



PakAtom

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Pakistan signs Safeguards Agreement of K2 & K3 with IAEA



Mr. Yukiya Amano, Director General (IAEA) and Ms. Ayesha Riyaz, Ambassador of Pakistan during the signing ceremony of K2 & K3 Safeguard Agreement

Pakistan is an energy-deficient country facing acute power shortage which is seriously hampering national development. The Government is exploring all viable options of power production. In order to meet its increasing energy needs and to support sustained economic growth as well as industrial development in the years to come, nuclear power generation is regarded as an essential component in the energy mix. At present, four Nuclear Power Plants (K-1, C-1, C-2 and C-3) are in operation. The next one named as C-4 at Chashma will be connected to the grid in a few months time. The construction of two bigger units (K-2 & K-3) of 1100 MW each near Karachi are under constructions which will add a sizeable share of electricity to the national grid.

Recently, Pakistan has entered into an agreement with the International Atomic Energy Agency (IAEA) for the application of safeguards at K-2 & K-3. The draft of the Agreement was approved during the IAEA Board of Governors (BoG) Meeting in March 2017. A formal ceremony of signing the Agreement took place at the office of the Mr. Yukiya Amano, Director General (IAEA) on 3rd May, 2017. Ms. Ayesha Riyaz, Ambassador of Pakistan in Austria signed the document on behalf of the Governor who

is Chairman PAEC. Mr. Waqar Ahmad, Minister (Technical) and Mr. Husham Ahmad, 2nd Secretary at Permanent Mission of Pakistan (Vienna) were also present at the occasion.

PAEC greatly values the Agency's statutory role in implementing safeguards in its Member States. All of Pakistan's civil nuclear reactors are under IAEA safeguards without any exception. Pakistan fully complies with its obligations under international agreements and remains committed to continuing and expanding cooperation with the Agency.

It is worth mentioning that due to specific environment in the region and national security concerns, Pakistan has Special Safeguards Agreements with the Agency. The document signed with IAEA is based on the Agency's model statutory agreement which is facility specific. The current Safeguards Agreement is in line with the agreements for its previous units. The generous assistance of IAEA especially the Safeguards Department as well as the Office of Legal Affairs (OLA) are deeply acknowledged in formalizing this agreement.

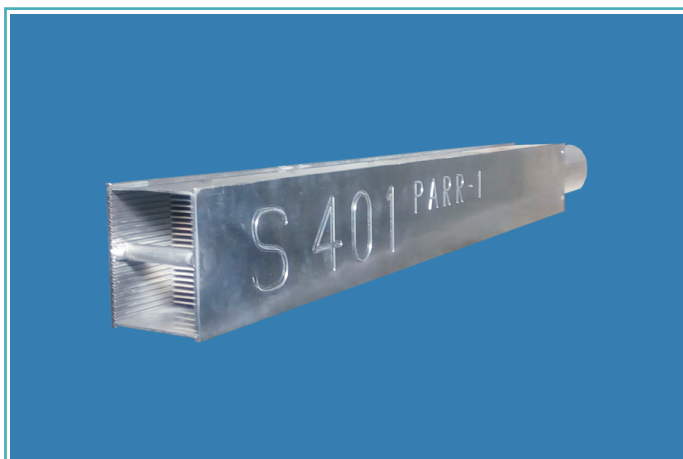
First Indigenously Developed LEU Fuel Element Loaded in PARR-1 Core

The first indigenous standard fuel element (S401) was loaded in PARR-1 core by the Chairman PAEC on May 30, 2017. This fuel element has been fabricated at LEU Fuel Fabrication Project, PINSTECH with substantial support from Member (Fuel Cycle) and Member (Engineering) set-ups. A brief ceremony was held at PINSTECH with Chairman PAEC as chief guest. Member (Science), Member (Engineering), Acting Member (Fuel Cycle), Member (Executive) PNRA, senior officers of PAEC and the team of PAEC scientists & engineers involved in the development of LEU fuel for PARR-1, attended the ceremony.

Addressing the participants, Chairman PAEC highlighted the importance of newly developed fuel and termed it a significant milestone towards the self reliance achieved by PAEC in the domain of nuclear fuel fabrication. He appreciated the efforts of all scientists, engineers, technical and support staff for their contributions in achieving this landmark success. He emphasized the need to keep strict controls to ensure the quality of the product to meet stringent safety standards of nuclear fuel. He also advised to continue R&D for the development of advanced fuels for future reactors. Earlier, Director General PINSTECH presented welcome address and Project Director LEU Fuel Fabrication presented an overview of development of first indigenous LEU fuel element.

Later, presenting vote of thanks, Dr. S. M. Javed Akhtar, Member (Science) PAEC thanked Chairman PAEC for his continuous support and guidance for realizing the objective of the project. He also thanked the project team and all those who contributed to make this project a success. At the end, Chairman PAEC himself started the fuel loading process by putting the fuel element in H-rack and witnessed the subsequent activities for loading of fuel element in reactor core. Chairman PAEC and all the participants signed the memorial poster of the first indigenously developed LEU fuel element.

Pakistan Research Reactor-1 (PARR-1), the first nuclear reactor in Pakistan, became critical on 21st December 1965



First indigenously developed Standard LEU Fuel Element (S-401) for Pakistan Research Reactor-1.

and is running in 52nd year of its safe operational life. PARR-1 has contributed a lot in R&D activities related to the projects of national importance, training of manpower and continuous production of radioisotopes for medical and industrial applications. Initially, highly enriched uranium was used as fuel which had an enrichment of ~ 93%. This fuel was supplied by USA.

In 1991, the fuel of PARR-1 was converted to low enriched uranium (LEU) fuel having an enrichment of less than 20%. At the same time, the reactor power was upgraded from 5 MW to 10 MW. This conversion from HEU to LEU and power up-gradation was entirely an indigenous effort barring fuel which was imported from China.

Continuing this journey of indigenization, Chairman PAEC advised PINSTECH to start R&D for fabrication of LEU fuel for PARR-1. On successful completion of R&D, LEU Fuel Fabrication facility was established at PINSTECH in November 2013. Engineers, Scientists and technical staff of the project and relevant facilities of PAEC worked hard during fabrication and qualification of fuel plates for the first fuel element.

Directorate of Quality Assurance, Directorate of Safety and Peer Review Committee provided valuable support and technical guidance for establishment of Quality Management System for the project. The Quality Control Committee provided valuable guidelines and oversight to deliver quality product

With the present requirement of reactor operation, 04 such fuel elements are required every year. This demand may increase with the increase in reactor operation time. The LEU fuel fabrication facility at PINSTECH will meet this requirement. Proposal for the construction of new research reactor (PARR-3) is in pipeline. The capability developed for local production of this fuel will not only save foreign exchange but will also help in realization of PARR-3. The newly loaded fuel element is performing well as the reactor has completed two cycles of full power operation without any problem.



Chairman PAEC loading the fuel element in the H-Rack for Sending it in the core of PARR-1

Chairman PAEC visits Jordan to attend opening ceremony of SESAME

Pakistan is one of the founding members of SESAME since its inception in 2003. The Chairman along with Member (Science) & Mr. Ghulam Jilani Butt, Director visited Amman, Jordan from 15 to 17 May 2017 to attend 30th SESAME Council Meeting and the opening ceremony of SESAME. SESAME was inaugurated by His Majesty King of Jordan. The ceremony was held on the site of SESAME. The Chairman delivered speech after inauguration along with other delegates. A visit of synchrotron machine was also arranged. The Ambassador of Pakistan to Jordan also attended the inaugural function. In the SESAME Council, nomination of Mr. Najibullah Khah, Ex- Member (Finance)

PAEC was approved as Chair of SESAME Finance Committee. New Logo of SESAME was also approved.



Heads of Member states of SESAME with His Majesty King Abdullah-II & Princess Sumaya Bint El Hassan

Workshop on Monte Carlo Simulations-Applications in Science and Technology at PINSTECH, Islamabad

The “Workshop on Monte Carlo Simulations-Applications in Science and Technology” was organized by High Energy Physics Group, Physics Division, Directorate of Science at Pakistan Institute of Nuclear Science and Technology (PINSTECH), Islamabad from May 15-17, 2017. The theme of workshop was to impart knowledge regarding Monte Carlo simulations-applications in different areas of science and technology particularly in high energy physics among scientists and engineers working in different departments of PAEC.

The honourable Member Systems, Pakistan Atomic Energy Commission, Dr. Raja Ali Raza Anwar, S.I., was the chief guest of inaugural ceremony held on 15th May 2017 at PINSTECH. In his inaugural address he described the importance of Monte Carlo simulations using Geant4 and FLUKA. He emphasized the need for collaboration among various departments of PAEC. He appreciated the efforts of organizers for providing a national platform to the scientists, engineers and researchers to share their research experience of simulations. He also appreciated the CERN & ELI-NP speakers Dr. Andreas Morsch and Dr. Sohichiroh Aogaki as invited speakers and presented them the souvenir shields as token of remembrance. DG PINSTECH Engr. Iqbal Hussain Khan in his welcome address motivated the participants to get maximum benefits from this workshop

and to utilize this opportunity to increase the interactions with different departments of PAEC.

Sixty five participants from different R & D departments of PAEC actively participated in the said workshop through the use of two well-known Monte Carlo codes, Geant4 and FLUKA. The technical session covered the excellent informative talks on Geant4 and FLUKA delivered by the two invited speakers and by six local speakers from PINSTECH, PIEAS and COMSATS. The hand on session on FLUKA was very interactive and informative and participants learnt much out of it.

In the concluding ceremony, the chief guest, Director General PINSTECH, Engineer Iqbal Hussain Khan, covered different aspects of the workshop and emphasised on collaborations, for the positive outcomes of this activity. Director Science PINSTECH, Dr. Sohaila Rehman, presented the summary of the workshop and express gratitude to all the speakers, participants, and the organizers for conducting a successful event. On behalf of the participants, Ms. Faiza Aziz from NIBGE and Dr. Saeed-ur-Rehman from PIEAS, given their views about workshop and appreciated the theme of the workshop and the efforts of organisers towards promoting the use of Monte Carlo simulations-applications in Science and Technology.



Member Systems (PAEC), Dr. Raja Ali Raza Anwar addressing the participants of the workshop

International Collaboration

Assignments of PAEC Experts Abroad

- ★ Dr. Ishtiaq Hussain Bokhari, Director (IA)/ DCE, PAEC HQ Participated in 39th NRM in Chittagong, Bangladesh from 01-07 April, 2017
- ★ Mr. Muhammad Yasin Tabish, DCE, CNPGs participated in 3rd Meeting of IGALL Phase-3 working group-I on Mechanical Components held at Budapest, Hungary from 03-07 April, 2017.
- ★ Dr. Ansar Parvez, Former Chairman, PAEC participated in the Meeting of International Nuclear Safety Group (INSAG) at IAEA, Vienna (Austria) from 03-04 May, 2017.
- ★ Mr. Hamid Mahmood, Senior Director, DNPES, PAEC, Islamabad undertook expert assignment for IAEA Safety Review Mission to Uganda from 15-19 May, 2017.
- ★ Mr. Waseem Uddin Farooqi, DCE, DENPEP undertook expert assignment in Meeting of the new Technical Working Group on Nuclear Power Plant Instrumentation and Control (TWG-NPPIC) at IAEA HQ, Vienna (Austria) from 24-26 May, 2017.
- ★ Dr. Imtiaz Ahmed, Director General (IA & Training) and Dr. Ishtiaq Hussain Bokhari, Director (International Affairs), PAEC undertook assignment in the Regional Meeting of IAEA TC National Liaison Officers (NLOs) and National Representatives (NRs) at IAEA HQ. Vienna (Austria) from 29 May-02 June, 2017.

Visit of Foreigners to Pakistan

- ★ Mr. Graham Peter Finn, Technical Support Expert, WANO London Office visited PAEC HQ and CNPGS, Chashma from 24 April to 04 May, 2017.
- ★ The four (04) members Team visited C-2 Chashma, Pakistan from 24-28 April, 2017 for WANO-TC Technical Support Mission (TSM) on "Improvement in Fire Protection Program, Practices, Procedures and Hazard Analysis, Mr. Hak Jin Kim, Team Leader (Korea), Mr. Serge Jean-Paul Tabellion, Reviewer (France), Mr. Marrant Eric Philippe (French) and Syed Nudrat Zulqarnain, Coordinator (PAEC Liaison Engineer at WANO-TC, Pakistan)
- ★ The two (02) Foreigners visited INMOL and KIRAN w.e.f 17-18 April, 2017 (Tentatively for two days) at each to discuss New Generation Products like Gallium 68, Lu 177, Rhenium etc of ITG, Germany, Mr. Christopher Florian Antony Morin (Deutsch) and Mr. Jakub Simecek (Czech Republic)
- ★ The six (06) members Team visited C-3, Chashma,

Pakistan from 22-26 May, 2017 for WANO-TC Technical Support Missions (TSM) on "OE Caravan", Mr. Hak Jin Kim, Site Representative Rep. of Korea, Mr. Hyunseok Song, Team Leader Rep. of Korea, Mr. Tsutomu Takahashi, Expert Japan, Mr. Yuzuru Yoshioka, Expert Japan, Mr. Francois Roger Chapelier French and Mr. Muhammad Asghar Khan Pakistan.

- ★ The Seven (07) members team visited C-3 / C-4, Chashma, Pakistan from 21 - 27 May, 2017 for C-4 Pre-Startup Peer Review (PSUR) Return, Mr. Jean Michel Marcel Laverdure, Team Leader (French), Mr. John Per Goran Larsson (Swedish), Mr. Randall Morgan Crane (USA), Mr. Jackie Banks (British), Mr. Xavier Francois Gerard Galmiche (French), Mr. Tingkui Wang (China) and Mr. Benoit Raymond Humbert (French).

Appointments Abroad

- ★ Mr. Nadeem Arshad, DCE, C-4 has been appointed to work as Programme Manager at WANO office, Hong Kong for 02 years started by the end of March, 2017
- ★ Dr. Arshad Mahmood, Deputy Chief Scientist, Directorate of Safety (DOS) has been posted to Embassy of Pakistan in Beijing, China to work as Minister (Scientist Affairs) w.e.f 10 April, 2017.
- ★ Mr. Amer Manzoor, Deputy Chief Engineer Engineering Office, Islamabad has been posted to Embassy of Pakistan in Vienna, Austria to work as Minister (Technical) for 03 years w.e.f 12 May, 2017.

Hosting of National Training Course (NTC)

- ★ Ms. Emerita Andres Barrenechea (Philippine), Department of Nuclear Medicine and Research; Veterans Memorial Medical Center, Quezon City, Philippines, Mr. John Zaknun (Austria) IAEA Staff, Vienna International Centre, Vienna, Austria, Mr. Qaisar Hussain Siraj, Farwania Hospital, Kuwait and Mr. Sobhan Vinjamuri, Department of Nuclear Medicine, Royal Liverpool and Broadgreen University Hospitals, UK (04 experts) and 19 Foreign participants attended Regional Training Courses on Hybrid Imaging and Therapeutic Nuclear Medicine Technologies and its Applications in Thyroid Conditions including Liver and Prostate Cancer Theranostics and Peptide Receptor Radionuclide Therapy from 08-12 May, 2017 at INMOL, Lahore and from 15-19 May, 2017 at PINUM, Faisalabad under Project RAS/0/073 Supporting Human Resource Development and Nuclear Technology.

SSDL Up-gradation, Achievements and Performance during 2016

Secondary Standard Dosimetry Laboratory (SSDL) PINSTECH is an ISO 9001:2008 certified and standard laboratory in the country for the provision of standardization to the radiation therapy, radiation beam output measurements of cancer treatment units, radiation protection, diagnostic x-ray dosimetry systems and low level activity measuring systems. It is a national calibration laboratory whose dosimetry measurements are traceable to BIPM through IAEA. This standard laboratory has gone through up-gradation process during 2016 to cope with the

increasing demands of the country in the fields of nuclear power, health, agriculture and industry.

The installation and commissioning of radiation protection calibrator was done with two Cs-137 sources (activities: 43Ci & 10Ci). This calibrator is the second of its kind in SSDL and now both the calibrators are being utilized for the calibration of countrywide radiation protection survey instruments. Secondly the installation and commissioning of therapy level calibrator with Co-60 source having 7kCi

activity at the time of installation. It has been purchased through IAEA TC Project PAK/9037. This therapy level Co-60 calibrator is the third of its series which has been installed since the inception of SSDL in 1981.

Previous two therapy level calibrators have been dismantled and stored in PINSTECH radioactive waste facility. Regulatory requirements such as NOCs from PNRA and disposed off have been completed accordingly. An additional lead shielding door of 2.1cm thick which was recommended by the foreign supplier has been fabricated and installed by the General Services Division (GSD)-PINSTECH for the first time. This door is of about 800kg weight and Lead sheets were sandwiched within two MS sheets of 5mm thick each. Third up-gradation is the addition of eight flat surface contamination beta radiation sources of nuclides having various geometries in kBq activities ranges.

Further, the total available alpha and beta radiation flat surface contamination sources in SSDL are now twenty. There are five beta and two alpha nuclides of flat surface contamination sources. All these additions have enhanced the scope and workability to deal with the variety of radiation measuring instruments and dosimetry systems. Fourth up-gradation is the calibration of diagnostic x-ray dosimetry systems which have been provided to the radiotherapy hospitals for the first time. Further the low level radioactivity measurement service has been provided to the Molybdenum Production Facility (MPF) facility and to the dose calibrators of countrywide radiotherapy hospitals. The major achievements of SSDL-HPD are the accuracy and reproducibility in measurements which are being attained through rigorous quality control and quality assurance programs. All such measurement systems are being quality audited by the regulatory and safety bodies in the country. To harmonize with the international dosimetry measurement system, SSDL has got standardized two reference therapy level and one protection level dosimetry systems from the IAEA dosimetry laboratory, Siebersdorf, Vienna. This is sixth time that the reference dosimetry systems have been got calibrated from the international dosimetry systems. During the span of standardization from 1981 to 2016, the deviation among all the calibration

coefficients remained within -0.2 to +0.4% which shows excellent maintainability and reproducibility of response of reference dosimetry systems by the SSDL-HPD.

Further in this series the external quality audits organized by the IAEA which are initially biennial and after 1993 on annual basis and the SSDL-HPD is participating since 1985 in these TLD postal dose intercomparison exercises. There is no single outlier during this period where the limits which were initially 4.0% and after 1993 is $\pm 3.5\%$ set by the agency. This shows excellent performance in accuracy and reproducibility of calibration measurements since initial participation for the better dose assessment of annually hundred-thousand cancer patients and the radiation workers in the country.

With the increase of calibration facilities during the year 2016, the performance, utilization and availability have also been enhanced by over 50% than the last year. The potential users of SSDL calibration facilities are the nuclear power and health sectors, which are growing very fast in the country. At present there are 30 cancer treatment hospitals working under PAEC, defense and civil administrations, which were only seven at the time of SSDL inception in 1981.



Absorbed dose rate calibration set-up in front of newly installed Co-60 therapy level calibrator

CERN has Awarded Various Contracts to Pakistan

After Pakistan became Associate Member of CERN in 31st July 2017, the interaction with different department of has increased. CERN has awarded various contracts to Pakistan. One of them is renovation of East area

Quadrupole magnets. A team of three technicians from HMC-3 have been working for the refurbishment of the magnets. First Two Quadrupole Magnets have been successfully renovated up to the satisfaction of CERN.



First two magnets disassembled and then assembled successfully after renovation at CERN

Establishment of Centre for Applied Mathematical Sciences at PIEAS on the cards

Nation's scientific and technological development is our top priority, and we see leading role of Pakistan Institute of Engineering and Applied Sciences (PIEAS) in these areas. These views were shared by Dr. Athar Osama, Member (Science and Technology) of the Planning Commission of Pakistan on Wednesday, May 24, 2017, while he visited PIEAS and attended a meeting regarding proposal for establishment of Centre for Applied Mathematical Sciences (CMS) at this institute.

The meeting was hosted by Dr. Nasir Majid Mirza, Rector PIEAS and a presentation was made by Dr. Naseem Irfan, Head of the Office of Planning and Development at the institute. Dr. Irfan highlighted the requirement of establishment of a center of excellence in Applied Mathematical Sciences and identified its significance towards macro growth of the country. He highlighted the contents of proposal which included aimed academic activities, an overview of the strengths of PIEAS, and targeted impacts of the CMS. The institute is already in process of establishing a High-Performance Computing facility which will be state-of-the-art and will enable scientists and engineers all over Pakistan to carry out high quality research in their respective fields, he emphasized. A comprehensive overview of the proposal and concrete responses to observations made by peer-review conducted by Planning Commission were included in Dr. Irfan's presentation. The meeting was followed by a visit of technical facilities and laboratories at PIEAS which was very

much appreciated by Dr. Osama as he witnessed some students from other universities, in addition to local researchers, working and using technical facilities at PIEAS.

Earlier, PIEAS submitted a PC-1 to the Planning Commission for establishment of Center for Applied Mathematical Sciences which was considered by the Planning Commission in its CDWP meeting and was approved, in principle. Member (S&T) of the Planning Commission desired to visit PIEAS which was readily arranged and accorded with a strong reception.



Member (S&T), Planning Commission during visit to PIEAS

Seminar on Mass Rearing & Eco-friendly Management of Fruit flies at NIA, Tando Jam

Biological control Technology, Male Annihilation Technology (MAT), Bait Application Technology (BAT) offer one of the most promising, environmentally sound, sustainable approaches and is an effective means of reducing pests. It can rationally offer everlasting solution of environment and horticultural pests that may be impossible to manage by means of chemicals.

Realizing the importance of fruit flies, Nuclear Institute of Agriculture offered a one day seminar for the promotion of MAT, BAT and Bio-control technology in which orchard growers, Exporters, Mango Contractors, Entomologists, Researchers and students participated across Sindh Province. Taking cognizance of the safety of the environment and insect pest management, NIA organized "1st Seminar on Mass Rearing & Eco-friendly Management of Fruit flies" on 11May, 2017. A large numbers of participants including exporters, orchard owners, researchers, entomologists, students and entrepreneurs across province participated in the programme.

The seminar was formally inaugurated by Prof. Dr. Abdul Ghani Lanjar, Director Advanced Studies, Sindh Agriculture (SAU), Tando Jam. The chief guest on this occasion emphasized the significance of using eco-friendly fruit fly management for sustainable fruit production.

Dr. Nazir Ahmed, Director/Chief Scientist, NIA, in his welcome address, highlighted the achievements being carried out by the Plant Protection Division of this institute for application of MAT, BAT and Bio-control technology, in Sindh province and appreciated efforts of the scientists. He reiterated that technologies developed by NIA, are not only popular among the orchard owners of guava, mango, Ber and chicko but are also famous amongst sugarcane and cotton growers. He also told that the Institute is pioneer in Sindh for developing such technologies and has close collaboration with international agencies like IAEA for further advancement.

In his concluding remarks, Director NIA lauded the contribution of this workshop for creating awareness among participants in reducing the global poisoning being inflicted by the indiscriminate use of pesticides. He also urged the participants to keep close contact with the scientists of this institute engaged in insect pests.

All the participants took keen interest throughout the seminar as well as in laboratory rearing procedures and preparation of artificial diets.

At the end, in closing ceremony the participants were awarded with the certificates.

NIFA organizes One day “On-Site Training Workshop on Dual Technology of Bio-geyser and Agro-Waste Composting

Prevailing energy crisis and non-availability of gas supply in rural areas of Khyber Pakhtunkhwa force the people to cut forest for warming of water for domestic uses as well as for drinking by livestock during winter. Soil and Environmental Sciences Division, Nuclear Institute for Food and Agriculture (NIFA), Peshawar has developed dual technology of bio-geyser and agro-waste composting.

NIFA organized a training workshop on May 19, 2017 at Chattar Plain, Mansehra for end-users as a part of PSF funded project activities. The workshop was attended by around 100 participants including farmers, extension workers, social workers, academia (Hazara University) and students.

Dr. Aurangzeb, Director NIFA, in his welcome address highlighted the contributions of PAEC to the nation in defense, energy, health and agriculture sector. He briefed the participants about varieties and technologies developed by the institute. Dr. Amir Raza, Pr. Scientist/Project Incharge delivered a comprehensive training lecture on fabrication,

use and maintenance of technology. NIFA has installed 25 bio-geysers in Hazara division and district Swat.

A model bio-geyser was also installed at the place of training event for demonstration to the local community. Participants took keen interest in this new technology as it is much needed for this particular area having no gas supply.

Community representatives demanded more units of bio-geysers for effective dissemination of technology to the masses in this region. Talking on the occasion, Chief Guest, Dr. Mohammad Akram Sheikh, Member (Science), Pakistan Science Foundation lauded the efforts of NIFA for successful demonstration of technology. He appreciated the participants for their overwhelming response and keen interest towards bio-geyser technology and desired that NIFA organize training events for master trainers so that maximum number of people get benefits from technologies developed at NIFA. A discussion session was held towards the conclusion of training program and feedback about the technology was recorded.

IAEA Workshop arranged by PINUM, Faisalabad

IAEA workshop on “Hybrid Imaging and Therapeutic Nuclear Medicine Technologies and its applications in thyroid conditions including liver and prostate cancer theranostics and peptide receptor radionuclide therapy” was held at Faisalabad from 15-19 May 2017. Dr. Emerita Andres Barrenechea from Philippines, Dr. J.J. Zaknun from Germany and Dr. Qaisar. H. Siraj from Kuwait delivered lectures as nuclear medicine experts. Dr. Durr-e-Sabih, Director, MINAR, Dr. Ahmed Qureshy, DCMO, INMOL and Dr. Aakif Ullah Khan, Director, SINOR were experts from Pakistan. Nineteen participants from 9 different countries and 22 participants from various Atomic Energy Cancer Hospitals of PAEC attended this joint venture of IAEA and PAEC.

Dr. M. Saeed Akhtar, Director PINUM inaugurated the workshop and welcomed the guests in Faisalabad, Pakistan. During the course, experts of IAEA and local experts of Pakistan delivered lectures on updates of hybrid imaging and theranostics. Hands on training on ultrasound guided biopsy procedures was also arranged. All participants appreciated the standard of teaching & training during the training period.

Concluding ceremony of the course was arranged on May 19, 2017 at Serena Hotel Faisalabad. Dr. Fayyaz Ahmed, Director Medical Sciences being the chief guest addressed the audience and appreciated the role of IAEA and PAEC in arranging such events in Pakistan. He highlighted the services of 18 atomic energy cancer hospitals in diagnosis and treatment of cancer patients. In his speech he reiterated that PINUM Faisalabad is a good venue for conducting international medical events in Pakistan.

In vote of thanks, Dr. M. Saeed Akhtar, Director PINUM thanked the international participants for their visit to Pakistan inspite of negative propaganda about Pakistan related with unrest and security situation in the country. He stressed that international speakers and participants should convey the message globally that Pakistan is a safe country to travel and has latest diagnostic facilities along with expertise to deliver knowledge about latest trends in the field of nuclear medicine. International experts and participants appreciated the hospitality, standard of teaching & training and hard work of PINUM, Faisalabad in hosting such event and proposed PINUM for venue for upcoming IAEA training courses / workshops.



IAEA Course participants, Directors of Atomic Energy Cancer Hospitals with the Chief Guest

Chairman, PAEC Inaugurated IAEA Regional Training Course on Hybrid Imaging & Therapeutic Nuclear Medicine & Ga -68 Basis Pet Scan Lab at INMOL

Mr. Muhammad Naeem, Chairman, PAEC, inaugurated IAEA Regional Training Course on Hybrid Imaging and Therapeutic Nuclear Medicine at Lahore on 8th May, 2017 in a local hotel in which Mr. S.M. Javaid Akhtar, Member (Science), Dr. Muhammad Fayyaz, Director, Medical Sciences, Prof. Sobhan Vinjamuri (UK), Dr. John Zaknun (Germany), Prof. Hussain Siraj (Kuwait), Prof. Emerita Barrenechea (Phillippines) and local and foreign participants were present.

Dr. Abubaker Shahid, Director INMOL welcomed all participants and appreciated IAEA on commencing such activity after two decades in Pakistan.



Chairman PAEC cutting ribbon

He informed that INMOL is one of the 18 cancer hospitals being run by PAEC and 80%-85% of work-load of cancer patients is being catered at these 18 hospitals. INMOL is recognized by CPSP for FCPS training in Radiotherapy, Nuclear Medicine, Medical Oncology, Diagnostic Radiology and Clinical Haematology having Supervisors and Trainees in all these disciplines. INMOL is the only institute which has got a PET Scan & Cyclotron in public Sector in Pakistan.

Moreover, he also informed that INMOL has also got Leukaemia Bay for paediatric and adult patients and all these state of the art facilities are being provided to the patients on highly subsidized rates. He also mentioned that



Chairman PAEC being briefed about the Lab

INMOL has been declared by IAEA as "Centre of Excellence & Referral Centre for Asia & Pacific Region.

In connection with the course he said that it will go a long way in establishing Ga-68 imaging and PRRT which is non Cyclotron technique for imaging various tumours and treating them with radionuclides in Pakistan. IAEA titled project "Strengthening PET through Ga-68 labelled molecules is undergoing in INMOL and a lot of manpower has been trained by IAEA through fellowship and scientific visit under this project. INMOL will be able to start Ga-68 basis PET Scan as the first Centre in the country in 2017 Insha Allah. Foreign faculty members highlighted significant role of this technique and imparted their experience and knowledge to the participants.

Mr. Muhammad Naeem, Chairman, PAEC highly appreciated the name and fame gained during the directorship of Dr. Abubaker Shahid and was impressed by the impressive outlook of INMOL and prayed that may this laboratory in diagnostics be a balm for healing the ailing humanity.

After inaugural session of the course, Chairman PAEC was enthusiastically welcomed by all Heads of Departments and senior officers of INMOL and bouquets were presented and rousing reception was given when he inaugurated the first ever theranostic lab. in Pakistan at INMOL which will be a great honour for INMOL & PAEC. Dr. Ifran Ullah was the coordinator of this course who made hectic efforts to make it a success.

Completion of Postdoctoral Research of PAEC Scientist



Dr. Maaz, Pr. Scientist, Physics Division, PINSTECH has completed two years postdoctoral research in Nanoscience and Nanotechnology from Institute of Modern Physics, Chinese Academy of Sciences (CAS), PR China. During his fellowship he has published more than 25 articles in different SCI

journals. He has over 65 publications and 6 books on his credit. Dr. Maaz is serving as the Editor-in-Chief of Journal of Materials, Processing and Design, Executive Editor of International Journal of Nano Studies and Technology and he is also working as the editorial board member and reviewer of many other journals of International repute. Prior to this, Dr. Maaz has successfully completed his first post-doctorate from Sungkyunkwan University, South Korea in 2010-2012.