



PakAtom

Newsletter of the Pakistan Atomic Energy Commission

December 2017 - January 2018

Legendry Nuclear Scientist Dr. Ishfaq Ahmad Passes Away



Dr Ishfaq Ahmad, former chairman of the Pakistan Atomic Energy Commission (PAEC), was laid to rest with full national honour and gratitude on January 21, 2018.

Dr. Ishfaq Ahmad passed away on January 18, 2018. He was suffering from pneumonia and was receiving medical treatment for it.

President of Pakistan Mamnoon Hussain and Prime Minister of Pakistan Shahid Khaqan Abbasi, on behalf of the entire nation, have expressed deepest condolences on the passing away of eminent national scientist and former Chairman Pakistan Atomic Energy Commission (PAEC) Dr. Ishfaq Ahmad, N.I., H.I, S.I.

Dr. Ishfaq Ahmad played leading role in the achievement of Pakistan's nuclear capability and development of the country's nuclear programme. Chairman Joint Chiefs of Staff Committee General Zubair Mahmood Hayat, Chief of Army Staff General Qamar Javed Bajwa, Director General Strategic Plans Division Lt. Gen Sarfraz Sattar, Chairman Pakistan Atomic Energy Commission (PAEC), Mr. Muhammad Naeem and several prominent national figures have also sent condolence messages to the bereaved family on the sad demise of Dr. Ishfaq Ahmad. He was 87 and has left behind a wife and two sons.

As Chairman, Pakistan Atomic Energy Commission, Dr. Ahmad pioneered and led various important programmes in nuclear power, agriculture, health care, research and development, including the establishment of various cancer treatment centres in Pakistan. He played a key role in establishing Pakistan's civilian nuclear power plants at Chashma and Pakistan Nuclear Regulatory Authority (PNRA).

Dr. Ishfaq Ahmad has served as Chairman, Pakistan Atomic Energy Commission (PAEC) (1991-2001), Senior Member, PAEC (1988-1991), Member, PAEC (1976-1988), Director, Pakistan Institute of Nuclear Sciences and Technology (PINSTECH) (1971-1976) and Director, Atomic Energy Centre (AEC), Lahore (1969-1971).

Dr Ishfaq did his M.Sc from the Government College. Lahore and was also awarded the roll of honour. He did his

doctorate from the University of Montreal, Canada. He did his postdoctoral research at the prestigious Niels Bohr Institute at Sorbonne.

Dr Ishfaq received several prestigious awards for his outstanding contribution in the field of science and technology, including Nishan-i-Imtiaz (1998); Hilal-i-Imtiaz (1995); Sitara-i-Imtiaz (1989); Gold Medal, Pakistan Academy of Sciences (1998); Gold Medal, Institute of Leadership Management (1998); Gold Medal, Society of Engineering, Materials and Metallurgy, Karachi (1998); Gold Medal, Geological Society of Punjab (1998), etc.

Among his many accomplishments, Dr. Ishfaq created the National Centre for Physics on the pattern of the Abdus Salam International Center of Theoretical Physics. He also established Pakistan's only Centre for Science of Climate Change ie. Global Change Impact Studies Centre (GCISC). Under his leadership, PAEC upgraded human resource development centre, culminating in establishment of a degree-awarding university namely Pakistan Institute of Engineering and Applied Sciences (PIEAS).

He was Special Adviser to the Prime Minister on Strategic Programme from 2002-2008, with the status of a federal minister and Special Adviser to the Chief Executive of Pakistan from 2001 to 2002, with the status of a federal minister. Dr. Ishfaq Ahmad was instrumental in establishing cooperation between International Organization and Pakistan especially IAEA, CERN and ICTP. He remained member of IAEA body SAGTAG. He represented Pakistan in IAEA Board of Governors.



Chairman PAEC, Laying floral wreath on the grave of Dr. Ishfaq Ahmad

Chief Executive Punjab Agriculture Research Board visits NIBGE

Dr. Noor-Ul-Islam, Chief Executive, Punjab Agriculture Research Board visited NIBGE on invitation by Director NIBGE. The meeting was attended by all scientists of Agricultural Biotechnology Division, NIBGE. PARB has recently approved two research projects on control of pink bollworm and whitefly on cotton in Punjab and funds have been released to all research collaborators including NIBGE. He discussed damages caused by the two pests on cotton crop in the Punjab. Dr. Shahid Mansoor, Director NIBGE explained various strategies adopted by NIBGE to control whitefly and pink bollworm. The chief executive also emphasized the identification of natural products that can control these pests in short-term. PARB recently invited concept papers for funding of research to enhance agricultural productivity and rural economy in Punjab. A total of 18 concept papers were submitted by NIBGE to use state-of-art technologies to combat various issues faced by crops and livestock and enhance agricultural productivity. Dr. Zahid Mukhtar, Head Agricultural Biotechnology Division and colleagues presented and discussed the proposed

research projects. Dr. Noor-Ul-Islam appreciated the scientific culture, quality manpower and research facilities at NIBGE. He lauded the dedication and hard work of NIBGE scientists. After detailed discussion, it was decided that PARB will fund all these research projects in two phases. In the first phase ten projects short-listed by NIBGE will be funded by PARB in 2018. In the next phase the remaining projects will be funded by PARB. In this regard, Chief Executive suggested that a memorandum of understanding can be signed between PARB and PAEC to provide operational funds for research work in area of agriculture, being carried by NIBGE. This MoU will ensure that scientists continue their research work with full dedication. He also expressed his desire that PAEC provides equipment required for cutting edge research at NIBGE. Director NIBGE assures that PAEC gives high priority to research in agriculture and biotechnology for enhancing agriculture productivity and socio-economic development in the country.



Group photo of scientists of Agricultural Biotechnology Division NIBGE with Dr. Noor-Ul-Islam, Chief Executive, Punjab Agriculture Research Board

KINPOE Organizes Research Exhibition-2017

“Karachi Institute of Power Engineering (KINPOE) organized the MS Research Exhibition-2017 on the occasion of graduating ceremony of MS Batch-23 fellows.

A total of 66 fellows displayed their work through posters and hardware equipment. Salient features of the research work involve development of mobile robot, vision-based surveillance quadcopter, electrical parameter studies, simulations and analysis of CHASNUPP and K-2/K-3 plant systems, ageing analysis of KANUPP plant equipment.

Design studies and modifications, system stability and safety analysis related to various PAEC projects, were also exhibited by the students through posters.

The Chief Guest, Mr. Muhammad Tahir Ahmad, DG (Corporate) inaugurated the event. Mr. Muhammad Asif Rajput, Director (KINPOE) delivered the welcome address and presented the published Abstract Book to the Chief

Guest. The Chief Guest highlighted the importance of the R&D efforts for utilization by PAEC establishments. He emphasized that it is the need of the hour to expand the collaboration with PAEC plants and projects to truly benefit from the research efforts carried out at KINPOE.

Renowned professors from local engineering universities also attended the event and expressed their impressions about the impact and significance of the work carried out.”



DG (Corporate) inaugurating the event

Project Management Using PRIMAVERA Training Held at PIEAS

The four-day training on Project Management using PRIMAVERA-P6 software concluded on December 22, 2017. The closing ceremony was graced by Dr. Nasir Majid Mirza, Rector PIEAS, as the chief guest. Mr. Rehan Fazal, DG, from Directorate General Nuclear Power Projects (DGNPP), and Dr. Tariq Majeed, Head, Department of Nuclear Engineering (DNE), PIEAS, were also present at the occasion.

The resource persons of the training course were from DGNPP, PAEC. Mr. Ammar Haider, SE; and Mr. Abdullah Yousaf, SE, both from DGNPP were among prominent

trainers of the course. Dr. Amjad Farooq, PD, PIEAS, coordinated the training.

Thirty-Six (36) officers from various establishments of PAEC and some other organizations, attended the course. The participants lauded the efforts put-in by the DGNPP and PIEAS for organizing the course.

Dr. Nasir Majid Mirza, Rector, PIEAS, encouraged the participants and emphasized importance of management courses towards professional grooming of officers.



Participants of the Training Course on Project Management Using PRIMAVERA-P6, with the Chief Guest of the Opening Ceremony, Dr. Nasir Majid Mirza, Rector, PIEAS.

NCNDT Directorately Indigenously Develops ET Probes Manufacturing Facility & Provides Inspection Services to National Industry

The National Centre for Non-Destructive Testing (NCNDT), SES Directorate (NEW-1) continues to extend inspection services to PAEC, Strategic Organizations along with Public and Private Sectors of national importance. NCNDT is also striving hard for self-reliance in NDT activities. The Eddy Current Testing (ET) method is used extensively in Pre-Service Inspection (PSI) and In-Service Inspection (ISI) of Tubes of Heat Exchangers, Boilers and Condensers of various Industrial Plants. Eddy current probes used for inspection purpose are quite expensive if procured from international market. Moreover, the procurement process is time consuming and relatively hectic. Therefore, NCNDT aimed for developing indigenous Eddy Current probe manufacturing facility. Recently, NCNDT has productively supplied indigenously manufactured and validated ET probes to KANUPP and etc. NCNDT has received an overwhelming response from both clients and is hopeful to expand their facility so that product can be launched countrywide.

NCNDT is also providing inspection & testing services to national industries in specific areas besides PSI/ISI of Nuclear Power Plants (NPP's) and services to other strategic organizations. For this purpose, a team of NCNDT visited M/s DESCON Engineering Ltd Lahore to provide helium leak testing of heat exchangers requested by Pak Arab Refinery Limited (PARCO) to enhance its refining capacity. The inspection was performed as per international

code & standard ASME Section-V (Article-10). Two different leak testing techniques namely Bubble Leak Testing and Helium Mass Spectrometry were applied to evaluate leaks for the safe and reliable operation of Heat Exchangers. M/s DESCON Managements highly appreciates the efforts of NCNDT team for its quick response and performing inspection activities in a highly professional manner.



Helium Mass Spectrometry Testing of Heat Exchanger being done for M/s at DESCON Engineering Ltd Lahore

International Collaboration

Assignments of PAEC Experts Abroad

- ★ Dr. Muhammad Misbah UI Haq, SS, NIFA is undertaking assignment as cost free expert in Department of Nuclear Security and Applications, IAEA, for a period of one-year from 01 December, 2017 to 30 November, 2018.
- ★ Mr. Farhat Bashir, DCE, KANUPP, Karachi proceeded to Toronto, Canada for undertaking 06 months assignment as KANREP from 31-12-2017 to 30-06-2018.

Visit of IAEA Experts to Pakistan

- ★ Mr. Fuming Jiang (China), IAEA, Team Leader, Mr. Yury Martynenko (Russian), Mr. Denny (Russian Federation) and Mr. Marcos Antonio Do Amaral (Brazilian), carried out OSART Follow-up Mission at Chashma, C-1 site from 11-15 December, 2017.
- ★ Mr. Milorad Dusic (Slovenia) and Mr. Gheorghe Marius Chirea (Romania), IAEA Experts visited KANUPP, Karachi from 17-23 December, 2017 to conduct EM-148 Follow-up to review the KSFDS Project progress after the Initial Implementation phase status.

Visit of Foreigners to Pakistan

- ★ Prof. Dr. Naveed Ahmed Khan (UK) and Dr. Ruqiya Bano Siddiqui (UK) visited NIBGE from 11-26 December, 2017 to deliver drug discovery related lecture and to develop research linkages for future research.

- ★ Dr. Osman Mirza (Danish National), Associate Professor, University of Copenhagen is planned to visit NIBGE, Faisalabad from 26 December, 2017 to 09 January, 2018 to discuss ongoing collaborative research in the field of structural biology.
- ★ Mr. Matthias Edgar Zeoh, Managing Director and Dr. Gerd-J Beyer, Technical Expert visited PINSTECH, Islamabad during 1st week of January, 2018 for Technical discussion.
- ★ Dr. Muhammad Saif ur Raisheed and Dr. Zarqa Saif (Australian / Pakistani National) visited NIBGE from 22-30 January, 2018 to deliver health biotechnology related lecture and to develop research linkages for future research work.
- ★ Mr. Peter Robin Prozesky, Dr. Naoki Chigua, and Syed Nudrat Zulqarnain, members of WANO team visited PAEC HQ, Islamabad, Pakistan from 25-28 January, 2018 for a meeting with Chairman PAEC and Member (Power).

Hosting of Workshop

- ★ PIEAS in collaboration with IAEA conducted IAEA Training Course on "Understanding the Physics and Technology of Advanced PWRs using Basic Principle Simulators" from 22-26 January, 2018. Four members' Expert team consisting Mr. Mathew Memmott (USA), Mr. Ryan Christopher Schow (USA), Ms. Tatjana Jevremovic (USA) and Mr. Matthias KRAUSE (German), IAEA staff visited PIEAS, Islamabad for conducting this Training Course.

Inauguration of GINOR Cancer Hospital, Gilgit

The Ground Breaking of Atomic Energy Cancer Hospital (GINOR) was performed by the Chief Minister Gilgit Baltistan on 12-01-2018. Member (Engineering), Officiating Member (Science), Member CAC/Ex-Member Science, Director General (WASO), Director (Medical Science), Director GINOR, Director (Technical) Chairman Secretariat, Project Director (North) WASO, Focal Person GINOR and other Higher Officials of PAEC participated in the auspicious event. Cost of the project is Rs.2342.783 million. Construction of Main Hospital Buildings i.e OPD Block, Ward Block, Lab Block, LINAC Shielded Bunker, Under Ground and Over Head Tanks has been started. Completion of project is expected within 30 months.



Member Engineering inaugurating GINOR

PAEC Scientist awarded First Prize



Dr. Muhammad Aslam, Principal Scientist, Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad participated in 17th International Congress of Soil Science Society of Pakistan on March 13-15, 2018 at Faisalabad and presented a research paper entitled

"Locally developed NIAB soluble NPK fertilizer improves yield and quality of tomatoes under drip irrigation system". The paper was based on the findings of the studies conducted at University of Agriculture Faisalabad, Water Management Research Station Renala Khurd and Arid University Research Farm Koont under PARB Project No. 379. Among more than 200 posters presented at the congress, Dr. Muhammad Aslam was awarded 'First Prize' owing to the importance and quality of his research work.

PAEC Scientist got Best Research Paper Award



Dr. Imran Majeed completed PhD degree from QAU, Islamabad in Materials Chemistry on December 15, 2017 under HEC Indigenous Scholarship Programme. His research topic was "development of UV-visible light active photocatalysts for hydrogen production from renewables". Recently on 01-03-2018 he got best research

paper award for the year 2015/2016 from HEC. Presently he is working in ACL (Applied Chemistry Labs) Nilore, Islamabad as Junior Scientist.

4th Conference on Frontiers of Nanoscience and Nanotechnology held at PINSTECH

The Conference on Frontiers of Nanoscience and Nanotechnology is one of the most popular and successful events in the PINSTECH scientific calendar. The 4th edition of this Conference (CFNN2016) was organized by the Nanomaterials Research Group, Physics division at the Pakistan Institute of Nuclear Science and Technology (PINSTECH), Islamabad on December 12-13, 2017.

Dr. Nasir Majid Mirza, Rector Pakistan Institute of Engineering and Applied Sciences, chaired the opening ceremony and in his inaugural address described the importance of nanotechnology based future applications that in turn will profoundly impact our economy, environment and society. He stated that PINSTECH is always a key organizer and sponsor of various research activities for the advancement of front areas of science and technology. He also applauded the efforts of the organizing committee for providing a national platform to the scientists, engineers and researchers to share their research. Engr. Iqbal Hussain Khan, Director General PINSTECH, welcomed the participants and urged them to utilize this fantastic opportunity to build-up bridges and relationships for future collaborations in nanoscience and nanotechnology.

The conference was attended by more than 150 participants including eminent scientists, academicians and young researchers from universities and research organizations. In various specialized technical sessions, about thirty-three talks were delivered by the leading researchers, scientists

and contributing speakers. Plenary and Invited lectures of distinguished scientists were arranged covering the emerging areas of nanoscience and nanotechnology including Biomedicine & Drug Delivery, Functional Materials, Energy Harvesting & Storage, Magnetism & Spintronics, and Nanocomposites & Alloys. A poster session was also arranged to provide an opportunity to young researcher to display and discuss their work with senior researchers.

One of the main objectives of this conference was to provide a platform where young researchers could present their latest work and also interact with senior scientists. For this purpose, special slots for students in the technical program were provided. To encourage the young students and researchers in the field of Nanotechnology, competitions of Posters and Oral Presentations were held. Three winners from each category were awarded with certificates, shields and cash prizes. A Conference Dinner was also arranged at PINSTECH to provide an opportunity to the participants to intermingle with each other.

In concluding ceremony, honorable chief guest Engr. Iqbal Hussain Khan, Director General PINSTECH presented the merit certificates and prizes among the winners of different competitions. He emphasized that in this era of knowledge based economy, science & technology is pivotal for economic development in all sectors to achieve the security, prosperity and social cohesion.



Group photo of participants with DG PINSTECH and Rector PIEAS

Ph.D. Degree awarded to PAEC Scientists



Dr. Khadija Nafeesa, Junior Scientist, Applied Chemistry Laboratories (ACL), Islamabad has successfully completed her Ph.D in Organic Chemistry from Govt. College University, Lahore under the supervision of Dr. Aziz-ur-Rehman, Associate Professor, Dept. of Chemistry, GCU, Lahore. The title of her dissertation is

“Synthesis, Spectral Analysis and Biological Evaluation of Different 2,5-disubstituted-1,3,4-oxadiazole and 3,4,5-trisubstituted-1,2,4-triazole Derivatives Bearing Piperidine Scaffold”.



Dr. Mukhtar Ahmed, Principal Scientist, Directorate of Scientific Development has been awarded Ph.D. Degree in the field of Energetic Materials Engineering by the National University of Sciences and Technology (NUST), Pakistan. His dissertation title was “Characterization, Modeling and Performance Evaluation of a

Variant of Insensitive Munition”. He has published four research papers in well reputed international journals. His Ph.D. work may contribute significantly towards the development and implementation of Insensitive Munitions

First Theranostic Laboratory of Pakistan becomes functional at INMOL Cancer Hospital, Lahore

INMOL Cancer Hospital takes pride of announcing successful launching of most modern and state of the art Theranostic services (Gallium-68 generator) for cancer patients, being first such facility supported by IAEA in the country and in Asia. Theranostic Laboratory became operational on 1st November 2017 after successful commissioning of new equipment. At this moment Dr. Abubaker Shahid Director INMOL, Dr. Irfan Ullah Khan Chief Investigator and Project Incharge, Dr. Ahmed Qureshy, Dr. Muhammad Numair, Dr. Arzoo Fatima, Dr. Azra Parveen, Mr. Khalid Masood, Ms Afshan Ashfaq, Mr. Saqib Ijaz, Ms Nouroz Gul, Ms Rizwana Zahoor, Mr. Muhammad Khalid, Mr. Ghulam Hussain and other doctors and scientists of INMOL were present.

The commissioning of Automatic Synthesizer and Gallium-68 generator is a landmark achievement of INMOL that became possible under supervision of Dr. Abubaker Shahid, Director INMOL and Dr. Irfan Ullah Khan, Chief Project Investigator, funded by International Atomic Energy Agency (IAEA). This project was awarded to INMOL by IAEA under TC Cycle 2016-17. During this period, IAEA provided all equipment related to this project and also trained 10 doctors and scientists from INMOL through fellowships and scientific visits in various advance hospitals of United Kingdom.

After the installation of this setup at INMOL, some patients successfully underwent diagnostic scans for neuroendocrine and prostate cancers using 68Ga-DOTA-NOC and 68Ga-DOTA-PSMA-11 ligands, respectively, under the supervision of Dr. Irfan Ullah and Dr. Muhammad Numair. In future, patients will be provided diagnostic



Team of Doctors and Scientists of INMOL who participated in project on "Theranostics"



Group photo of Doctors and Scientists of INMOL in Theranostics Lab.

services with Gallium-68 imaging and treatment using beta (Leutetium-177, Yttrium-90) and alpha emitter (Actinium-225 and Bismuth-213) radionuclide's. Theranostic lab at INMOL is a landmark achievement of Pakistan Atomic Energy Commission and Institute of Nuclear medicine and Oncology (INMOL), Lahore that opened a new era in diagnosis and treatment of cancer patients. "We, under the umbrella of IAEA are determined to maintain high quality of Research and Development projects at INMOL in future as well", Dr. Irfan said at this occasion. He further said that this theranostic setup will bring a revolution in diagnosis and treatment of cancer patients, because it has the ability to detect and treat cancer with same type of biomolecules. Moreover, research and development in this novel area is rapidly grooming and we endorse that in next few years, INMOL will be able to apply many novel diagnostic and therapeutic ligands, by this machine.

By highlighting the significance of high class services performed by this Institute, Director INMOL explained that INMOL is one of the best Cancer Institute's among Pakistan and Asia. We provide high quality diagnostic and treatment facilities to the patients. He thanked Dr. Irfan Ullah Khan, his team and IAEA who provided this state of the art setup. He also thanked and acknowledged efforts of Mr. Muhammad Naeem, Chairmen Pakistan Atomic Energy Commission, Dr. S.M. Javed Akhtar, Member Science (PAEC) and Dr. Muhammad Sohaib (Director Medical Science) for their generous support throughout this project. Chairman PAEC had inaugurated this theranostic lab at INMOL on 8th May 2017 on occasion of opening ceremony of a Regional Training Course hosted by IAEA at INMOL.

Consultancy Services by DQA

The Directorate of Quality Assurance (DQA) is providing consultancy Services to PAEC establishments which are keen to adopt the Quality Management System for continual improvement in their processes and activities. It is mandatory for PAEC Establishments which are Certified on ISO 9001:2008 Standard to transform their Quality Management Systems on revised Standard i.e. ISO 9001:2015 before cutoff date of Sept. 2018. In this context continuous liaison is made with PAEC Establishments, i.e. GINUM, NORI, INMOL, NIFA, NIAB, NIBGE, CENUM, IPD, HPD & CAFD, BINO, PINUM etc. to modify their necessary documents which are required by the ISO 9001:2015

standard to get benefits of the changes in new version in true letter and spirit.

Recently, HMC-3 has been successfully certified on ISO 9001:2015 Quality Management Systems by CeSP. Similarly, ICCC has been audited as per ISO 9001:2015 Standard and Certificate of ISO 9001:2015 will be awarded to ICCC very soon by CeSP. This is only possible with the determined efforts of HMC-3 & ICCC Management and dedication of all their employees with the active support of the DQA for developing, implementing and maintaining of QMS at HMC-3 & ICCC.

Promotion of Quality Culture among PAEC Establishments

DQA is determined to promote Quality Culture in PAEC and striving to develop the approach in all employees that "everyone is responsible for quality in his/her domain". A quality focused culture creates a healthy work environment and leads to satisfy all interested parties, along with compliance of fundamental safety objective.

In order to cope with changing needs of Quality and to upgrade the knowledge of PAEC professionals, the DQA has been conducting courses on "Implementation of ISO 9001:2015 QMS", "Quality Assurance Level-1" and "QA Course for staff". The purpose of these courses is to train PAEC manpower to develop, implement, maintain and improve the requisite Management System effectively. In the training course "Implementation of ISO 9001:2015 QMS" the changes brought by ISO in 2015 version of the Standard have been addressed in detail for their understanding and implementation. While "QA Level-1" course provides guidelines for development and implementation of Management System in line with requirements of PNRA & IAEA. QA Course for Staff is designed to strengthen the QA concepts at working level for effective implementation of QMS.

14th and 15th courses on "QA Level-1" were conducted at Karachi and Islamabad for KANUPP, K-2/K-3, etc. employees in October, 2017 respectively. 19th & 20th courses on "Implementation of ISO 9001:2015 QMS" were conducted at Karachi for KINPOE, KANUPP, NEW-2, KIRAN and AEMCK employees in October, 2017 whilst 21st

& 22nd courses were conducted at CENAR and SINOR Auditorium for CENAR and SINOR employees in November & December, 2017 respectively. 1st & 2nd courses on "QA course for staff" were conducted at DQA Training Hall for DQA, WASO & DGNPF staff members in November and December, 2017 respectively.

Feedback from participants on the conduct of above courses was very positive and encouraging for the DQA. Participants were determined to play their role in strengthening the QMS within their organization. More such courses have been planned to be conducted by DQA to train maximum professionals of PAEC.



Certificate presented by DG DQA to course participant

PIEAS faculty wins PSF-NSFC joint research project

PIEAS faculty has won Pakistan Science Foundation (PSF) and National Natural Science Foundation of China (NSFC) research project titled, "Two-Dimensional Transition Metal Dichalcogenide Based Photodectors and Quantum Effect Devices". The project was submitted by Prof. Dr. Muhammad Aftab Rafiq, Department of Metallurgy and Materials Engineering, and Prof. Dr. Xiulai Xu, from Institute of Physics, Chinese Academy of Sciences, Beijing, China. A grant of USD 335,950 approx. has been awarded to this project.

PSF-NSFC received 131 proposals this year and only 12 proposals were recommended for funding after detailed review.

In this project won by PIEAS, two-dimensional transition metal dichalcogenide (2DTMDC) materials will be



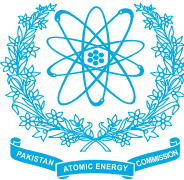
Dr. Muhammad Aftab Rafique working in Nano-Device lab



Students working of various technical equipment in the laboratory

synthesized and characterized. The 2DTMDCs are graphene like material but with the advantage that these materials have bandgap. The project involves standard micro/nanofabrication techniques which will be used to fabricate photodectors, sensors and quantum effect devices based on these materials.

Work is already in progress in Micro and Nano Devices Group, Department of Metallurgy and Materials Engineering, PIEAS.



43rd INTERNATIONAL NATHIAGALI SUMMER COLLEGE ON PHYSICS & CONTEMPORARY NEEDS, NATHIAGALI, PAKISTAN (16th- 28 July 2018)



PATRON-IN-CHIEF Mr. Muhammad Naeem
CHAIRMAN ORGANIZING COMMITTEE Mr. Iqbal Hussain Khan
EXECUTIVE SECRETARY Dr. M. Javed Akhtar
SCIENTIFIC SECRETARY Dr. Manzoor Ikram
CO-SCIENTIFIC SECRETARY Dr. Ashfaq Ahmad
EXPECTED FACULTY:
ACTIVITY - I: (16th-21st July 2018) Applications of Synchrotron Light Sources Prof. Richard Catlow, FRS, UK Prof. Samar Hasnain, UK Dr. Paul Dumas, France Dr. Zahid Hussain, USA Dr. Josef Hormes, Canada Dr. Giorgio Paolucci, Jordan Dr. Giuliana Aquilanti, Italy Dr. Robert Rambo, UK
ACTIVITY - II: (16th-21st July 2018) SMRs & Innovative Hybrid Energy Systems Dr. Xing L. Yan, Japan Dr. Ibrahim Khamis, Austria Dr. Rizwan Uddin, USA Dr. M. Hadid Subki, Austria Dr. Francisco D'Auria, Italy Dr. Rayman Sollychin, China
ACTIVITY - III: (23rd-28th July 2018) Pulsed Power Technology & Applied Electromagnetics Dr. Zhanliang Wang, China Dr. Ying-Hui Liu, China Prof. Huang Hua, China Dr. Ge Yi, China Prof. Mirzahan Hizal, Turkey Dr. Song Falun, China
ACTIVITY - IV: (23rd-28th July 2018) Applications of Medical Physics & Biophotonics Prof. Habib Zaidi, Switzerland Dr. Rao Fawad Khan, USA Dr. Marco Petasecca, Australia Mr. Scot Dube, USA Mr. Charles Shang, USA Prof. Lothar Lilge, Canada Prof. Stephen G. Bown, UK Dr. Silke Krol, Italy Dr. Thomas Bortfeld, USA Dr. Naomi Matsuura, Canada
ACTIVITY - V: (23rd-28th July 2018) Pre-Disposal & Disposal of Radioactive Waste & Spent Fuel Management Ms. Li Tingjun, China Dr. Nicolas Solente, France Prof. Ryu Ho Jin, Korea Prof. Kim Yonghee, Korea Mr. Rosario Millet Romero-Grion, Spain Mr. Paul Standing, Austria Mr. Roberto Haddad, Argentina Dr. Andrey Vladimirovich Guskov, Austria Dr. Gerald Nieder-Westermann, Germany Prof. Willie Meyer, Austria Mr. Shen Lihua, China

International Nathiagali Summer Colleges (INSC) on Physics and Contemporary Needs have been organized every year since 1976. The idea of holding these Colleges came from the distinguished Nobel Laureate, Professor Abdus Salam who emphasized the vital need of communication, as well as for transferring and sharing scientific knowledge among the scientific community. The primary aim of the College is to break the isolation of the scientists of the developing countries by enabling them to interact with an international faculty. INSC provides an ideal interactive forum for open discussion of recent advancement in the cutting edge research among established scientists and early-career researchers in their respective fields; thereby instigating new proposals and ideas. Over the years, INSC has invited about 900 eminent scientists and keynote speakers from advanced countries including 07 Nobel Laureates from leading universities and research organizations. An interdisciplinary selection of speakers with more than 1100 foreign scientists from over 75 developing countries and about 9000 scientists from Pakistani R&D institutes and universities has brought together a diversified legion of academic scholars, planners and industry professionals; thus catalyzing new efforts of worldwide collaborations and networking with unrestrained scientific discussions amongst peers. The scientific activities of INSC aim at the broad coverage of topics at the frontiers of knowledge in Physics and allied sciences. Every year four to six subjects of current interest and their applications with special reference to needs of the developing countries are highlighted. This year the 43 college is covering following topics:

- ACTIVITY - I: (16-21 July 2018)**
Applications of Synchrotron Light Sources
- ACTIVITY - II: (16-21 July 2018)**
SMRs & Innovative Hybrid Energy Systems
- ACTIVITY - III: (23rd-28th July 2018)**
Pulsed Power Technology & Applied Electromagnetics
- ACTIVITY - IV: (23rd-28th July 2018)**
Applications of Medical Physics & Biophotonics
- ACTIVITY - V: (23rd-28th July 2018)**
Pre-Disposal & Disposal of Radioactive Waste & Spent Fuel Management

SEMINAR/ POSTER PRESENTATION
Seminars or poster presentation will provide edge to candidates in selection

WORKING LANGUAGE
The working language of the college is English

VENUE
College will be held at National Center for Physics (NCP), Islamabad

FUNDING SUPPORT:
Boarding and lodging arrangements are the responsibility of the organizers. However, modest funds will be available to cover half of the travel expenses of some participants from the developing countries.

REGISTRATION:
Requests for participation should be made through INSC online application system. In case of student, form must also be signed by the Supervisor/HoD. The deadline for application is 31st March 2018. The selected candidates will be informed by 15th June 2018.

SPONSORS:
Regular sponsors of the College includes, Pakistan Atomic Energy Commission, Abdus Salam International Centre for Theoretical Physics (ASICTP), US National Science Foundation, Chinese Academy of Sciences, The European Organization for Nuclear Research (CERN) and National Centre for Physics.



FOR FURTHER INFORMATION, PLEASE CONTACT

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DEADLINE
for receipt of participation requests
31st March 2018
For Application to Participate please visit the following weblink.
[Http://www.paec.gov.pk/insc](http://www.paec.gov.pk/insc)
<http://www.ncp.edu.pk/insc>