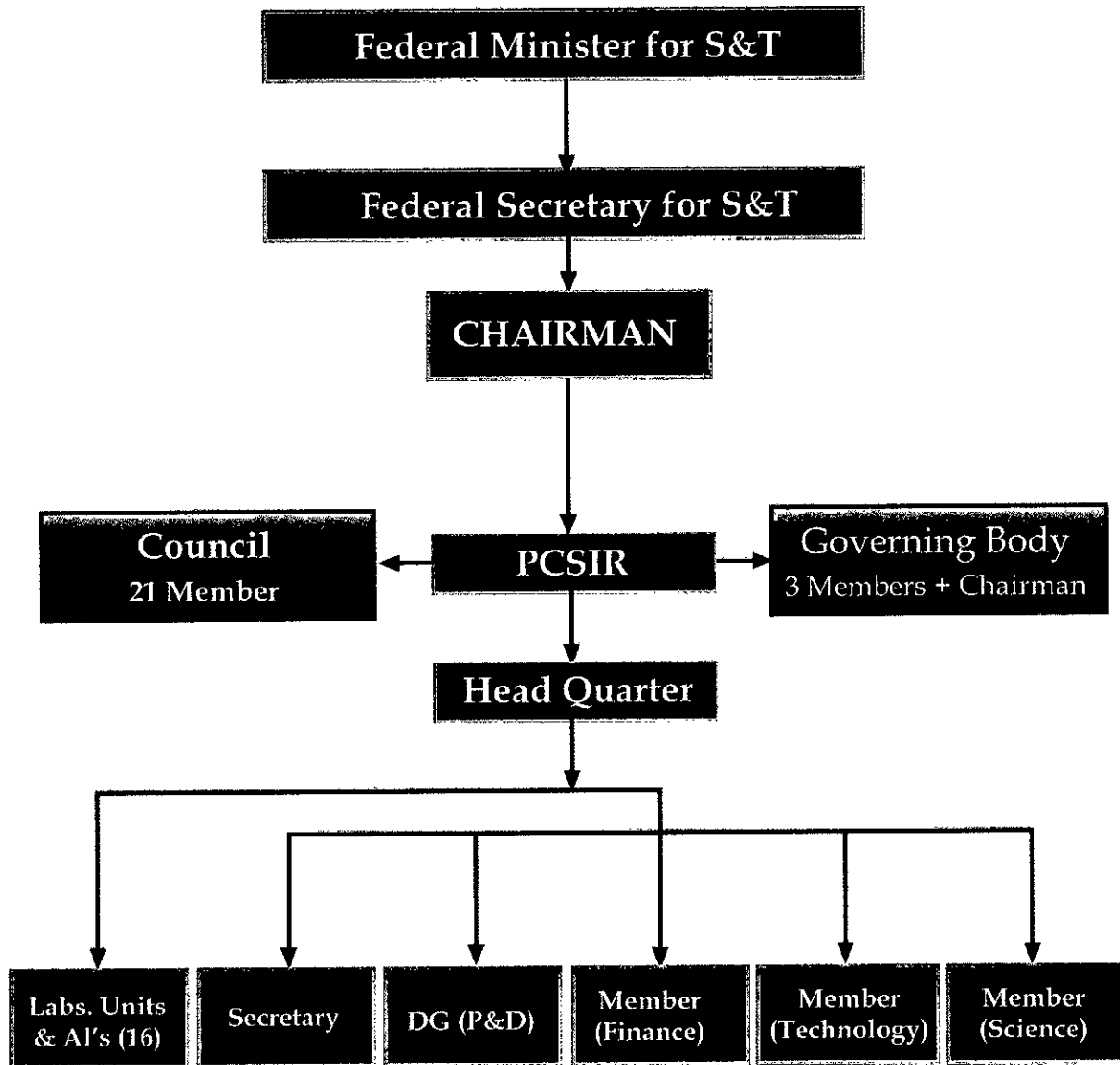
The Government of Pakistan established Pakistan Council of Scientific and Industrial Research (PCSIR) in 1953 as an autonomous body with a mandate to undertake, promote and guide scientific and technological research related to problems connected with the establishment and development of Pakistani industries.

Vision

To re-align PCSIR as a cost-effective technology solution provider for public and private sectors, especially for SMEs.



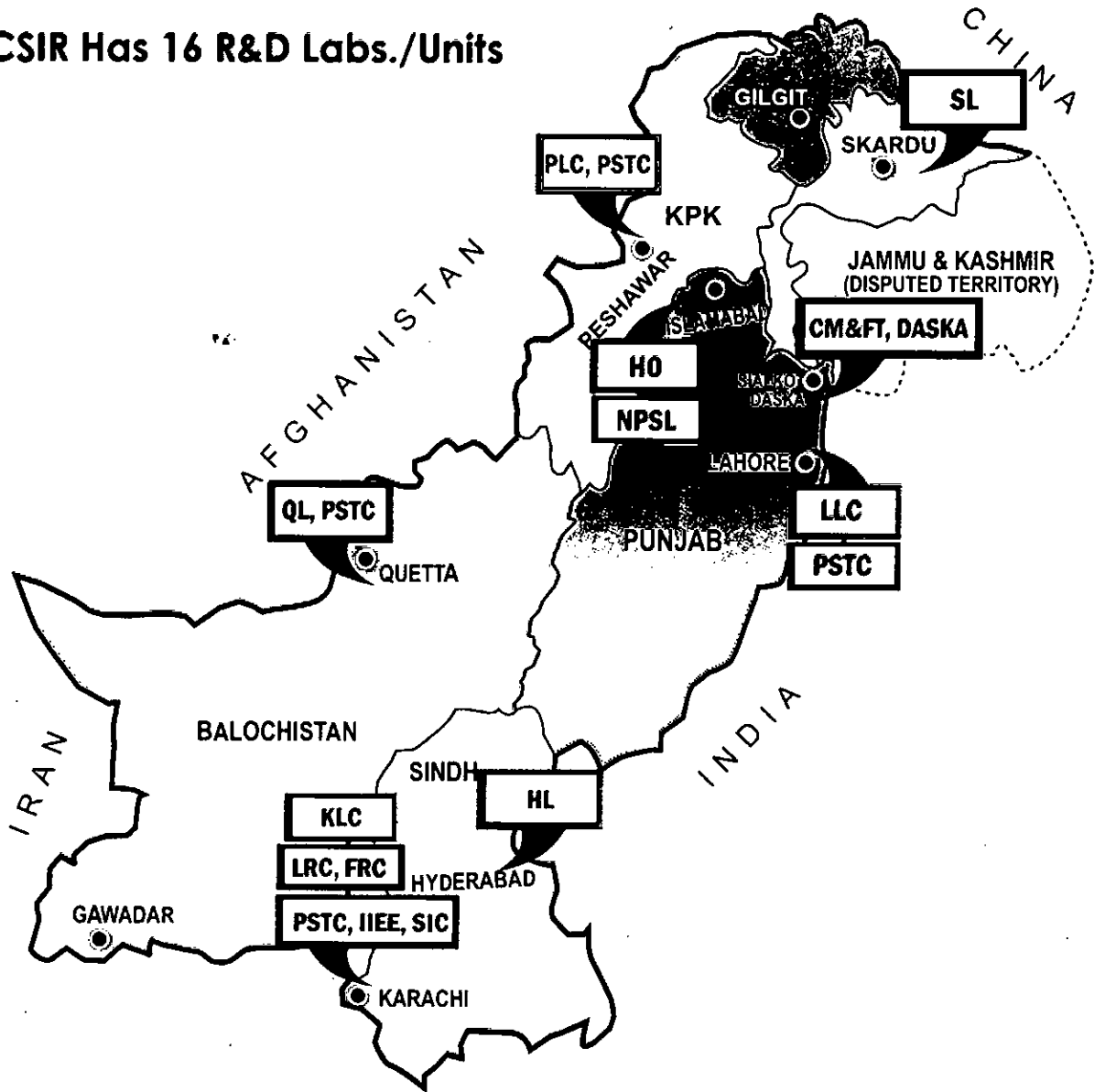
PCSIR ORGANIZATION CHART





LOCATION OF PCSIR LABS & UNTIS

PCSIR Has 16 R&D Labs./Units



★ **PCSIR HEAD OFFICE, ISLAMABAD**



PCSIR- LABS

- Laboratories Complex, Karachi ■ Laboratories Complex, Lahore ■ Laboratories Complex, Peshawar
- Laboratories, Quetta ■ Laboratories, Hyderabad ■ National Physical & Standards Laboratories, Islamabad
- Laboratories, Skardu



PCSIR RESEARCH CENTRES

- Fuel Research Centre, Karachi ■ Leather Research Centre, Karachi



ACADEMIC & TRAINING INSTITUTIONS

- IIEE - Institute of Industrial Electronics Engineering, Karachi ■ Pak Swiss Training Centre, Karachi
- Precision System Training Centre, Lahore ■ Precision System Training Centre, Peshawar
- Precision System Training Centre, Quetta ■ Cast Metals & Foundry Technology Centre, Daska

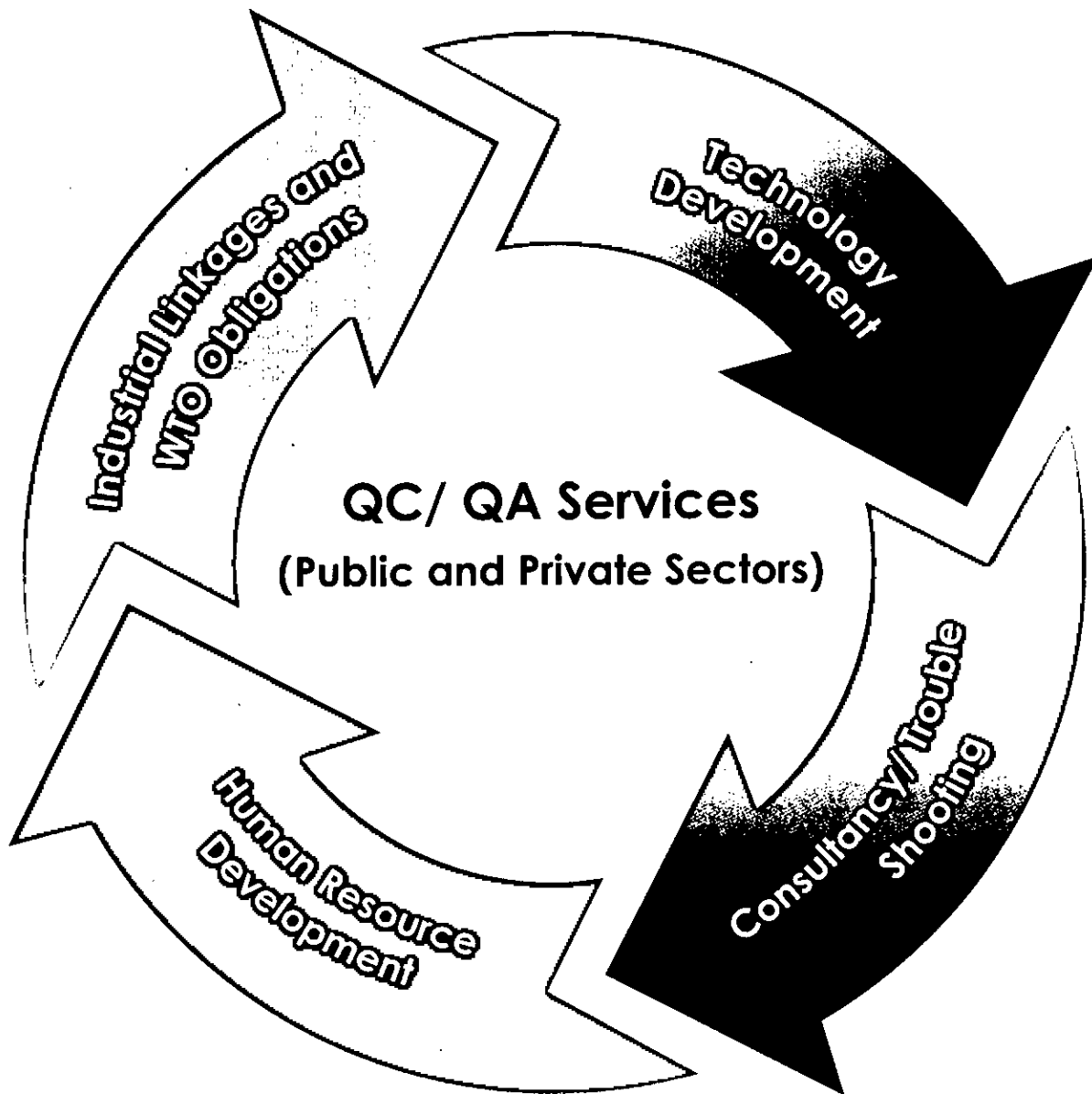


PUBLISHING & INFORMATION CENTRE

- SIC - Scientific Information Centre, Karachi



MAIN ACTIVITIES





SERVICES SECTORS

Advance Engineering Materials

Environment

Food and Allied Products

Electronics

Minerals

Industrial Chemicals

Leather and Leather Auxiliaries

Paper and Plastic/ Polymers

Textile and Associated Products

Pesticides/ Herbicides

Glass and Ceramics

Oils and Fats

Biotechnology

Dyes

Strategic Industry

Pharmaceutical



PCSIR HEAD OFFICE, ISLAMABAD

Pakistan Council of Scientific and Industrial Research has a network of 17 research laboratories/ units including 6 training institutes located all over the country in Federal as well as all provincial capitals. Several laboratories of PCSIR are ISO-17025 accredited and some are under the accreditation process. PCSIR's Head Office is located in Islamabad.

The Chairman PCSIR is the competent authority of PCSIR. The PCSIR Council consists of 21 members which is the supreme policy-making body. The executive organ of the Council is the Governing body which consists of four members: The Chairman and the Members for Science, Technology and Finance. The following wings are working under supervision of the Members in Head Office.

Science Wing

Member (Science) is the head of the wing and responsible for supervision and monitoring of all Research and Development activities of the Council, training and technical matters of units, organizing events and programmes in collaboration with international and national organizations.

The Science Wing is also responsible for PCSIR Annual Reports and R&D Programme, accreditations matters, technical comments, National Assembly/ Senate questions, networking system, software development etc.

Technology Wing

Member (Technology) is the head of the wing and responsible for supervision of all civil works, PSDP projects, technical training institutes, commercialization of products/ services, exhibitions etc.

Finance Wing

Member (Finance) is the head of the wing and responsible for supervision of all finance related matters of PCSIR, audit matters, annual budget, payments, monitoring of Self-Generated Income, pension and GP Fund.

Administration/ Establishment Wing

Secretary PCSIR is the head of the wing and responsible for supervision of administrative matters, establishment matters, security measures, legal matters, promotions and recruitment, holding PCSIR Council and Governing Body meetings.



PCSIR HEAD OFFICE, ISLAMABAD



PCSIR Head Office, Islamabad

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Establishment of Science, Technology & Innovation Park (STIP) at PCSIR Lahore

Science and Technology Park (STP) in all over the world acts as bridge among the academia, industries, R&D organizations and government, to provide infrastructure and research facilities for continuous development and economic growth of a region. Establishment of Science and Technology Park is the dire need for integrated innovative system at national level. PCSIR has instigated the establishment of PCSIR Science Technology and Innovation Park (STIP) for sustainable economic development at PCSIR Laboratories Complex Lahore, as per verbal instructions of the Honorable Minister for Science and Technology. The idea and salient features of PCSIR- STIP, Lahore have been briefed to the honourable Federal Minister and worthy Secretary, MoST. In this regard, PCSIR, also conducted a number of meetings various meeting with stakeholders for taking them on board and has taken necessary steps for providing technical and infrastructural support. A visit was also made by the Honorable Minister and Secretary MoST to PCSIR Laboratories Lahore to witness measures taken to provide technical and infrastructure support to the industries.

Paradigm shift towards Industrial Need-Based Research

Scientists/ engineers of PCSIR have been emphasized to do need-based R&D projects for the development of high-tech products/ technologies for industries which are the need of the country. During the year 2017-18, 70 need based projects were undertaken out of which 40 were completed.

Strengthening of Triple Helix Linkages with Academia/ Industry/ R&D Organizations

Strong linkages of R&D organizations, Academia and Industry are imperative for socio-economic development, ultimately progress and prosperity of a country. Hence, it is essential to identify the areas of collaboration, co-ordination and mutual support between these basic sectors for sustainable industrial growth. The level and nature of research and strong relationship between these stakeholders have always played an important role in swift economic progress in developed as well as developing countries.

In order to strengthen the industrial linkages, efforts are made to fortify linkages with industry and academia for undertaking demand driven R&D, value addition especially for exports, development of import substitutes, entrepreneurship development, transfer of technology to the local industry and effective publicity.

Establishment of Precision Systems Training Centre (PSTC) and PCSIR Laboratories at Gwadar, Balochistan (on-going PSDP project)

Gwadar is an important city of Pakistan with natural port and shall become hub of Commercial, Economic and Social activities due to China Pak Economic Corridor (CPEC). A development project "Establishment of Precision Systems Training Centre (PSTC) and PCSIR Laboratories at Gwadar (Balochistan)" is being executed by PCSIR. These laboratories at Gwadar will not only create jobs but will also play a vital role in the economic development by providing testing facilities to the local industries in food safety and security, building materials, minerals, water testing, fisheries and chemicals.

Assistance to Honorable Supreme Court of Pakistan

On the orders of the Honorable Supreme Court of Pakistan, the testing/ analyses of Milk Samples of different companies were undertaken. The project was undertaken with reference to Human Rights Case No.1107 of 2018 (Deficiencies in the production, processing and packing of packed milk in the province of Sindh) of Regional Office, Karachi. In this regard, 58 different samples were provided to PCSIR by the Commission appointed by the Honorable Chief Justice of Pakistan. Detailed reports of the testing/analyses were provided to the Regional Office within the stipulated time. The Supreme Court appreciated the quality of the work done by PCSIR, Karachi. Later on, a three month monitoring service was also conducted and companies



YEAR AT A GLANCE

**YEAR AT A
GLANCE**



of Science and Technology (MoST) on September 17-18, 2018 for the industrialists and academia of Khyber Pukhtunkhwa and Gilgit Baltistan.

4th International Conference on "Frontiers of Advanced Engineering Materials (FAEM-18)" held at PCSIR Labs Complex, Lahore

The 4th International Conference on Frontiers of Advanced Engineering Materials (FAEM-18) was organized by Pakistan Institute of Technology for Minerals & Advanced Engineering Materials (PITMAEM) Pakistan Council of Scientific & Industrial Research (PCSIR) Laboratories Complex, Lahore in collaboration with ECO Science Foundation and Pakistan Science Foundation, Islamabad on 19-20th February, 2018. Eminent scientists and engineers participated from all over Pakistan. The foreign delegates from Denmark, Kyrgyzstan and Iran also participated in this conference. The Federal Minister for Science & Technology, Rana Tanveer Hussain, was the Chief Guest of the inaugural Session of the Conference. The eminent guests in the Conference included Ms. Yasmin Masood (Secretary, MoST), Dr. Manzoor Hussain Soomro (President, ECO Science Foundation), Dr. Shahzad Alam (Chairman, PCSIR) and Vice Chancellors of the Universities and delegates from different Industries.

International Conference on "Innovation and Commercialization in Biotechnology" Organized by LLC in Collaboration with MoST at PCSIR Labs Complex, Lahore

International Conference on "Innovation and Commercialization in Biotechnology" was organized by PCSIR Laboratories Complex, Lahore in Collaboration with Ministry of Science and Technology on 25th-26th April, 2018 at PCSIR Labs. Complex, Lahore. Dr. M. Ashraf Tahir, Director General, Punjab Forensic Science Agency was the Chief Guest. The renowned Scientists from International and National Research Institutes/ Universities participated in the Conference. International delegates from Malaysia, Turkey, Brazil, and China participated in the conference.

PCSIR Labs Complex Peshawar Signed Memorandum of Understanding with Serena Hotels Pakistan

PCSIR Laboratories Complex, Peshawar has signed memorandum of understanding (MoU) with M/s Serena Hotels Pakistan to execute a honey project under CSR Programme - namely "KARIGHAR" in April, 2018. Dr. Shahzad Alam, Chairman PCSIR and Mr. Aziz Boolani, Chief Executive Officer, Serena Hotels put their signatures on the MoU. The signing ceremony was attended by the senior management of both the entities. Under the scope of MoU, PCSIR and Serena Hotels will collaborate in improving the skills of farmers of Gilgit Baltistan (GB) region in honey bee farming by providing professional trainings, processing and quality assurance facilities and also facilitate them for selling their product, leading to the sustainable and improved livelihood.

PCSIR Peshawar Organized a Training Programme on "Techniques in Value Addition of Fruits & Vegetables"

PCSIR Laboratories Complex, Peshawar organized a training programme on "Techniques in Value Addition of Fruits & Vegetables" on May 3-5, 2018 at Booni, Chitral. This activity was initiated under PCSIR's "Community Uplift Programme" in collaboration with Agha Khan Rural Support Programme. Chairman PCSIR, Dr. Shahzad Alam, was the Chief Guest in the "Certificate Distribution Ceremony" who awarded the certificates to the trainees. Mr. Farid Ullah Khan, Member Science-PCSIR, Engr. Irfan Ahmad Rabbani, Director General, PCSIR Laboratories Complex, Peshawar, and the senior management of PCSIR Head Office and Peshawar Laboratories were also present in the event. The Chairman PCSIR also distributed 50 Water Filtration Kits and a Solar Dehydration Plant to the local community of the Booni region.



YEAR AT A GLANCE

whose samples were found substandard were asked to improve the quality of their products. These services were provided during December, 2017 till March, 2018.

Successful Installation of Defluoridation Water Treatment Plant in the Thar Desert for Removal of Sediments, Fluoride, Nitrate and Microbiological Contamination Simultaneously

Population of Thar Desert rely on groundwater for drinking as well as livestock purposes which is available at a depth of 20-300 ft and is obtained through wells. Most of the ground water in the area is contaminated with high level of Fluoride ion which is a major source of Fluorosis (a disease which is characterized by mottled teeth in dental fluorosis and brittle bones in severe skeletal fluorosis). To solve the issue, PCSIR conducted an extensive research on different clay and natural product materials, that can be potent defluoridation adsorbents.

Process to Decrease the Water Absorption and Porosity in Ceramics Tiles

Master tiles are one of the largest manufacturers of ceramics tiles who were facing a problem of water absorption and increased porosity in tiles. To resolve the problem, samples were evaluated for chemical composition and process was developed to reduce water absorption and porosity by making changes in mix design and sintering temperature.

Development of Herbal Product for Hypertension Normalization

Hypertension is one of the major cardiovascular diseases and causes a number of vascular disorders. It is defined as a sustained increase in blood pressure $\geq 140/90$ mm Hg, which is a principle cause of stroke and major contributor to coronary artery disease, cardiac failure and renal insufficiency. Keeping in view the antihypertensive effects of medicinal plants, three abundantly available indigenous plants were chosen for the development of required product which will normalize the blood pressure safely without any side effects. Plant material has been procured, processed into different solvent extracts and calculated their extractives values. Moisture, ash and metal contents were determined. Antibacterial and antifungal activities were performed. Further work on pharmacological activities, standardization of the different extracts and their formulation into a product is in progress.

Tree Plantation Activity Conducted at PCSIR Labs Lahore

A tree plantation activity was conducted at PCSIR Laboratories Complex, Lahore on September, 13, 2018 for purifying the environment and to prevent the global warming, soil erosion and pollution. The Director General, LLC, Dr. Quratual-Ain-syed, Director (P&D), Dr. Shaista Jabeen Khan, Head of all centres and officials of Lahore Labs., planted new plants in the Laboratories. Students of Bashir Memorial High School also actively participated in the said activity.

Tree Plantation Campaign Conducted at PCSIR Labs. Peshawar

One-day campaign on "Tree plantation" was arranged in PCSIR Laboratories Complex, Peshawar and PCSIR employees colony on August 29, 2018. Chairman PCSIR and Director General Peshawar Laboratories Mr. Irfan Ahmed Rabbani took part in the event. They appreciated the active participation of PCSIR employees in this campaign to make the environment clean and green.

ISO Training Provided to Industrialists and Academia of KPK and Gilgit-Baltistan

Two days awareness training on "Integrated Management Solution (ISO 9001:2015 and ISO 1401:2015)" was provided at PCSIR Laboratories Complex, Peshawar under Certificate Incentive Programme (CIP), Ministry



YEAR AT A GLANCE

PCSIR Lahore Participated in Pakistan Coating Show 2018 and Science Mela

The 4th Pakistan Coating Show 2018 was organized by Bin Rasheed Group at Expo Centre, Lahore. This coating show had two sessions, knowledge sharing and exhibition for the industry and academia. PCSIR Laboratories Complex Lahore exhibited stall in this Coating Show and Engr. Ali Imran delivered lecture on the topic "Modern Era and Role of Thermal Coatings".

PCSIR Laboratories Complex, Lahore also participated in the "Lahore Science Mela 2018" organized at Ali Institute of Education, Lahore on January 27-28, 2018. PCSIR stall was set in this exhibition to display the R&D products.

LRC Participated in Pakistan Mega Leather Show 2018

Mr. Farrukh Nazir, Principal Scientific Officer and Mr. Shakeel Ahmed, Senior Technician of PCSIR Leather Research Centre, Karachi participated in 4th Pakistan Mega Leather Show 2018 organized by PTA in Expo Centre Lahore held from January 27-29, 2018. In this event a number of leather articles developed at LRC were displayed such as wallets, key chains, shoes, sheet from chicken paw leather, ostrich leather, polka dot effect leather, fish skin leather, stomach leather, chicken paw pieces, fur leather, fat liquors, syntan and resins. All the visitors having relevant profession appreciated the research products as well as testing and training facilities available at LRC, Karachi.

One Day Seminar on "Halal and Safe Food: Challenges and Responsibilities" held at PCSIR Labs. Complex, Karachi

A one-day seminar on "Halal and Safe Food: challenges and responsibilities" was held in PCSIR Laboratories Complex, Karachi on January 29, 2018. The seminar comprised of Inaugural session and two technical sessions. The Chairman PCSIR, Dr. Shahzad Alam, graced the occasion as the Chief Guest. Speakers from various organizations, including SANHA Pakistan, FPCCI Karachi and Dadabhoy Institute of Higher Education presented their speech on topics to cover the different aspects of Halal and Safe Food and highlighted the importance of Halal Trade in the economic uplift of the country. The participants also interacted with the speakers during the question answer session. Commemorative shields were presented to the guest speakers.

PCSIR Scientists Visited China under "South Asian Talents China's S&T and Innovation Trip"

The scientists of PCSIR visited China to participate in "South Asian Talents China's Science, Technology and Innovation Trip" from June 10-17, 2018, fully sponsored by Ministry of Science and Technology of the People's Republic of China. The objectives of the visit were to promote regional science, technology and innovation (STI) cooperation, explore effective mechanism for science and technology (S&T) cooperation, provide the platform to young scientists to present themselves, exchange ideas and create opportunities for promoting scientific and cultural exchange.

Recovery of Protein and Chromium from Leather Solid Waste through Hydrolization

During the conversion process of one ton salted hides/skins into leather, only 200kg final product is obtained. Out of the remaining proteineous material, maximum goes in wet blue wastes eg. shavings, buffing, dust and trimmings etc. therefore in terms of collagen, the yield as leather is 20%. The traditional way of handling this waste collagen in most of the countries is incineration, land filling or thrown out the tanneries near the public places. Such disposition of solid wastes is potentially risky since uncontrolled chemical and biological degradative process of land filled chrome wastes may produce various soluble chrome containing substance.



Under these conditions the oxidation reaction of Cr^{+3} to Cr^{+6} is possible because it has been found that in basic condition, the oxidation of Cr^{+3} to Cr^{+6} by peroxide and hydro halide can occur with ease. Rain (especially acid rain) can leach chromium Cr^{+3} from waste dumps after which soluble salts may reach the sources of potable water. Still all of these ways in which chrome Cr^{+3} may be converted to Cr^{+6} are unknown. When waste is thrown out at public places the protenious material provides the growth media to the microorganisms and other nuisances that cause the bad smell and many diseases. Also the toxic chemical from these solid wastes enters in the food chain and insert the negative effects on life. While the huge amount of waste protein has wide chances to be utilized in hundreds of very beneficial and costly products e.g. Pharmaceutical products, cosmetic, food, adhesive and different gelatins etc. therefore emphasis was made on the development of suitable technologies for the recovery of protein from waste and its beneficial application in value added products.

Major Products/ Processes Developed

Defluoridation Water Treatment Plant

PCSIR Karachi has developed a Defluoridation technology for groundwater. Based on the technology, state of the art water defluoridation plant has been designed, fabricated and installed at Khinsar village, sub district Tharparker. The water treatment plant not only removes Fluoride but also eradicates other harmful chemicals like nitrate and arsenic and microbial contaminants. The Defluoridation Water Treatment Plant can be used in areas where fluoride concentration in groundwater is high but TDS level of water is drinkable, in order to provide safe drinking water to community to safe guard health and wellbeing of suffering people.

Mechanical Heat Pump

PCSIR Karachi developed "Mechanical Heat Pump" Training-Aid System which is an integrated training system or simulator that introduces and trains students to the principles and components of a heat pump and refrigeration system using industrial and commercial devices. The training system clearly demonstrates the operation of the most common refrigeration system - configurations including evaporator, condenser, compressor and expansion valve. Lockable fault-insertion switches allow students to practice troubleshooting skills, which may be conducted at either the schematic control panel or at the suspect devices and components. Fully integrated courseware guides students through alternative modes of system set-up and control. The training system includes all the equipment required to perform the exercises contained in the courseware. The Refrigeration Training System is supported by correlated courseware employing a competency-based, individualized approach to the study of intermediate refrigeration topics.

Transparent Conductive Oxide (TCO)

Transparent conducting films (TCFs) are thin films of optically transparent and electrically conductive material. They are an important component in a number of electronic devices including liquid-crystal displays, OLEDs, touch screens and photovoltaic. PCSIR Labs Lahore have developed low cost TCO films that cater the demands for research and industrial applications.

Protease enzyme production for industrial applications

Proteases are the most important industrial enzymes with almost 60% share of world's enzyme market. In Pakistan protease enzyme is imported in the largest amount as compared to the other enzymes. It is used extensively in leather and detergent industry. The indigenous production of the enzyme from local agro-industrial wastes can save the foreign exchange expense on its import. PCSIR Labs Lahore has produced protease enzyme at laboratory scale. Low cost medium has been developed from indigenous bio-resources. The maximum activity of enzyme at alkaline pH made it suitable for leather, detergent industries and poultry industries.

Production of non antibiotic feed additive

Natural feed additives are compounds which are added to a diet for supply nutrients to the animals. In



YEAR AT A GLANCE

general, the purposes of feed additives are to enhance production efficiency, to improve health, and to reduce morbidity. Feed additives are important to the business of food in the country and world. Among various types of feed additives, non-antibiotic growth promoters are affectively used in all over the world to improve poultry and other live stocks. The use of non-antibiotic growth promoters such as prebiotics and probiotics are widely practiced in the US poultry industry which is utmost need of poultry industry in Pakistan. The biofeed additive has been produced at laboratory scale by PCSIR Lahore. Agricultural byproducts were used in the medium and final product development to make it economical.

Apple Cider Vinegar

PCSIR Lahore has developed apple cider vinegar which has more trusted applications. Its wide-ranging benefits include everything from curing hiccups to alleviating cold symptoms, health concerns including diabetes, cancer, heart problems, high cholesterol, and weight issues.

Peach Vinegar

Peach vinegar developed by PCSIR Lahore, is low in calories and contains no saturated fats. Nonetheless, they are packed with numerous health promoting compounds, minerals/vitamins, a moderate source of antioxidants and vitamin C which is required for the building of connective tissue inside the human body. Consumption of such foods that are rich in vitamin C helps a person develop resistance against infections and helps to eliminate harmful free radicals. The natural antioxidants in fruits and vegetables help keep body working at its best, so consuming a diet that meets daily recommended amount of fruits and vegetables without increasing sugar level is one of the best ways to give a strong defense against disease. Fruits and vegetables are protective to health as they're helpful at reducing the risk of coronary heart disease, stroke and some cancers.

Jamun Vinegar

Jamun vinegar, developed by PCSIR Lahore is good to reduce enlargement of spleen, diarrhea, and who has urine retention problems. Jamun's polyphenolic compounds are effective against cancer, heart diseases, diabetes, asthma and arthritis. Various digestive disorders i.e. flatulence, bowel spasm, stomach disorders, dysentery are cured by jamun vinegar.

Buckwheat Gluten Free Cake

PCSIR Labs Skardu has developed buckwheat gluten free cake from buckwheat flour. The gluten free cake suitable for gluten allergic/wheat sensitive persons and peoples suffering with celiac disease. It is excellent for patients of anemia, diabetes, indigestion. Buckwheat also boosts immune system and strengthen capillary wall, increase elasticity of blood vessel and circulatory disorder treatment. The product is good source of iron, zinc, selenium, and other micronutrients, the cake is used as like other cakes by common people.



Human Resource Development

Training Received (Long-Term)

Nature of Training	Foreign	Local	Total
Post-Doc	-	-	-
Ph.D.	02	09	11
M. Phil./M.Sc./MS	-	04	04

Training Received (Short-Term)

Nature of Training	Foreign	Local	Total
Short Training Courses, Workshops, Seminar, etc.	16	76	92

Training Imparted

Sr. no.	No. of Trainings	Lab/Unit	No. of Participants
1.	34	PCSIR Labs Complex, Karachi	242
2.	27	PCSIR Labs Complex, Lahore	-
3.	10	PCSIR Labs Complex, Peshawar	72
4.	01	PCSIR Labs, Quetta	01
5.	02	National Physical and Standards Laboratory, Islamabad	19
6.	01	Fuel Research Centre, Karachi	22
7.	11	Leather Research Centre, Karachi	129
8.	08	PCSIR Labs, Skardu	526



YEAR AT A GLANCE

Academics Contribution

Technical Training Centers

Name of Course/Degree	Students Passed-Out
B. Engg.	35
DAE (Diploma of Associate Engineer)	266
Short Courses	240

Students Supervision

Name of Lab/Unit	Number of Students
PCSIR Labs Complex, Karachi	29
PCSIR Labs Complex, Lahore	711
PCSIR Labs Complex, Peshawar	27
PCSIR Labs, Quetta	12
PCSIR Labs, Hyderabad	06
PCSIR Labs, Skardu	10



Development Projects

On-Going/Completed Projects during 2017-18

S. No.	Project Name	Total Cost	Allocation 2016-17
		PKR in million	
1.	Establishment of Technical Training Centre for Precision. Mechanics and Instrument Technology PSTC Gwadar Baluchistan.	189.360 852.342 (R)	129.477
2.	Up gradation of Food Processing & Analytical Laboratory and Establishment of Gems Cutting and Polishing Centre at PCSIR Skardu, Gilgit-Baltistan.	56.00	20.00
3.	Up gradation of Medicinal Botanic Centre as National Centre for Herbal Medicine, PCSIR Labs. Complex, Peshawar.	110.36	2.00
4.	Establishment of Textile Research Centre, Faisalabad Revision of PC-1 Considered in DDWP 14.06.2017 24 months.	236.464 Revision submitted 876.962	35.00
Total			186.477

Projects Approved during 2017-18

S. No.	Title of Project	Approved by DDWP/CDWP/ ECNEC	Total Cost
			PKR in million
1.	Establishment of Technical Training Centre for Precision Mechanics and Instrument Technology PSTC Gwadar Baluchistan (Revision)	CDWP 29.03.2018	852.342
2.	Up gradation of Medicinal Botanic Centre as National Centre for Herbal Medicine, PCSIR Labs. Complex, Peshawar	CDWP 08.05.2018	110.36



YEAR AT A GLANCE

Budget & Finance

Non-Development Budget (Fiscal Year 2017-18)

Approved Budget	PKR 2312.961 million
Released	PKR 2312.959 million

Development Budget (Fiscal Year 2017-18)

Approved Budget	PKR 186.477 million
Released	PKR 96.634 million



PICTORIAL PRESENTATION

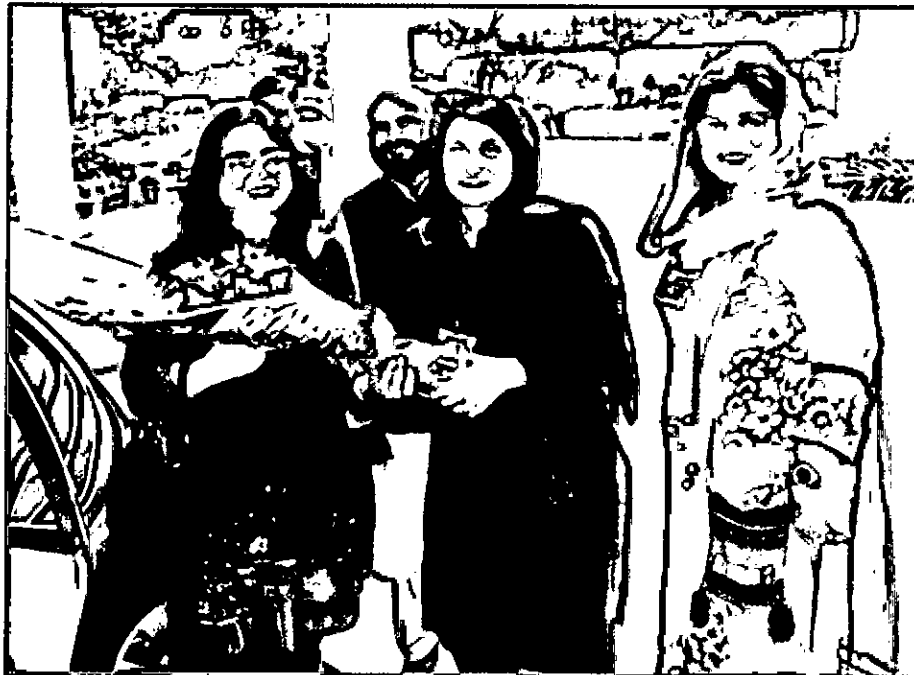


PICTORIAL PRESENTATION

Pictorial Presentation of the Events



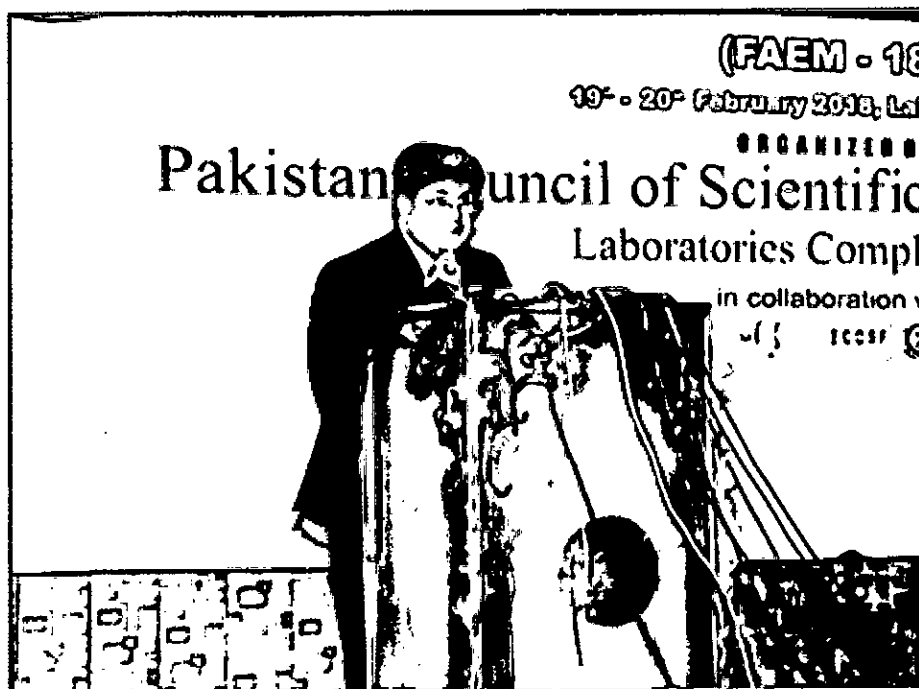
Dr. Shahzad Alam Chairman PCSIR and CEO Serena Hotels, Mr. Aziz Boolani signing the memorandum of understanding.



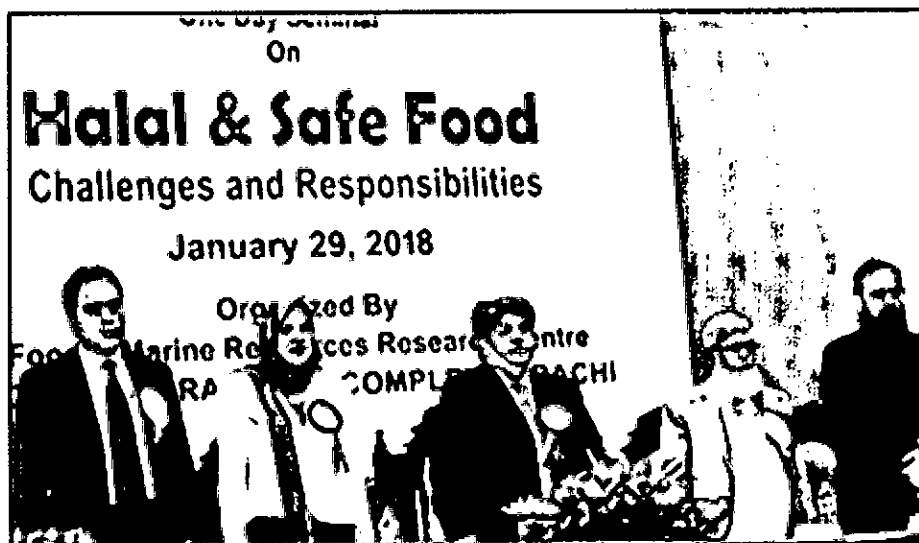
Honourable Mrs. Yasmin Masood, Federal Secretary for Science and Technology, Government of Pakistan is being welcomed by Dr. Qurat-ul-Ain, DG during her visit to PCSIR Laboratories Complex, Lahore - 15th March, 2018.



PICTORIAL PRESENTATION



Dr. Shahzad Alam addressing at the Two Days 4th International Workshop on Frontiers of Advanced Engineering Materials held at PCSIR Laboratories Complex, Lahore - 19th - 20th February 2018.



Dr. Shahzad Alam, Chairman PCSIR at the One-day seminar on Halal and Safe Food held at PCSIR Laboratories Complex, Karachi - 29th January, 2018.



PICTORIAL PRESENTATION



Two Days 4th International Workshop on Frontiers of Advanced Engineering Materials held at PCSIR Laboratories Complex, Lahore - 19th - 20th February 2018



Dr. Shahzad Alam, Chairman PCSIR presenting certificate to a participant during the Three Days Training Programme on "Techniques in Value Addition of Fruits & Vegetables" held at Booni, Chitral under PCSIR's "Community Uplift Programme" - 3rd - 5th May, 2018.



PICTORIAL PRESENTATION



A group photo of Female trainees at PCSIR Skardu.



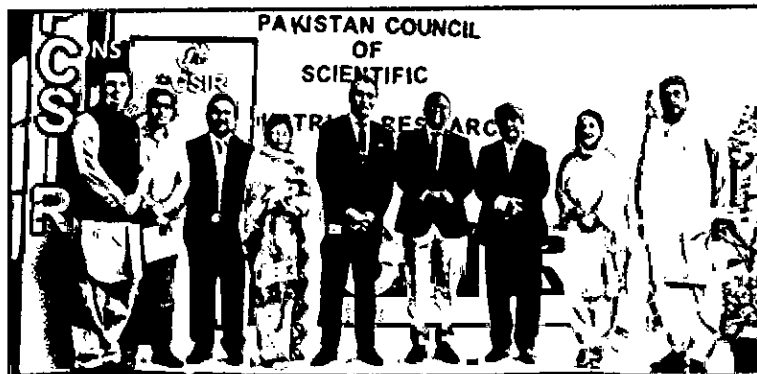
One day awareness training on "Curing, preservation and QA/QC" on Leather & Textile - 16th January, 2018.



Dr. Shahzad Alam, Chairman PCSIR presenting Laptops to students at CM&FT Daska, Sialkot.



Distribution of Certificate and Tool kits among the pass out trainees at PSTC, Quetta - June, 2018

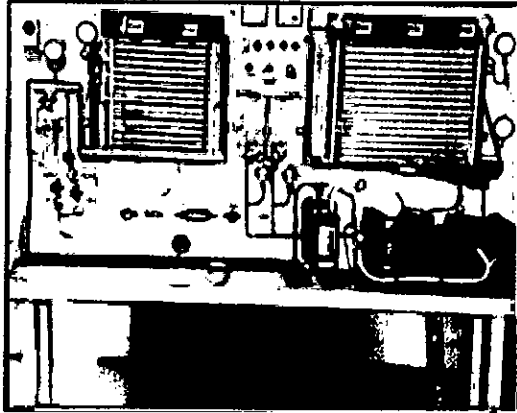


Dr. Shahzad Alam, Chairman PCSIR and the delegation of Nestle Pakistan (Pvt) Ltd.

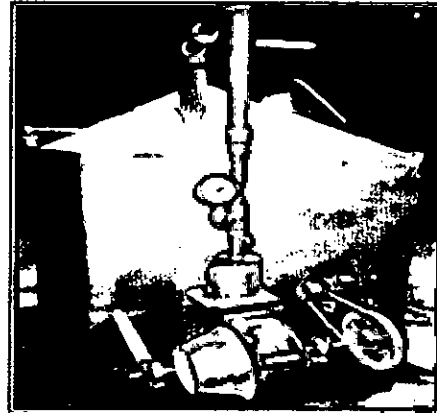


PICTORIAL PRESENTATION

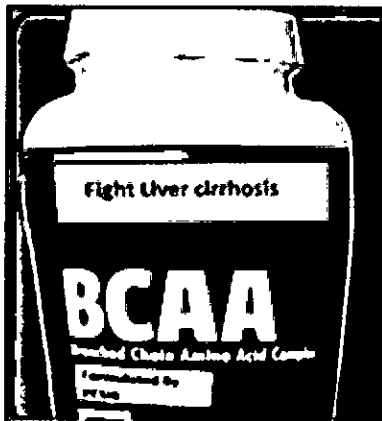
Pictorial Presentation of the Major Products/ Processes Developed by PCSIR



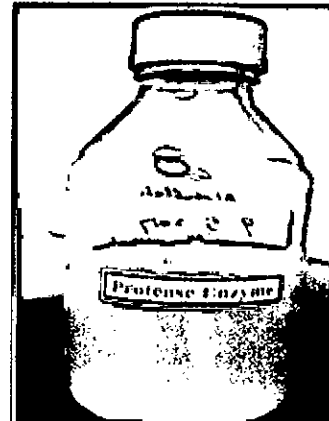
Mechanical Heat Pump - Developed by PCSIR Labs Complex, Karachi.



Solid Waste Incinerator - Developed by PCSIR Labs Complex, Karachi.



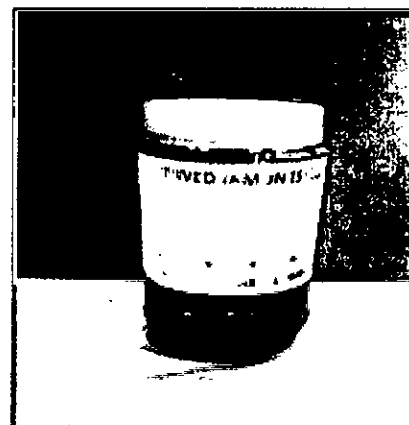
Dietary Supplement for Liver Cirrohsis - Developed by PCSIR Labs Complex, Karachi.



Protease Enzyme - Developed by PCSIR Labs Complex, Lahore.



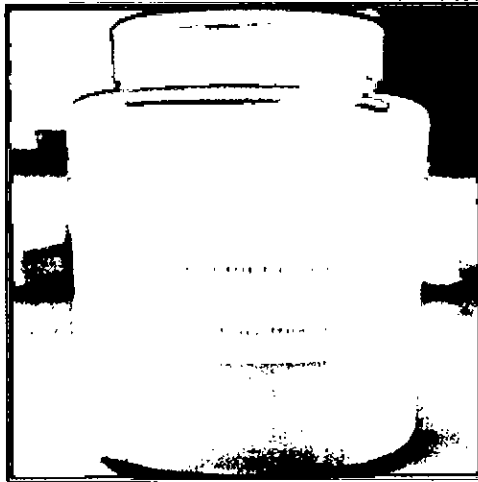
Peach Vinegar - Developed by PCSIR Labs Complex, Lahore.



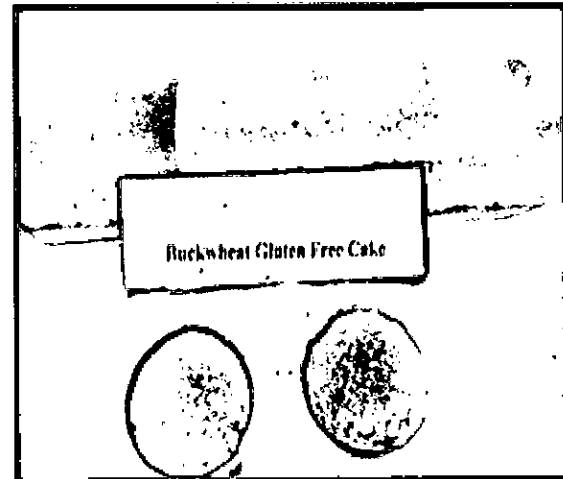
Preserved Jamun (SIZGIUM) - Developed by PCSIR Labs Complex, Lahore



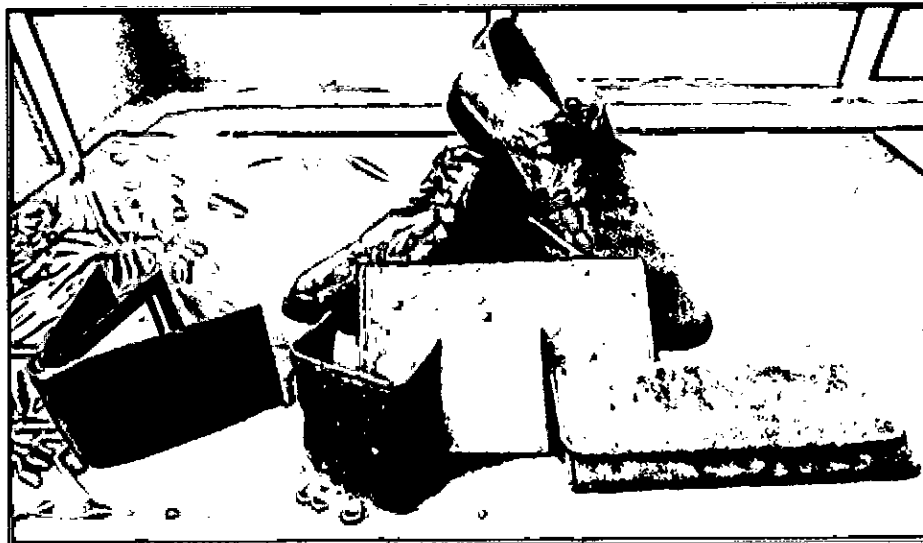
PICTORIAL PRESENTATION



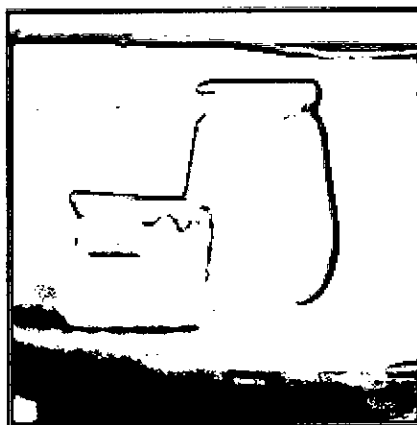
*Bio Fertilizer for Agriculture Exploitation-
Developed by PCSIR Labs Complex, Lahore.*



*Buckwheat Gluten Free Cake - Developed by PCSIR
Labs, Skardu.*



Products of Ostrich Leather - Developed by PCSIR Leather Research Centre, Karachi.



*Adhesive for Wood - Developed by PCSIR Leather
Research Centre, Karachi*



*Oil Pull-up Ostrich Leather - Developed by PCSIR
Leather Research Centre, Karachi*



PCSIR LABORATORIES / UNITS

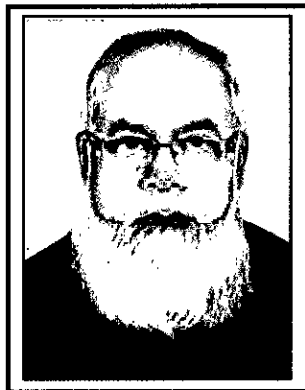


PCSIR Laboratories Complex, Karachi

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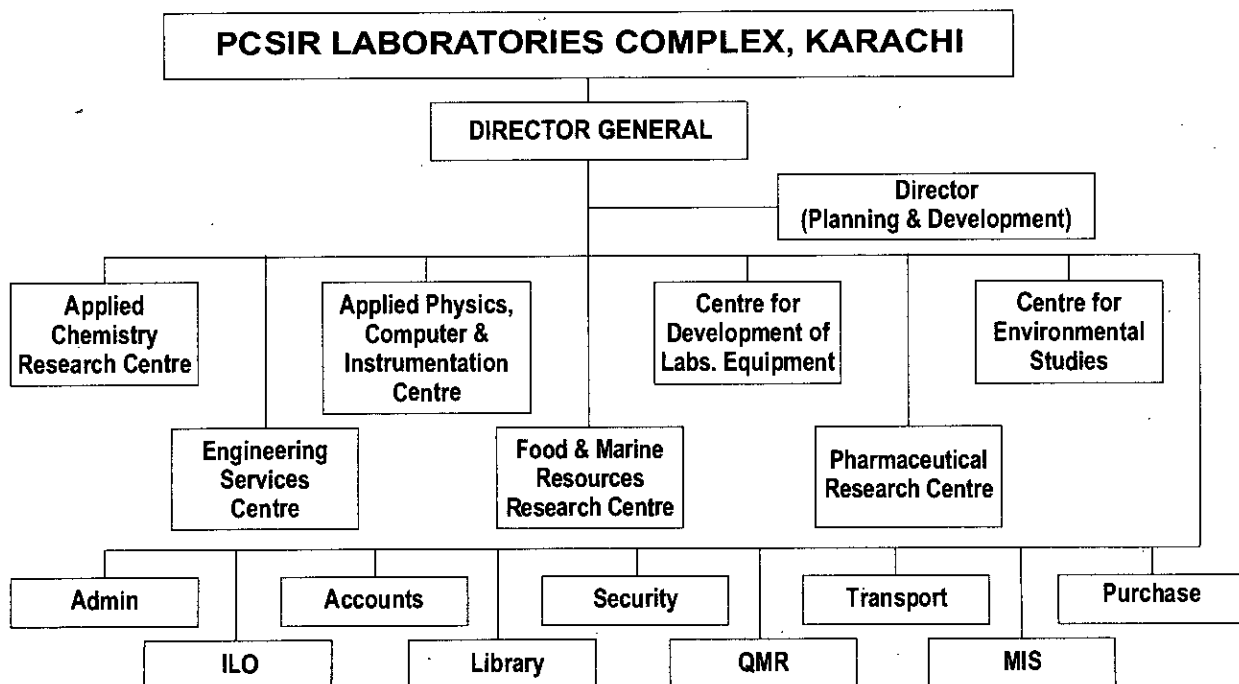
PCSIR LABORATORIES COMPLEX, KARACHI



Director General
Mr. Muhammad Aleem Ahmed

PCSIR Laboratories Complex, Karachi (KLC), is a multidisciplinary Research Complex with scientists having expertise in the disciplines of Marine & Food Sciences, Environment, Bio-Sciences, Pharmaceuticals, Applied Chemistry & Physics, Instrumentation, Material Science & Computers. Besides carrying out R&D work in particular disciplines, it also provides analytical and technical services as well as academic supervisory services. In the present scenario of ISO and WTO, KLC has contributed a lot by providing quality testing services, accredited under ISO / IEC-17025, to the Pakistani manufactures, exporters and importers. Work on the implementation of three CDWP level projects for improving the infrastructure of Buildings, Workshops and Pilot Plants is in progress.

Besides R&D and sponsored/analytical work, the scientists and technologists of KLC have published research papers in National and International Journals. Moreover, patents have been obtained/ filed.





PCSIR LABORATORIES COMPLEX, KARACHI

Research Activities

Synthesis of Heterocyclic Organic Compounds for Drug Development

In this PSF funded project eighteen derivatives of succinamic acid were synthesized. Sixteen (16) derivatives of diithindiisoimides were synthesized from succinamic acid and twenty-seven (27) derivatives of hydantoins are synthesized in very good yield. Ten compounds of diithindiisoimides having zone of inhibition (17-23 mm) showed very good activity against *E. coli* (Gram negative bacteria), except two, all compounds are active against *E. coli* MDR, whereas standard Gentamicine is inactive, so these compounds can be used in future for treatment of *E. coli* MDR infections. Most of the compounds are active against *K. pneumoniae*. Thirty seven derivatives of benzenesulonyl hydrazone are synthesized, 22 compounds are evaluated for their *in vitro* anti-leishmanial activity. Six compounds, showed good anti-leishmanial activity. These compounds can therefore be served as lead compounds for further studies in this field. Eight compounds showed moderate anti-leishmanial activity. Two research papers were published.

Production of Stress Tolerant Tissue Culture Sugarcane Plants

A Memorandum of Understanding was signed between PCSIR Laboratories Complex, Karachi, and M/s Omni Group of Companies Private Limited on developing bilateral cooperation, collaboration and linkages in R&D activities on improvement of sugarcane crop through tissue culture technique. Under the study R&D on improvement of sugarcane variety for better sugar recovery and yield was carried out. PCSIR KLC will initially support Plant Tissue Culture Lab KSM by providing sugarcane culture bottles and nutrient media bottles. PCSIR Laboratories Complex Karachi provides absolute technical support in developing the facilities for Plant Tissue Culture Laboratory under the supervision of Dr. Beena Naqvi SSO at the premises of Khoski Sugar Mill, Badin. After completion of laboratory facilities training of manpower for Plant Tissue Culture technique and to handle tissue culture plants in the Green house and field have been provided to a team to run the lab both technically and administratively at all levels.

Designing & Development of Blood Tube Sealer

Blood transfusion is an essential therapeutic intervention. The collection of blood from donors may take place within the blood transfusion centre or hospital blood bank. But in order to maintain its vital properties, it must care for factors of serious concern "risk of bacterial contamination". For this reasons the plastic tube bags, just sealed after blood collection and sealing operation performed automatically, by applying high frequency operation via Clamps/ metallic electrodes. The bagged liquid sealing requires clean non-toxic, non-polluting, reliable bonding, convenient operation, the blood bag tube sealer machine is specially designed for this purpose. The blood bag tube sealer works principally as: plastic pipe medium polarizes and heats due to the high-frequency electric field between heat sealing head (Clamps/Electrodes), and bonding under certain pressure. The designed under way has automatic and manual clamp head heating, to meet different needs. The heat sealing head is made from special way, if the user wants to cut the blood transfusion pipeline, no need of scissors, just gently pull it then parted. Electrodes have made from very high grade metal for perfect sealing

Development of Color Matching/Color Assessment Cabinet, (Five Light Sources British Standard Light Source Code: D65, TL84, CWF, UV and F/A)

Centre for Development of Laboratory Equipment (CDLE) of PCSIR Labs. Complex, Karachi has developed various laboratory equipments as import substitute and locally developed/fabricated equipment. Now, Digital Color Matching/Color Assessment Cabinet as Textile Testing equipment has been Developed for Industries, Textile Labs Institutions. The equipment works with most accurate light sources namely Artificial Day Lamp, Tungsten Filament Lamp, Cool White Lamp, Triphosphor Fluorescent Lamp, Ultra Violet Black

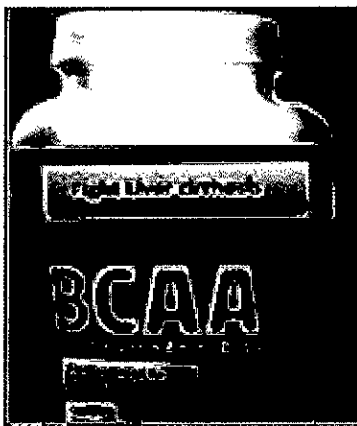


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Lamp. The samples are viewed under multiple light source or Lamps to detect phenomena of Metamerism. (In which a sample appear to match under one light source appears distinctly different under another). The equipment helps in marking this difference. It is used for visual evaluation of Fabrics, Clothes, and Leather etc.

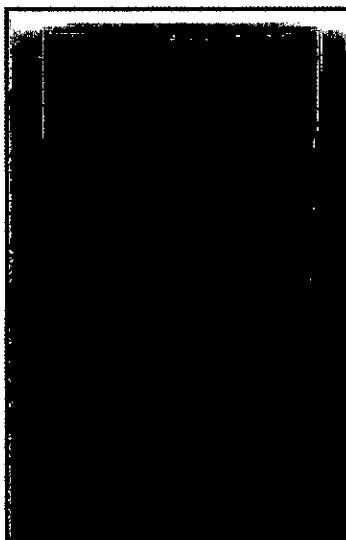
Dietary Supplement Rich in Branched Chain Amino Acids for the Patient of Liver Cirrhosis

This supplement rich in branched chain amino acids is a diet especially designed to improve the body mechanism and is a specialized nutritional formula containing amino acids, carbohydrates, fats, vitamins and minerals to supplement the dietary intake in patients with chronic liver impairment.



Synthesis of Triterpenes and other Bioactive Compounds by Microbial Biotransformation/Chemical Method

Natural F-wash (Feminine Wash) is a pure herbal Organic F-wash formed by the combination of unique natural herbs with Aloe-Vera/ amyrrins, which possess anti-inflammatory/ antibacterial properties. The cleansing wash is formulated with a combination of lavender fragrance, *Alstonia scholaris* botanical extracts, and other high-quality ingredients. Get the odour off skin with this sweet smelling lavender F-wash. The F-wash Cleansing Wash helps to stay fresh, clean and odorless while keeping pH level healthy and maintained at acceptable levels.





PCSIR LABORATORIES COMPLEX, KARACHI

Isolation, Purification & Characterization of Phytase from Microbial Source & its Potential Applications in Poultry Feed

Phytase enzyme was partially purified from *Aspergillus niger*. The study design included the collection of several bacterial and fungal isolates from different grains and oil seeds. Conditions have been optimized for maximum production. Enzyme phytase is used in poultry feed.



Research Outcomes

Processes Developed

- A process developed for the "Preparation of Potassium Chloride at laboratory scale".
- Method for the analysis of TCE in surgical instruments has been developed on GCMS.
- A Lab scale process for preparation of a liquid fertilizer for all crops, vegetables and fruits is under process on demand of client
- A process for the production of "Ginger syrup" with active ingredient Spanish
- A process developed for isolation, purification and characterization of Phytase from microbial sources and its potential applications in poultry feed
- Process Flow Diagram(PFD) and High-Pressure-Temperature-RPM Homogenizer for manufacturing of Nano Crystalline Cellulose from Karka on MS Visio has been drawn by availing the private expertise.
- Development of Bio-Fungicide for sustainable agriculture
- A Process for the preparation of Chlorobutanol preservative for Pharmaceutical formulation
- Lab scale process for the development of growth promoter for corn and sunflower seed germination
- Manufacture of chip board from Karka (Agro waste)
- Preparation of Potassium Phosphate at laboratory scale.
- Process developed for Tri-Sodium Phosphate at laboratory scale.
- Isolation, purification, characterization of Eugenol and synthesis of Methyl Eugenol from Eugenol
- Development of dietary supplement Rich in BCAA for Patients of Liver Cirrhosis
- Process for De-colorization of Honey
- A process for the production of Sea buckthorn/Green tea whitening liquid spray with natural ingredients
- A process of Toothpaste is developed on demand of client
- A process for the production of chlorophyll health drink
- A process developed for Sodium Tris-oxalato Ferrate (III) at Lab. scale
- A process developed for Sodium Oxalate at laboratory scale
- A process for the production of Chromium Sulphate
- A process for the production of Sodium Bromide



PCSIR LABORATORIES COMPLEX, KARACHI

- A process for the production of Sodium Oxalate
- A process for the preparation of Hydroponic Fodder for live stock
- Process for the production of nano Crystalline Cellulose (NCC) from Karka (wild grass) by chemical means
- New Techniques developed for drying of fruits & vegetable reducing post-harvest losses
- A process to develop Nutritious Health Product using indigenous natural raw materials
- A process for the production of anti-obesity granules.
- A process for the production of black Hinna for Hair
- A process has been developed for the production of anti-inflammatory "inflamm-shoo" with active ingredient, A scholaris / amyryns
- A Process for the production of Sea buckthorn Tea Granules with natural mint flavour has been developed.
- A Process has been developed for the extraction of salvadorin from Salvadorin plant
- A Process for the production of chlorophyll from green herbs with natural mint flavor
- A Process to develop Nutritious Health Product using indigenous natural raw materials.
- A Process for the Production of Distributed Control System (DCS)
- A Process for the production of Mechanical Heat Pump
- A Process for the production of Synthesis of Sodium Phosphate Dibasic
- A Process for the production of Synthesis of Copper Ammonium Sulphate.
- A Process for the production of Cobalt citrate has been prepared by the interaction of cobalt salt and corresponding acid
- A Process for the production of Synthesis of Penta amin aqua Copper II Sulphate
- Development of economical floor cleaner with antibacterial activity
- Packaging Integrity process for the Compliance of ISO-11607:2006 for Terminally Sterilized Medical Devices
- A process for the production of Hot air drying of peach and chicko (Sapota) as dry fruit products
- Process developed for the production of value added product for soil additive/conditioner & Activated carbon from bio-char.

Processes Leased Out

- A process for the production of Mechanical Heat Pump with Gas Law Apparatus.
- A process for the production of Distributed Control System (DCS).
- A process for the production of Mechanical Heat Pump.
- Process transferred on non-exclusive basis relating to Alum containing tooth paste.
- Processes transferred on non-exclusive basis relating to whitening cream.
- Processes transferred on non-exclusive basis relating to Whitening lotion.
- Processes transferred on non-exclusive basis relating to Whitening soap.
- Process transferred on non-exclusive basis relating to "Dietary Supplement Rich in branched chain amino acids.

Patents Filed

- A Process for the Production of Distributed Control System Training Apparatus" Arif Karim, Faisal Ghazanfar, Kashif Hussain, Farahan Aziz, 697/2017 dated: 29-12-17.
- A Process for Synthesis, Characterization and Biological Evaluation of Cobalt (II) Complex of 2-(Methylimino)methyl]phenol, Muhammad Kamil, Samina Iqbal, Kamran Abro, Alia Bano Munshi, Sofia Khaliq Alvi, Shagufta Shaikh, Ghulam Fareed & Sheraz Shafiq, 686/2017, dated 27-12-2017
- A Process for the Production, Gas Dilution Device for Calibration of different air monitoring Analyzer, Akhtar Shareef, Durdana and Razia Begum, Patent application No. 643/2017 dated 13-12-2017
- A Process for the Production, Colour Matching/ Colour Assessment Cabinet, Dildar Hussain Memon,



PC SIR LABORATORIES COMPLEX, KARACHI

- Sohail Akhtar, Aqeel Ahmed Khan, 43/51/17-18-Design dated 08-11-2017.
- A novel process for the production of Fast Wound Healing Ointment, Hina Imran, Atiq-ur-Rahman, Tehmina Sohail, 692/17 dated 28-12-2017.
 - A process for synthesis characterization, antifungal activity and biological evaluation of "Copper Sodium Trichloride Dihydrate" Muhammad Kamil, Samina Iqbal, Sofia Khalique Alvi, Anila Siddiqui, Sheraz Shafiq and Ghulam Fareed. 194/2018, dated, 28-03-2018.
 - A Process for manufacture of chipboard from Karaka Stick, Syed Burhanuddin Abdali and Syed Mohsin Ali, Patent application No. 91/2018 dated 20-02-2018
 - A process for synthesis, characterization and biological evaluation of Co (II)[(2-methylimino)methyl]phenol, Muahammad Kamil, Samina Iqbal, Kamran Abro, Ali Bano Munshi, Sofia K. Alvi, Shagufta A. Sheikh, Ghulam Fareed, Patent application No. 686/2017 dated 27-02-2018
 - A process for the preparation of 4-(3-fluorophenyl)-2-(2-(1-(pyridin-2-yl)ethylidene) hydrazinyl) thiazole, a potent β -glucuronidase inhibitor, Farman Ali, Khalid Mohammed Khan, Shahnaz Perveen, Uzma Salar, and Muhammad Taha, Patent application no. 173/2018 dated 21-03-2018.
 - A process for the preparation of 2-((5-[(2-amino-1,3-thiazol-4-yl)methyl]-1,3,4-oxadiazol-2-yl)sulfanyl)-n-(2,6-dimethylphenyl)acetamide, a persuasive therapeutic agent for type 2 diabetes, Muhammad Athar Abbasi, Khalid Mohammed Khan, Aziz-ur-Rehman, Shahnaz Perveen, Sabahat Zahra Siddiqui, and Muhammad Ashraf, Patent application no. 174/2018 dated 21-03-2018.
 - A Process for synthesis, characterization, antifungal activity and biological evaluation of Copper Sodium Trichloride Dihydrate, Muhammad Kamil, Samina Iqbal, Sofia Khalique Alvi, Anila Siddiqui, Sheraz Shafiq and Ghulam Fareed, Patent application no. 194/2018 dated 28.03.2018.
 - A process for the preparation of fluorinated sulfonamide as potent anti-diabetic agent: N-(4-Ethylphenyl)-N-(4-fluorobenzyl)-2,3-dihydro-1,4-benzodioxine-6-sulfonamide, Muhammad Athar Abbasi, Khalid Mohammed Khan, Aziz-ur-Rehman, Shahnaz Perveen, Sabahat Zahra Siddiqui, and Muhammad Ashraf, Patent application No. 346/2018 dated 14-05-2018.
 - Process and composition for a nutritious value added product from Sapodilla and citrus fruits, Naheed Kausar, Umair Ihsan, Irfan Ali Rahoojo, Tariq Bakshish, Muhammad Farhan Khan, 2018, 459/18, dated 06.07.2018.
 - Process for the production of organic composit from solid herbal waste on, Tooba Naveed, Razia Begum and Niaz Ahmed, Patent application no. 687/2017 dated 27-12-2017.

Patents Obtained

- A process for the production of nigelline cream, Zahra Yaqeen, Yaqeenuddin, Nighat Sultana, Nudrat Fatima, Tehmina Sohail, Hina Imran, Patent no. 142648/2018, dated 04.01.2018.
- A Process for the extraction of phosphoric acid by amyl alcohol, Muhammad A. Khan, Muhammad Arif, Imtiaz-ud-Din, Khalid Muhammad Khan, Nida Ambreen and Shahnaz Perveen, Patent no. 142652 dated 24-01-2018.
- A composition of standardized ink for stamp pads and method of making same, Ghulam Fareed, Shahnaz Perveen, Patent No. 142431, renew 17.01.2018.

International Publications

Papers Published in Impact Factor Journals

- M.T.H. Siddiqui, S. Nizamuddin, N.M. Mubarak, K. Shirin, M. Aijaz, M. Hussain, H. A. Baloch, 2017, Characterization and process optimization of Biochar produced using novel biomass, waste Pomegranate peel: A Response Surface Methodology Approach, Journal Waste Biomass Valor ; DOI 10.1007/s12649-017-0091-y.
- Arshia, A.K. Khan, K.M. Khan, A. Ahmed, M. Taha, S. Perveen, 2017, Antibio film potential of synthetic 2-amino-5-chlorobenzo phenone Schiff bases and its confirmation through fluorescence microscopy,



PCSIR LABORATORIES COMPLEX, KARACHI

- Bioorganic Chemistry, 80, 129-144.
- M. Khan, U. Ali, A.U. Rahman, M. Ibrahim, A. Hameed, M. Asif, Zahid, Hussain, Kanwal, K.M. Khan, S. Perveen, 2018, Green Synthesis, characterization, DPPH and ferrous ion-chelating (FIC) activity of tetrakis-Schiff's Bases of terephthalaldehyde, Letters in Drug Design & Discovery, DOI:10.2174/1570180815666180531101404, (E-pub Abstract Ahead of Print).
 - M. Ali, K.M. Khan, U. Salar, M. Ashraf, M. Taha, A. Wadood, S. Hamid, M. Riaz, B. Ali, S. Shamim, F. Ali, S. Perveen, 2018, Synthesis, in vitro α -glucosidase inhibitory activity, and in silico study of (E)-thiosemicarbazones and (E)-2-(2-(arylmethylene)hydrazinyl)-4-arylthiazole derivatives, Molecular Diversity, DOI: 10.1007/s11030-018-9835-2.
 - A. Ali, K.M. Khan, U. Salar, Kanwal, S. Hussain, M. Ashraf, M. Riaz, A. Wadood, M. Taha, S. Perveen, 2018, 1-[4'-Chlorophenyl] carbonyl-4-(aryl) thiosemicarbazide derivatives as potent urease inhibitors: Synthesis, in vitro and in silico studies, Bioorganic Chemistry, 79, 363-371.
 - K.M. Khan, S. Perveen, A.T. Bale, A. Wadood, M. Ghufuran, M. Taha, S.S. Nanda, S. Chigurupati, T. Fasina, Kanwal, F. Ali, U. Salar, 2018, Chalcones and Bis-chalcones: As potential α -amylase inhibitors; Synthesis, in vitro screening, and molecular modeling studies, Bioorganic Chemistry, 79, 179-189.
 - I. Fatima, H. Zafar, K.M. Khan, S.M. Saad, S. Javaid, S. Perveen, M.I. Choudhary, 2018, Synthesis, molecular docking and xanthine oxidase inhibitory activity of 5-aryl-1H-tetrazoles, Bioorganic Chemistry, 79, 201-211.
 - A. Ali, K.M. Khan, Arshia, Kanwal, S. Hussain, M. Ashraf, M. Riaz, A. Wadood, S. Perveen, 2018, Synthetic nicotinic/isonicotinicthiosemicarbazides: In vitro urease inhibitory activities and molecular docking studies, Bioorganic Chemistry, 79, 34-45.
 - N. Sultana, 2018, Enzymatic biotransformation of bioactive and clinically useful cyclic steroids: focus on steroids derivatives, Steroid, 139, 76-92.
 - S.I.H. Taqvi, A. Rahman, M.A. Versiani, H. Imran, A. Khatoon, T. Sohail, 2018, Studies to determine antidiarrhoeal and spasmolytic activities of extract of Aegle marmelos L fruit, Bangladesh Journal of Medical Science, 17(2).
 - T. Sohail, N. Saleem, H. Imran, Z. Yaqeen, A. Rehman, K. Jamil, M. Rauf, 2018, Nutritional and toxicological analysis of Phoenix dactylifera (date palm) powder used as a drink, Bangladesh Journal of Medical Science, 17(2), 263-269.
 - U. Salar, K. M. Khan, S. A. Ejaz, A. Hameed, M. Al-Rashida, S. Perveen, M. Nawaz Tahir, Jamshed Iqbal, and Muhammad Taha, 2018, Coumarinyl aryl/alkyl sulfonates with dual potential: Alkaline phosphatase and ROS inhibitory activities; In silico molecular modeling and ADME evaluation, Letters in Drug Design & Discovery, 15, DOI: 10.2174/1570180815666180327125738.
 - S. Shah, Arshia, N. S. Kazmi, A. Jabeen, A. Faheem, N. Dastagir, T. Ahmed, K. M. Khan, S. A. , A. Raza, and S. Perveen, 2018, Diclofenac 1,3,4-oxadiazole derivatives; biology-oriented drug synthesis (BIODS) in search of better non-steroidal, non-acid anti-inflammatory agents, Medicinal Chemistry, (Shàriqah (United Arab Emirates), 14(7), 674-687.
 - Khalid M, Khan, Uzma Salar, Humaira Muhammad, Muhammad Imran Fakhri, Sanaullah, and Shahnaz Perveen, 2018, Anti-MRSA (Multidrug resistant Staphylococcus aureus) activity of 3-substituted coumarins, Letters in Drug Design & Discovery, 15(4), 353-362.
 - S. Iqbal, N. N. Shaikh, K. M. Khan, S. Naz, Z. H. Qasmi, S. Perveen, 2018, 2-Oxo-1,2,3,4-tetrahydropyrimidines as potent β -Glucuronidase Inhibitors: One-pot Synthesis, In vitro and In silico Studies, M. Iqbal Choudhary, Medicinal Chemistry, 14, DOI: 10.2174/1573406414666180525105325.

Papers Published in Other Journals

- S. Ferheen, B.M. Khalid, F. Sikander, S. Yaqeen and Z. Yaqeen, 2017, An overview on fruit mango (Mangifera indica) Life, International Journal of Biology, Pharmacy and Allied Sciences, 6(7), 1434-1443.
- M. A. Asghar, N. Mumtaz, S. Niaz, K. Zaheer, M. L. Raza, 2017, Prescribing behavior of practitioners in public and private hospitals in Pakistan evaluated using the World Health Organization (WHO)



PCSIR LABORATORIES COMPLEX, KARACHI

indicators: A comparative approach, *Le Pharmacien Hospitalier et Clinicien*, DOI No. org/10.1016/j.phclin.06.002

- N. Mumtaz, Syed B. S. Naqvi, M. A. Asghar. 2017, Assessment of antimicrobial activity of *Sphaeranthus indicus* L. against highly resistant pathogens and its comparison with three different antibiotics, *Journal of Disease and Global Health*, 10(3), 67-73.
- T. Rafique, "Sequential Studies based on batch to pilot plant approach for the designing and development of real defluoridation water treatment plant, 4th International Turk-Pak conference on Chemical Sciences (ITPCCS-2017), October 26-28, 2017, In Koreya, Turkey.
- Z. Khatoon, M. Akhtar, R. Sultana, H. A. Khan, A, 2017, Report on free living marine nematodes from the Ambrab Creek, Ghorabari, Thatta, Sindh. *International Journal of Biology and Biotechnology*, 14(4), 61-64.
- F. Ibrahim, M.A. Asghar, J. Iqbal, A. Ahmed & A.B. Khan, 2017, Inhibitory effects of natural spices extracts on *Aspergillus* growth and Aflatoxin synthesis, *Australian Journal of Crop Sciences*, 11(12), 1553-1558.
- B. Bano, K. M. Khan, A. Jabeen, A. Hameed, A. Faheem, M. Taha, S. Perveen, and S. Iqbal, 2017, Aminoquinoline Schiff bases as non-acidic, non-steroidal, anti-inflammatory agent, *Medicinal Chemistry & Drug Discovery*, 2(31), 10050-10054.
- T. Naveed, M. N. A. and R. Begum, Study the efficiency of composted herbal biomass as a source of nutrients for vegetative growth and nutritional composition of Okra, *International Journal of Science and Research Publication*, 7, 556.
- D. R. Hashmi, A. Shareef, M. Azam and R. Begum, 2017, Air quality index (AQI of atmospheric pollutants in different parks and play grounds of Karachi city and their Associated Health Hazards". *International Journal of Current Research*, 9(10), 59052-59057.
- S. B. Abdali and M. Ali, 2018, Optimization of parameters for cost effective technology of liquor ammonia from ammonium sulfate (Chemical Fertilizer) in the head of plant design, 2nd International Conference on Chemical Engineering (ICCE 2018) at Movinpick Hotel, Karachi January 23.
- F. Khan, N. Dastagir, M. Lateef, M. Yousuf, Z. A. Mirani, A. M., S. Faizi and S. U. Kazmi, 2018, Immunomodulatory activities of extracts of *Caesalpinia pulcherrima*, *Journal of Herbs, Spices & Medicinal Plants*, DOI: 10.1080/10496475.1463931.
- N. A. Memon, N. Ahmed, T. haq, S. Ismail, U. Rashid, R. Begum, 2018, An effective use of anodizing mud for treatment of tannery wastewater as a coagulation agent, *Int. J. of Sci. and Res. Pub.* 8, Issue 4, N. sultana, M. S. Qazi, and Khan, 2018, *CPQ Microbiology*, 1(3), 1-11.
- H. K. Sheikh, T. Arshad, S. Ferheen and T. Sohail, 2018, Bioactivity and conformational study of novel glycol azo derivatives, *International Journal of Biology and Biotechnology*, 15(1), 185-191.

Papers Presented in International Conference/Workshops/Symposia

- Tahir Rafique, 2017, "Genesis and Occurrence of High Fluoride Groundwater in the Thar Desert, Pakistan", presented in the Australian Groundwater Conference, held at John Nilad Scientia Building in the University of New South Wales, Sydney, Australia. Conference was jointly organized by the National Center for Groundwater Research and Training (NCGRT), Australia and The International Association of Hydrogeologists (IAH) under the theme "Groundwater Future: Science to Practice". July 11-13, Sydney, Australia.
- Arif Karim, 2017, "General Repair & Maintenance Techniques", National Workshop on "Repair and Maintenance of Scientific Equipment in Universities, Research Institutes and Small Scale Industries", October 2-6, Kazakhstan, KazNU
- Arif Karim, 2017, "Atomic Absorption Systems & Trouble Shooting Techniques", National Workshop on "Repair and Maintenance of Scientific Equipment in Universities, Research Institutes and Small Scale Industries", October 2-6, Kazakhstan, KazNU
- Arif karim, 2017, "GC Systems & Trouble Shooting Techniques" National Workshop on "Repair and Maintenance of Scientific Equipment in Universities, Research Institutes and Small Scale Industries",



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- October 2-6, Kazakhstan, KazNU.
- Arif Karim, 2017, "LC / HPLC Systems & Trouble Shooting Techniques" National Workshop on Repair and Maintenance of Scientific Equipment in Universities, Research Institutes and Small Scale Industries", October 2-6, Kazakhstan, KazNU.
 - Arif Karim, 2017, "Mass Analyzer & Trouble Shooting Techniques" National Workshop on "Repair and Maintenance of Scientific Equipment in Universities, Research Institutes and Small Scale Industries", October 2-6, Kazakhstan, KazNU
 - Arif Karim, 2017, "ICP-OES (Alloy Analyzer) & Troubleshooting Techniques", National Workshop on "Repair and Maintenance of Scientific Equipment in Universities, Research Institutes and Small Scale Industries", October 2-6, Kazakhstan, KazNU
 - Arif Karim, 2017, "ICP-MS & Troubleshooting Techniques", National Workshop on "Repair and Maintenance of Scientific Equipment in Universities, Research Institutes and Small Scale Industries", October 2-6, Kazakhstan, KazNU
 - Arif Karim, 2017, "High Vacuum Technology: Sensors and Pumps", National Workshop on "Repair and Maintenance of Scientific Equipment in Universities, Research Institutes and Small Scale Industries", October 2-6, Kazakhstan, KazNU.
 - Shahnaz Perveen, 2017, "Intellectual Property rights, Plagiarism and Ethics in Research", in a workshop on at National Institute of Blood Disease & Bone Marrow Transplantation, September 18th, Karachi.
 - Shahnaz Perveen, 2017, "Discovery of Novel Urease Inhibitors for Treatment of Peptic Ulcer", in Tehran University of Medical Sciences, in a "Science & Technology Exchange Program (STEP)", December 2nd, Tehran, Iran.
 - Shahnaz Perveen, 2017, "Bio Based Application of Organic Chemistry", in University of Tehran-College of Science, in a "Science & Technology Exchange Programs (STEP)", December 2nd, Tehran, Iran.

National Publications

Papers Published in Impact Factor Journals

- S. Fatima, I. Naeem, M. Naseem Khan, S. Jameel, 2017, Phenotypic expression and prevalence of multi-drug resistant extended spectrum β -lactamase producing E. coli and K. pneumonia in Karachi Pakistan Journal of Pharmaceutical Sciences, 31(4):1379-1384, July 2018, IF, 0.581.
- R. Jafri, H. Imran, A. Ahmed, T. Sohail, I. Ahmed, Z. Yaqeen, Formulation and screening of analgesic activity of Different analgesic gel preparations, Pakistan journal of Pharmaceutical Sciences, MS No. 5002 Accepted, IF, 0.581.

Papers Published in Other Journals

- S. Perveen, 2017, Intellectual Property rights, Plagiarism and Ethics in Research, National Institute of Blood Disease and Bone Marrow Transplantation, 18th September.
- S. B. Abdali, S. M. Ali and M. Farhan, 2017, "Optimization of parameters for cost effective recycling of textile processing waste water by UF", Pakistan Journal of Scientific & Industrial Research (PJSIR) registration #: PJSIR-9522-SA.
- N. Khatoon, B. Naqvi, G. Abbas, F. Ahmed, 2018, Optimization of the protocol for initiation, multiplication and acclimatization of sugarcane variety US-633. National Journal of Advanced Research, 4(1), 63-65.
- Urooj, S., Mirani, Z.A., Naz, 2018, S. Impact of seasonal variations on bacterial, yeast and mold's count in drinking water collected from Karachi, Pakistan, PSM Microbiol. 3(1): 37-42.
- B. Naqvi, S. M. Ali, M. Makhani and K. Yousuf, 2017, Effect of physical, chemical and physiochemical treatments of surface sterilization of medicinal plants *Salvadora Persica* and *Solanum Surattense* for in-vitro propagation, Pakistan Journal of Scientific & Industrial Research, 6(3), 141-144.

Papers Presented in National Conference / Workshops / Symposia

- Arif karim, Atomic Absorption Systems & Trouble Shooting Techniques Training workshop at PCSIR-



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Lahore October 18-19, 2017.

- Arif karim, GC Systems & Trouble Shooting Techniques Training workshop at PCSIR-Lahore October 18-19, 2017.
- Arif karim, HPLC Systems & Trouble Shooting Techniques Training workshop at PCSIR-Lahore October 18-19, 2017.
- Arif karim, General Repair & Maintenance Techniques Training workshop at PCSIR - Peshawar October 21-22, 2017.
- Arif karim, Atomic Absorption Systems & Trouble Shooting Techniques, Training workshop at PCSIR - Peshawar October 21-22, 2017.
- Arif karim, HPLC Systems & Trouble Shooting Techniques Training workshop at PCSIR - Peshawar, October 21-22, 2017.
- Syed Junaid Mahmood, "CF/PF Composite for Engineering Application", (CF/PF (Cotton Fabric / Phenol Formaldehyde), 2nd International Conference on Advance Materials and process Engr. (AMPE-2017), Organized by Faculty of Chemical Process Engr. NEDUET Karachi, December 12-13, 2017.
- Dr. Zulfiqar Mirani et al. "Ascorbic acid augments colony spreading by reducing biofilm formation of methicillin resistant Staphylococcus aureus", 40th Annual Conference of Pakistan Association of Pathologists at SIUT, December 14-17, 2017.
- Dr. Zulfiqar Mirani et al. "Assessment of microbial quality of drinking water by yeast, mold and bacterial count" 1st International Collaborative Mycology Conference, organized by Aga Khan University, Karachi, December 4-6, 2017.
- Arif karim, Faisal Ghazanfar, General Repair & Maintenance Techniques, Training workshop at PCSIR-Karachi, January 8-9, 2018.
- Arif karim, Atomic Absorption Systems GC Systems & Trouble Shooting Techniques, Training workshop at PCSIR, January 8-9 2018.
- Faisal Ghazanfar, HPLC Systems & MS Systems Trouble Shooting Techniques, Training workshop at PCSIR, January, 8-9 2018.

Technical Services

Analytical/ Testing Services

- 9886 Analytical Technical services rendered to different Industries in the area of Food, Pharmaceutical, Textile, Chemical and Engineering to the public and private sectors.

Consultancy/ Advisory Services

- Consultancies. Provided on Purifier" in Data Centre's of Head Office, Hafiz Branch and Operation Building of Standard Chartered Bank (Pakistan) Ltd., Karachi, "M/s. Standard Chartered Bank (Pakistan) Ltd., Karachi, ILD/ Advisory Consultancy-5737/2017, September, 2017.
- In-vitro Cytotoxicity Test of Electro surgical instruments for the compliance of ISO-10993- 5, Dr. Samina Iqbal, Dr. Kauser Siddiqui, M/s. Meister Surgical Instruments, St-26, Roras Road, New Miana Pura (West), Sialkot-51310, Pakistan ILD/ Adv.Cons-5356/17.
- Consultancy provided on Jinan Fertility Enhancement Supplement for Men, Dr. Hina Imran, Dr. Tehmina Sohail, Dr. Atiq-ur-Rahman, M/s. Jinan35-C, Mezzanine 4, 12th Commercial Street, Phase-II, DHA, Karachi ILD/ Adv.Cons-5649/17 (A).
- Consultancy provided Physico-Mechanical Characterization of Textile Composites, M/s. Department of Textile Engineering, NEDUET, Karachi, ILD/ Advisory Consultancy-5391/2017, 06-09-2017.
- Consultancy provided Characteristics of Adhesive QG-295, M/s. ASA International, ILD/ Consultancy-4489/2017.
- Consultancy provided Quality Assessments of Lithium Bromide Chiller Solutions,, M/s. Gatron Industries Limited ILD /Ref. Proj.-4209/17.



PCSIR LABORATORIES COMPLEX, KARACHI

- Consultancy provided Characterization of Thermoplastic Paint Yellow, White and Glass Beads, M/s. Consulting Consortium, Karachi Thatta Dual Carriageway Project. ILD/Ref. Project-4193/2017.
- Consultancy provided Characterization of Thermoplastic Paint Yellow and Glass Beads, M/s. PEAS Consulting (Pvt.) Ltd. ILD/Ref. Project-4194/2017
- Consultancy provided Mail Bags and Uniforms, M/s. Pakistan Post Office Islamabad, ILD/Ref. Proj.-4605/2017
- Consultancy provided Mail Bags and Uniforms, M/s. Pakistan Post Office Islamabad, ILD/Ref. Proj.-4606/2017
- Quality Assessments of Chemicals, M/s. SEPCOIII Electric Power Construction Corporation, ILD/Ref. Proj.-5389/17
- Consultancy provided Technical Evaluation of Aluminium Transom/ Mullion, M/s. NESPAK (Pvt.) Ltd, Nespak House, Islamabad, ILD /Ref. Proj.-5521/2017
- Consultancy provided Residual Trichloroethylene Analysis in Stainless Steel Surgical Instruments (Adson Tissue Forceps, Adson Dressing Forceps, Frazier Suction Tube, Allis Tissue Forceps, Standard Operating Scissor), M/s. SITEC (Pvt.) Ltd, ILD/Adv-Cons/4234/2017
- Consultancy provided Residual Ethylene Oxide Analysis in Stainless Steel Surgical Instruments (Halstead Mosquito A/Fcps 12cm), M/s. SITEC Pvt. Ltd., ILD/Adv-Cons/4237/2017
- Consultancy provided Biocompatibility testing of surgical instruments, M/s. Daud Jee Mfg. Co, Nihat Park, Paris Road, Sialkot, ILD/Adv.Cons-4318/2017 (A)
- Consultancy provided Chemical analysis of petroleum fractions for white spirit/ kerosene oil, M/s. High Court of Sindh, Karachi, ILD/Adv.Cons-4352/2017.
- Consultancy provided Chemical analysis of two representative samples drawn from consignment claim to be white spirit, M/s. Custom Enforcement Unit, Karachi, ILD/Adv.Cons-4444/2017.
- Consultancy provided Residual Trichloroethylene Analysis in Stainless Steel Surgical Instruments, M/s. TaTa Surgicals (Pvt.) Ltd., Mughal Street Sialkot, ILD/Adv-Cons-4502/2017.
- Consultancy provided M/s. Laderly Bio Tech Pharma, Karachi, ILD/Adv.Cons-4612/2017 (A).
- Consultancy provided Bioburden Analysis of stainless steel surgical Instruments, M/s. Elmed Instruments (Pvt.) Ltd., Roras Road, Nowl, Sialkot, ILD/Adv.Cons-4917/2017,
- Consultancy provided Residual Ethylene oxide Analysis in Electrosurgical Instruments for the compliance of ISO 10993-7, M/s. Meister Surgical Instruments, Sialkot, ILD/Adv.Cons-5355/2017.
- Consultancy provided for calibration of scientific equipment, submitted to M/s. Oil Industries Pakistan
- Consultancy provided for calibration of scientific equipment to M/s. Pearl Cables
- Consultancy provided for calibration of scientific equipment to M/s. Artistic Milliners
- Advisory & Consultancy for calibration of scientific equipment, submitted to M/s. SGS(Agri)
- Consultancy provided for calibration of scientific equipment to M/s. Intertek (Tariq Road)
- Consultancy provided for calibration of scientific equipment to M/s. Attock Cement
- Consultancy provided for calibration of scientific equipment to M/s. Pharm Evo
- Consultancy provided for calibration of scientific equipment to M/s. SAMI Pharmaceuticals
- Consultancy provided for calibration of scientific equipment, submitted to M/s. Platinum Pharmaceuticals
- Consultancy provided for calibration of scientific equipment to M/s. Lucky Textile
- Consultancy provided for calibration of scientific equipment to M/s. Brookes Pharmaceuticals
- Advisory & Consultancy on Plant tissue culture Lab to M/s OMNI Group of Companies, ILD/Advisory Consultancy/1429-32/2017.
- Chemical and Microbiological Analysis of Army's water supply line at Tharparkar Sindh. M/s 16 Engineer Battalion (Al-Muqadam), Pakistan Army, Hyderabad, Cantt.
- Process Development To Exhaust A Specific Coating Material On A Technical Substrate To Prevent Discoloration, M/S Midas Safety BEL & PSL,
- Calibration of Scientific Equipment, M/s. SGS Pakistan (Pvt) Limited, Karachi, ILD/Advisory-Consultancy-6156/17, (Minerals Section)
- Calibration of Scientific Equipment, M/s. Nestle Waters, Bin Qasim, Karachi, ILD/Advisory-



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Consultancy6506-/17

- Calibration of Scientific Equipment, M/s. HSE Services, Karachi, ILD/ Advisory-Consultancy-6731/17
- Advisory Consultancy for Calibration, M/s. National Food (Site), ILD/ Advisory-Consultancy-7066/17
- Advisory Consultancy for Calibration, M/s. Lucky Cement, ILD/ Advisory-Consultancy-7140/17
- Advisory Consultancy for Calibration, M/s. SGS(Textile), ILD/ Advisory-Consultancy-7806/17
- Advisory Consultancy for Calibration, M/s. Swiss Tex Chemicals, ILD/ Advisory-Consultancy-7892/17
- Advisory Consultancy for Calibration, M/s. Atco Lab, ILD/ Advisory-Consultancy-8319/17
- Testing/ Analysis of Uniform Samples, M/s. Workers Welfare Fund (Ministry of Overseas Pakistani's and Human Resource Development ILD/Ref. Project 6415/2017
- Characterization of Chlorinated Rubber Paint White, Yellow and Glass Beads, M/s. NESPAK (PVT) LTD., Lahore, ILD/Ref. Project-6964/2017.
- Technical Evaluation of Thermoplastic Paint White, Yellow and Glass Beads", M/s. Karachi Thatta Dual Carriageway Project, ILD-Advisory Cons. 7944/2017.
- M/s. Flower Plastics, ILD/Consultancy-8123/2017.
- Analysis of water samples of kidney Centre, M/s. ILD/Ref. Project-6736/2017
- Water purification and treatment, M/s 16 Engg Battalion (Al-Muqaddam) Hyderabad Cantt, ILD/ Advisory Consultancy/1429-1432/2017
- Testing of Solar Inverter (5kva), M/s New Rabia Enterprises Karachi, ILD/analytical testing/7503/2017.
- Service of Spectrophotometer, M/s Department of Biochemistry, University of Karachi, ILD/Repair & Maintenance /7639/2017.
- Testing of Samples declared to be "Solar Inverter" imported vide GD Machine no KAPW-HC-84652, M/s Model custom Collectorate of Appraisement (West) Custom House, Karachi, ILD/ Analytical Testing/8236/2017
- Testing of Samples declared to be "Soalr Pumping Inverter with MPPT" imported vide GD Machine no KAPW-HC-83215, M/s Model custom Collectorate of Appraisement (West) Custom House, Karachi, ILD/Advisory Consultancy /8240/2017.
- Analytical testing of pharma product ASLOW-81 enteric coated tablets (Aspirin), M/s. Helix Pharma (Pvt.) Ltd., ILD/ Adv.Cons-6586/2017.
- Determination of liquid born Particulate count, Total Organic Carbon Substance and sterility of medical devices provided by Goldstar Medical Instruments, Hayat Center, Khadim Ali Road, Sialkot, ILD/Adv.Cons-7442/2017.
- Bioburden Analysis in Stainless Steel Surgical Instruments, M/s. Tata Surgicals (Pvt.) Ltd., Sialkot, ILD/Adv.Cons-7501/2017.
- Determination of liquid born Particulate count and Total Organic Carbon Substance of medical devices provided by Hakmed Instruments, M/s. Hakmed Instruments, Sialkot, ILD/Adv.Cons-8165/2017.
- Determination of liquid born particulate count and Total Organic Carbon Substance of medical devices, M/s. Mohrukh Surgical Co., Sialkot, ILD/Adv.Cons-8166/2017.
- Textile Testing of Mail Bags. M/s. Government of Pakistan, Pakistan Post Office, ILD/Ref. Proj.-1230 A
- Technical Evaluation of Polyurethane Foam, M/s. ICI Pakistan Ltd. ICI House, Karachi, ILD/Ref. Project-1276/2018
- Technical Evaluation of Rubber Materials, M/s. Creative Social Marketing, Karachi, ILD/ Advisory Consultancy-1766/2018.
- Testing of Solar Inverter (5KVA), M/s New Rabia Enterprises Karachi, ILD/ Analytical Testing-521/2018.
- Analysis of Tap Water, M/s. Master Motors Ltd. Karachi, ILD/ Advisory Consultancy-641/2018.
- Analysis of water for RO, M/s. Syed Ali Irteza Naqvi. Karachi, ILD/ Advisory Consultancy /776/2018.
- Analysis of Fresh Water, M/s. Rahmat Shipping Pvt. Ltd. Karachi, ILD/ Advisory Consultancy-2032/2018.
- Confirmation of Consignment Export declared to be Moxifloxacin, M/s. Abbott Laboratories (Pakistan) Ltd, vide GD No. KAFE-SB-3940,
- Residual Ethylene Oxide Analysis in Stainless Steel Surgical Instruments Redon Guide Needle), M/s.



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- Tata Surgical (Pvt.) Limited, Sialkot, ILD/ Advisory Consultancy-1650/2018
- Bioburden Analysis of stainless steel surgical Instruments, M/s. Pheasant Surgical Corporation, Sialkot, ILD/ Advisory Consultancy-1651/2018.
 - Antioxidant and anti-bacterial activity of isolated phyto compounds, Ms. Mehwish Farrukh ILD/Ref. Project-356/2018.
 - Human Rights Case No. 1107 of 2018- In the matter of deficiencies in the production, processing and packing of packed milk in province of Sindh, (On Gratis Basis), M/s. The Assistant Registrar, Supreme Court of Pakistan, M.R. Kiyani Road, Karachi, ILD/Ref. Project-818/2018.
 - Technical evaluation of thermoplastic paint white, yellow and glass beads, M/s. Karachi Thatta Dual Carriageway, Project, Karachi, ILD/ Advisory Consultancy-7944/2017.
 - Advisory Consultancy for incorporation of error and measurement of uncertainty and calibration of equipment, M/s. Ajmer Electric Engineering Works, ILD/Advisory-Consultancy-2375/2018
 - Quality Control and Chemical Composition of Kisan Canola Oil, M/s. Faisalabad Oil Refinery (Pvt.) Ltd., The University of Faisalabad Sargodha Road, ILD/Ref. Project-3507/2018.
 - Proximate of Thermoplastic Paint Yellow, White and Glass Beads, M/s. Sukkur-Multan Motorway Project, CSCEC K-509, Nawaz abad Camp Tehsil Sadiq Abad, Distt: Rahim Yar Khan, ILD/ Advisory Consultancy-3364/2018.
 - Quality Control and Chemical Composition of Mezan Canola Oil, M/s. The Paracha Textile Mills, H.O. & Mills, Karachi, ILD/Ref. Project/3304/2018.
 - Testing of Oil Samples, M/s Paracha Textile Mills, ILD/Ref. Proj. 3304/ 2018.
 - Analysis of Skimilac Skimmed Milk Powder, M/s Supreme Court of Pakistan, ILD/Ref. Project- 4018-4019/2018
 - In vitro cytotoxicity Assay of stainless steel surgical Instruments from Concise Enterprises for the compliance of ISO-10993-5, M/s. Concise Enterprises Muslim Pura, Kotli Behram, Sialkot, ILD/ Advisory Consultancy-4030/2018.
 - Biocompatibility testing of surgical instruments: Guinea pig maximization test Intracutaneous reactivity test, M/s. Concise Enterprises Muslim Pura, Kotli Behram, Sialkot, ILD/Consultancy-4030/2018.
 - Residual Ethylene Oxide Analysis in General Surgical Instruments, M/s. Surgikare, Toorabad, Daska Road, Sialkot, ILD/ Advisory Consultancy-4156/2018.
 - Improvement of formulation of floor cleaner for its antibacterial activity, M/s. A.Z. Chemical, Karachi, ILD/Advisory Consultancy-4411/2018.
 - Microbiological monitoring of air quality of printing room, molding room, boxing are and swab testing of Equipment, closure caps and polythene bag, M/s Plastech Auto safe (Pvt.) Ltd., ILD/ Advisory Consultancy-4028/2018.
 - Title "Environmental Consultancy on Plastic Scrap, M/s. M/s Zephyr Waste Solution, ILD/ Advisory Consultancy-4210/2018.
 - Air Quality Monitoring, Emission Testing, Noise level Measurement and Lux Testing, M/s Rainbow Hosiery (Pvt.) Ltd., ILD/ Advisory Consultancy-3692/2018.

Technical Reports Prepared

- Technical Evaluation of Lithium Bromide Chiller Solution, Dr. Sofia Khalique Alvi, Mr. Sheraz Shafique and Ms. Rubina Saleem, M/s. Iceberg Industries, ILD/TR 4952/17.
- Quality Evaluation of Chemicals, Dr. Sofia Khalique Alvi, Mr. Sheraz Shafique and Ms. Rubina Saleem, M/s. SEPCOIII Electric Power Construction Corporation, ILD/TR-5390/17.
- Characterization of Resin (Granules) samples, Dr. Razia Sultana, Mr. S. Junaid Mahmood and Mr. AFK Ifrahim. M/s. Shamim & Co. Pvt. Limited, ILD/TR- 5620/2017.
- Technical Report on Suitable extracts of *Salvadora Perisca*, Nighat Sultana, Mahmood-ul-Hassan, ILD/TR-4275/17.
- Technical Report on Residual Trichloroethylene Analysis in Stainless Steel Surgical Instruments, Dr. Ghulam Fareed, Dr. Kamran Ahmed Abro, M/s. Daud Jee Mfg. Co, Nihat Park, Paris Road, Sialkot, ILD/TR-4755/17.



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- Stability Study of Infant Naunehal Gripe Water, Dr. Saeeda Bano, Dr. Kauser Siddiqui, M/s Hamdard Laboratories (Waqf) Pakistan, ILD/TR-4953/17.
- Technical Report on Chemical characterization of sea water from east and west bay gawadar ILD/TR-8162/ 2017 M/S CCCC-FHDI Engineering co.ltd.

Equipment Fabricated/ Calibrated

- Fabrication of Digestion Unit
- Conductivity Meter (digital)
- Digital pH Meter
- Shaking Incubator
- Water Chilling and Flow control station
- Cooled Incubator (Temp: -10 to +50°C)
- Digital pH Meter
- Digital Conductivity Meter
- Digital pH Meter
- Design and Development of low cost "Smart Flame Photometer"
- Designing of Control System for IR Dying Bath
- Development of "Universal Centrifuge Control System"

Human Resource Development

Training Imparted/ Arranged

- Two days training on ISO/IEC-17025 and Measurement Uncertainty given to 05 participants from M/s Bosh Pharmaceutical Korangi in July, 2017.
- Training on Calibration of Measuring Tape and Mass given to two Persons from Al-Karam Textile Mills (Pvt) Limited in July, 2017.
- Two-days training on General Awareness of ISO 17025 and Measurement Uncertainty was organized at M/s Bosch Pharma on their request in August, 2017.
- Two-week training on Microbiological Analysis of Food and Water Samples given to 40 students from different universities in July, 2017.
- Training on QC and Operation team were trained on GC-MS and ISO-17025 protocol given to M/S Botchi Pharma company in August, 2017
- Training organized on Pakistan Halal Standard PS 3733 at PCSIR Karachi in collaboration with National Alliance for Safe Food in August, 2017
- Training on processes, unit operations, material balance, estimation of direct production cost and quality control equipment organized in October, 2017.
- International 5-Day Training Workshop on Repair and Maintenance of Scientific & Engineering Equipment in Universities, Research Institutions and Small Scale Industries organized in collaboration with COMSATS, ISESCO and Al-Farabi University Kazakhstan, at Al-Farabi University, Almaty, Kazakhstan in October, 2017.
- A 2-days Training Workshop on Repair and Maintenance of HPLC, GC, MS and Atomic Absorption organized and conducted at CDLE-PCSIR Laboratories Lahore in December, 2017.
- A 2-days Training Workshop on Repair and Maintenance of HPLC, GC, MS and Atomic Absorption organized and conducted at PCSIR Laboratories Peshawar in December, 2017.
- Training on Physico-chemical Parameters of Biodiesel and Diesel was provided in ACRC to a M. Phil. student from Sindh University in December, 2017.
- Training was given in the field of textile, material sciences and Analytical Techniques of Oil and Fats and metal testing to 04 Trainees in February, 2018.
- Training on Petroleum Oils and Lubricants (POL) provided to 37 Junior/ Non Commissioned Officers



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- (Ordnance) at Ordnance College Malir, Cantonment in February, 2018.
- Training on Detection of Heavy Metals in Hair Samples was provided to Student from SBK women's University Balochistan in February, 2018.
 - Training on Edible Oil/Ghee Fortification and Quality Assurance & Quality Control (QA/QC) Processes organized by Food Fortification Programme (FFP), Pakistan at PC Hotel, Karachi. About 25 professionals from industry and regulatory bodies participated in the training. Dr. Omer Mukhtar Tarar, SSO, participated as a Trainer in January, 2018.
 - Training on Measurement Uncertainty as per ISO-17025 was provided to the staff of Microbiology Lab of M/s SGS Pvt. Ltd as per ISO-17025 Standard in February, 2018.
 - A 5-Days Training on Plant Tissue Culture Technique was organized at Plant Tissue Culture Laboratory, Khoski Sugar Mills, Badin in March, 2018.
 - A training workshop on Repair and Maintenance of HPLC, GC, MS and Atomic Absorption was organized and conducted at PCSIR Laboratories Karachi in January, 2018.
 - Mr. Zain-ul-Ibad, SSO participated as resource person in the workshop on Measurement Management Systems ISO 10012:2003 organized by PSQCA-Karachi in January, 2018.
 - One day Workshop on Quality Control & Assurance Course (Junior/Non Commissioned Officers/Civilians) was organized for 25 officials from Ordnance College Malir Cantonment as part of their training course in May, 2018.
 - Training on Edible Oil / Ghee Fortification and Quality Assurance & Quality Control (QA/QC) Processes was organized by Food Fortification Program (FFP), Pakistan in Karachi in March, 2018. Dr. Omer Mukhtar Tarar, SSO participated as trainer.
 - Two-Day Training on Measurement Uncertainty for M/s National Foods provided to 5 Officials of M/s National Foods (Pvt) Ltd, as per the Standard ISO 17025, in April, 2018.
 - Two weeks internship training on Isolation techniques to isolate a specific compound from a natural product and analytical equipment/techniques/tools to assess test samples was provided to a group of 05 students at PRC in March, 2018.
 - Two weeks internship training on Natural Product Chemistry provided to 22 students at PRC in April, 2018.

Training received (Local/ Foreign)

- Dr. Muhammad Naseem Khan, SSO, received one-day training on ISO 14046 - Water Foot Print Management at PSQCA Head Office, Karachi, September 19, 2017.
- Dr. Zulfiqar Ali Mirani, SSO, obtained a 3-day certificate training on ISO 18000 (OSHAS) at NILAT, Karachi, September 19-21, 2017.
- Dr. Shahnaz Perveen, Director (P&D), KLC received three days training on "Organizational Performance Management" given by National Institute of Labour Administration Training (NILAT), Government of Sindh, 21-23 November, 2017.
- Dr. Beena Naqvi, SSO, received training on ISO - 14001:2004 Environmental Management system and Environmental Protection Act, 1997, Organized by NILAT, Karachi.
- Ms. Anila Siddiqui attended a 3-days course on, "ISO-9001-2015 - Quality Management System" at National Institute of Labour Administration Training (NILAT), Karachi.
- Dr. Omer Mukhtar Tarar, SSO, participated in a training workshop organized by World Health Organization (WHO) Regional Office for the Eastern Mediterranean on "Standardization of Regional Food Composition Table in the Eastern Mediterranean Region", This training workshop was supported by Global Challenge Research Fund and WHO jointly. Leading scientists working on Food Composition Table from Morocco, Tunisia, Egypt, Sudan, Kuwait, Iraq, Iran, Pakistan and Nigeria participated in the workshop and shared their experiences, May 8 to 10, 2018, Rabat, Morocco.

Workshops/ Seminars/ Exhibition Organized

- Organized training workshop on "Drafting & Filing of Patent Application" at PCSIR Laboratories



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Complex, Karachi in August, 2017.

- Organized a seminar and imparted lectures/demo on Application of Project Management with hands-on training on PM Software to teachers and students of PSTC at Lecture Hall, PCSIR, KLC in August, 2017.
- Organized a presentation on "Genetically Modified Organisms (GMOs)". The lecture was organized under the Dr. Salim-uz-Zaman Siddiqui Lecture Series in August, 2017.
- Organized a lecture on Pulp and Paper in Scenario of Economical Development of Pakistan under the Dr. Salim-uz-Zaman Siddiqui lecture series in July, 2017.
- Organized a lecture on Role of Research Animals in Human Health in September, 2017.
- Organized a lecture on Introduction to Cyber Security under the Dr. Saleem-uz-Zaman Siddiqui Lecture Series in December, 2017.
- Displayed Products developed by PCSIR and CDLEs Instrument at Science Exhibition for Young Learners in October, 2017.
- Workshop on Advanced Analytical Techniques (GC, GC-MS and HPLC) was organized for Industrial Engineering students from NED University in October, 2017.
- A one-day seminar on Halal and Safe Food: Challenges and Responsibilities was organized in January, 2018.
- Organized a conference on Personality Development & Interpersonal skills in September, 2017.
- Organized a conference on SWOT (Strength Weakness Opportunity and Threats) in April, 2018.
- Organized a lecture on Time Management in May, 2018.

Workshops/ Seminars/ Exhibitions Attended

- Director General accompanied with Dr. Shahnaz Parveen, Director (P&D), Mr. S. Zain-ul Ibad, QMR and Engr. Aijaz Ali Panhwar, AQMR attended a Seminar on ISO Certification organized by NoRD at Hotel Ramada, Karachi in March, 2018.
- Mr. Burhanuddin, PSO, Res. Industrialization Section, ESC, KLC attended a seminar on GCIP for awards-2017 by UNIDO in July, 2017.
- Dr. Shahnaz Perveen, had attended the inaugural ceremony of the "6th International Symposium-Cum Training Course on Molecular Medicine and Drug Research (MMDR-6)" in November, 2017.
- Dr. Shahnaz Perveen, had attended the "Half Day Workshop on the Role of PCST in Promoting and Recognizing Scientific Output in Pakistan", in HEJ Research Institute of Chemistry (ICCBS), Karachi in July, 2017.
- Dr. Shahnaz Perveen, had attended the inaugural ceremony of "Sino-Pakistan Hybrid Rice Research Center" in HEJ Research Institute of Chemistry (ICCBS), Karachi in July, 2017.
- Dr. Shahnaz Perveen had attended seminar on "Science & Technology Exchange Programs (STEP)", in Tehran University of Medical Sciences, Iran in December, 2017.
- Dr. Khaula Shirin, Director General, Engr. Razia begum, PE and Dr. Sohail Shaukat attended national workshop on Inventory of Initial and New Persistent Organic Pollutants (POPs) in Pakistan", Organized by Ministry of Climate Change at Marriot hotel, Karachi in September, 2017.
- Mr. M. Aijaz attended a seminar at Mirpurkhas Gymkhana, Organized by Trade Development Authority of Pakistan, Ministry of Commerce, Hyderabad in January, 2018.
- Halal and Safe Food – Challenges and Responsibilities. Scientists of ACRC attended this one day seminar, organized by Food and Marine Resources Research Center PCSIR Laboratories Complex Karachi in January, 2018.
- Syed Junaid Mahmood, SO, attended 2nd international conference on Advance Materials and process Engg. (AMPE-2017) Organized by Faculty of Chemical process Engg. NEDUET Karachi.
- Director General attended National Conference on "Food Safety and Harmonization: shaping a Healthier Nation" organized by M/s. Nestle Pakistan Limited in Collaboration with PCSIR at Hotel Serena, Islamabad in November, 2017.



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Students Supervision

- Laboratories provided supervision to 29 students of Ph.D./ M.Phil/ MS and M.Sc./ B.Sc./ BE of different universities/ institutes during 2017-18.

Other Activities

MoUs/ Agreements Signed

- Signed MoU with Mehran University of Engineering & Technology, Jamshoro for "Collaboration in R&D Activities and Development of Human Resources".
- Signed MoU with University of Karachi for Co-operation and Collaboration in Academic and Research Development.

Meetings/ Visits

- Meeting with chairman and high officials of FPCCI was conducted, regarding the testing facilities of Azo dyes in PCSIR (KLC), DG-KLC briefed about this facility.
- Meeting with chairman & high officials of PCDMA was conducted, regarding the facilities developed in PCSIR KLC for Azo dye. DG briefed about this facility.
- Mr. Muhammad Athar Ayub, TA and Mr. Muhammad Jawed Rana, TA visited M/s. Feroze Textile(Pvt.) Limited, SITE, Karachi for calibration of scientific equipment.
- Mr. Waseemuddin, SO and Mr. Abdul Razzaq, UDC visited M/s. K-Electric, , Karachi for calibration of scientific equipment.
- Mr. Atif Aziz, EO, Mr. Muhammad Jawed Rana, TA and Mr. Noshad Ul Hassan, Tech-II visited M/s. Allied Industries (Pvt.) Ltd., HUB, Balochistan for calibration of scientific equipment.
- Mr. Muhammad Ghazanfar Ali, JE and Mr. Ayaz Mirza, TA visited M/s. SGS Pakistan (Pvt.) Limited, Korangi Industrial Area, Karachi for calibration of scientific equipment.
- Syed Zeeshan Mahmood, SO and Mr. Naveed Ahmed Sheikh, JE visited M/s. Keizan Pharma and M/s. Platinum Pharma, Bin Qasim Industrial Area, Karachi for calibration scientific equipment.
- Mr. Muhammad Javed Rana, TA has been visited to M/s. Bosch Pharmaceuticals (Pvt.) Limited, Korangi Industrial Area, Karachi for calibration of Hardness Tester.
- Mr. Waseemuddin, SO and Mr. Muhammad Athar Ayoub, TA visited M/s. Al-Karam Textile Mills, Landhi Industrial Area, Karachi for calibration of Scientific Equipment.
- Mr. Faisal Ghazanfar (SO) attended meeting of the technical committee at PSQCA-Karachi for standard development/adaptation regarding "Electromagnetic compatibility requirement " based IEC 62040-2-2016
- Mr. Faisal Ghazanfar (SO) and Mr. Arif Karim visited HEJ, Karachi University for Development and design project of Orbital shaker.
- Mr. Faisal Ghazanfar (SO) and Mr. Arif Karim (SSO) attended meeting of the Electronics technical committee at PSQCA-Karachi for standard development/adaptation regarding IEC 62569-1-2017
- Mr. Faisal Ghazanfar (SO) and Mr. Arif Karim (SSO), visited FRC-PCSIR for Repairing work of CHNS analyzer.
- Mr. Muhammad Ather Ayoub,TA has been visited to M/s. SGS Pakistan (Pvt.) Limited, Korangi Industrial Area, Karachi for calibration of Balances.
- Mr. Muhammad Athar Ayoub, TA and Mr. Ayaz Mirza,TA visited M/s. DOW University Of Health Sciences Hospital, Karachi for calibration of Analytical Balances and Thermal Measuring Equipment.
- Mr. Naveed Ahmed Sheikh, JE and Mr. Muhammad Athar Ayoub, TA visited M/s. Defence Science & Technology Organization (DESTO), DHA, Karachi for calibration of scientific equipment.
- Dr. Omer Muktar Tarar, SSO, visited M/s Mount Fuji Textile Ltd for the assessment and verification of documents under the Certification Incentive Program.
- Meeting of PCSIR Team with Mr. Nasir Uddin Fateh Kukda, Chairman Pakistan Chemicals & Dyes



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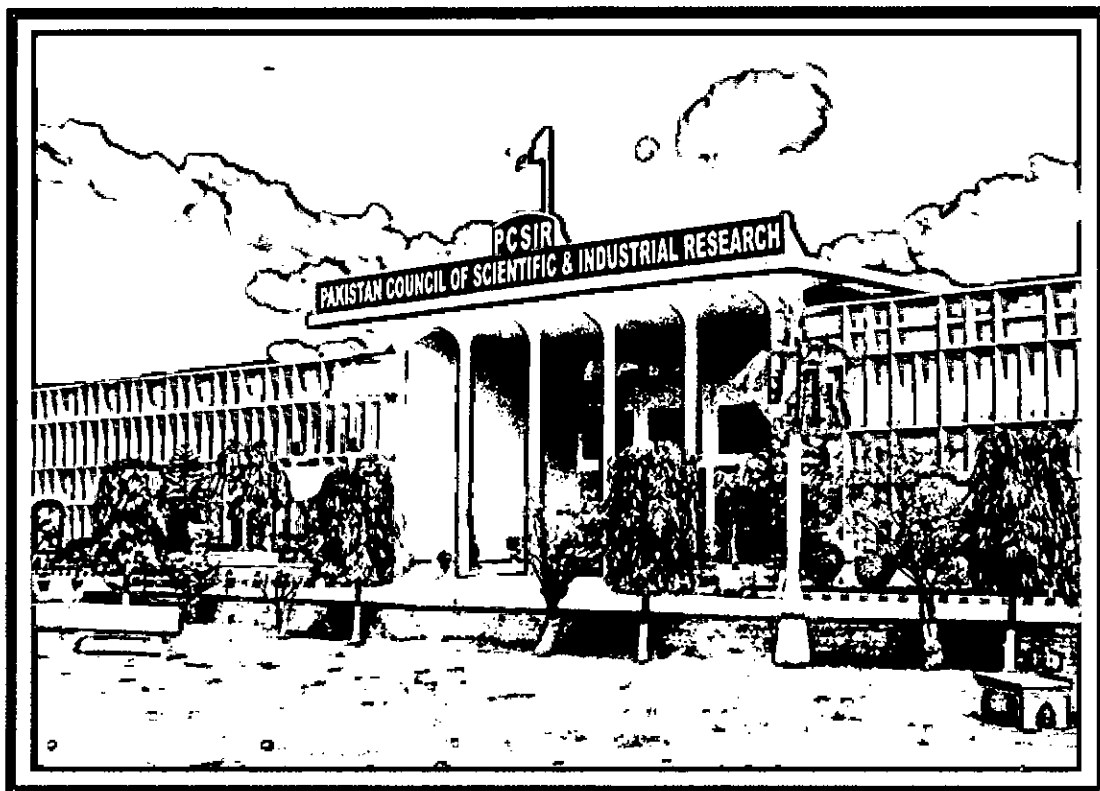
Merchants Association with regards to the Testing of AZO Dyes in Textiles.

- Mr. Burhanuddin, PSO, Res. Industrialization Section, ESC, KLC held a meeting with Director, Soil Fertility Department, Government of Punjab and Deputy General Manager, STEDEC and demonstrated Good Manufacturing Practices (GMP), PFD and SOPs (Safety Operational Procedures) of Phytifix, for registration of product as a plant growth regulator for purpose of marketing in Punjab.
- Dr. Akhtar Shareef, SSO and Durdana Rais Hashmi, SSO of CES (KLC) Visited the Data Centre of M/S Standard Charter Bank (Pakistan) Limited, for 4th Quarter Maintenance of "Indoor Air Purifier" and corrosion test at Data Center.

Awards/ Honours

Research Productivity Award (RPA)

- Dr. Shahnaz Perveen, CSO, KLC, received Research Productivity Award (RPA) by PCST, MoST for the year 2017-2018 in the **Category B**.



PCSIR Laboratories Complex, Lahore

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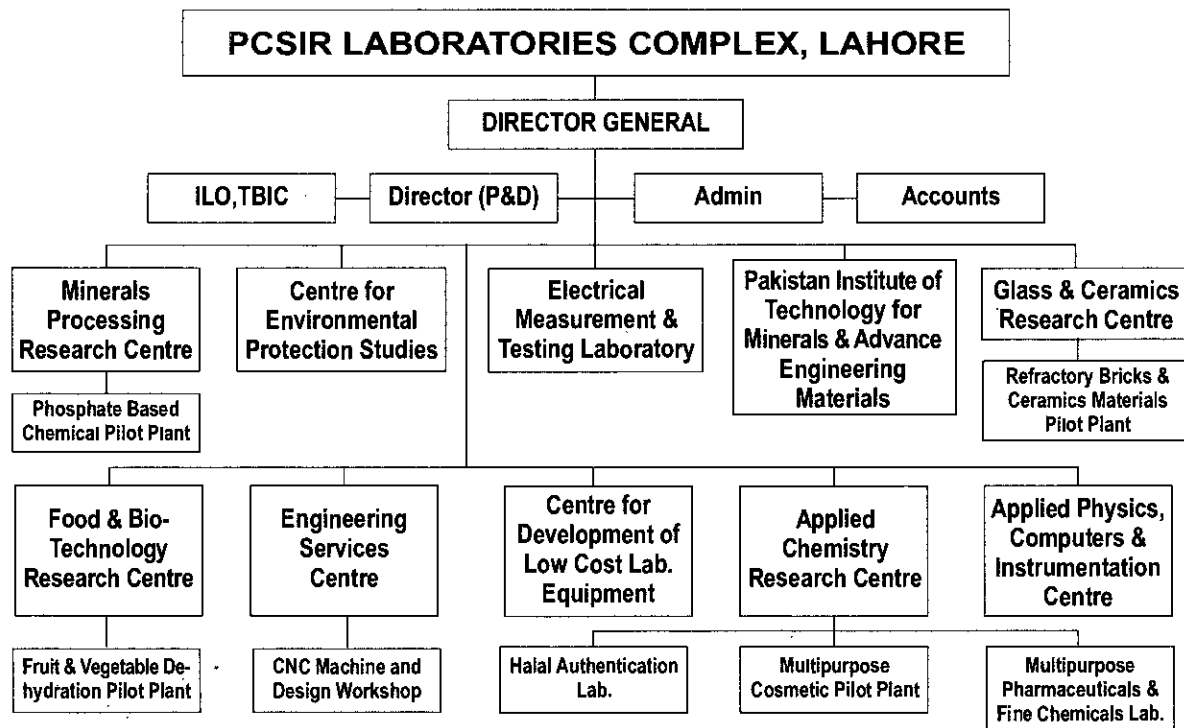


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Director General
Dr. Quratulain Syed

Pakistan Council of Scientific & Industrial Research (PCSIR) Laboratories Complex, Lahore (LLC) comprises of 10 research Centres. These Centres are rendering services to local industry and other organizations in diversified fields, such as: Applied Chemistry Research Centre (ACRC), Applied, Physics Computers & Instrumentation Centre (APC&IC), Centre for Development of Laboratory Equipment (CDLE), Centre for Environmental Protection Studies (CEPS), Electrical Measurement and Test Laboratory (EMTL), Engineering Services Centre (ESC), Food & Biotechnology Research Centre (FBRC), Glass & Ceramics Research Centre (GCRC), Minerals Processing Research Centre (MPRC), Pakistan Institute of Technology for Minerals & Advanced Engineering Materials (PITMAEM). These Centres are not only engaged in indigenous technology development, provision of Testing and Quality Assurance Services but also effectively contributing to the Human Resource Development (HRD) through its Precision System Training Centre (PSTC) by providing research guidance to the B.S / M.Sc., M.S / M.Phil. and Ph.D. students from the Academic Institutions.



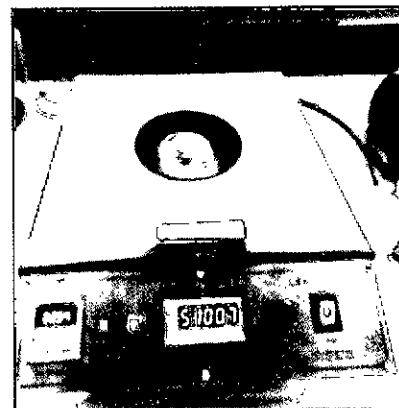


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Research Activities

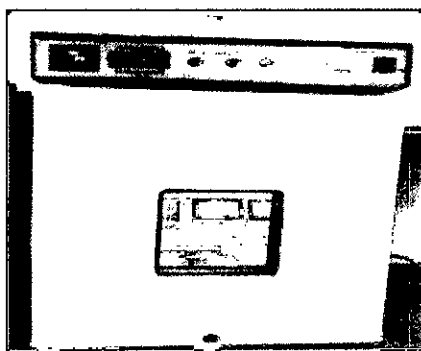
Design & Development of Germicide UV Cabinet

Bio safety Cabinets are often equipped with germicidal ultraviolet light (UV) lamps that radiate light at a wavelength of 254 & 356nm (UV-C band) to decontaminate the interior surface. To ensure the energy output is sufficient to kill microorganisms, the lamps output intensity must be tested periodically, and the intensity should not be less than 40microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$) at the center of the work area. A nominal lamp power of 30 Watts typically provides a UV intensity of approximately $125\mu\text{W}/\text{cm}^2$ at a distance of one meter from the lamp. In many BSCs, the distance from the lamp to the floor of the cabinet is less than one meter, so intensities at the work surface greater than $125\mu\text{W}/\text{cm}^2$ should be expected. The studies have been conducted to investigate the germicidal effect of UV light on mycotoxins, aflatoxin, spores, bacteria, food, water, and indoor air quality.



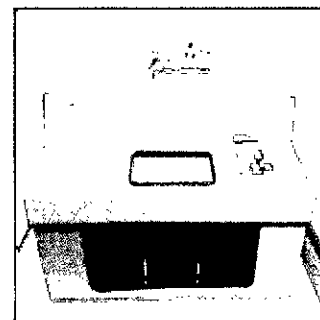
Design and Development of Humidity Chamber

Shaking incubators are often used for cell culturing, cell aeration, and solubility studies. In addition to offering stable temperature conditions, the shaking incubators use an orbital agitation at variable speeds to affect the growth of cell cultures. An adjustable orbit allows users to change the rotational stroke from vigorous shaking to gentle shaking to accommodate different types of cells, and to provide maximum oxygen transfer. Standard features include microprocessor control, load flexibility, shaking platform (included), and independent controls for temperature, timer, and shaker. All major functions (temperature, RPM and time) have alarms that alert the user to deviations from set parameters. Over temperature protection is provided by a safety thermostat. Digital keypad operation offers the ability to calibrate the temperature controller to a reference thermometer. To better support the load over years of constant use, four load bearing positions for optimal weight distribution are provided



Design and Development of High Speed Centrifuge

A centrifuge is a device that spins liquid samples at high speeds and thus creates a strong centripetal force causing the denser materials to travel towards the bottom of the centrifuge tube more rapidly than they would under the force of normal gravity. A centrifuge is a laboratory device that is used for the separation of fluids, gas or liquid, based on density. Separation is achieved by spinning a vessel containing material at high speed; the centrifugal force pushes heavier materials to the outside of the vessel. The particles get separated according to their size, shape, density, viscosity of the medium and rotor





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speed. The centrifuge involves principle of sedimentation, where the acceleration at centripetal force causes denser substances to separate out along the radial direction at the bottom of the tube.

A Process to Make the Quartz Sand Suitable for use in Fluidised Bed Technology

Ibrahim Fibres required a material for use in fluidized bed at their Plant. In this regard Quartz sand was evaluated for maximum service temperature, alkali content, grain size to make it suitable and a process was developed and handed over to the client

Process to Ascertain the Suitability of Raw Materials for Ceramic Ware Manufacturing

Master Tile industry has changed their raw material source and were facing the problem in making raw mix design. For this purpose, 16 samples were analyzed for their alkali content. As the alkali content has major role in sintering temperature of the product a process was developed to adjust alkali content with respect to sintering temperature.

A Process for Suitability of Refractory Blocks for use in Thermal Power Plant

Atomic Energy Commission of Pakistan is erecting a Power Plant at their complex CFPP-I Jauharabad. They required a refractory castable block with minimum moisture contents which can withstand high temperature (1500 °C) and should be wear/ thermal shock resistant. In this regard refractory blocks were evaluated for moisture contents and after considerable R&D a process was developed for their safe use in thermal power plant.

Research Outcomes

Processes Developed

- Formulation of brown marker ink with natural herbal dyes
- Development of *Moringa olifera* herbal tea
- A process developed for suitability of refractory castable for use in power plant at atomic energy was developed
- Development of Fabric Conditioner.
- Production of natural food colors
- Development of preservation technique for *Syzygium cumini* (Jambolan)
- Process Improvement for Development of Kojic Acid
- A process to make Quartz sand suitable for use in fluidized bed Technology
- A process to reduce the water absorption and porosity in porcelain tile
- Development of process for humification of poultry waste
- Color Reduction from textile industrial wastewater through Fenton's Reagent
- Process development for the production of ammonium hydroxide.
- Development of Liquid Paste Gel for Offset Paper Printing Ink
- A process for the development of Surgical Tools by powder metallurgy technique
- Development of process for chemical evaluation of low alkali cement for use in construction project.
- Process for the production and Feasibility of analytical grade Sulphuric acid
- Process for the development of Ni-Cr Thermal Spray coating for the reclamation of cylinder Heads
- Process for the beneficiation of Sulphur ore
- Process for the beneficiation of Calcium Fluoride ore



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- Development of Micro Nutrients for Poultry feed
- Extraction of Humic Acid from local Coal
- Fortification of powder milk with Vitamin E
- Pinkish purple color developed from black carrot
- Preparation of Manganese sulfate from indigenous ore
- Development of Industrial Chemicals
- Development and Synthesis of eco-friendly Synthetic Dyes and Dye Intermediates.
- Development of Calcium Oxalate

Processes Leased Out

- Formulation of Mineral Oil Emulsion for Grinding Machine, Mr. Ahsan Ali, Settlite Town Gujranwala
- Fortification of Milk Powder with Vitamin A & D, M/s Malmo Foods
- Process for development of Natural color, Vania Food Industry Lahore
- Process for development of organic insecticide, Taj Food Pvt Ltd Muridky
- Process for development of organic insecticide, M/s Indus Farmers Gujranwala
- Beneficiation of Graphite, M/s Scomi Oil Tools, Islamabad
- A process for suitability of refractory castable for use in power plant at atomic energy was leased out, Mr. Arshad Ahmad, Manager (QA), KCPC Complex, CEPP, Joaharabad Khushab
- Production of natural food colors, M/s. Yania Food Industry Lahore
- A process to make Quartz sand suitable for use in fluidized bed Technology, M/s. Ibrahim Fibres Limited Faisalabad
- A process to reduce the water absorption and porosity in porcelain tile, M/s. Mater Tiles & Ceramic Industries Gujranwala
- Development of Die Casting Mould Lubricant, M/s. Noor ul Haq and Sons, Kot Lakhpat, Lahore
- Development of Insect Repellent Floor Cleaner, M/s. STEDEC, Adjacent Science Building, PCSIR, Lahore
- Mango Fruit Drink Development, M/s F.R. Foods, Sahiwal
- Process for the Beneficiation of Fluorite Ore, Tariq Mehmood, Al-Hamra Fabrication Works
- Process development for the recovery of Platinum and Palladium Metal from Waste Material, Sajid Rana, Benzen Traders Canal Bank Road Lahore
- Beneficiation of graphite ore, M/s Muhammad Ilyas Qalandari Rawat, Rawalpindi
- Anti Diabetic Tea, M/s Biogreen International, Lahore
- Development of process for Freeze Drying of Milk Whey, Department of Food Science & Human Nutrition, UVAS, Lahore
- Process Developed for Evaluation of Dielectric Strength of Material/ an Artifact at different voltages, Creative Electronics (Pvt.) Ltd., Lahore

Patents Filed

- "Development of method and composition for Biodegradable Eco-bioplastic formation from potato waste". Dr. Khalid, Dr. Rauf, Dr. Quratul Ain Syed and Javed Iqbal
- "Process for the black plum pomace cumini syzigium vinegar and vinegar thereafter". Dr. Naaz Abbas, Dr. Quratulain syed, Dr. Rubina Nelofer, Dr. Muhammad Nadeem, Dr. Yasar Saleem
- "Development and optimization of sodium silica fluoride base heat resistant glass" Muhammad Saadet Khan, Dr. Shahzad Alam, Miss Phool Shahzadi
- "Development for Eco-Friendly RDF Pallets from low cost Municipal Solid waste and Biomass for burning". Dr. M. Khalid Iqbal, Dr. Sakhawat, Mrs. Tayyaba Aftab, Dr. Raufa Ahmad, Mrs. Ammana, Mr. Javed Iqbal
- "Combustion chamber for Coal Water Slurry Fuel". Dr. Shahzad Alam, Engr. M. Irfan, Mrs. Farzana Habib



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- "A Process for the development of Inert Material for Water Purification". Hammad Khan, Farrukh Hussain, Muhammad Tariq, Rauf A. Khan, Quratulain Syed

International Publications

Paper Published in Impact Factor Journals

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- Asad Gulzar, Mahmood Ahmed, M. Abdul Qadir, M. Imtiaz Shafiq, Sakhawat Ali, Ijaz Ahmad, M. Farooq Mukhtar. 2018. Effect of Blanching Techniques and Treatments on Nutritional Quality of Dried Mango Slices during Storage, Pol.J. Food Nutr. Sci.68 (1): 5-13.
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- Consultancy for food products provided to Six B Industries
- Consultancy for rice quality provided to Ideal Rice Industries Lahore
- Consultation for Electric Cables provided to SDO Buildings Sub-Division No. 1 Multan
- Consultation for Energy Meters provided to Pakistan meter Factory, Islamabad
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- Consultation for Electric Cables provided to Universal Cables Industries Ltd. Karachi
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- Consultancy regarding Evaluation of Impregnated Rubber Cork Sheet provided to M/s. S.Fazal Ilahi & Sons, Lahore
- Consultancy regarding Ghee/Cooking Oil provided to M/s Kausar Ghee Mills Gujranwala
- Consultancy regarding Cooking Oil provided to M/s Hamza Vegetable Oil, Lahore
- Consultancy regarding analysis of Rice provided to Punjab Food Authority.
- Consultation for LED Lights provided to DG (I&M) LG & CD Development, Govt. of Punjab
- Consultation for LED Lights provided to Orient Lighting (Adnan Corporation), Lahore
- Consultation for Cables provided to Newage Cables (Pvt.) Limited, Lahore
- Consultation for LED Lights provided to Adlit LED Company, Gujrat
- Consultation for Cables provided to PD (PRRP) KPK (Coppergat Cables, Lahore)
- Consultancy regarding Paper provided to M/s. KPK Text book Board Peshawar
- Consultancy regarding Paper provided to M/s. Punjab Text book Board Lahore
- Consultancy regarding Oil/Ghee provided to M/s. Fatima Vegetable Oil, Okara.
- Consultancy regarding quality of TUPVE Pipe provided to M/s. Braila Town, Lahore
- Consultancy regarding quality of Cooking Oil provided to M/s. Sialkot Oil Refinery, Sialkot
- Consultancy regarding quality of Paint provided to M/s. Happiac, Lahore
- Consultancy regarding quality of Lead & Chrome provided to M/s. Akzo Nobel Pak, Lahore
- Consultancy regarding quality of Medicine provided to M/s. CCL Pharma, Lahore.
- Consultancy regarding quality of Cosmetics Items provided to M/s. Trend Int. Lahore.
- Consultancy regarding quality of Li-Bro provided to M/s. Shifa Int. Hospital, Islamabad.



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- Consultancy regarding toxicological studies of Lynex super provided to Evyol group
- Consultancy regarding Transformer Oil provided to M/s. NTDC, Lahore.
- Consultancy regarding Chicken Meat provided to M/s. K&N's Food, Karachi.
- Consultancy regarding Salt etc. provided to M/s. Kisan Foods, Sialkot.
- Consultation for LED Lights provided to Lightcare (Pvt.) Limited, Lahore
- Consultation for LED Lights provided to Municipal Committee, Taxila
- Consultation for Medical Instruments provided to Haymed Instruments, Sialkot
- Consultation for LED Lights provided to Punjab Govt. Servants Housing Foundation Scheme, Faisalabad
- Consultation for LED Lights provided to Usman & Company, Lahore
- Consultancy regarding quality of natural food colours provided to Gujranwala Food Industries
- Consultancy for the analysis of Peanut, Butter, Suji, Jolly Jam Biscuits & Cake Rusk provided to Rupali Foods (Pvt.) Ltd., LHR
- Consultancy for the analysis of Frozen Kinnow Concentrate Juice provided to Shakarganj Food Products Ltd., Lahore
- Consultancy Regarding Olive Oil provided to M/s. Barani Agri. Res. Institute, Chakwal.
- Consultancy Regarding Food Oil provided to M/s. K and N's, Lahore.
- Consultancy Regarding Pipe provided to M/s. Govt. of Gilgit Baltistan.
- Consultancy Regarding Cosmetics Items provided to M/s. Bio Tech Energy, Lahore.
- Consultancy Regarding PVC provided to M/s. Adnan Khalid, DHA, Lahore.
- Consultancy Regarding Water provided to M/s IWASRI, Lahore.
- Consultancy Regarding Cosmetics items provided to M/s Bare EMPITOME, Gulberg, Lahore.
- Consultancy Regarding MCPA provided to M/s Century Paper and Board Mills, Lahore.
- Consultancy Regarding Cosmetics Items provided to M/s PSQCA, Faisalabad.
- Consultancy Regarding Tent etc. Items provided to M/s NDAM, Islamabad,
- Consultancy to analyzer Nectar & Juices provided to Shakarganj Food, Lahore
- Consultancy Regarding Cosmetics Items provided to M/s Evyol Group, Multan.
- Consultancy Regarding Tablet provided to M/s IRMNCH & Nutrition Programme, Punjab.
- Consultancy regarding quality of food colours provided to M/s Asia dye Tech
- Consultation for Electric Cable provided to H. M. Esmail & Co. Ltd., Kotri
- Consultation for Electric Cable provided to NTDC Lahore (H.M. Ismail Co. Ltd., Kotri)
- Consultation for Auto Parts provided to Novelty Manufacturing (Pvt.) Ltd., Lahore.
- Consultation for LED Street Lights provided to Lahore Cantonment Board Lahore (Al-Arab Associates, Lahore)
- Consultancy regarding toxicity studies of herbicides/pesticides provided to M/s Four Brother
- Consultation for Refrigerator provided to M/s Varioline Intercool Pakistan (Pvt.) Ltd., Lahore
- Consultation for Electric Cable provided to M/s Universal Cable Industries Ltd., Karachi

Technical Reports Prepared

- Failure Investigation of Rail Track submitted to Pakistan Railways, Lahore
- Third Party Validation of WASA Laboratories. Lahore submitted to ECSP (pvt) Ltd, Lahore
- Third Party Validation of WASA Laboratories. Multan submitted to ECSP (pvt.) Ltd, Lahore
- Third Party Validation of WASA Laboratories. Rawalpindi submitted to ECSP (pvt.) Ltd, Lahore
- Third Party Validation of WASA Laboratories. Faisalabad submitted to ECSP (pvt.) Ltd, Lahore
- Third Party Validation of WASA Laboratories. Gujranwala ECSP (pvt.) Ltd, Lahore
- Upgradation and Modification of Biofertilizer submitted to PCSIR Head Office
- Training workshop on Repair & Maintenance of scientific lab and Engineering equipment submitted to COMSATS Islamabad
- Completion Report for sponsored project "Evaluation of WASA Tubewell water quality at Lahore" submitted to WASA Lahore



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- Development of process for detoxification of highly contaminated cotton seeds cake (CSC)" submitted to M/s. Shakeel & Company Multan
- Development of Wear and Corrosion resistant Hard (Ni Cr) based Coatings for Reclamation of Jehanberg Cylinder Head by Thermal Spray Technique submitted to M/s Sitara Chemicals (Pvt.) Ltd., Faisalabad
- Failure/Root Cause Analysis of Condenser Tubes (Pr 38016) submitted to M/s HUB Power Company Limited, Karachi
- Failure/Root Cause Analysis Of Crank Shaft submitted to M/s KAM Engineering Pvt. Ltd., Lahore
- Reutilization of Industrial waste for agricultural purpose by Humification process submitted to Premier Industries Chemical MFG Pvt. Ltd
- Technical report of treated water submitted to Eternal International industries Pvt. Pakistan.
- Technical report regarding Process development of shelf stable Tamarind Plum Syrup submitted to M/S Kitchenette's, Lahore

Equipment Fabricated /Calibrated

- Centrifuge (Large)
- Shaking Environmental Chamber
- Muffle Furnace
- Digital magnetic stirrer hot plate
- Digital drying oven
- Digital rectangular water bath
- Mini Magnetic Stirrer Hot Plate
- Heating mantle
- Magnetic Stirrer Hot Plate
- Cylindrical Water Bath
- Heating Mantle
- Rotamantle
- Tube Furnace
- Melting Point Apparatus
- UV-Germicide Cabinet
- Micro feeder
- Digester System
- Sand Bath
- Heavy Duty Hot Plate
- Circulating water Bath
- Orbital Shaker
- Melting Point Apparatus
- High Temperature Vacuum Furnace
- ICP Chiller and Air Pump
- Electromantle Soxhlet Extraction
- Oil Bath
- Walk Through Gate

Human Resource Development

Training Imparted/Arranged

- Training on Atomic absorption Spectrophotometer, 30-08-2017 (ACRC)/ Pharmaceutical group.
- Regulatory monitoring and reporting for export of fortified wheat flour, 21-08-17.
- Repair of Spectrophotometer, September 2017/CDLE.



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- FTIR, September 2017/CDLE.
- One day training on "Innovative Cement" by Akhtar Shahnaz, SO, 28-09-2017, GCRC Committee Room
- One Day Training on Electrical Safety and Performance of Testing of Home Electrical Appliances & Accessories, 14th September 2017 at Electrical Measurement & Test Laboratory
- Two Days Training on ISO / IEC 17025: 2005, 26-27th September 2017 at Electrical Measurement & Test Laboratory
- Regulatory monitoring and reporting for export of fortified wheat flour, 21-08-17.
- Training workshop on Repair & Maintenance of scientific lab and Engineering equipment, Alfarabi University Kazakhstan From 2-6 October, 2017
- One week training on Optical Emission Spectrometer, 06- 10 Nov, 2017, OES Lab, PITMAEM
- Two Days Training Programme on ISO / IEC 17025 : 2005 Standard along with Testing of Electrical Cables and Electrical Fans, 25-26th October 2017 at Electrical Measurement & Test Laboratory
- Technique for Uncertainty Measurement- ISO 17025 Documentation for PCSIR Labs. Complex, Peshawar, EMTL, PCSIR Laboratories Complex, Lahore, 08-09th November, 2017.
- One day training on "investigation of thermal electrical and mechanical properties of carbon black particles reinforced poly pyrolle nanocomposite" by Miss Phool Shahzadi, SO December 14th 2017, GCRC Committee Room
- Technical Requirements of ISO 17025 Standard, Techniques for Uncertainty Measurement, Quality Assurance Techniques for M/s Ace Indigo (Pvt.) Ltd., Lahore, EMTL, PCSIR Laboratories Complex, Lahore, 5th December, 2017
- Training given by Dr. Rabia Nazir, SSO & Mr. EhsanUl Haq, SSO based on "ISO/IEC 17025" 17-20th Jan, 2018, PCSIR Labs. Complex, Lahore.
- Mrs. Asma Inayat, SSO, given Training on "Atomic Absorption" Jan, 2018, PCSIR Labs. Complex, Lahore.
- Training on "Determination of Zinc and Chromium in serum samples" 08.01.2018 PCSIR Labs. Complex, Lahore.
- Training on "ISO-17025", document preparation by Dr. Rubina, PCSIR Labs. Complex, Lahore.
- Training on "CA and Root cause Analysis-ISO-17025" 07-05-2018, Seminar Room, CDLE, LLC.
- Training on "Project formulation workshop" organized by Pakistan Science Foundation June 26-27, 2018.
- A training on "Procuring of various items in accordance with PPRA rules" with joint collaboration of Account and Workshops employees was given by Dr. Muhammad Nadeem (PSO/TMR Microbiology) to scientific staff of PCSIR Labs Complex Lahore on 10th May 2018.

Training Received (Local/Foreign)

- Training on awareness of Labs, QMS and ISO 17025 and method validation, 22-08-17.
- Training on method verification and internal audit, 22-08-17.
- Training of Master Trainers on fortification of wheat flour, 15-16 August, Park Lane Hotel Lahore.
- One day training workshop "Drafting and filing of patent application" 07-08-2017.
- Functioning and operating the norber therm furnace, 18.08.2017.

Workshops/ Seminars/ Exhibition Organized

- Nano Technology going small from an idea to Technological Development held at PCSIR Lahore in July, 2017.
- Lecture was delivered on "Halal Slaughtering Standard" in August, 2017.
- A technical lecture on Nano-indentation and scratch testing of materials was arranged in September, 2017.
- Technical Session on Food Standards: Importance of Science based harmonized regulations" by Ms. Awilo Ochieng Pernet organized by Nestle Pakistan and PCSIR at PCSIR Labs., Complex, Lahore in



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November, 2017.

- Organized one day seminar on "Dissemination of Study Report on Identifying Incidence, Level and Source of Aflatoxin in Pakistani Wheat and Wheat Flour" by GAIN in December, 2017.
- Halal Audit Course. By IFANCA in collaboration with PCSIR Labs. Complex, Lahore in November, 2017.
- International Conference on Frontier in Advance Engineering Material at PCSIR Labs. Complex, Lahore in February, 2018
- "7th International Halal Conference & Exhibition 2018" at Faletti's Hotel, Lahore in April, 2018.
- Organized 2 days "International Conference on Innovation and Commercialization in Biotechnology" at LLC in April, 2018.
- Organized one day seminar on "Quranic Therapy Scientific Facts and Practical Demonstration" at LLC in May, 2018.

Workshops/Seminars/Exhibition Attended

- "Balanced Life is an Ideal Life for research" A motivational talk on topic entitled "Balanced life is an ideal life for research" arranged in seminar room of PITMAEM building on 24-08-2017. Talk presented by Dr. Rao Muhammad Adeel Nawab (COMSATS, Lahore). This was attended by scientists/engineers of PCSIR. 24-08-2017
- Drafting and filing of patent application, a resource person Ms. Shakra Khurshid, Patent Examiner, IPO Regional Office Lahore conducted one day workshop on common problems with patent writing, filing and publishing, 07-08-2017 which was attended by PCSIR scientists/engineers on 07-08-2019.
- "Dadex Antimicrobial Water Pipes" A step forward towards Innovation and Green technology Product launch ceremony and introductory lecture held at Kohinoor Hall, Pearl Continental Hotel, Lahore, 24.08.2017
- Lecture on "Electrical Safety and performance of testing of home electrical appliances, delivered by Mr. M. Azhar (SSO/Head, EMTL) on 14-09-2017. Which was attended by Syed Zaheer Abbas (SO) and Ms. Maryam (JE). 14-09-2017
- Workshop on "Persistent Organic Pollutants and their implication in Pakistan" Dr. M.Tahir Butt, SSO and Dr. Khalid Iqbal, SSO attended workshop at Holiday in, Lahore, 12-09-2017
- Dr. Saira Taj and Muhammad Raza Hussain at ACRC visited Gujranwala Chamber of Commerce to participate in Seminar Awareness on Quality of PPRC Pipes and Fittings in Collaboration of Gujranwala Chamber of Commerce & Industry and Express Media Group organized by Standing Committee PPRC and Gujranwala Chamber of Commerce on 18-09-2017.
- Dr. Tahir Butt and Dr. Farrukh Hussain attended a lecture at Committee room on CYBER CRIME Different Types of internet cyber crimes, 25-10-17
- Dr. Khalid attended a seminar in University of Punjab, Lahore. Awareness seminar on Technology Development. 26-10-2017
- International Symposium on Advanced Materials (ISAM-2017). Organized at National Centre for Physics (NCP), Islamabad, ISAM-2017 attended by Engr. Muhammad Irfan (Head) and Syed Zaheer Abbas (SO) on 16-10-2017.
- How to write a "Patent" A workshop/ technical talk on Patent writing arranged in PCSIR Auditorium on 03-10-2017. This was attended by engineers/scientists of PCSIR. 03-10-2017
- Prevention of Cybercrime and Parental Control on Smart Devices, A lecture programme on cyber crime and their prevention was arranged in Auditorium, D.G Office, LLC. Lecture delivered by Sardar Ikramullah Khan. This was attended by Engr. Abrar (JE) and Engr. Ahmad Raza (JE) from PITMAEM on 25-10-2017.
- Mr. Tariq attended a one day workshop entitled "National workshop on Air Pollution & Smog" Organized by Dept. of Environmental Sciences, University of veterinary and Animal Sciences to discuss SMOG formation and Air Pollution. 08-11-17



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- Dr. Farzana Bashir and M. Tariq attended one day seminar entitled "Food safety and Harmonization shaping a Healthier Nation". Lecture was delivered by Ms. Awilo Ochieng Pernet Chairman Codex Alimentarius Commission in Committee room PCSIR, Lahore 24-11-2017.
- Importance of Laser Particle Size Analysis-Applications & Techniques, a seminar/workshop was attended by Engr. Badaruddin Soomro (JE) and Mr. Waseem Akram (Sr. Tech.) organized by Bin-Rasheed Scientific (Pvt.) Ltd., Lahore at Lahore Chamber of Commerce & Industry, Lahore. In which Japanese experts delivered technical talk/ practical demonstration on Laser Particle Size Analyzer. 07-12-2017
- Attended one day seminar on "Dissemination of Study Report on Identifying Incidence, Level and Source of Aflatoxin in Pakistani Wheat and Wheat Flour" at Marriot hotel, Islamabad.

Students Supervision

- Laboratories provided supervision to 711 students of Ph.D./ M.Phil./ MS and M.Sc./ B.Sc./ BE of different universities/ institutes during 2017-18.

Other Activities

MoUs/Agreements Signed

- Signed with Mango Growers Association Pakistan for quality assurance services to Mango Association Pakistan in July, 2017.
- Signed with NTDC Lahore for Quality control services of Transformer Oil in July, 2017.
- Signed with M/s. Gai Banaspati Ghee & Cooking Oil, Faisalabad for Testing of Banaspati Ghee in July, 2017.
- Signed with M/s Farm Wise Solutions for Quality Assurance and Composition Profile of Indigenously Developed Mineral Supplements for Animal Feeds in July, 2017
- Signed with M/S Guard Agricultural Research & services (Pvt.) Ltd., Lahore for Quality assurance of the rice and water samples in October 2017.
- Signed with M/s Adam International Rice Re-Processor, Miller & Exporter, Faisalabad for Quality assurance of the rice and water sample in November, 2017.
- Signed with M/s Iqbal Rice Mill, Chiniot for Quality assurance of the rice and water sample in November, 2017.
- Signed with Pepsi Cola International (Pvt.) Ltd., Lahore for Quality Assurance of Pepsi Cola products in January, 2018.
- Signed with M/s Pepsi-cola International, Lahore for Quality Assurance of difference raw and finished Products of PCI in June, 2018.

Meetings/ Visits

- Nestle MD visited LLC to avail the services of PCSIR Labs. Complex Lahore on 30-4-2018.
- Representative of Fatima Group, Lahore, visited for Smoke analysis, Emission Monitoring and Noise Level on 04-10-2017.
- Mr. M. Tariq from, Taj Food Industries Ltd, Sheikhpura visited for Smoke analysis, Emission Monitoring Noise Level and Light Level on 26-10-2017.
- Mr. Muhammad Azhar, Head, EMTL visited 01 Industry Sargodha & Bhalwal for verification of application under CIP Project on 09-10-2017.
- Composite Testing Lab, PITMAEM, Ms.Filza Zafar Khan, Conducted Internal Audit on 02-11-2017.
- Engr. Badaruddin Soomro (JE) and Engr. M Yousaf Channa (JE) visited M/s Powder Tech, Engineering, Gujranwala to collect the dies of different surgical parts and technical discussion for powder metallurgy project on 21-11-2017.



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- Mr. Ehsan-ul-Haq visited different Sialkot Industries for the verification of applications under CIP (certification Incentive program) on 20-12-2017.
- Mr. Muhammad Azhar, Head, EMTL visited Kniltex Apparel (Pvt.) Limited, Lahore for verification of application under CIP Project on 27-12-2017.

Awards/ Honours

- Dr. M. Tahir Butt, SSO was awarded Ph.D degree on the topic "Treatment of Laboratory Waste water and its Application for Agricultural purpose" from National College of Business Administration and Economic (NCBA&E) Lahore.
- Best Presentation award in "Dielectrics and Ceramics" won by Mr. Qaisar Khushi Muhammad (J.E-PITMAEM) at International Conference on Solid State Physics (ICSSP-17) held at University of the Punjab 2017.
- "1st Poster presentation award" won by Mr. Qamar Hayat (J.E-PITMAEM) in International Conference on Frontiers of Advanced Engineering Materials (FAEM-18) held at Pakistan Council of Scientific & Industrial Research (PCSIR), Lahore Laboratories Complex.
- "2nd Poster presentation award" won by Mr. Haris Ikram (S.E-PITMAEM) in International Conference on Frontiers of Advanced Engineering Materials (FAEM-18) held at Pakistan Council of Scientific & Industrial Research (PCSIR), Lahore Laboratories Complex.
- "3rd Poster presentation award" won by Mr. Qaisar Khushi Muhammad and Mr. Abdul Qadeer (J.E-PITMAEM) in International Conference on Frontiers of Advanced Engineering Materials (FAEM-18) held at Pakistan Council of Scientific & Industrial Research (PCSIR), Lahore Laboratories Complex.



PCSIR Laboratories Complex, Peshawar

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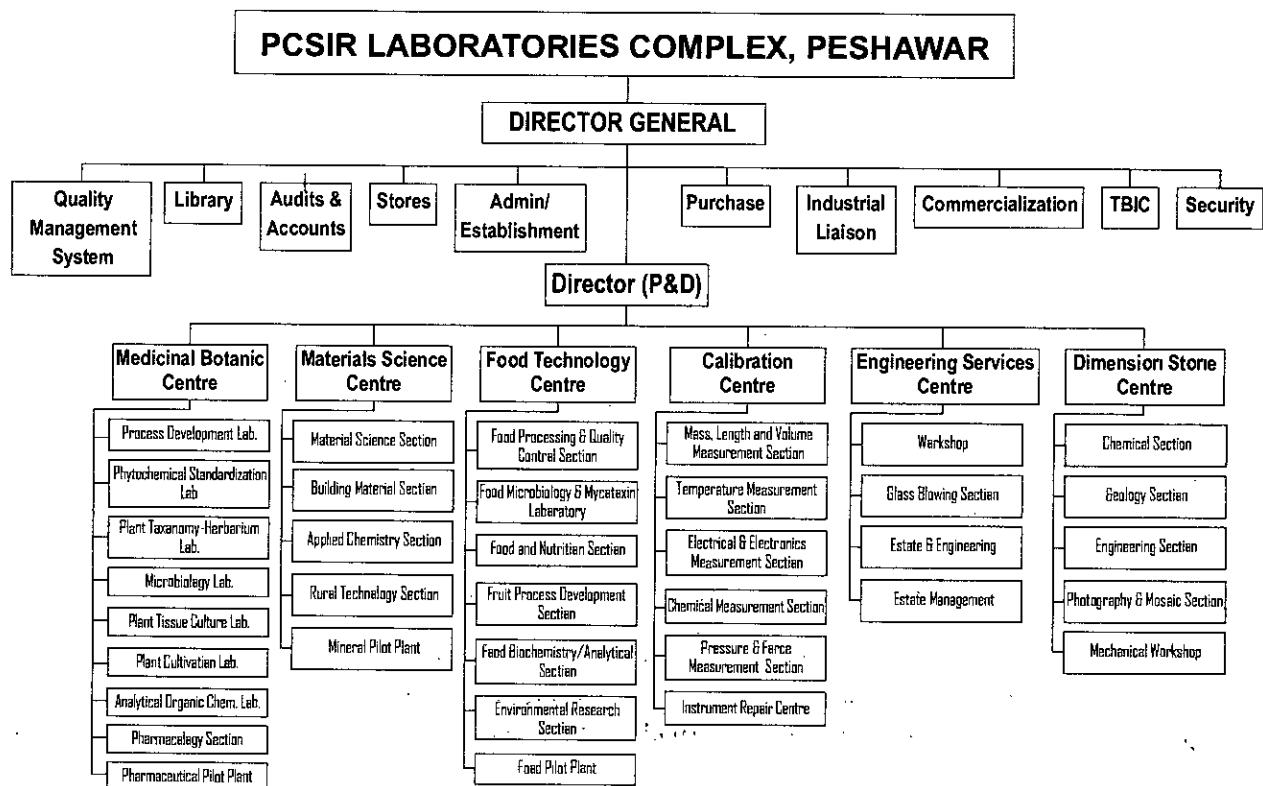
PCSIR LABORATORIES COMPLEX, PESHAWAR



Director General
Engr. Irfan Ahmad Rabbani

PCSIR Laboratories Complex Peshawar was established in 1955 with a view to investigate raw material resources of the region and assist in the industrial development of the country. The Complex comprises of six main Centres; Medicinal Botanic Centre, Materials Science Centre, Food Technology Centre, Dimension Stones Centre, Engineering Services Centre and Calibration Centre.

These Centres are providing services to local industry, Government and Non-Government Organizations in diversified fields besides carrying out research for development of economical and effective indigenous raw material based technologies. These Centres are also engaged in providing research supervision to students of almost all Government Universities of KPK in various fields of Science and Technology. PNAC has awarded Certification of Accreditation to PCSIR Laboratories Complex, Peshawar on 26.11.2017 in accordance with the requirements of ISO/IEC 17025: 2005.





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casting materials are heated very slowly. Dental casting material is prepared. Curing & further tests are underway to find out its properties.

Up-gradation of Viable Minerals of KPK and FATA Region

The raw ore contains gangue material which can be reduced by proper beneficiation techniques to enrich the target mineral content thereby increasing their payback value. Major upgradation techniques are screening, gravity separation, magnetic separation and froth flotation. Processes have been developed for the up gradation of Chromite ore of Waziristan and manganese ore of Mohmmmand using different physical techniques. Copper from copper ore of Waziristan was extracted by hydrometallurgical technique.

Development of Herbal Medicine for Urinary Tract Infection (UTI)

The fruit of Opuntia plant was collected from Attock area of Punjab. Some of it was dried and grinded for some important preliminary activities. The dried and grinded material was burnt, ashed and digested with strong mineral acid for metals analysis. Sodium, potassium and calcium were determined with the help of flame photometer while atomic absorption spectrometer was used for the determination of lead, cadmium, zinc, iron and nickel. For secondary metabolites determination, the plant material was extracted with methanol three times and the combined extract was concentrated on rotary evaporator. Investigations for carbohydrates, saponins, alkaloids, flavonoids, tannins, glycosides and amino acids were performed following standard procedures. The standards/ reagents like microbial cultures including *Escherichia coli*-causing about 80% UTI cases, *Staphylococcus aureus*, *Proteus mirabilis*; antibiotic standards including Ciprofloxacin, Azithromycin and Sulphamethox/Trimethoprim; etc. required at the very start of the experimental work have been received. Samples were then prepared from different parts of the fruit for different antimicrobial activities against the above-mentioned microbes in comparison to the aforementioned standard antibiotics and handed over to microbiology section where these activities are under process.

Development and Storage Stability of Carbonated Sugarcane Juice

Sugarcane was procured from the local market. Sugarcane was sorted, washed, and cleaned to remove dust and unwanted particles. The filtration unit equipped with UV arrangement in Food Pilot Plant was brought into function. Water samples were collected for the microbiological analysis and results are compiled for the proper functioning of the UV filters. The sugarcane juice extraction machine in Food Pilot Plant was brought into function for controlling the juice extraction under hygienic environment and with less microbial load. Sugarcane was given heat treatments for the inactivation of enzymes and micro-organisms. After that sugarcane juice was extracted and samples were submitted for microbiological analysis. Water ceramic filters have been installed in water filtration unit in food pilot plant. Sugarcane juice was given heat treatments for the inactivation of enzymes and micro-organisms. After that sugarcane juice was passed through water filtration unit and samples were submitted for microbiological analysis. Further work is in progress. Sugarcane juice was extracted after heat treatments and passed through filtration unit equipped with UV arrangement. Samples were treated with different chemical preservatives. Samples were collected for the microbiological analysis.

Research Outcomes

Processes Developed

- Development of Natural Aflatoxin Binder as Poultry Feed Additive.
- Process developed for Immunity Enhancer Product.
- Process developed for the isolation of isoflavone glycoside and formulation of new product as alternative to hormone therapy.
- Preparation of Instant water soluble KALWANGI extract.



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- Production of non-settling natural juice based on Tamarind fruit.
- Process for the production of soy protein concentrate.
- Beneficiation studies of Manganese ore of Mohmand Agency.
- Up-gradation of Chromite ore of Waziristan Agency through Wet Screening
- Up-gradation of Chromite ore of Waziristan Agency through Gravity Separation
- Preparation of food grade Calcium Carbonate

Patents Filed

- Naturally Low Calorie Sweetener from *Stevia rebaudiana*, Dr. Humaira Inayat, Mrs. Farina Kanwal, Dr. Mushtaq Ahmad Dr. Muhammad Qaisar, Muhammad Siddique and Gul Akhtar Marwat
- Process for the development of bio friendly carbomer based instant gel formulation for dental hygiene and odour removal, Dr. Muhammad Qaisar, Mrs. Farina Kanwal, Muhammad Akram, Muhammad Siddique Afridi, Dr. Hina Fazal, Dr. Farah Gul, Engr. Muhammad Saddique
- Nabeela G. Dar, Arshad Hussain, G.M Paracha, Shamsur Rehman. Natural antioxidant comprising food product "An extraction methodology standardized and applied for product preparation (Citablend)" submitted in Aug 2017.
- "Preparation of instant powder drink based on sour orange peels" submitted to IPO Karachi on 25-09-2017 (Dr. Javid Ali, SSO).
- Hamida Abid, Javid Ali, Arshad Hussain, Mussadiq Ibrahim "Process for the Preparation of Sea buckthorn berries Pulp Concentrate" (App. No. 190 / 2007)
- Hamida Abid, Arshad Hussain, Javid Ali, Ziaur Rehman "Development of a Process for the Preparation of Low Sodium Salt" (App. No. 331/ 2013) revised and submitted on 15-08-2017)

International Publications

Papers Published in Impact Factor Journals

- Afifa Saeed , Zafar Iqbal, Hafiza Iqra Khalil , Zhang Hai , Mohammad Akram, Lubna Liaqat , Zaheen Tara , Marvi Mansha and Zubia Gulzar. 2017. Fatty Acid Profile of Aerial Roots of *Ficus Elastic*. World Journal of Pharmaceutical Research. 6(8): 54-60.
- Afifa Saeed , Zafar Iqbal, Hafiza Iqra Khalil , Zhang Hai , Mohammad Akram , Lubna Liaqat , Zaheen Tara , Marvi Mansha and Zubia Gulzar. 2017. GC-FID and Physicochemical Studies of Oil From The Leaves of *Ficus Elastica* Linn. World Journal of Pharmaceutical Research. 6(8): 47-53.
- O. Zhurakovskiy; Y. E. Türkmen; L. E. Löffler; V. A. Moorthie; C. C. Chen; M. A. Shaw; M. R. Crimmin; M. Ferrara; M. Ahmad; M. Ostovar; J. V. Matlock; V. K. Aggarwal. 2018. Enantioselective Synthesis of the Cyclopiazonic Acid Family Using Sulfur Ylides. *Angewandte Chemie International Edition*. 57, 1346-1350.
- Tausif Nawaz, Nisar Ahmad, Shahid Ali, Maaz Khan, Hina Fazal, Shahid Akbar Khalil. 2018. Developmental variation during seed germination and biochemical responses of *Brassica rapa* exposed to various colored lights. *Journal of Photochemistry and Photobiology B: Biology*. <https://doi.org/10.1016/j.jphotobiol.2018.01.008>.
- Bushra Ghazal, Sumaia Saif, Kashif Farid, Adnan Khan, Sapna Rehman, Ahmad Reshma, HinaFazal, Mohammad Ali, Ashfaq Ahmad, Latifur Rahman, Nisar Ahmad. 2018. Stimulation of secondary metabolites by copper and gold nano particles in submerge adventitious root cultures of *Stevia rebaudiana* (Bert.). *IET Nano biotechnology*. DOI:10.1049/iet-nbt.2017.0093.
- Naveed Ahmad, Abdur Rab, Nisar Ahmad and Hina Fazal 2018. Differential pH-Induced Biosynthesis of Steviol Glycosides and Biochemical Parameters in Submerge Root Cultures of *Stevia rebaudiana* (Bert.). *Sugar Tech*. <https://doi.org/10.1007/s12355-018-0589-z>.
- Muhammad Idrees, Bibi Sania , Bibi Hafsa, Sana Kumari, Haji Khan, Hina Fazal, Ishfaq Ahmad, Fazal Akbar, Naveed Ahmad and Sadeeq Ali, Nisar Ahmad. 2018. Spectral lights trigger biomass accumulation



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and production of antioxidant secondary metabolites in adventitious root cultures of *Stevia rebaudiana* (Bert.). *Comptes Rendus Biologies*.

- Hina Fazal, Bilal Haider Abbasi, Nisar Ahmad, Mohammad Ali. 2018. Exogenous melatonin trigger biomass accumulation and production of stress enzymes during callogenesis in medicinally important *Prunella vulgaris* L. (Selfheal). *Physiology and Molecular Biology of Plant*.

Papers Published in Other Journals

- Javid Ali, Farhat Ali Khan, Sudhair Abbas, Muhammad Siddique Afridi, Shamsur Rehman. 2017. Comparative Phytochemical Evaluation of *Mentha piperita* Varieties (citrate and perpetea) Leaves and Stem Extracts. *Specialty Journal of Biological Sciences*. Vol, 3 (3): 1-5.
- Javid Ali, Farhat Ali Khan, Sudhair Abbas, Shamsur Rehman, Jehangir Shah, Inayat Ur Rahman. 2017. Proximate and Minerals Composition of *Mentha Piperita* Varieties of Valley Peshawar, Khyber Pakhtunkhwa, Pakistan. *Specialty Journal of Biological Sciences*. Vol, 3 (4): 29-32.
- Inayat ur Rehman, Jehangir Shah, Javid Ali, Salma Iman, Mohammad Ilyas, Farhat Ali Khan, Mujahid Sher. 2017. Physico-chemical Investigation of Quality Characterization of Peshawar City Effluents, *Specialty Journal of Chemistry*, Vol, 2 (2): 1-9.
- Javid Ali, Arshad Hussain, Shamsur Rehman, Farhat Ali Khan, Mujahid Sher. 2017. Antifungal Potential of *Mentha piperita* Leaves and Stem Extracts against Phytopathogenic Fungi. *Specialty Journal of Biological Sciences*. Vol 3 (4): 38- 43.
- Javid Ali, Arshad Hussain, Shamsur Rehman, Ziaurahman, Ghulam Mahiuddin Paracha. 2018. Antibacterial Agents' Effects on the Bacterial Flora of Fruits Collected from Peshawar City of Khyber Pakhtunkhwa-Pakistan. *Specialty Journal of Biological Sciences*. Vol, 4 (1): 8-11.
- Javid Ali, Muhammad Siddique Afridi, Shamsur Rehman, Arshad Hussain, Ziaurehman. 2018. Antibiotic Potency of *Myrtus Communis* Leaves, Stems and Flowers' Extracts against Bacterial Pathogens Responsible for Diarrhoea. *Specialty Journal of Biological Sciences*. Vol, 4 (2): 1-6.
- Iqbal Hussain , Atta U. Khan , Riaz Ullah , Mansour S. Alsaid , Syed Salman , Sarwat Iftikhar, Gul A. Marwat, Muhammad Siddique , Samin Jan , Muhammad Adnan, Akash Tariq. 2017. Chemical Composition, Antioxidant and Anti-bacterial Potential of Essential Oil of Medicinal plant *Isodon rugosus*. *TEOP* 20 (6):1607 - 1613.
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- Javid Ali, Shamsur Rehman, Jehangir Shah, Muhammad Siddique Afridi. 2018. Phytochemical and Antibacterial Potential of *Punica granatum* L. Leaves, Flower and Stem Bark Extracts against Human Pathogenic Bacteria. *Science Arena Publications Specialty Journal of Biological Sciences*. 4 (3): 1-6
- Iqbal Hussain, Atta U. Khan, Riaz Ullah, Mansour S. Alsaid, Syed Salman, Sarwat Iftikhar, Gul A. Marwat, Muhammad Siddique, Samin Jan, Muhammad Adnan. 2018. Chemical Composition, Antioxidant and Antibacterial Potential of Essential Oil of Medicinal plant *Isodon rugosus*. *Journal of Essential Oil Bearing Plants*, 20 (6): 1607-1613.
- M. Shah, I. Rahim, M. Iqbal, 2018. Synthesis, structural, optical, morphological and multi sensing properties of Graphene based thin film devices in *Journal of Materials Research Express*, DOI 10 1088/2053-1591/acc 98b.



PCSIR LABORATORIES COMPLEX, PESHAWAR

- M. Iqbal, S. Noor. 2018. Humidity sensing properties of graphene based nanocomposites thin film at room temperature 4th International Conference on Frontiers of Advanced Engineering Materials, FAEM-18, PCSIR Lahore, Pakistan
- M. Sharif, A. U. Rahman, S. Noor. 2018. Preparation Of High Concentration Stabilized Coal-Water Slurry: An Effective Way To Overcome Energy Crisis 4th International Conference on Frontiers of Advanced Engineering Materials, FAEM-18, PCSIR Lahore, Pakistan

National Publications

Papers Published in Impact Factor Journals

- Shafqat Ullah, Arshad Hussain, Rasool Khan, Asadullah, Khaliq ur Rehman. 2017. Effects of Temperature and Storage on the Antioxidant Potential, Polyphenols and Vitamin-C Contents of Azadirachta Indica Leave aqueous Extract. Pakistan Journal of Pharmaceutical Sciences, 30:1665-1669.

Papers Published in Other Journals

- W.U. Rahman, A. Muhammad, W. Ali, M. Younas. 2017. Osmotic distillation and quality evaluation of sucrose apple and orange juice in hollow fiber membrane contactor in Chemical industry and chemical engineering quarterly, 23: 217-227.

Technical Services

Analytical/ Testing Services

PLC provided 4440 testing/ analytical services to different industrial clients during year 2017-18.

Consultancy/ Advisory Services

- Consultancy on Nanoparticles Production provided to Islamia College Peshawar.
- Consultancy on Oxifier Tablets provided to Jansons Biotech Peshawar.
- Consultancy on shelf life study of milk product provided to M/S Global Foods Peshawar.
- consultancy on Water and Air Analysis provided to Mr. Sibghat Ullah Khan, Environmental Engineer, Shogo-Sin Hydropower Project Chitral KPK,

Technical Reports Prepared

- Technical Report on Validation of Ethylene Oxide Chambers submitted to M/S. Surgy Plast Gadoon Industrial Estate Swabi.
- Technical Report on the Process of "Purification of Water Through ceramic water Filter"
- Physiochemical Quality Assessment of Drinking water of Selected Areas of Peshawar
- Bacteriological Assessment Survey of Drinking Water in Peshawar Municipal Area

Human Resource Development

Training Imparted/ Arranged

- Arranged a three days training workshop on "Techniques in value addition of fruits and vegetables" from 23rd to 25th November 2017 in Booni, Chitral.
- Arranged training for the technical staff of MBC on Drug Design and Development: Opportunities at PCSIR Peshawar: The trainer was Dr. Inamullah, Assistant Professor.
- Arranged a Three days training on Techniques in Value Addition of Fruits & Vegetables from 3rd to 5th May 2018 at Booni, Chitral.



PCSIR LABORATORIES COMPLEX, PESHAWAR

- The Calibration Center arranged one day training on "Accurate Measurement Techniques" arranged on 16.08.2017.
- The Calibration Center arranged One day training on "Uncertainty Evaluation & Accurate Measurement Techniques" arranged on 12.02.2018, Total participants: 10
- Imparted Six months training to fifty (50) students of NAVTTC. The training was sponsored by NAVTTC-UNCHR-Pakistan

Training Received (Local/Foreign)

- The scientists of MBC received training on Tablet Testing Sponsored by Medcraft Pharma, Hayatabad, Peshawar, on 07.03.2018.
- The technical staff of MBC received Two days training on Operation of Hi-Tech Equipment (HPLC, GC Mass, AAS) at PLC with effect from 21.12.2017 to 22-12-2017. The training was organized by the PCSIR Head Office, Islamabad.
- Three staff members of PLC received training titled "Organizational Leadership and Conflict Management in 21st Century for Effective Services Delivery" Organized and Venue by Pakistan Academy for Rural Development, Peshawar, 11.12.2017 to 13.12.2017.
- Two staff members of Administration and Account section received training in the field of "MS Project" scheduled from 22.11.2017 to 24.11.2017 at PPMI Complex Islamabad.
- The staff of FTC conducted three days joint training from 6th November 2017 with Nestle staff on different procedures of Juice parameter to evaluate the quality of Juices.
- PLC employees received one day internal training on "Uncertainty of Measurement" Sponsored by Al Meezan Industrial Metrology Services on 14-09-2017.
- The Scientist of MSC attended one day training on "Uncertainty of measurement" held on 14-09-2017 at PCSIR, Complex Peshawar.
- Employees received one day training on PCSIR e-portal system on 10-10-2017 in PCSIR Peshawar sponsored by PCSIR Head office.
- Scientists received four days training from 04-12-2018 to 08-12-2018 on Project Management in Rural Academy, Peshawar.
- Employees received two days training in PCSIR Peshawar from 21-12-2017 to 22-12-2017 on Operation of Hi-Tech Equipment".
- Officers received one week training from 18-12-2017 to 22-12-2017 on Project Management in PPMI, Islamabad.
- Employees received one day training on 26-02-2018, Physical and Chemical testing of Plastic Pipes in Alpha Industries Gadoon.
- Two officials of Calibration Center received 02 days training on "Pressure & Electrical Measurement" from LLC on 06-07, November 2017.

Workshops/ Seminars/ Exhibition Organized

- PCSIR Peshawar organized one day seminar on "Dengue Threats: Prevention and its Treatment" on 18-10-2017
- One day seminar at auditorium PLC on "Drug discovery and development facilities at PCSIR".
- Organized a seminar on Peptide Mass Fingerprinting: This is an analytical technique used for peptide/protein identification in which the unknown protein of interest is 1st break into small pieces of peptide. This method is nowadays used in every R&D organization in the field of medicine, food and agriculture.
- "International Conference on Innovation Commercialization in Biotechnology" sponsored by UNIDO.
- A seminar on WHO Herbal Medicine Strategy and Guidelines for Herbal Medicine.

Workshops/Seminars/Exhibitions Attended

- MBC scientists attended seminar on "Project Planning and Management of Rural Development Projects"



PCSIR LABORATORIES COMPLEX, PESHAWAR

- organized by Pakistan Academy for Rural Development, Academy Town Peshawar on 08/12/2017.
- Mrs. Farina Kanwal, attended a seminar on Role of Medicinal Plants on Domestic and Non domestic Animals organized by Pakistan Forest Institute Peshawar on 12-15 December 2017
- Officers attended conference on "Frontier of Advanced Engineering Materials (FAEM)" on 19-20th February 2018 held at PCSIR Lahore.
- Officers attended a National workshop on inventory of initial and new POPs in Pakistan, at PC hotel Peshawar, dated 25 October, 2017.
- Officers attended one day conference held at International Islamic University Islamabad on 20.04.2018 Pakistan Productivity, Quality Innovation (PQI) Initiative.
- Attended seminar on "Development of long shelf life meal ready to eat (MRE) for disaster victims and other vulnerable groups" at NIFA Peshawar on 15.11.2017
- Staff of Dimension Stone Center participated in the skill exhibition organized by the FATA Development Authority (FATA-DA) on May 4th, 2018 at Pearl Continental Hotel Peshawar.

Students Supervision

- Laboratories provided supervision to 27 students of Ph.D./ M.Phil. and M.Sc./ B.Sc. of different universities/ institutes during 2017-18.

Other Activities

MoUs/ Agreements Signed

- A MoU has been signed with M/s. Zam Zam Food Swat regarding Technology Transfer of Akrikure Cream (Non-Exclusive).
- Dimension Stone Centre (DSC), PCSIR Labs Complex Peshawar with collaboration UNHCR-NAVTTTC, Pakistan Skill Development Programme to provide training to 50 trainees in two short courses for a period of six months.

Meetings/ Visits

- The Director General and his team held a meeting on 14-07-2017 with the Pakistan Bee Keeper Association and extended his full support to the Honey Exporters for quality evaluation of honey.
- Dr. Hina Fazal, SSO visited Qarshi Industries Pvt. Ltd Hattar for the purpose to visit Culture lab, Experimental farms and collect the seeds of *Echinacea* and *Matricaria* for cultivation on 04.08.2017.
- Engr. M. Saddique, Jr. Engr. Visited IBM Pharma Peshawar for providing Technical Services at their Pharmaceutical Pilot Plant on 18- 09-2017.
- Dr. Muhammad Qaisar and Engr. Muhammad Saddique visited KPK Chamber of Commerce and Industries, Peshawar for PQI initiatives for SMEs "Project Presentation.
- Meeting with Managing Director Nestle Pakistan at DG office regarding preparation of proposal on water quality assessment on 16.8.17.
- The FTC staff visited Honey bee Research institute at NARC: To view the existing facilities of Honey processing and quality control laboratory.
- The Director General and his technical team held a meeting with the staff of SERENA Honey in Gilgit on May 11th, 2018 to facilitate SERENA CSR staff in Honey Processing.
- Dr. Shafqat Ullah SSO, visited China-South Asia Technology Transfer Center, Department of International Cooperation, Ministry of Science and Technology of the People's Republic of China on 10-06-18 to 17-06-18 at Shanghai & Kunming, China.
- A team of Materials Science Centre scientists/engineers led by Director General, PCSIR Labs. Peshawar visited C&W department, Civil Secretariat KPK on 03-08-2017. Presentation was given on quality testing of building materials. The meeting was attended by regional heads/representatives of C&W department.

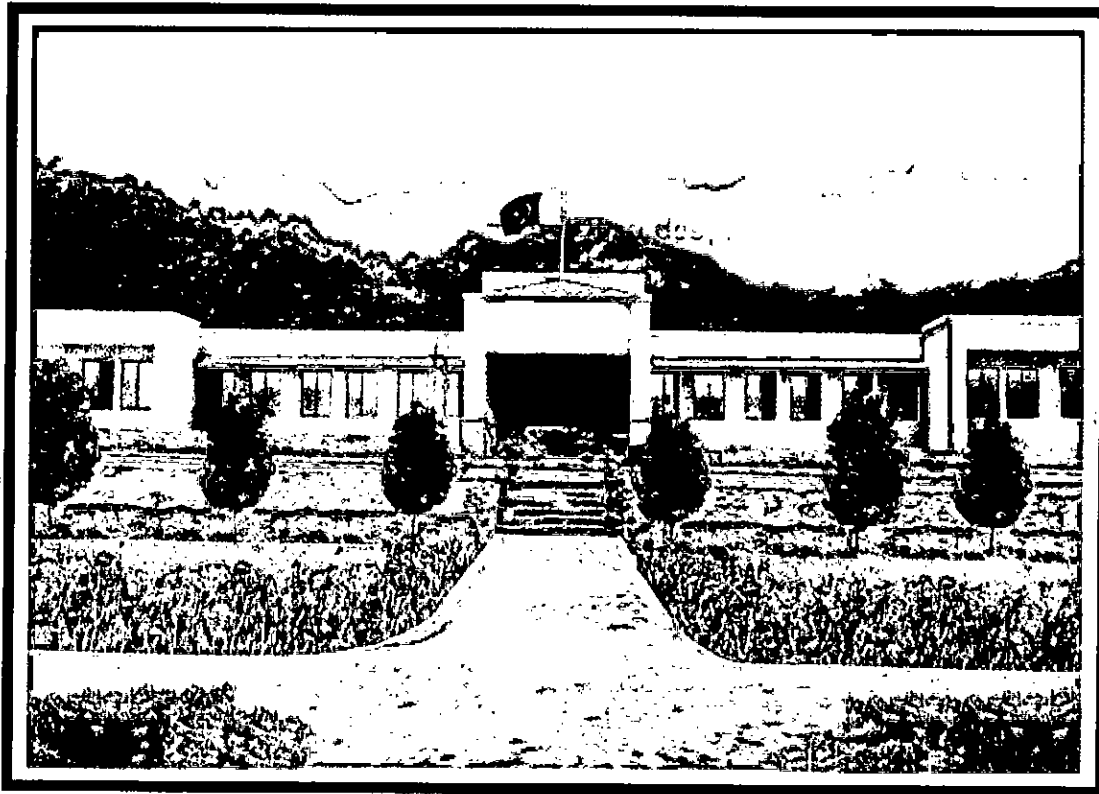


PCSIR LABORATORIES COMPLEX, PESHAWAR

- Qazi Muhammad Sharif, SSO attended a meeting of the provincial food committee regarding purchase of fumigant tablets. The meeting was held under the chairmanship of Minister for food, KPK in his office on 08-08-2017 and finalized the purchase.



PCSIR LABORATORIES / UNITS



PCSIR Laboratories, Quetta

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PCSIR LABORATORIES, QUETTA

Production of Value Added Chemicals from Magnesite Ore of Baluchistan

Magnesite is mined by open pit method in Killa Saifullah. On the average about 7000 tons per year are being mined. Magnesite is used as raw material in refractories, fluxes, fillers, insulations, cements, decolorants, etc. World demand for magnesite is drastically increased from the year 2000 and it is expected to increase sharply in the next five years because of its new applications in Mg-metal industries, automotive components, slag conditioners and as an advance value added material. The purpose of research and development is to establish the importance and applications of Magnesite as one of the industrial mineral in Pakistan to meet the future demand and latest consumptions. Magnesite is utilized to produce different value added chemicals such as magnesium sulphate, magnesium chloride and magnesium oxides. Anhydrous magnesium sulphate is used as a drying agent, as a fertilizer in agriculture and gardening. The process for the production of Magnesium Oxide has been developed. Further work on production of other chemicals is in progress.

Research Outcomes

Processes Developed

- Production of commercial grade magnesium oxide from indigenous magnesite.
- *Nepeta* Tea Preparation (Bench Scale Process)
- Production of Balm from *Nepeta* oil. (Bench Scale Process)
- Production of Mouth wash from *Seriphidium quettense* (Bench Scale Process)
- Cough Syrup preparation from *Seriphidium quettense* (Bench Scale Process)
- Candies preparation from *Nepeta* for stomach relief.

International Publications

Papers Published in Impact Factor Journals

- Mujeeb ur Rahman, Shereen Gul, Adeela Anwar, Muhammad Ajmal, A. K. K. Achakzai. 2017. Production of Protease by Alkalophilic *Bacillus subtilis* in Bioreactor and its Characterization. International Journal of Innovative Research in Advanced Engineering (IJIRAE), 4(8), 30-37.
- Mujeeb ur Rahman, Mohammad Arsalan, Adeela Anwar, Muhammad Ajmal, Sheeren Gul. 2017. Antimycotic activity of Essential oil of *Rosemarinus officinalis* on Asexual Reproductive stages of Foodstuff Fungi. International journal of innovative Research in Advanced Engineering (IJIRAE),
- Saniya Tahir, Shamim Gul, Sadaf Aslam Ghor, Muhammad Naeen Shahwani and Mujeeb ur Rahman. 2018. Biochar influences growth performance and heavy metals accumulation in Spinach under waste water irrigation. Cogent Food & Agriculture, 4: 1-12.

National Publications

Papers Published in Impact Factor Journals

- Shafqat Ullah, Arshad Hussain, Rasool Khan, Asadullah, Khaliq ur Rehman. 2017. Effects of Temperature and Storage on the Antioxidant Potential, Polyphenols and Vitamin-C Contents of *Azadirachta Indica* Leave aqueous Extract. Pakistan Journal of Pharmaceutical Sciences, 30:1665-1669.
- Abdul Kabir Khan Achakzai, Samiullah, Mujeeb-Ur-Rahman and Mohammad Younas Khan Barozai. December 2017. Chemical Structure, Occurrence and Health Hazard Status of Ochratoxin A (OTA) in Cereal, Food and Feeds of Pakistan: A Review. Journal of the Chemical Society of Pakistan. Volume 39, No. 6: 867-878 (impact factor: 0.327).
- Abdul Kabir Khan Achakzai, Ayeesha Masood and Mujeeb-Ur-Rahman. December 2017. Study of Polyphenols at Vegetative and Reproductive Stages of Eight Common Plant Species of Asteraceae Found in Quetta. Journal of the Chemical Society of Pakistan. Volume 39, No. 5: 1068-1074 (impact factor: 0.327).



PCSIR LABORATORIES, QUETTA

- Abdul Kabir Khan Achakzai, Ayeesha Masood, Rasool Bukhsh Tareen and Mujeeb-Ur-Rahman. Nutrients Composition of Common Plant Species of Asteraceae in Quetta at Two growth stages. Journal of the Chemical Society of Pakistan. 40(4), 722-732 (impact factor: 0.327).

Technical Services

Analytical/Testing Services

PCSIR Laboratories Quetta provided 2343 testing/ analyses services to 104 industrial clients during the year 2017-18.

Technical Reports Prepared

- Technical report on Preservation of Fruits prepared for students and public information.
- Characterization and Washability studies on Raw Coal of Balochistan. Zaheer ud Din, Huma Ayub and Khurram Shehzad Mineral Technology Center, PCSIR Laboratories, Quetta.MR-1 (2017)
- Production and prospects of processing of fruits in Balochistan. Mujeeb ur Rahman, Junaid Ahmad, Adeela Anwar, Mohammad Ajmal Food Research Center, PCSIR Laboratories, Quetta. FR-2 (2017)
- Vegetable Production and Prospectus of Vegetable Processing in Balochistan. Mujeeb ur Rahman, Junaid Ahmed, Adeela Anwar Food Technology Center, PCSIR Laboratories, Quetta.FR-1 (2018).

Human Resource Development

Training Imparted/Arranged

- Imparted 5 days training on "small scale processing of Apple for production of clarified apple juice and jam" to the officers/officials of Agriculture Department from November 20 to 24, 2017.

Training Received (Local/Foreign)

- Mr. Abdullah Khursheed Account Officer and Abdul Rahman Assistant have received training for 5 Days on Accounting software Training Replication of Payroll and Accounting system, from December 11-15, 2017 at MIS- PCSIR Labs. Complex Lahore.
- Mr. Abdullah Khursheed Account Officer and Abdul Rahman Assistant have received training for one week on pension rules and procedure and travelling/ daily allowance, from April 2-6, 2018 at Pakistan Audit and Accounts Academy (PAAA), Quetta.
- Mr. Javed Iqbal Baloch Superintendent received training on Public work: Audit & Accounts, from April 16-18, 2018 at Pakistan Audit and Accounts Academy (PAAA), Quetta.
- Mr. Abdul Rahman Assistant has received training for three days on Frame work Certification Audit, from May 7-9, 2018 at Pakistan Audit and Accounts Academy (PAAA), Quetta.

Workshops/Seminars/Exhibition Attended

- Ms. Hiba Amanat Ali (S.O.) and Mrs. Adeela Anwar (S.O.) attended one day National Workshop on Inventory of Initial and new Persistent Organic Pollutants (POPs) on 27 October, 2017 at Serena hotel, Quetta.
- Mr. khurram Shehzad (S. O.) and Mr. Junaid Ahmed (S.O.) attended two days summit on Innovation of Invention summit from 24 to 25 April 2018 at University of Balochistan, Quetta.

Students Supervision

- Laboratories provided supervision to 09 students of M.Phil and BS of different universities/ institutes during 2017-18.



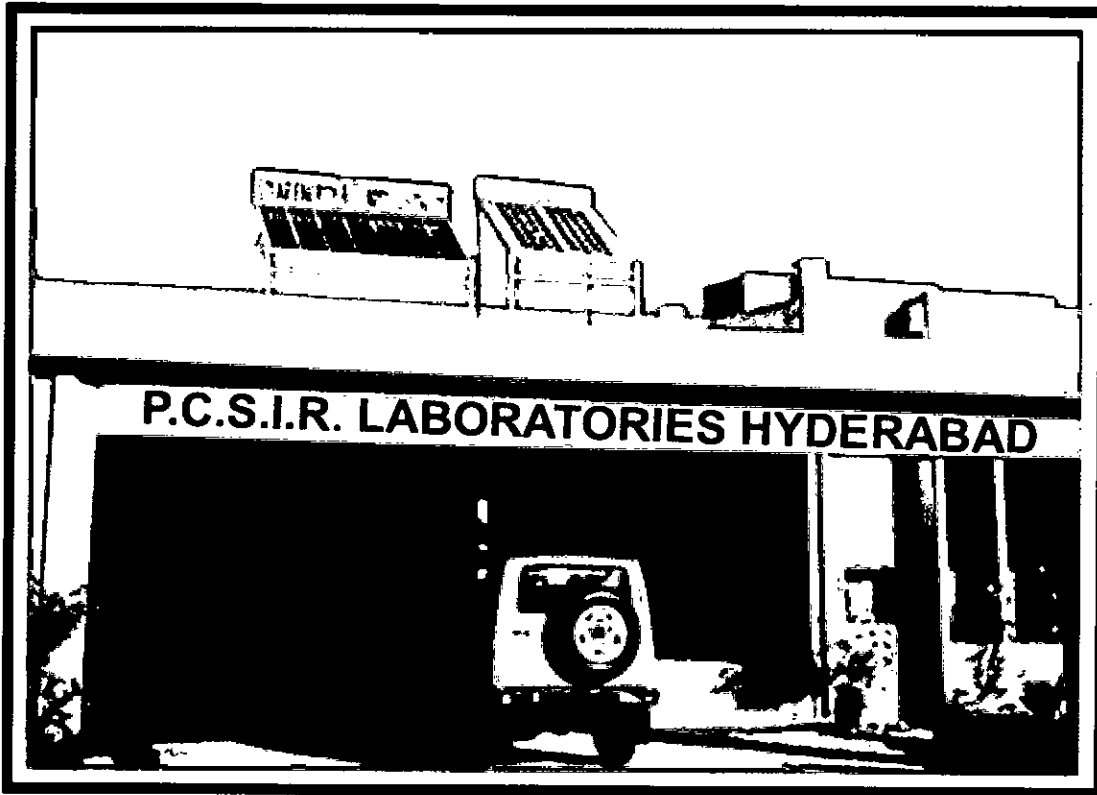
Other Activities

Meetings/ Visits

- Director PCSIR Labs. Quetta held meeting with V.C. University of Balochistan, Quetta to discuss about the research work of the M.Phil. Scholars on 16.09.2016.
- Director PCSIR Labs. Quetta attended meeting with V.C. University of Balochistan, BUITEMS and SBKWU, Quetta and discussed about the research work of their M.Phil. and Ph. D. Scholars, and latest fields of research for further improvement in R&D work.
- Director PCSIR Labs. Quetta visited the Balochistan Chamber of Commerce and Industries, Quetta and held meeting with President (CCI) to discuss various – matters pertaining to imports/exports and assured full cooperation related to the identification, products specification and quality of their commodities.
- Director PCSIR Labs. Quetta visited Centre of mineral excellence, university of ' Balochistan and discussed about the possibilities of joint project and offered utilization of PCSIR R&D resources for beneficiation of mineral currently mined in Chaghi, Muslim bagh and other areas of Balochistan.
- Director PCSIR Labs. Quetta attended the meeting with D. G. Mines & . Minerals and discussed about the possibilities of establishing a mineral/ore identification and quality evaluation unit/mobile lab. at Chaghi Balochistan.



PCSIR LABORATORIES / UNITS



PCSIR Laboratories, Hyderabad

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E-mail: hlpcsir@gmail.com

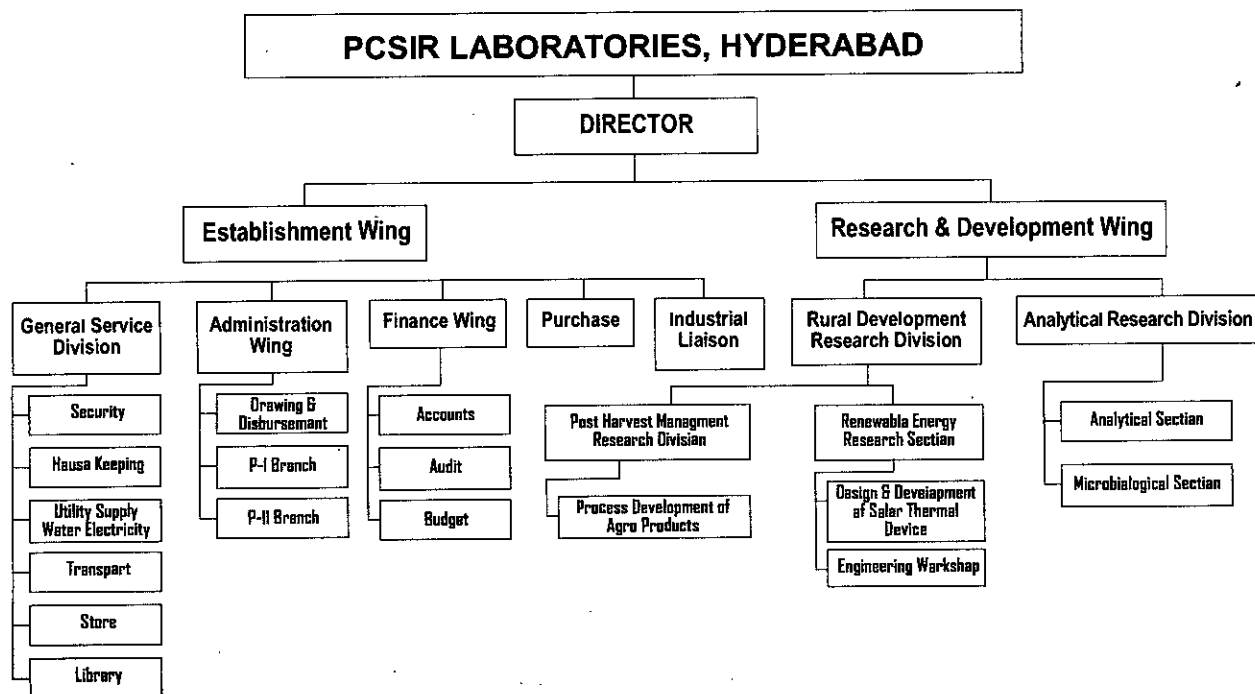


PCSIR LABORATORIES, HYDERABAD



Director
Engr. Dr. Riazuddin Abro

PCSIR Laboratories Hyderabad is a multi-disciplinary unit; located in the heart of three Industrial zones i.e. Nooriabad, Hyderabad and Kotri as well as rural areas of Sindh and enjoys a pivotal position among the R&D Institutions of this region. Therefore trying its level best to play vital role in sustainable growth of the region by focusing on various dimensions of Rural Development Technology like value addition in Agro Produces, Solar Oriented Techniques for Safe Drinking Water, Drying & Cooking of Food Stuff and Technical Support of Regional Cottage Industries as well as actively providing its Technical Services for Quality Assurance & Control in this Region. This unit was founded as Solar Energy Research Centre in 1985 and in 2003 keeping in view the needs of this region, the scope was broaden from mono-disciplinary to multidisciplinary. PCSIR Laboratories Hyderabad in addition to R&D Work, completed several adhoc Projects and provides Analytical, Consultancy and Troubleshooting Services to Private and Public Sector Organizations and Industries. Students of Universities complete their Internship Training under the supervision of Engineers and Scientists of these laboratories.





PCSIR LABORATORIES, HYDERABAD

Research Activities

To Study the Effect of Photo Catalyst on the Efficiency of Solar Water Desalination through Double Slope Single Basin Type Still

The main objective of this project is to enhance the efficiency of Solar Still by using the Photo Catalysts TiO_2 . Fabrication work of two desalination units has been completed. Further experimental work is in process by using of Photo Catalyst (TiO_2) along with glass fiber composite as Heat Absorber.

Development of Solar Oriented Food Processing Technology

The main objective of this project is to develop cost effective solar oriented powered fruit/ vegetable dehydrator enable to remove moisture contents at desirable range within minimum time. As this project is in-house project and in progress, design work of hybrid dehydrator has been completed. Selection of target area according to production capacity of different types of vegetable and fruit is under way.

Study of Different Reflecting Foils / Materials for Solar System

The main objective of this project is to reduce the cost of Solar Cooking System to achieve maximum efficiency of cooking by using local reflecting material. As this project is in-house Project, different parameters of reflecting foil are in progress for fabrication of Solar Cooking System.

Technical Services

Analytical/ Testing Services

Hyderabad Labs provided 37 testing/ analyses services to 10 different industrial clients during year 2017-18.

Human Resource Development

Workshops/Seminars/ Exhibition Attended

PCSIR Laboratories Hyderabad participated in the 1st Sindh Water Expo-2018 on March 22, 2018 at Mirpurkhas organized by RDF (NGO). PCSIR Laboratories Hyderabad has participated in this Water Expo and displayed Solar Dehydration, Solar Desalination, Solar Cooker and Water Testing Equipment. The Chief Guest of the Expo Mir Munawar Ali Khan Talpur MNA and large number of participants visited PCSIR Stall. Participants were briefed about the functions and facilities available in PCSIR Laboratories Hyderabad.

Students Supervision

Laboratories provided internship to 06 students of University of Sindh, Jamshoro, Mehran UET, Jamshoro and Sindh Agriculture University, Tando Jam during 2017-18.

Other Activities

Meetings/ Visits

- Mr. Ali Dino Kunbhar, Programme Manager and Mr. Riaz, Deputy Programme Manager of Welt Hunger Hilfe NGO visited our laboratory on July 20, 2017 for meeting regarding fabrication of Solar Desalination Units.
- Mr. Shaukat Raza, Manager of Fateh Textile Mills Limited SITE Hyderabad visited our Laboratories



PCSIR LABORATORIES, HYDERABAD

on August 02, 2017. During the visit various aspects of water quality was discussed and showed keen interest in testing of water samples.

- Engr. Shah Muhammad Shaikh, Senior Engineer Thermal Power, Kotri visited our Laboratories and had meeting about Thermal Devices on September 10, 2017.
- Mr. Mohammad Iqbal Shaikh, Project Director DARAWAT DAM, WAPDA Project visited our laboratories on October 18, 2017 and showed keen interest in our developed devices.
- Mr. Shaukat Raza, Manager of Fateh Textile Mills Limited SITE Hyderabad visited our Laboratories on May 22, 2018. During the visit various aspects of water quality was discussed and showed keen interest in testing water samples.



National Physical & Standards Laboratory, Islamabad

Plot # 16, Sector H-9, Islamabad
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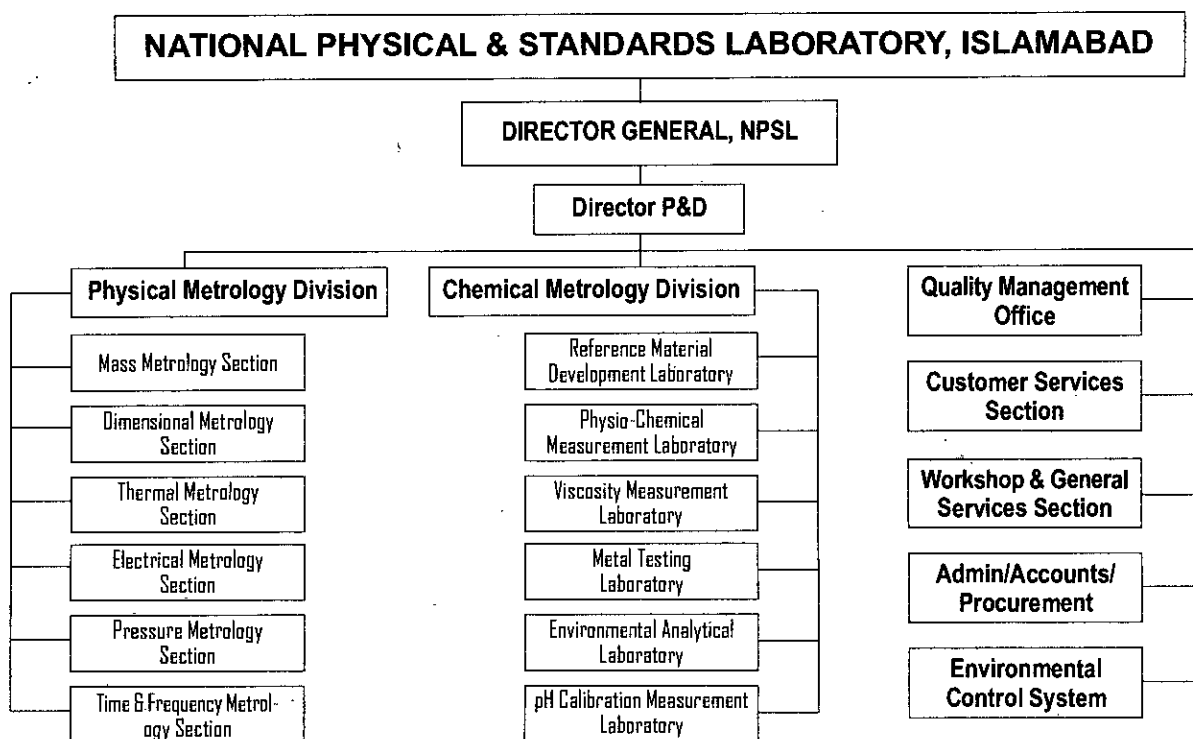


NATIONAL PHYSICAL & STANDARDS LAB., ISLAMABAD



Director General
Mr. Faridullah Khan

National physical & Standards Laboratory is an apex national body in the field of metrology and custodian of National Standards of Measurement that provides unbroken chain of Measurements: Traceable internationality to BIPM and extends traceable testing / calibration services to industries, within the country to meet the obligation under Technical Barriers to Trade (TBT) and Sanitary and Phytosanitary Standards WTO. The laboratory has two major disciplines i.e. Physical Metrology (Mass, Time & Frequency, Thermal, Electrical, Pressure & Dimension) and Chemical Metrology (Reference Material, Product Certificates & SPS). These two disciplines are equipped with Primary & Secondary Reference Standards used for the calibration certificates of industrial equipment and material. Apart from providing the calibration & testing services, NPSL is maintaining Primary & Secondary Metrology Standards traceable internationally and disseminate to the industrial regional laboratories in the country.





NATIONAL PHYSICAL & STANDARDS LAB., ISLAMABAD

Research Activities

R&D Projects

- New calibrations and calibration protocols in the field of acoustic measurement as an accredited facility.
- Development of a computerized length measuring module (CLMM) prototype
- Assessment of heavy metals concentration in cosmetic products being imported and locally available in Rawalpindi / Islamabad
- Development of reference material and optimization of analytical methodology for the assessment of Mycotoxins in exportable commodities
- Development of indigenous technology for treatment of Brackish water and fabrication of prototype treatment plant
- Extraction, characterization and standardization of active ingredients from indigenous medicinal plants of Pakistan and its applications for the treatment of skin diseases
- Comparison of sample preparation and analytical methods, for determination of metal ions in geological samples at major and trace level using different classical and instrumental techniques.
- Development of a new method for the quantitative determination of cephalosporin antibiotic in pharmaceutical formulation by UV-Visible Spectrophotometer
- Catalytic degradation of industrial azo-dyes using bio synthesized metallic nano particles
- Preparation of Highly Efficient Adsorbent for Improved Removal of Pollutants. Development of a new method for the quantitative determination of Cephalosporin antibiotic in Pharmaceutical formulation by UV-Visible Spectrophotometer. (completed).

Research Outcomes

International Publications

Papers Published in Impact Factor Journals

- Aniqa Batool, Nafeesa Samad, Syeda Sabahat Kazmi, Muhammad Asad Ghufraan, Saima Imad, Mateen Shafiqat, Tariq Mahmood. 2018. Spring water quality and human health: an assessment of natural springs of margalla hills Islamabad zone- III. International Journal of Hydrology, 2.

National Publications

Papers Published in Other Journals

- Ambreen akhter saddozai, amer mumtaz, saeeda raza. 2017. Nutritional and Microbial qualities of mango based cereal flake stored at different temperature. Proceeding of Pakistan academy of sciences. 54: 177-182.

Technical Services

Analytical/Testing Services

NPSL provided 2601 testing/ analyses services to 317 industrial clients during the reporting period.

Consultancy/Advisory Services

- Provided consultancy to the Deputy Director Fisheries, Mansehra KPK, on the accidental death of thousands of trout fish in the farm and river in August- 2017.



NATIONAL PHYSICAL & STANDARDS LAB., ISLAMABAD

Technical Report Prepared

- Causes of Contamination in Rawal Dam Water

Human Resource Development

Training Imparted/Arranged

- 05 days training program, Training on Calibration Techniques in various Physical Metrologies launched at NPSL Islamabad from 26-03-2018 to 30-03-2018.
- 05 days training program launched at NPSL Islamabad from 09-05-2018 to 15-05-2018. Training on Calibration Techniques in various Physical Metrologies.

Training Received (Local/ Foreign)

- Mr. Muhammad Abdullah, Technician-CMD received training on Photometry and Radiometry in Thermometry and Humidity (TH), March 24 - April 05, 2018 at KRISS-Korea.
- Mr. Aftab Haider Jafri, SEO-PMD received training on Electronics Dead Weight Tester from September 12-14, 2017 at Singapore.
- Mr. Ather Bashir Ch., SEO-PMD received training on Electronics Dead Weight Tester from September 12-14, 2017 at Singapore
- Mr. Abdul Wahab, Jr. Engineer -TMD received training on Metrology in Thermometry and Humidity (TH) from August 18 to September 02, 2017 at KRISS-Korea.

Other Activities

MoUs/ Agreements Signed

- Signed with M/s CNPC Chauging Drilling Engineering Company Limited (CCDC)-Pakistan Branch for Services agreement for calibration of equipment/ gadgets.

Meetings/ Visits

- Dr. Naseem Rauf, PSO visited Katmandu (Nepal) on 08-09 May, 2018 for SAARC and PTB in the field of Quality Infrastructure Regional Kick-Off workshop for Phase-III.
- Dr. Naseem Rauf, PSO along with Dr. Muhammad Tahseen Aslam, SSO and Ms. Fouzia Hussain SO visited NIM-China on 12-13 October, 2017 for APEC workshop on capacity building of measurement standards and technology in grain food safety.
- Mr. Alfio Antoniazzi (Italian) Head of Rotor Tech CAMO along with Ahsan Taj Regional Maintenance Manager Agha Khan Helicopter Foundation, Rawalpindi visited NPSL Calibration Laboratories for their Equipment calibration on 21-11-2017.



PCSIR LABORATORIES / UNITS



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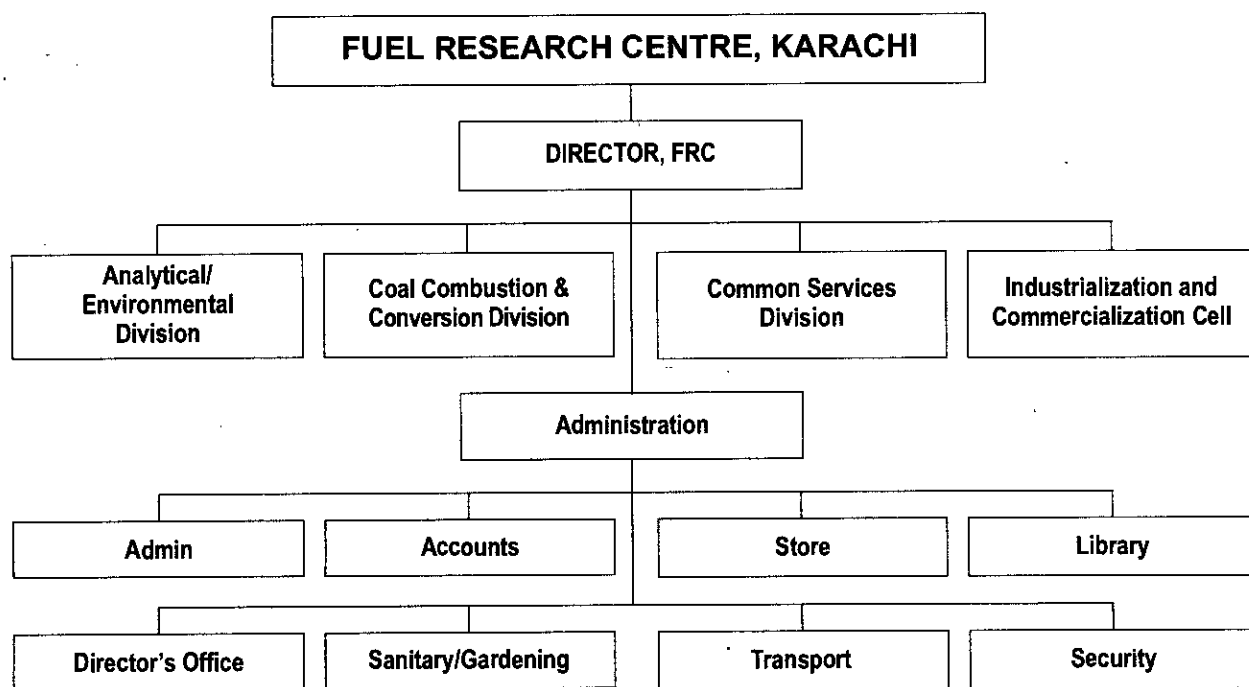
FUEL RESEARCH CENTRE, KARACHI



Director
Mr. Gulzar Hussain Jhatial

Fuel Research Centre (FRC) is the premier Fuel Research Centre of Pakistan providing basic research along-with R&D backup, advisory services and help in technology up-gradation, adaptation with legal standard and safety, and clean environment for newly build coal power station. FRC is playing effective role to help Thar Coal Projects and newly build Coal Power Plants and other industries throughout the country.

The centre has achieved enough experience to conduct research and offer technical assistance and services to all Government departments, autonomous bodies, educational institutes as well as many private and public sector organizations in energy sector and exploration of fossil fuels.





FUEL RESEARCH CENTRE, KARACHI

Research Activities

Need Based Projects/R&D Projects

- Exploration of Future Fuel for the Boilers of Industries and Coal-based Power Plants - Co-combustion studies of some novel renewable fuels/coal blends.

In-House R&D Projects

- Development of Hybrid Fuel Exploiting: A Clean Coal Technology for Alternate Energy.
- Production of Coal Tar Char from Pakistani lignite and its utilization in the industries of Pakistan.
- Thermodynamic Analysis of Release Alkali Species Under Pressurized Gasification and Combustion of Coal and Biomass
- Investigation of Different Techniques for Production of Bio-Oil Derived from Biomass.
- Up-gradation of Semi-Pilot Scale production of Agricultural grade Solid Humic Acid from manual mixing method to mixers/stirrer tanks.
- A Research Study on Treatment of Low Grade Coals to Control Hazardous Emissions During Combustion.

Research Outcomes

Processes Developed

- Development of Hybrid Fuel from Indigenous Resources
- Behavior of Alkali Species under Pressurized Combustion of Biomass
- Development of Fertilizer from Steel industry
- Up-Gradation of Semi Pilot Scale production of agriculture grade solid Humic Acid from manual mixing method to mixer/stirrer tanks.
- Process Development for Emission control in Baluchistan Coal using clean coal technology.
- Process Development for the Development of environment friendly fuel from Duki Coal Mine, Baluchistan.
- Behavior of Alkali species under pressurized gasification of Biomass

Patents Filed

- Development of Method for preparation of Black Tatto Ink from Pakistani lignite coal char, IPO Receipt No. 012378/KHI/18 dated: April 3, 2018
- Development of Method for preparation of Permanent Ink from Pakistani lignite coal char, IPO Receipt No. 01246/KHI/18 dated: April 23, 2018
- Development of Method for preparation of Black Printing Press Ink from Pakistani lignite coal char, IPO Receipt No. 012504/KHI/18 dated: May 4, 2018
- Development of Method for preparation of Charcoal Face Mask from Pakistani lignite coal char, IPO Receipt No. 012539/KHI/18 dated: May 4, 2018

International Publications

Papers published in Impact Factor Journals

- Thermodynamic analysis of release alkali species during pressurized combustion of biomass. IJSER, Vol. 8(11), 2017.
- Catalytic Effect of Metal Chlorides on Coal Pyrolysis and Gasification Part. Effects of Acid Washing on Coal Characteristics. International Journal of Thermochemica Acta, Volume 655, 10 September 2017, Pages 331-336.
- Occupational noise exposure and its impact on worker's health and activities. IJPHCS, Vol-5, No.2 e-ISSN 2289-7577.



FUEL RESEARCH CENTRE, KARACHI

Technical Services

Analytical/ Testing Services

FRC analyzed coal samples of different industrial clients during year 2017-18.

Consultancy/ Advisory Services

- Consultancy service has been provided to Model Customs Collectorate Port Muhammad Bin Qasim, Karachi about Quality and Classification of Coal.
- Consultancy service has been provided to Sindh Lakhra Coal Mining Company about quality and Classification of Coal.
- Consultancy service has been provided to M/s. Muhammad Jamil & Company (Pvt.) Ltd. about Coal Briquettes from Lakhra Coal
- Consultancy service has been provided to M/s. Rainbow Hosiery Pvt., Ltd., about Air Quality Monitoring, Emission Testing, Noise level Measurement and Lux Testing.

Technical Reports Prepared

- Technical Report has been prepared for Sindh Lakhra Coal Mining Company about Fabrication of Composite Agglomerated Fuel from Lakhra Coal.

Human Resource Development

Training Imparted/ Arranged

A total number of 22 students from NED University of Engineering & Technology Karachi, Quaid-e-Awam University, Nawabshah and Dawood Engineering College, Karachi have availed the training on different aspects of Coal and Fuel Technologies during 2017-2018.

Workshops/ Seminars/ Exhibition Organized

- A Seminar on "General Awareness of Lab. Management & Guidelines for technical parameters for ISO-17025 Accreditation" organized on February 13, 2018 at Fuel Research Centre, PCSIR, Karachi.

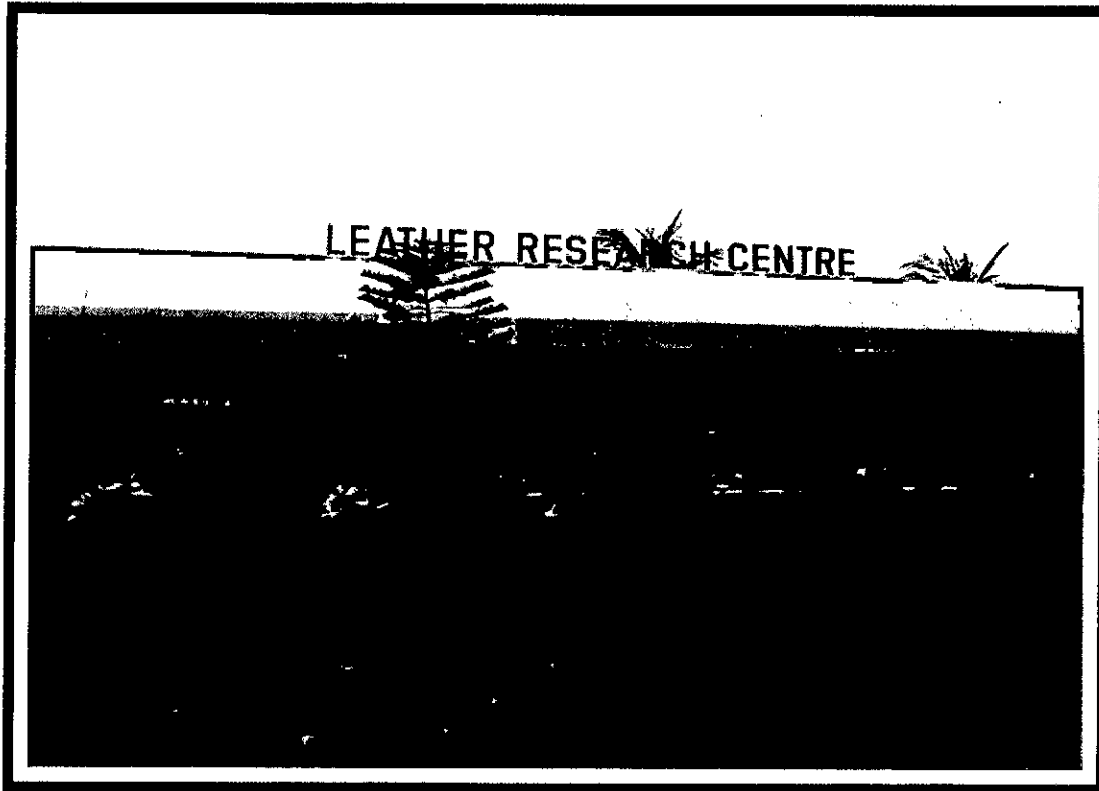
Other Activities

Visits/ Meetings

- A meeting with Mr. Tanveer Ashraf, Project Manager and M. Tufail Khattak, Asstt. Manager of Pakistan Mineral Development Corporation Pvt. Ltd. (PMDC) was arranged on September 19, 2017 to discuss the utilization of different seams of Lakhra coal on the basis of their quality. The meeting was ended with the decision that FRC will provide the consultancy services to PMDC.
- Dr. Anila Sarwar, SSO conducted a meeting with Mr. Samad Raisani, Chief Executive Mari Coal Mining Pvt. Ltd. on September 20, 2017 to discuss the combustion and burning characteristics of Baluchistan coal. He also provided 5 samples of Mari coal mine for analysis.
- A meeting with Mr. Taufeeq Ahmed, CEO, Sindh Lakhra Coal Mining Company (Pvt.) Ltd., Energy Department, Government of Sindh was conducted on July 21, 2017 regarding R&D potential of Lakhra coal.



PCSIR LABORATORIES / UNITS



Leather Research Centre, Karachi

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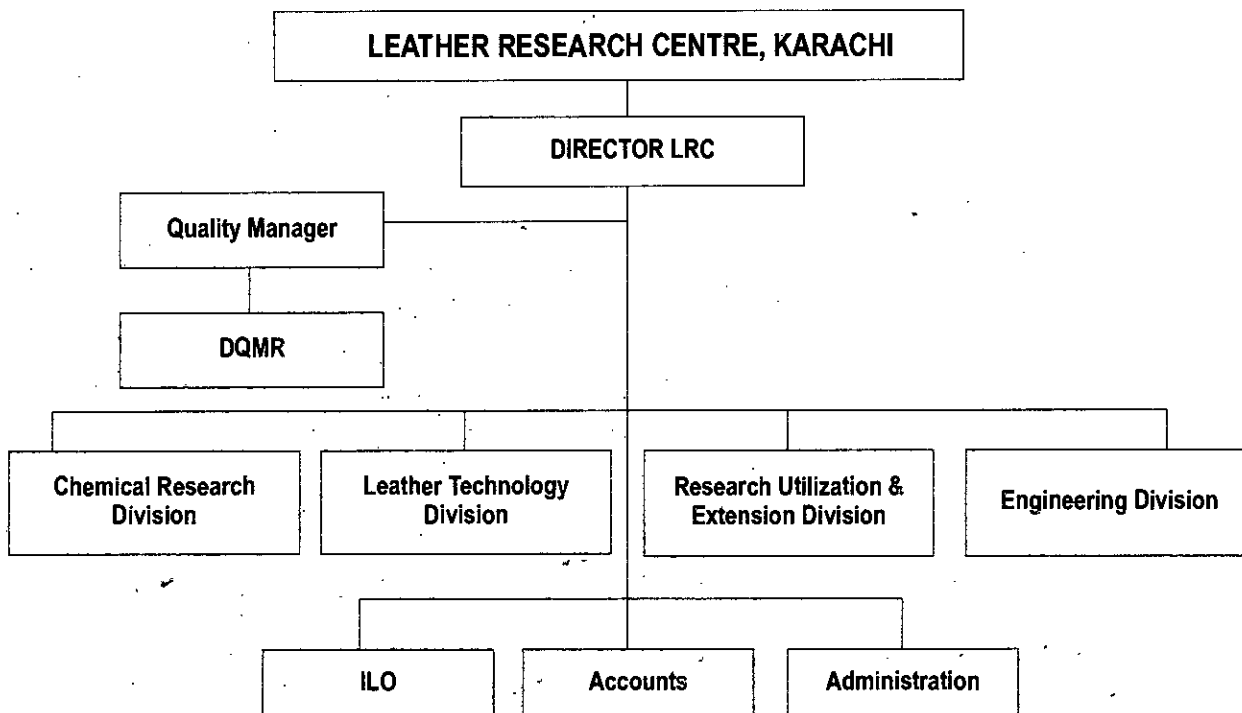


LEATHER RESEARCH CENTRE, KARACHI



Director
Dr. Hafiz Rub Nawaz

In 1959 Leather Section was established in PCSIR Laboratories Complex, Karachi to serve the tanning industry which was upgraded to Leather Research Division in 1981. Later on in 1984 Leather Research Division was upgraded into Leather Research Centre at SITE, Karachi. The team of Technologists along with highly qualified chemists and engineers form a well experienced and trained research group to promote the objectives of PCSIR.





LEATHER RESEARCH CENTRE, KARACHI

Research Activities

Up-graded Leather through Advanced Nano Materials

Under this need based project, nano zinc and nano silica have been prepared and examined for morphology. These nano materials have been applied in leather processing and finishing process. Antimicrobial activity revealed affective properties and good results of self cleaning properties.

Nano Colorants for Leather Dyeing: Synthesis and Commercial Applications

Under the project processes have been developed for the synthesis of Malachite Green based cationic nano dyes and for the synthesis of Saphranin based nano dyes.

Developing Clean Technology in Leather Tanning Finishing Process

Under the project a process for the "Preparation of Halaal Fat Liquors for Leather Making" has been developed and two papers have been published.

Extraction, Purification and Application of Eco-friendly Bio-Based Dyes

Selection of seaweeds containing polyphenols, flavanoids like compounds and extraction of dye pigment from seaweeds. The extracted pigments apply on various materials such as crust, wet blue and textile fabric. The existing result seems to be good on crust and cotton jersey.

Production of Degradable Mulching Film from Tanneries Wastes and Other

Lab scale preparations have been carried out. New short technique has been developed for the preparation of mulching films. Biodegradation rates have been determined. Results have been found comparable.

Development of Technique in Leather Processing to Produce Halaal and Health Friendly Leather

The product up to wet blue stage has been developed through raw material of sheep & goat skins in two batches (05 skins of each). In all the process, soaking, batting & degreasing to avoid suspicious chemicals, no detergent based on animal fats and the enzyme prepared from the pig kidney were used. The synthetic detergents and enzyme instead of animals were used for carrying out the processes.

Research Outcomes

Processes Developed

- A process of oil pull-up finishing of Ostrich leather for exotic articles.
- A process developed for the synthesis of silica based nano-particles on lab scale.
- A process developed for the synthesis of acrylic water based resin.
- Fashionable Gloving Leather with extra-soft property.
- A process developed for the synthesis of Malachite Green based cationic nano dyes and application on leather.
- A process developed for the synthesis of Saphranine based cationic nano dyes.
- Rapid Ultrasound assisted reduction of azo dyes for screening of banned aromatic amines.
- A process developed for synthesis of nano silica and nano zinc oxide.
- A process developed for the production of anti-microbial / anti-fungal binder from leather waste protein
- A process of waste protein and silicate based binder for multipurpose binding.
- Fine, soft & low substance leather from split hide for the inner parts of leather articles.



LEATHER RESEARCH CENTRE, KARACHI

- A process for the extraction and application of natural poly phenolic on pickled skin to convert into wet blue and then retanning agent for crust preparation.
- A process for purification the crude fish oil extracted from feed processing to be used in joint pain relief in human.
- A process for antibacterial and self-cleaning leather by combination of nano/ micro materials.
- A method for the production of tanning agent from indigenous plant sources for leather industry

Processes Leased Out

- A process entitled "Recovery of protein and chromium from leather solid waste through Hydrolization" has been leased out to M/s. F&N International'

Patents Filed

- "An environmental friendly process/technology for the production of biogas, bio fertilizer and recycled chrome from chrome tanned leather solid wastes" by Barkat Ali Solangi, Dr Hafiz Rub Nawaz, Uzma Nadeem & Muhammad Zeeshan, Application No. 382/2017.
- "A Process for the Preparation of Halaal Fatliquors for Leather Making" by Muhammad Kashif Pervez, Farman Ahmed, Dr. Hafiz Rub Nawaz, Sarwat J. Mehboob & Dr. M. Shaiq Ali , Application No. 541/2017.
- "A Process for the production of anti-microbial / anti-fungal binder from leather waste protein" by Dr. Hafiz Rub Nawaz, Barkat Ali Solangi, Uzma Nadeem, Dr. Beena Zehra & Muhammad Zeeshan , Application No. 198/2018.

International Publications

Papers Published in Impact Factor Journals

- Beena Zehra, Hafiz Rub Nawaz and Uzma Nadeem, 2017 "Evaluation of Safety Gloves from Goat, Cow and Synthetic Leathers made in Pakistan" Journal of advanced Research in Glass, Leather and Plastic Technology, 2017; 2(3): 1-4. I.F 2.385.
- Rajkumar Dewani, Farman Ahmed, Munawwer Rasheed, Muhammad Kashif Pervez, Kehkashan Khan & Sarawat J. Mehboob, 2017 "Microwave Assisted Reduction for Screening Banned Aromatic Amines in Azo.Dyes" Journal of Basic & Applied Sciences, 2017,13,638-646.
- Dr. Beena Zehra, Dr. Hafiz Rub Nawaz, Barkat Ali Solangi, Uzma Nadeem ,Tahira Ayaz &Muhammad Zeeshan, 2018 "An Efficient Recovery of Chromium from Tanning Liquor waste and its Reutilization for the Production of Quality Leather" American Scientific Research Journal for Engineering, Science & Technology Vol 41, No. 1 page No. 263-270 (2018). I.F 0.296
- Rajkumar Dewani, Farman Ahmed, Munawwer Rasheed, Muhammad Kashif Pervez, Muhammad Farooq Wahab & Tahira Ayaz, 2018 "Rapid Ultrasound assisted reduction of azo dyes for screening banned aromatic amines" Journal of Studia chemia,1, 2018, 157-175.
- Madiha Ashaikh, Maryam Shafique, Sehar Afshan Naaz, Nusrat Jabeen, Hafiz Rub Nawaz, Zahoor Khan, Barkat Ali Solongi & Tahir Ali, 2018 "Streptomyces SP. MM-3 from Rhizosphere of Psidium Guajava Potential candidates for protease with dehairing properties" Pakistan Journal of Botany(Accepted MS 18-213)

National Publications

Papers Presented in National Conference/Workshops/Symposia

- Zahoor Khan, Maryam Shafique, Qandeel Laraib, Dr. Hafiz Rub Nawaz, Nusrat Jabeen & Afshan Naz. 2017. Bio-Sorption of chromium VI from simulated tannery effluent using immobilize Aspergillus Terreus QMS-1, 28th National & 16th International Chemistry Conference, Global Challenges and Chemistry, page # 56.



LEATHER RESEARCH CENTRE, KARACHI

- Dr. Hafiz Rub Nawaz, Barkat Ali Solangi, Beena Zehra, and Uzma Nadeem. 2017. Technologies of Distinctive Leathers; Antimicrobial & Self-Cleaning Leather and Industrial Leather for Special uses, 2nd Invention to Innovation Summit, Sindh, page # 11.
- Muhammad Kashif Pervez, Farman Ahmed, Dr. Hafiz Rub Nawaz & Sarwat J. Mehboob. 2017. Dual Characteristic of Syntan to Process Human Friendly Leather, 2nd Invention to Innovation Summit, Sindh, page # 13.
- Zahoor Khan, Maryam Shafique, Dr. Hafiz Rub Nawaz, Nusrat Jabeen & Afshan Naz. 2017. An efficient, Cost effective Eco-friendly Enzyme Technology for Leather Processing, 2nd Invention to Innovation Summit, Sindh, page # 22.

Technical Services

Analytical/ Testing Services

LRC provided 2410 testing/ analyses services to 372 different industrial clients during the fiscal year 2017-18.

Consultancy/ Advisory Services

- Verification of Microbial activity in fair & lovely tube to M/s. Burhani Tubes Industries Karachi.
- Clarification of Pepsi crown to microbial organism to M/s. Al-Burhan Metal Industries, Karachi.
- Up gradation of Low grade Garment Leather through mechanical operation to achieve glossy & smooth surface to M/s. Leather Collection, Karachi.
- Manufacture of Fur Leather from sheep skin to produce the quality product to M/s. AL-Rehman Processing, Karachi.
- Technical Assistance regarding ISO-17025 to M/s. Archroma Karachi.
- Consultancy provided for the improvement of fastness properties in finished leather for export purpose to M/s. Y & Sons International
- Improvement in the quality of Leather through different mechanical operation of embossing, to M/s. Leather Collection, Karachi.
- Process of Leather of goat skins from wet- blue to white crust to evaluate the effect of fat-liquor to M/s. Saleem Brothers, Karachi.
- Technical assistance for the determination of waterproofing quality in rexine to M/s. M. M. Enterprises.
- Consultancy & semi pilot production provided for processing of raw ostrich skins into different fashionable articles to M/s. Pakistan Ostrich Company.
- Technical assistance for the determination of physical parameters in conventional leather and half chemicals using as compare to conventional leather to M/s. Hostachem International.
- Technical assistance for the determination of water resistance quality on special condition to M/s. Pak Leather Craft
- Technical Assistance of measurement of Uncertainty to M/s. Global Environmental Lab.
- Advisory services on "ISO-17025 Accreditation for General Awareness of Lab. Management and Guideline for Technical Parameters" to Scientists/technologist of PCSIR, FRC .
- Consultancy for way of Internal Audit at Quality System ISO 17025 to M/s. Global Environmental Lab.
- Consultancy provided for CE Certification Class-I of working glove to M/s. O.M Leather.
- Consultancy provided to initiate the trails before mass production of Hydrolyzed protein from leather solid waste to M/s. F&N International.
- Consultancy & sample provided for making leather article from stingray fish skin to M/s. Mead & Johnson International.
- Consultancy provided on semi pilot plant processing of raw ostrich skins into different kind of exotic leather for articles like ladies purse, sandles & shoes etc to M/s. Pakistan Ostrich Company.



LEATHER RESEARCH CENTRE, KARACHI

- Consultancy provided for rectification and control of fungal growth in wet blue leather to M/s. BV Consumer.
- Consultancy provided for identification and differentiation of PU or PVC Artificial Leather for import purpose to M/s. Cotton Field Company.
- Up- gradation of 3000 cut pieces of wet blue split Leather into dye crust Leather from 16th to 20th April, 2018 to M/s. Kashif Brothers, Karachi.
- Removal / Reduction of faults in 2500 cut pieces of dye crust Leather through Mechanical operation from 25th to 27th April, 2018 to M/s. Kashif Brothers, Karachi
- Process of suede Leather from hide of wet blue split (500 sq. ft.) into quality product from 08th to 10th May, 2018 to M/s. A- One Leather, Karachi.
- Improvement of surface quality of 100 sides of damaged shoe upper Leather through embossing of different pattern under specific temperature & pressure from 20th to 22nd June, 2018 to M/s. Leather Collection, Karachi.
- Purification of Raw/Crude Fish Oil rich with free fatty acid content to reduce upto negligible amount count to M/s. Shakeel & Sons.
- Practical consultancy provided for Measurement of uncertainty for chemical method in labs to ICCBS, University of Karachi.

Technical Reports Prepared

- Technical report for the special requirement of the customer to improve & evaluate the finishing properties of leather to M/s. Din Leather (Pvt.) Ltd.
- Technical report for verification of Working Glove for export guideline to M/s. Faisal Leather.
- Technical report for verification of guideline for Safety Shoes used in Industry to M/s. OX Premium.
- Technical report for evaluation of restricted chemicals for export purpose to M/s. Jeaman Leather.
- Technical report after verification of guideline of physical parameters for the material used in upcoming model of Pak Suzuki Motor to M/s. Noor Engineering.
- Technical report for the special requirement of the customer to improve & evaluate the finishing properties of leather to M/s. Din Leather (Pvt.) Ltd.
- Technical report for verification of guideline for Safety Shoes used in Industry to M/s. OX Premium.
- Technical report for guideline of fastness of leather through daylight & xenon for export purpose to M/s. Dr. Eberle Pakistan.
- Technical report after Verification of Microbial activity in Packaging Material to M/s. Printech Packaging.
- Technical report for guideline for evaluation of dispersed dye in leather to M/s. BV Consumers.
- Technical report for the special requirement of the customer to improve & evaluate the finishing properties of leather to M/s. Din Leather.
- Technical report for evaluation of restricted chemicals for export purpose to M/s. G.M Leather Industries.
- Technical report for evaluation of water resistance property in special type of leather M/s. Pelle Classics.
- Technical report for guideline for CE Certification of working gloves for export purpose to M/s. Vohra.
- Assessment of the antifungal activity of finished leather treated with different antifungal chemicals to M/s. BV Consumers.
- Technical report on the study of baking gloves at special temperature requirement to M/s. Textile Testing International.
- Investigation of nine Sheep Skin samples for Fat Content before and after the degreasing process to develop processing recipe to M/s. Stahl Pakistan (Pvt.) Ltd.
- Investigation of eight Sheep Skin samples for Fat Content before and after the degreasing process to look into of efficiency of degreasing chemical to M/s. Atlas Refinery.
- Investigation for the limit of Fat Content in two Sheep Pickle (Irani) samples to M/s. Atlas Refinery.



LEATHER RESEARCH CENTRE, KARACHI

Human Resource Development

Training Imparted/ Arranged

- Twenty three Junior /Non Commissioned Officers/Civilians, Three Officer Instructors visited LRC. Lecture was delivered on subject of "Quality Control & Assurance Testing" on Leather & Textile on 15th August, 2017.
- A 05 days certificate training course was conducted on the demand of Midas Pvt. Ltd. for its 08 Nos. executive employees to aware basic science & technology of leather from 11th to 15th September, 2017.



- An exclusive two days training workshop was conducted entitled "Understanding Laboratory Management System ISO-17025 & Uncertainty Measurements" on the request of M/s. Global Environmental Lab (GEL) Pakistan Ltd, Korangi Industrial Area, Karachi for its 08 Nos. executive employees to provide awareness on Management system of ISO-17025 28th & 29th November, 2017.
- Scientist /Technologist provided one day awareness training on "Curing, preservation and QA/QC" on Leather & Textile to Thirty Seven Young Officers and Two Instructors from Ordinance College Malir Cantonment on 16th January, 2018.
- LRC Scientists delivered lecture on "Basic methods of leather manufacturing & Control of Quality parameters as per NEQS and Reach requirement" respectively on the request of Management of Pakistan Army Ordinance College, Malir, Karachi on 17th January, 2018. The total No of officers attended the presentation were thirty eight of Captain rank.
- LRC Scientists provided two days training to understand Laboratory Management System ISO-17025 to 10 Nos. employees of M/s. Engro Polymer & Chemical Ltd, Port Qasim, Karachi on 25-26th January 2018.
- One month Training of Processing of Shoe Upper Leather was arranged on the request of Inspectorate of Army & Civilian in April - May 2018.
- 45 Days Training of QA/QC Training on Leather was arranged on the request of Inspectorate of Army in April - May 2018.





LEATHER RESEARCH CENTRE, KARACHI

- One day training workshop on Awareness and Implementation of ISO-17025 & Internal Audit was conducted on the request of AIC, ICCBS, University of Karachi in May, 2018.
- One day awareness session on QA/QC for the 25 Nos. Junior/Non Commissioned Officers/Civilians from Ordinance College Malir in May, 2018.

Training Received (Local/ Foreign)

The five Officers from LRC attended the Training workshop entitled "Drafting & Filing of Patent Application" at PCSIR Laboratories Complex, Karachi held on August 17, 2017. Training was given by *Patent Examiner*, IPO-Pakistan.

Workshops/ Seminars/ Exhibition Organized

LRC Scientist delivered presentation in two seminars on 20th August, 2017 at Al-Mustafa Welfare Trust, Karachi and on 29th August, 2017, at Jamia tul Islamia, Banuri, Karachi which were jointly arranged by the management of Leather Research Centre, Karachi with Al-Mustafa Welfare Trust, Karachi on the occasion of Eid-ul- Azha to minimize the loss of skin and hides of sacrificial animals. It also provided awareness to save the skin/ hide from various defects like butcher cuts, salt stains, drying, corrosion etc.

Workshops/ Seminars/ Exhibition Attended

- Dr. M. Kashif Pervez (PSO) and Dr. Farman Ahmed (SSO) attended the event, i.e., Two days First International Conference on the Textile Colloquium on May, 13-14, 2018.
- Ms. Sarwat J. Mahboob, SSO delivered a lecture in one day seminar on "ISO-17025 Accreditation for General Awareness of Lab. Management and Guideline for Technical Parameters" to scientists/ technologist of PCSIR, FRC on 13.02.2018 at FRC, Karachi.
- Mrs. Tahira Ayaz, SSO and Mr. Raj Kumar Dewani, SO attended two days training workshop on repair and maintenance of scientific instruments at PCSIR Laboratory Complex, Karachi.
- Mr. Farruk Nazir, PSO & Mr. Shakeel Ahmed, Sr. Technician participated in Pakistan Mega Leather Show Organized by PTA in Expo Centre Lahore held from 27th - 29th January, 2018.
- Dr. Hafiz Rub Nawaz, Director, LRC and Dr. M. Kashif Pervez, PSO delivered the presentation on the topics of "technologies of distinctive leathers" in the Pre-summit conference on "Innovative Technologies" as part of 2nd 'Invention to Innovation' Summit, Sind-2017.
- Dr. Farman Ahmed, attended the inaugural session of six International Symposium-cum-Training Course on Molecular Medicine and Drug research (MMDR-6) on November, 6 2017 at ICCBS, University of Karachi.
- Leather Research Centre participated in the Exhibition "Science Exhibition for Young Learners" at Dawood Public School, Karachi on 6th to 8th October, 2017. LRC displayed different leather articles & products on stall like ostrich leather, chicken paw leather, sheep fashionable leather articles and leather goods; like ladies bill folds, chicken paw leather wallets and chicken paw leather key chains.
- Dr. Hafiz Rub Nawaz, Director LRC, Dr. Kashif Pervez, PSO & Mr. Nadeem Hussain, SEO attended the workshop on "International Labor and Environmental Standard (ILES)" for textile and leather sector at SITE Association Office on 27th July, 2017.

Other Activities

MoUs/ Agreements Signed

- MoU has been signed between Federal Urdu University of Arts, Science & Technology (FUUAST) and PCSIR, Leather Research Centre, Karachi. This MoU is focused on bilateral research on various topics like environmental issues, Application of enzyme in leather technology, leather processing and replacement of toxic chemicals in tanning and finishing process. Both the partner are agreed to train researchers in various fields.

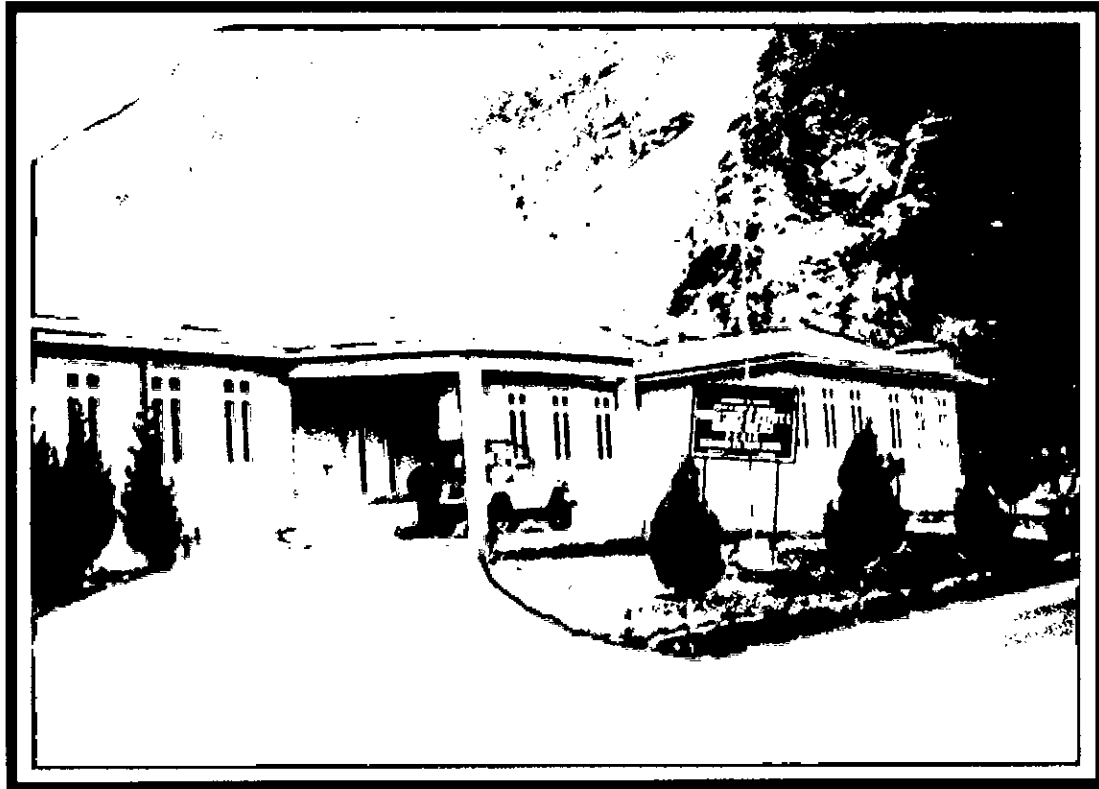


LEATHER RESEARCH CENTRE, KARACHI

- Mr. Raja Tahir, CEO of Pakistan Ostrich Company has signed MoU with Leather Research Center on "Preparation of Exotic Ostrich Leather at Leather Research Center, Karachi through Technology developed by LRC".
- Agreement has signed between M/s. BUREAU VERITAS Consumer Products Services Pakistan (Pvt.) Ltd. with Leather Research Center, PCSIR to serve the Leather & Footwear Testing in LRC.

Visits/Meetings

- The LRC commercial team members Dr. Kashif Parvez, PSO & Mr. Nadeem Hussain, SEO visited Korangi Industrial Area, Karachi on 08 May, 2018 to develop the interaction between the LRC and Leather Industries & Tanneries.
- The 8th meeting of BoM was held on 24th April, 2018. The meeting was presided over by the Director, LRC, Dr. Hafiz Rub Nawaz, and attended by the member from academia, member from industries and LRC scientists. The Director, LRC presented a detailed presentation to the members regarding Leather Research Centre activities and subsequent progress since the 7th BoM meeting.
- Mr. Saquib Fayyaz Magoon and Mr. Shabbir Mansha Churra from Pakistan Artificial Leather visited LRC on 6th March, 2018 for consultation of the on spot identification of PVC & PU surface of artificial leather. Director, LRC and scientist & technologist discussed with the team and suggested the parameters for identification of PVC & PU surface coating.
- PNAC Team visited LRC on 28th & 29th August, 2017 for full assessment of LRC. PNAC Team constituted of Mr. Azhar Iqbal as Lead Assessor and Mr. Tariq Maqsood as Technical Assessor.



PCSIR Laboratories, Skardu

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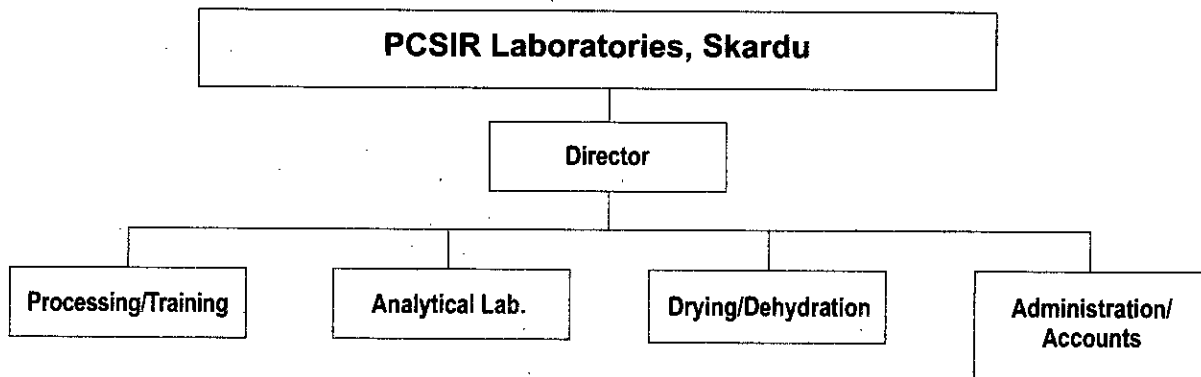


PCSIR LABORATORIES, SKARDU



Director
Mr. Tariq Umer Khan

The Center started working in 1998 under the administrative control of PCSIR Labs Peshawar to impart technical training on processing, preservation, value addition, packaging, transportation and storage of fruits and vegetables. The Center is helping rural population of the region in their socio-economic development by imparting training and offering technical help in minimizing the post-harvest losses. The Center is also providing testing facilities to the farmers/students in the field of agricultural raw materials and its value added products. A PSDP Project of Rs: 56 millions titled "Up-gradation of Fruit Processing, Analytical Laboratory and Establishment of Gems & Minerals Cutting and Polishing Center at PCSIR Laboratories Skardu" has been approved in July 2017. Activities of project have been started, The Gem & Mineral Cutting and Polishing center building is under construction.





PCSIR LABORATORIES, SKARDU

Research Activities

Seabuckthorn Apricot Blended Jam

Seabuckthorn Apricot Blended Jam developed from Seabuckthorn and apricot pulp/fruit. The jam can be used by all age groups for breakfast and immediate relief from hunger with bread, paratha or chapatti.

Gluten Free Energy Bar

The Gluten Free energy bar developed using buckwheat flour, apricot Kernel, walnut, coco powder etc. The Gluten Free energy bar is highly nutritious, suitable for gluten allergic/wheat sensitive persons and people suffering with celiac disease. It is excellent for patients of anemia, diabetes, indigestion. The Gluten Free energy bar can be used by all age groups for instant relief from hunger. The product is delicious, energetic and nutritious.

Research Outcomes

Process Developed

- Buckwheat Gluten Free Cake developed.
- Seabuckthorn Apricot Blended Jam developed.
- Gluten free energy bar developed

International Publications

Paper Published in Impact Factor Journals

- Faizullah Khan, Tariq Umar Khan, Muhammad Ayub, Tajudin, Abdul Karim. 2017. Preparation of Thymo-Rutin Green Tea and its Active Ingredients Evaluation. *Adv Food Technol Nutr Sci Open J*; 3(1): 15-21.
- Asad Afzal Humayon, Noor-ul-ain Ansari, Tariq Umar Khan, Abida Latif, Shoaib Raza. 2018. Factors influencing organizational Performance in public Hospitals of Pakistan. *International Journal of Applied Environmental and Biological Sciences*; 8(3)2454-11. :

Technical Services

Analytical/Testing Services

Skardu Laboratories provided 71 analytical services to 50 different clients during year 2017-18.

Consultancy/Advisory Services

- Consultancy on Reprocessing of Dry Fruits provided to Al-Naeem Dehydration Unit New Ranga Skardu.
- Consultancy on Separation Techniques of Seabuckthorn Seed from Dry Seabuckthorn Berries provided to Baltistan Seed Corporation Skardu.
- Consultancy on Development of Yogurt from Fresh Cow milk and skimmed/powdered Milk and preservation of Makhan provided to Mr. Rehmatullah Ghori Sain Skardu Baltistan.

Human Resource Development

Trainings Imparted/Arranged

- One day training on Fruit processing, preservation and value addition was given to 7 groups of selected



PCSIR LABORATORIES, SKARDU

farmers at Hussainabad, Shegri Kalan, Nianure, Ranga, Shegri khurd, and Olding Skardu in collaboration with Satpara Development Project from 10-july to 20 July 2017. Total 143 farmers were trained in these 7 group trainings at different villages.

- Two days Training was given on Apple Orchard Management and Value Addition" to selected farmers of Baltistan Region at PCSIR Skardu in collaboration with Department of Food Technology KIU (Karakorum International University) Gilgit. Total 29 selected farmers of Baltistan region were trained on 28-29, August 2017.
- One day Mix Vegetable Pickle Development training was given to female farmers of Skardu. 31 participants were trained in this training on 19-October-2017.
- Six Months (Nov-2017 to April 2018) Fruit Processing, Preservation, Packaging, & logistics Training was given to 25 selected candidates through PMYSP (Prime Minister Youth Skill Program) in collaboration with NAVTTC.
- One day training was given to 28 potential farmers on Seabuckthorn pruning and selection of best variety on 28-November-2017.
- Two days training on "Fruit handling, Processing, preservation, dehydration and value addition of fruits & Vegetables" was given to 30 selected farmers of Skardu district under ALP (Agricultural Linkages program) funded project at PCSIR Skardu dated 13-14, February-2018.
- Two days training on "Fruit handling, Processing, preservation, dehydration and value addition of fruits & Vegetables" was given to 4 groups comprising of 120 selected farmers at 4 different location (Chilas, Goharabad, Tangir and Darel) at district Diamer under ALP (Agricultural Linkages program) funded project in collaboration with Agriculture Department District Diamer from 19-26, February-2018.
- Two days training on "Fruit handling, Processing, preservation, dehydration and value addition of fruits & Vegetables" was given to 4 groups comprising of 120 selected farmers at 4 different location (Khanaabad, Gulmit, Passu and Shiskat) at District Hunza under ALP (Agricultural Linkages program) funded project in collaboration with Agriculture Department District Hunza from 10-17, May-2018..

Training Received (Local)

- Mr. Faizullah Khan Scientific Officer received one day training on "Inventory of Mercury and Mercury compounds in Pakistan at Serena Hotel Gilgit in July-2017.
- Mr. Faizullah Khan Scientific Officer received one day training on "Biosafety and Biosecurity, Principals and Practices at Directorate of Agriculture Baltistan Region in October-2017.
- Mr. Faizullah Khan Scientific Officer received one Week training on "Train the Trainer workshop Laboratory safety training" at Margalla Hotel Islamabad from 25-29, March 2018.

Workshop/Seminar/Exhibition Organized

- Arranged two days Exhibition "Agricultural Exhibition 2017" in collaboration with Agriculture Department Baltistan Region. In this exhibition value added and processed products of agricultural produce was displayed at municipal stadium Skardu for general awareness of common people on 26-27, October -2017.

Students Supervised

Skardu Laboratory provided supervision to 10 Students of M.Sc (Hons) and B.Sc (Hons) of different Universities/ Institutes during 2017-18.

Other Activities

PSDP Project

- Got a PSDP Project of Rs: 56 Millions titled "Up-gradation of Fruit Processing, Analytical Laboratory



PCSIR LABORATORIES, SKARDU

and Establishment of Gems & Minerals Cutting and Polishing Center at PCSIR Laboratories Skardu" July 2017.

- Gem & Mineral Cutting and Polishing center building under construction.

Research Funded Project

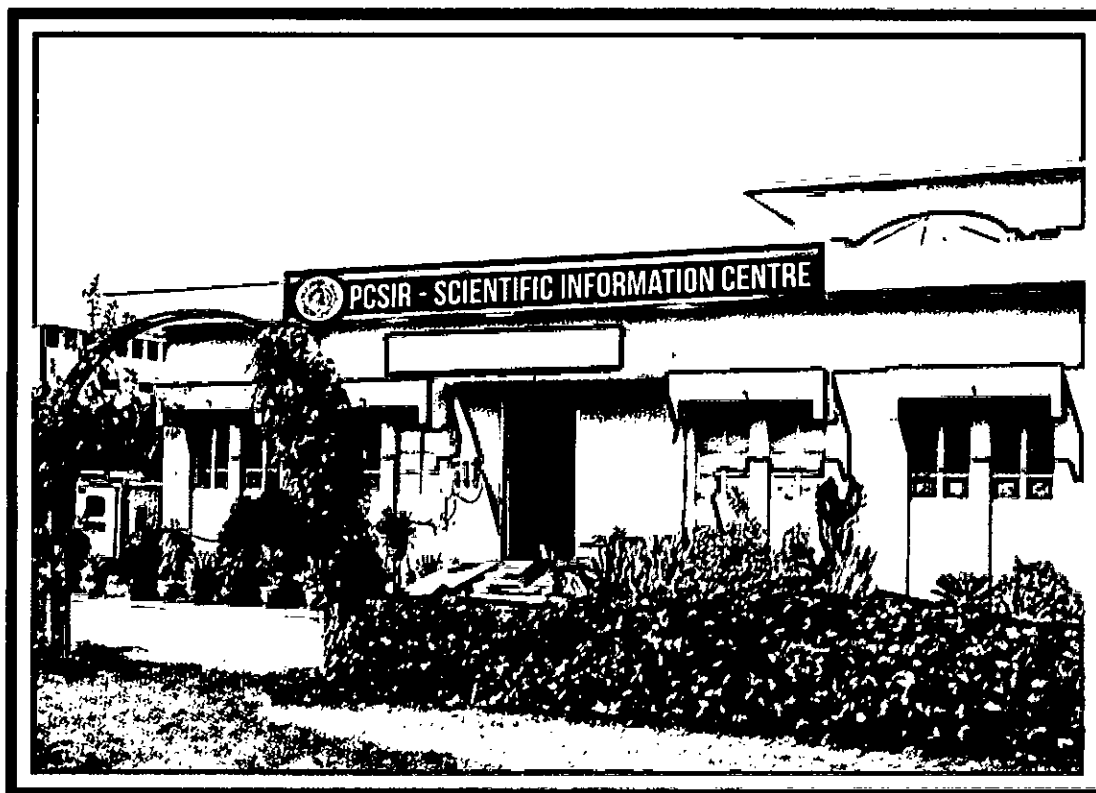
- Won a funded project of Rs: 4.979 millions on Fruit Processing Trainings from Agricultural Linkages Program (ALP) PARC, Islamabad titled "Demonstration of Technologies and Training of Growers for Handling and Value Addition of Fruits in Gilgit-Baltistan" and started activities from 2nd November-2017.

MoUs/Agreements Singed

- MoU signed with Department of Food Technology KIU (Karakorum International University) Gilgit to conduct training on "Provision of Training on Apple Orchard Management and Value Addition" at PCSIR Skardu in August-2017.
- MoU signed with NAVTTC Islamabad to execute of PMYSP Six months training on "Fruit processing, preservation, packaging & logistics" in November 2017.
- MoU signed with NAVTTC Islamabad to execute of PMYSP Six months training on "Fruit processing, preservation, packaging & logistics" in April-2018.
- MoU signed with Director Agriculture Department Gilgit Region to conduct trainings on "Two days Fruit Handling, Processing, Preservation and Value Addition Training at 4 different locations of District Diamer" in February 2018.
- MoU signed with Deputy Director Agriculture Department District Hunza to conduct trainings on "Two days Fruit Handling, Processing, Preservation and Value addition Training at 4 different locations of District Hunza" in May-2018.



PCSIR LABORATORIES / UNITS



Scientific Information Centre, Karachi

Shahrah-e-Dr. Salimuzzaman Siddiqui, Off University Road, Karachi-75280
Tel: (021) 99261916-17, 99261949; Fax: (021) 99261913
E-mail: info@pjsir.org; sicpcsirkarachi@gmail.com



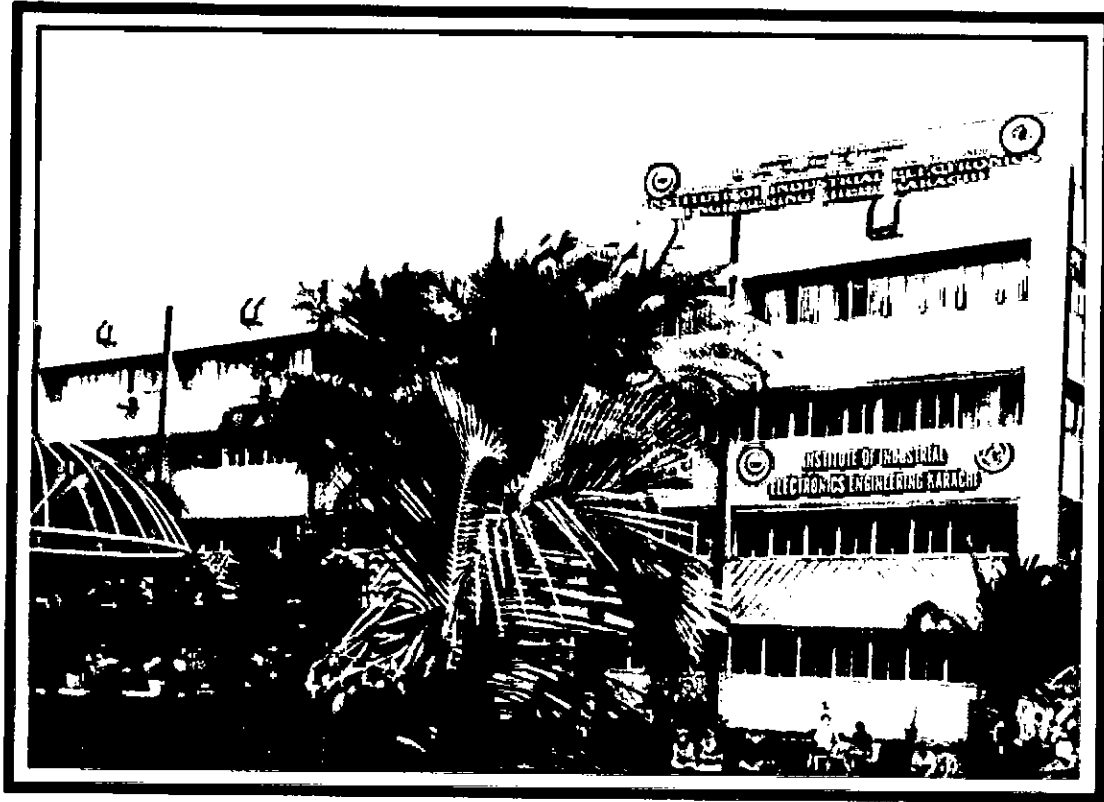
SCIENTIFIC INFORMATION CENTRE, KARACHI

In-House Activities

During the year 2017-2018 the Production Division undertook a number of printing and publication jobs of PCSIR labs/ units.



PCSIR LABORATORIES / UNITS



Institute of Industrial Electronics Engineering, Karachi

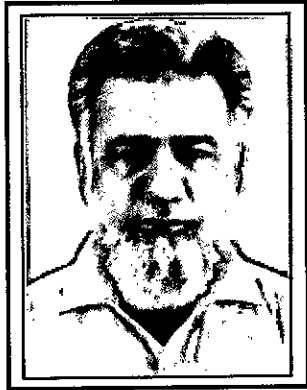
ST-22/C, Block 6, Gulshan-e-Iqbal, Karachi-75300

Tel: (021) 99244218-20; Fax: (021) 99244221

E-mail: info@iiee.edu.pk, pcsiriiee@gmail.com



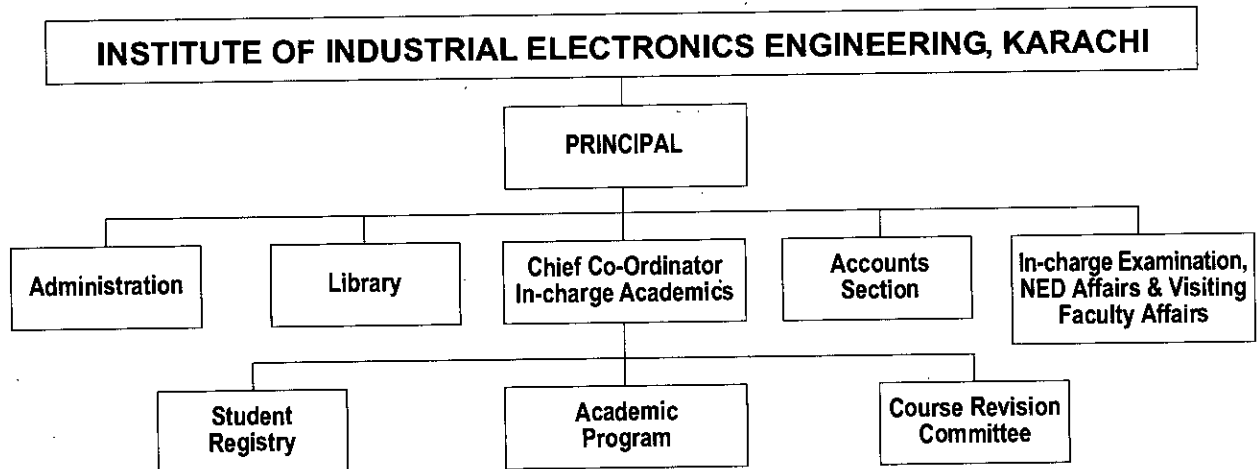
INST. OF INDUSTRIAL ELECTRONICS ENG., KARACHI



Principal
Engr. Ashab Mirza

Trained and Skilled manpower is a bloodline for Industries and Institutions of any country. Keeping in view the needs of the nation, PCSIR founded IIEE in 1989 in collaboration with SWISS CONTACT Government of Switzerland, to prepare trained and skilled manpower for the local Industry in the form of Industrial Electronics Engineering Graduates. IIEE is affiliated with N.E.D. University, Karachi.

IIEE with its unique laboratory, workshops and computer facility, is inducting a batch of 47 undergraduates in 1st Year Engineering every year. Graduate Engineers of IIEE are very much sought by the industries/ organizations and those who have so far graduated are gainfully employed throughout the country and abroad.





INST. OF INDUSTRIAL ELECTRONICS ENG., KARACHI

Academic Activities

B.E. (Industrial Electronics)

50 students enrolled in the B.E. (Industrial Electronics) out of which 34 students passed out in the fiscal year 2017-18.

Students Visit

- IIEE Students of 4th Year visited United Towels Exporters Pvt. Ltd in November, 2017.
- IIEE Students of 3rd Year visited Atlas Hitec Pvt. Ltd. in December, 2017.
- IIEE Students of 3rd Year visited Pacific International (Pvt.) Ltd. in December, 2017.



Honours and Awards

- IIEE Student secured 1st position in "Electria 2017" held at Baharia University, Karachi in October, 2017.
- IIEE Student secured 1st position in "SEE 17" held at PAF Kiet in November, 2017.

Other Activities

Workshops/ Symposiums

- Workshop held on "Product Development Cycle" in January, 2018 attended by students and faculty members.
- Workshop held on "Intellectual Property Patent" in April, 2018 attended by students and faculty members.

Conferences

- 3rd International Electrical Engineering Conference jointly organized by NED UET in collaboration with Institution of Engineers Pakistan Karachi Center and IIEE on 9th & 10th February 2018. Sr. Faculty Members attended 3rd IIEE - 2018.
- Engr. Dr. Farah Haroon performed her duties as reviewer and member of organizing committee of International Electrical Engineering Conference, IIEE 2018 held on 9-10th Feb 2018 at IEP, Karachi.
- Engr. Dr. Farah Haroon attended International conference on Emerging Trends in Telecommunication and Electronics Engineering ICE (TE)² at NED, UET on 27-28th Feb 2018.



Pak Swiss Training Centre (PSTC), Karachi

PCSIR Laboratories Campus, Shahrah-e-Dr. Salimuzzaman Siddiqui, Karachi - 75280
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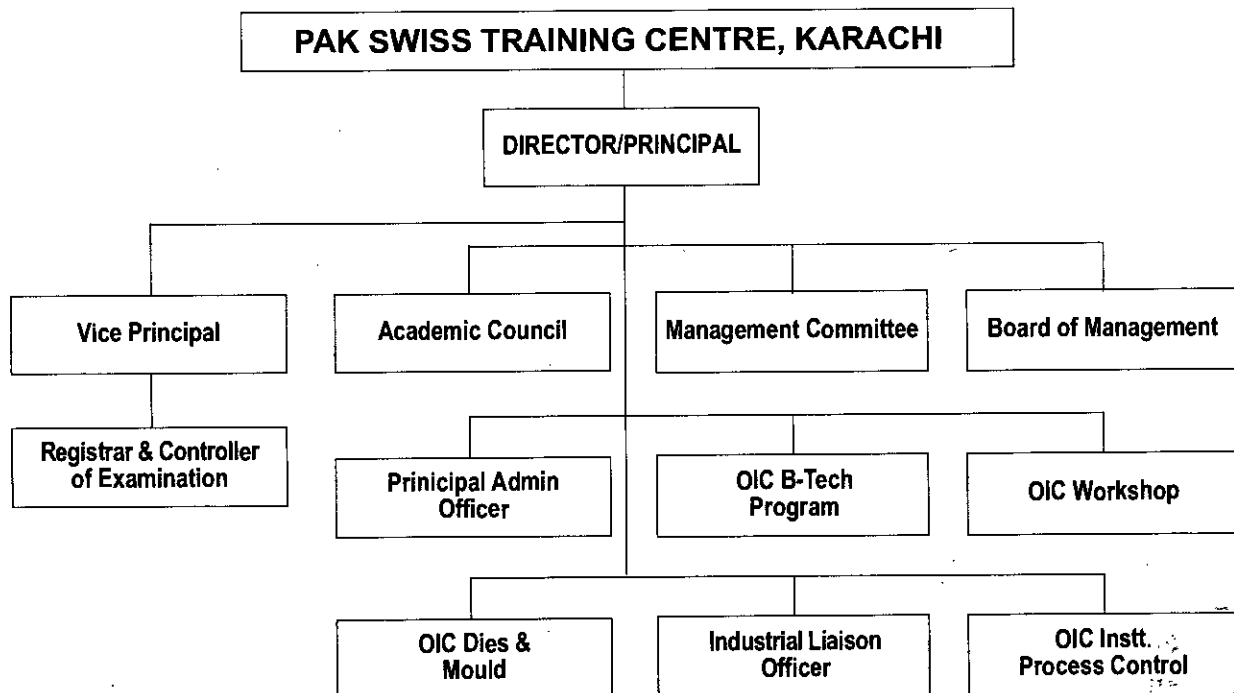


PAK SWISS TRAINING CENTRE, KARACHI



Principal
Syed Nadeem Gohar

Pak Swiss Training Centre (PSTC), Karachi was established in 1965 to provide technical personnel for the emerging industrial sector in the Country. PSTC is conducting a Degree Program B.Tech. (Pass) in Mechanical Technology with the affiliation of NED University of Engineering & Technology, Karachi. PSTC is also offering Three Years Diploma of Associate Engineer in Precision Mechanics and Instrument Technology and 04 Years Specialized Diploma of Associate Engineer in Dies & Mould Technology. The Course is affiliated with the Sindh Board of Technical Education, Karachi. Furthermore, PSTC is also conducting evening short courses for in-service engineers & technologists to upgrade the skills and knowledge in the field of CNC Programming & Operation (CAD/CAM), Process Control Technology, Dies & Mould Technology. About 300 in-service engineers & technologists are trained every year in specialized fields.





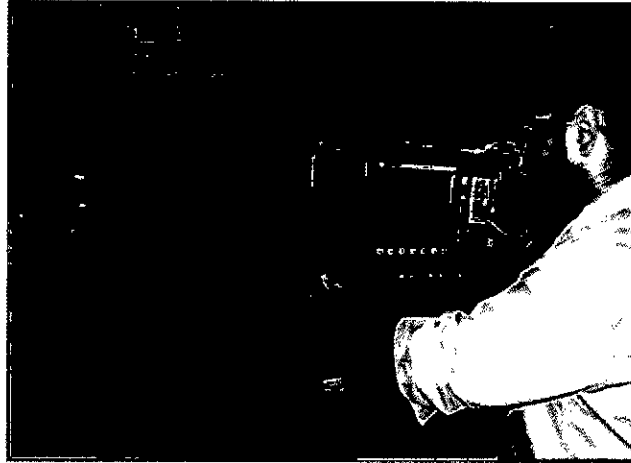
PAK SWISS TRAINING CENTRE, KARACHI

Academic Activities

Diploma of Associate Engineering (DAE)

03 Years DAE in Precision Mechanics & Instrumentation Technology

The unique course to impart excellent skill oriented training on various conventional machine coupled with lectures in relevant theory. 44 students enrolled and 25 students passed out in 2017-18.



04 Years Specialized DAE in Dies & Mould Technology

During 2017-18, 84 students (18 morning & 66 evening) enrolled and 54 students passed out.

03 years DAE in Instrumentation and Process Control Technology

Instrumentation and Process Control Technology was initiated with the collaboration of Government of Spain. 40 students enrolled and 31 students passed out in the year 2017-18.

Short Courses Conducted

- 04 weeks short course on Basic Cam (CNC Programming & Operation)
- 08 weeks short course on Control Technology (Hydraulics, PLC)
- 05 weeks short course on Basic Electronics





PAK SWISS TRAINING CENTRE, KARACHI

Other Activities

Internships & Industrial Visits

- 44 students of Final Year were sent to different companies for internship to have a practical exposure and experience of the manufacturing and production activities at different leading industries.
- A high level team from M/s Pak Suzuki visited PSTC Karachi wherein they were briefed about the practical training methods and infrastructure available at PSTC. They realized that at PSTC there is a practical oriented training system but lack of latest state of art equipment to fulfill the present day requirement of industries. They showed their willingness to cooperate with PSTC to strengthen its training activities. They have already gifted some machines to PSTC for the practical training of the students.



Precision Systems Training Centre (PSTC), Lahore

Ferozpur Road, Lahore - 54600
Ph: (042) 99231797, Fax: (042) 99231796
Email: pstc_lhr@hotmail.com; pcsirpstclahore@gmail.com



PRECISION SYSTEMS TRAINING CENTRE, LAHORE

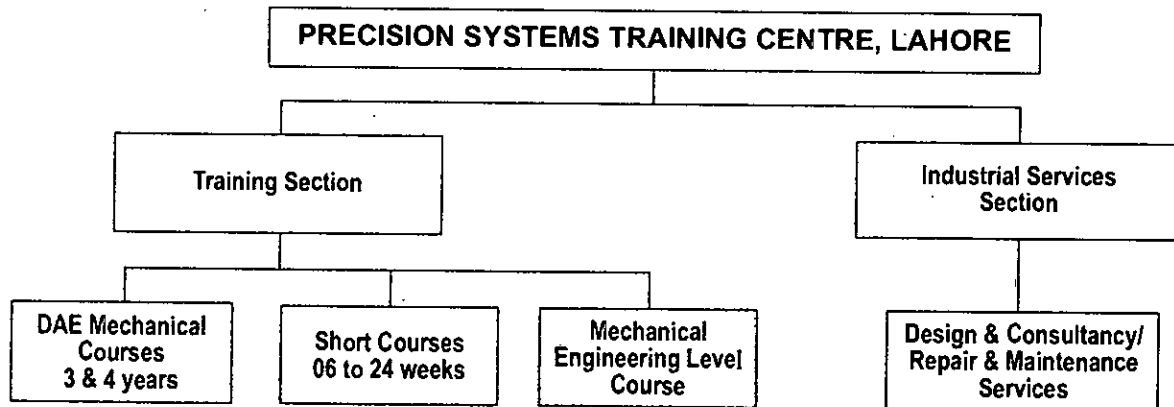


Principal
Engr. Muhammad Saadet Khan

Precision Systems Training Centre (PSTC), Lahore's objectives are to provide the foundation for development and generation of technical know-how and to organize and conduct training in the following fields:

- i. Precision Mechanics and Instrumentation Technology [Diploma of Associate Engineer (DAE), 03 years course].
- ii. Dies and Moulds Technology with specialization in special purpose machines [Diploma of Associate Engineer (DAE), 04 years course].
- iii. Short term courses of 06 to 24 weeks duration for Engineer and Technicians employed in the industries.

The Centre also offers Chartered Engineering (Mechanical) Level courses through City & Guilds, U.K.





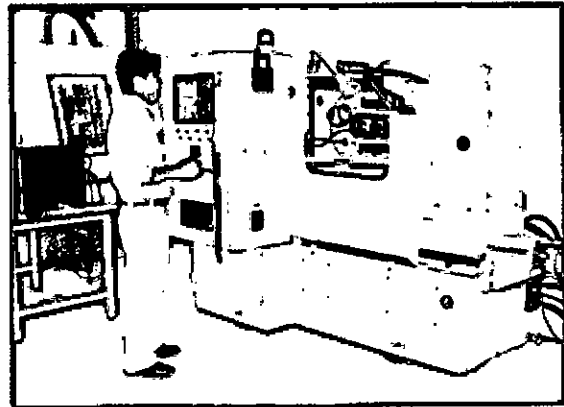
PRECISION SYSTEMS TRAINING CENTRE, LAHORE

Academic Activities

Diploma of Associate Engineering (DAE)

03 Years DAE in Precision Mechanics & Instrumentation Technology

63 trainees of DAE in Mechanical Technology with specialization in Precision Mechanical & Instrumentation Technology (3 years course) passed out during the year 2017-18 and are serving in different sectors of well reputed industry and other organizations both local and abroad like Atomic Energy Commission, oil & gas fields, fertilizer, automobile, plastic/polymer, agriculture, food, chemical, etc.



04 Years DAE in Dies & Mould Technology

64 trainees of DAE in Mechanical Technology with specialization in Dies & Mould Technology (4 years course) passed out in the year 2017-18.

Gold Medalist in DAE in Annual Examinations 2017

One student of PMIT (3 years course) and one student of DM (4 years course) got 1st position in Annual Examination 2017 throughout Punjab and on this achievement Punjab Board of Technical Education awarded them gold medals and merit certificates.

Merit Scholarships Awarded by Punjab Board of Technical Education

12 students of PSTC-Lahore got distinctions in 1st Annual Examinations 2017 for DAE in PMIT (3 years course) and DM (4 years course) and Punjab Board of Technical Education, Lahore awarded them merit scholarships.

Visits

Honourable Mrs. Yasmin Masood, Federal Secretary for Science & Technology, Government of Pakistan visited PSTC-Lahore on March 15, 2018 to see the facilities available at the centre.





PCSIR LABORATORIES / UNITS



Precision Systems Training Centre (PSTC), Peshawar

Campus PCSIR, Palosi Road, 1.5 Km, Off University Road, Peshawar

Tel: (091) 9221198, 9221348, Fax (091) 9221349

E-mail: pcsirpstcpehawar@gmail.com



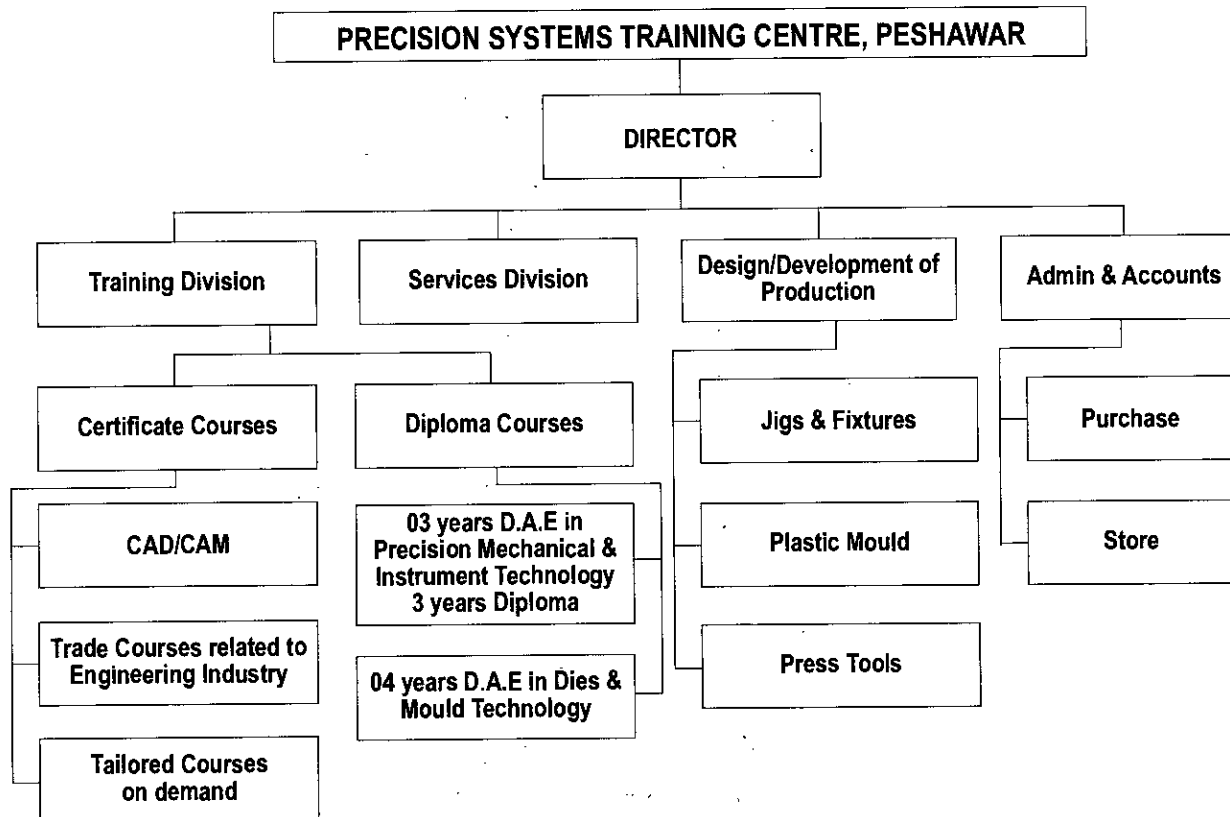
PRECISION SYSTEMS TRAINING CENTRE, PESHAWAR



Director
Engr. Saiful Islam

The main objectives of Precision Systems Training Centre (PSTC), Peshawar is to ensure rapid development in the industrial sector of K.P.K by introducing an important and new training programme in the emerging trades with modern-age techniques of teaching and as per requirement of the industries through;

1. Organizing and conducting three years Diploma course of Associate Engineer in Precision Mechanical & Instrument Technology and Four Years Diploma course of Associate Engineer in Dies & Mould Technology.
2. Organizing & conducting short term courses of 4 to 24 weeks duration in the field of Machine Tool Operations, CAD/CAM, Process Control, Dies & Mould, Engineering, Drawing & Design.





PRECISION SYSTEMS TRAINING CENTRE, PESHAWAR

Academic Activities

Diploma of Associate Engineering (DAE)

03 Years DAE in Precision Mechanics & Instrumentation Technology

20 students passed out and 52 new students enrolled during the year 2017-18 for DAE in Mechanical with specialization in Precision Mechanical & Instrumentation Technology.

04 Years DAE in Dies & Moulds Technology

13 students passed out and 24 new students enrolled during the year 2017-18 for DAE in Mechanical with specialization in Dies & Moulds Technology.

Short Courses

04 Short courses of 06 months duration conducted with Fata Development Authority, Peshawar in the following areas with participation of 160 trainees:

1. Machinist
2. Building Electrician
3. CNC Machine
4. Information Technology

Students Visits

- 2nd and 3rd years regular DAE Student of PSTC Peshawar visited different industries located at Industrial Estate, Hayatabad (M/s Marks Ltd, Pepsi, M/s Muhammad Ahmad & Sons Plastic Ltd. etc.) to enhance their knowledge and skill.

Student Supervision

The Centre supervised 23 students of different institutes.

Other Activities

Seminars/ Exhibition

- Director PSTC participated in the exhibition conducted by FDA at Pearl Continental, Peshawar on 04.05.2018. Governor KPK (Chief Guest) visited the stall and appreciated the activities.

MoUs

- MoU for 7th batch has been signed with FATA DA (Fata development Authority) Hayatabad, Peshawar to train 115 students of FATA in four different short courses. The duration of the course is six months.

Internship

- The NIP office has sent 23 internees under National Internship Programme (NIP) w.e.f July, 2017 for a period of 01 years.



Precision Systems Training Centre (PSTC), Quetta

Mastung Road, Near Mian Ghundi, Quetta.

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E-mail: pcsirpstcquetta@gmail.com

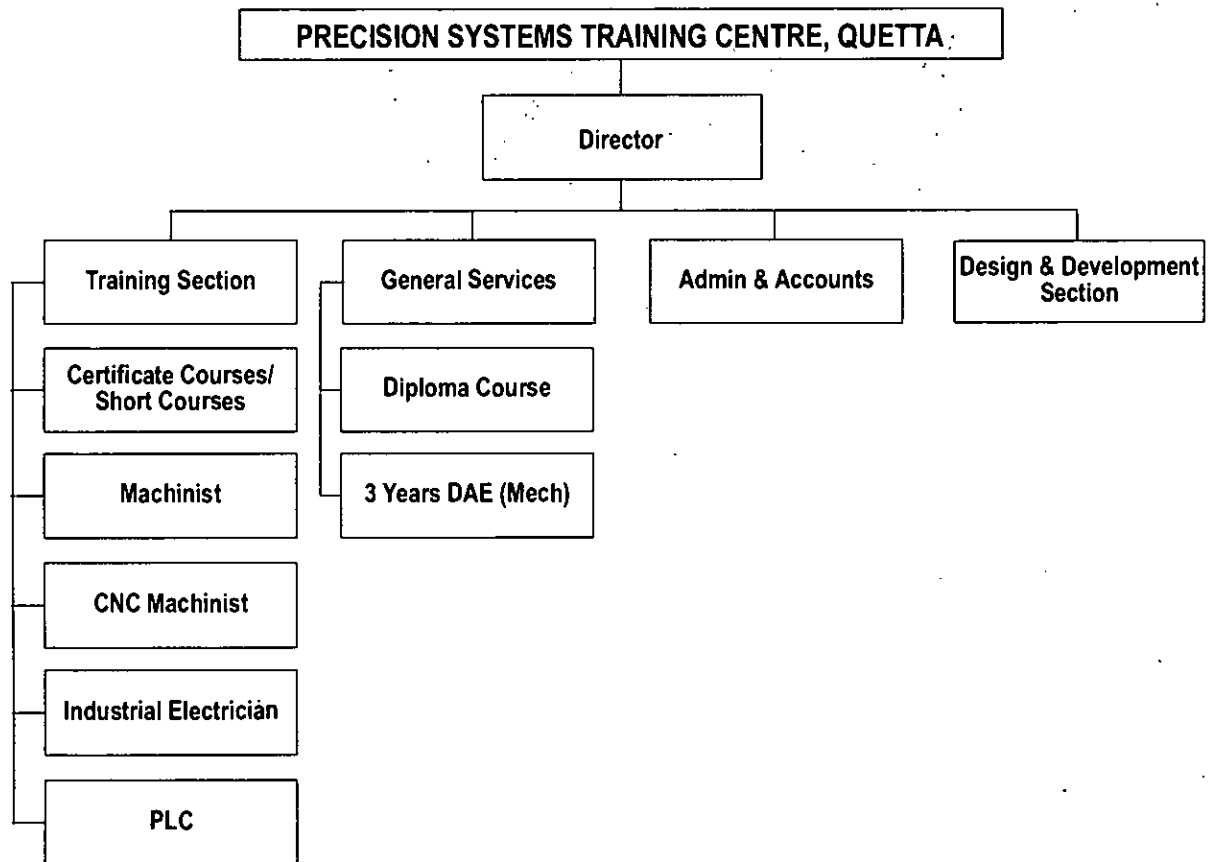


PRECISION SYSTEMS TRAINING CENTRE, QUETTA



Director
Engr. Nasir Ali Baloch

Precision Systems Training Centre (PSTC) Quetta was established in 1987. The Centre is actively involved in the development of specialized manpower. PSTC Quetta produced about 325 technical skilled youth till date, serving across the globe and providing services to the industrial sector to enhance the economy of the country.





PRECISION SYSTEMS TRAINING CENTRE, QUETTA

Academic Activities

Diploma of Associate Engineering (DAE)

03 Years DAE in Precision Mechanics & Instrumentation Technology

21 students enrolled during the year 2017-18 for DAE in Mechanical with specialization in Precision Mechanical & Instrumentation Technology.

Short Courses

03 Years DAE in Mechanical Technology with Specialization in Precision Mechanical & Instrumentation Technology.

21 numbers of students enrolled during the session/year 2017-18 for DAE in Mechanical Technology with specialization in Precision Mechanical & Instrumentation Technology.



Short/Certificate Courses

Besides regular Diploma Program, PSTCs are also conducting professional short courses for in-service Engineers & Technologists, unskilled manpower and other interested persons involved in the relevant field:

- 06 Months short course under Prime Minister's Youth Skill Development Programme of NAVTTC were conducted in the following Trades:
- CNC Machinist
- Industrial Electrician

05 numbers trainees from District Dera Bugti region completed 8 weeks short course training program with collaboration of a local NGO BRDS on Domestic Electrician, which was highly appreciated by all.

Other Activities

Certificate and Tool Distribution Ceremony

A ceremony was held in June 2018, for the distribution of Certificate and Tool kits among the pass out trainees of PMYSDP of Phase-III/B-I.



PRECISION SYSTEMS TRAINING CENTRE, QUETTA

Awards/ Honours

- A trainee of PSTC Quetta got 1st Position on Provincial Skill Competition organized by National Vocational & Technical Training Commission (NAVITC) at Quetta.

Meetings/Seminars/Workshop/Conferences Attended

- Engr. Nasir Ali Baloch, Director, Mr. Kashif Ali, Chief Instructor, Muhammad Umar Farooq , Admin. Assitant attended a 5 days' Workshop on "Industrial Coordination and Joint Frame work organized jointly by GIZ(GmbH) Germany and Balochistan TEVTA under TEVT Reform Support Program funds for Sindh and Balochistan at Serena Hotel , Quetta from 2-6 April, 2018.

Training Received

- Engr. Nasir Ali Baloch, Director, Mr. Farooq Ahmed, Chief Instructor and Engr. Shamsullah , JE attended 4-days training session "Quality Assurance of Training Institutes" under TEVT support training Programme of Sindh & Balochistan organized by GIZ, Pakistan at Serena Hotel Quetta from 27th February, to 2nd March, 2018.
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- Engr. Nasir Ali Baloch, Director, Muhammad Arshad Khan, Administrative officer and Abdullah Khurshid Accounts officer attended a two Training workshop on "Project Financial Management "organized by GIZ.



Cast Metals & Foundry Technology Centre (CM&FT), Daska

Punjab Small Industrial Estate, Daska, District Sialkot
Phone: (052) 6625086 Fax: (052) 6625089
E-mail: pcsircmftdaska@gmail.com



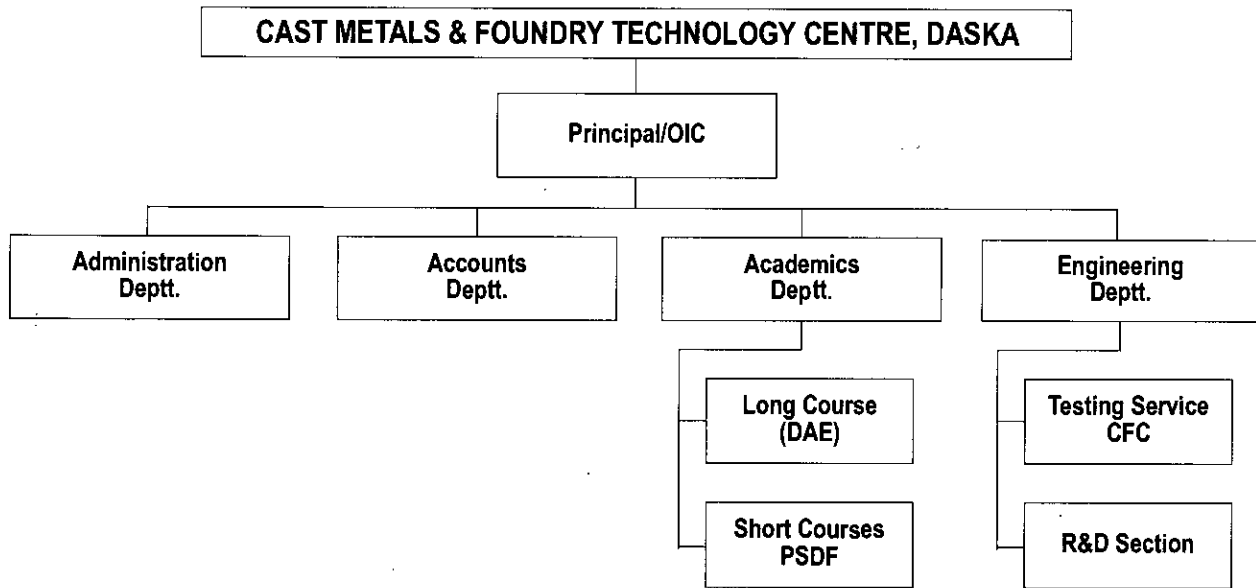
CAST METALS & FOUNDRY TECH. CENTRE, DASKA



Officer Incharge
Engr. Ghulam Shabbir

The Cast Metals & Foundry Technology Centre, Daska is providing multi-pronged and multi-dimensional services to all engineering industries especially the Cast & Metal Industry. Cast Metals & Foundry Technology Centre conducts and promotes industrial projects and help research scholars, institutes and industries in the following ways:

- Provision of trained human resource to all relevant institutes and concerned industries.
- Sharing of information, literature and technical knowhow regarding Cast Metals & Foundry Technology.
- Provide customized training for employees in the metal Casting Industry





CAST METALS & FOUNDRY TECH. CENTRE, DASKA

Academic Activities

Diploma of Associate Engineering (DAE)

03 Years DAE in Cast Metal Foundry Technology

24 students passed out and 30 students enrolled during the year 2017-18 for DAE in Cast Metal Foundry Technology.

Short Courses

Short courses of 3-6 months duration were conducted in the program "Skills for Punjab Growth Strategy/ Skills for Job" under Punjab Skill Development Fund (PSDF) in the following areas:

- CNC Programmer
- Auto CAD/CAM
- CNC Machine Operator
- Material Evaluation & Mechanical Testing
- Induction Hardening Machine Operator
- Milling Machine Operator

Other Activities

MoUs / JV's Agreements/Collaborations

PCSIR has established a common facility centre (CFC) at SIMAP Sialkot. The objective of the centre is to provide technical services/testing to the stakeholders. Number of industries have been served & more than 800 analytical tests have been conducted so far.

Industrial Visits/ Linkages/ Promotional Activities

In order to promote quality education, building confidence and broaden horizon of CMFT students, industrial visits to different key industries in Gujranwala & Lahore were made.



PRECISION SYSTEMS TRAINING CENTRE, QUETTA

Awards/ Honours

- A trainee of PSTC Quetta got 1st Position on Provincial Skill Competition organized by National Vocational & Technical Training Commission (NAVTTTC) at Quetta.

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Cast Metals & Foundry Technology Centre (CM&FT), Daska

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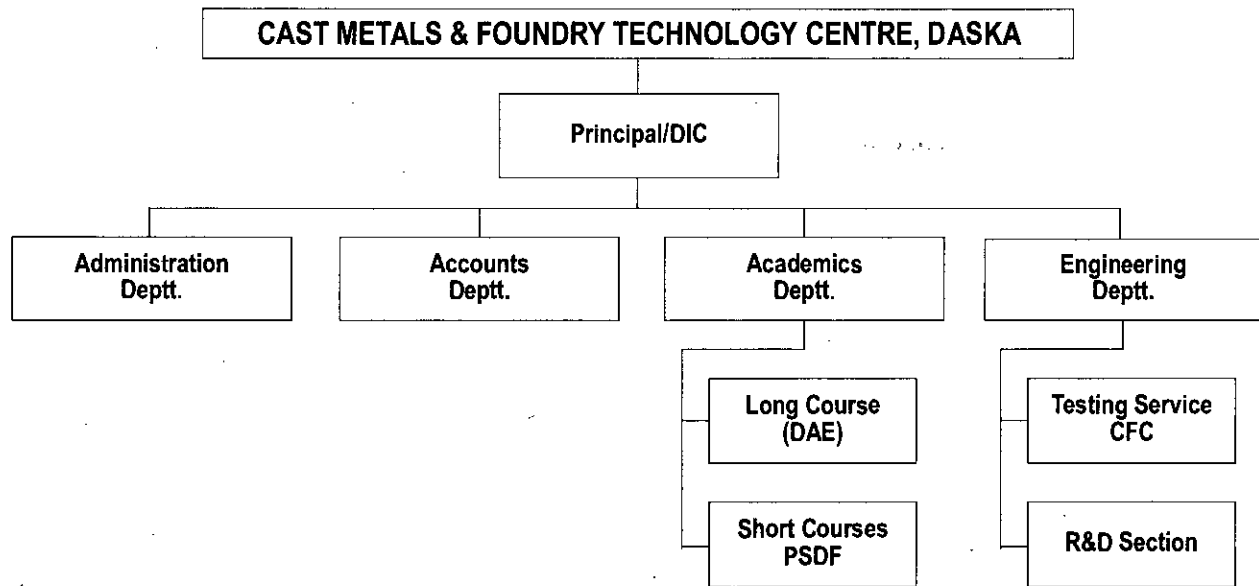
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Officer Incharge
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CAST METALS & FOUNDRY TECH. CENTRE, DASKA

Academic Activities

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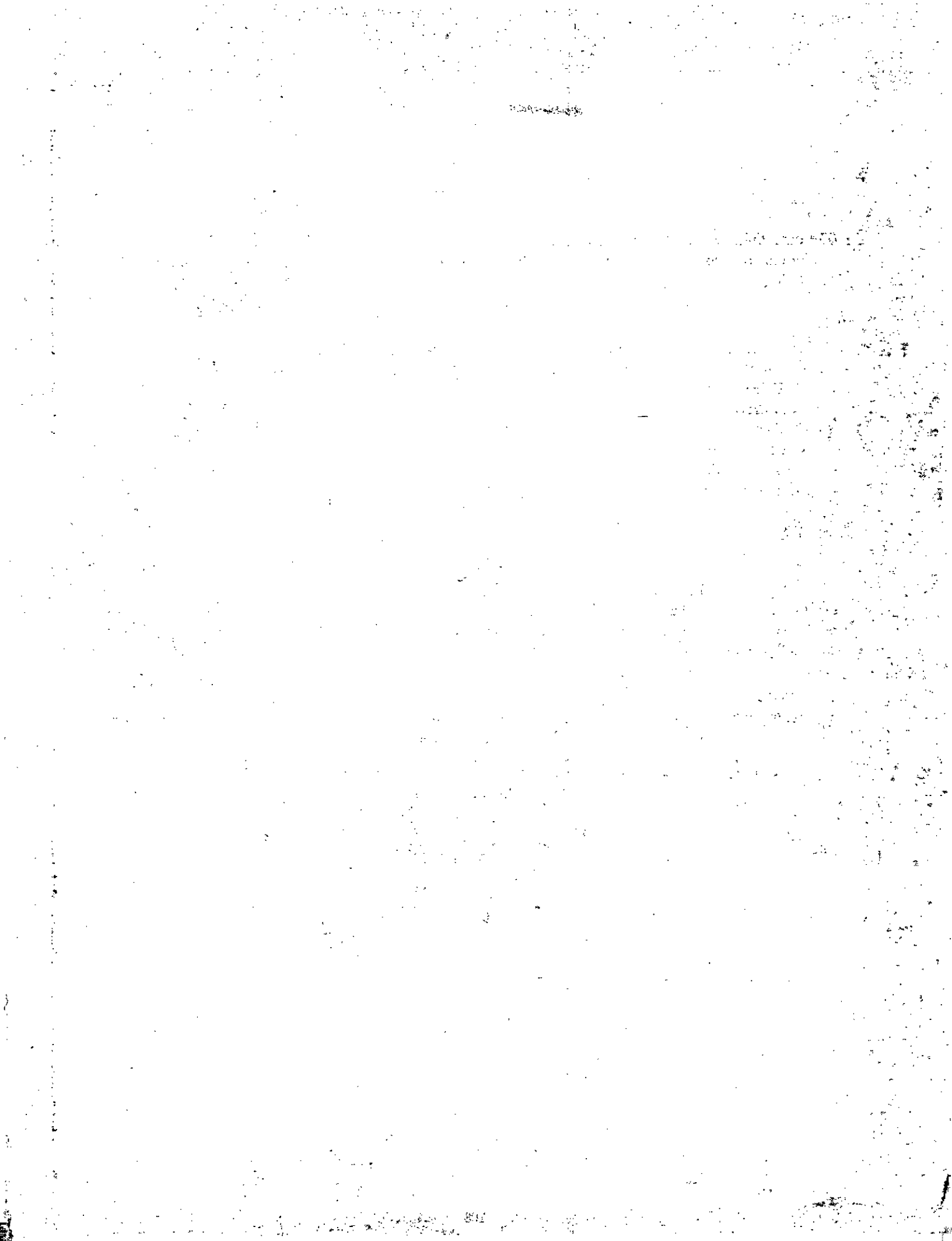
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SELF-RELIANCE THROUGH INNOVATION

