



# PakAtom

Newsletter of the Pakistan Atomic Energy Commission

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## PAEC embarks on the road to promote nuclear desalination as a sustainable solution for water scarcity

### IAEA provides technical assistance for Nuclear Desalination Demonstration Plant at KANUPP

Fossil fuel usage for energy production results into greenhouse gases which adversely impact the global climate. Nuclear energy, being carbon free, is therefore, going to be an important source of power. In order to find a sustainable solution to the scarcity of energy and freshwater, nuclear plants and desalination plants are seen as cogeneration projects in the future. As a policy every future nuclear power plant to be located on the coastal areas of Pakistan should have an integrated large capacity nuclear/hybrid desalination plant producing desalinated water for supplying safe drinking water to the local population and pure water (distilled quality) for industries. These desalination plants may open other avenues like production of hydrogen as a fluid fuel substitute as this also requires desalinated water. Excellent prospects for the utilization of nuclear energy for seawater desalination are foreseen in next 20 years.

#### Road Map

PAEC has already embarked on the road to promote desalination. It was decided in 1999 to install a 100,000 GPD Sea Water Reverse Osmosis (SWRO) desalination plant at Karachi Nuclear Power Plant (KANUPP). This plant is successfully operating since 2000. Experience gained in the installation, operation and maintenance of this plant has helped KANUPP to build a team of engineers and technicians who are now capable to embark on designing and installation of large capacity desalination plants.



*KANUPP undergone life extension by 15 years after completing 30 years of design life.*



*Equipment fabrication for Nuclear Desalination Demonstration Plant (NDDP).*

In 2005 Pakistan Atomic Energy Commission decided to give a go ahead to KANUPP for coupling of a 400,000 GPD capacity thermal desalination plant and in this context a team of engineers was constituted to work on the Nuclear Desalination Demonstration Plant (NDDP) project. IAEA provided the necessary assistance for capacity building of

**the NDDP team and Expert Missions were also provided to assist in finalizing the coupling scheme and technical specifications of the desalination plant. Government of Pakistan allocated an amount of Rs. 270 million for this project.**

The major technological benefit of the NDDP project is that 100% fabrication of the MED type thermal desalination plant has been done indigenously. Thus the required technical know-how has been accumulated to manufacture even larger size desalination plants in Pakistan.

The NDDP project is presently in advanced stage of implementation; all civil works at KANUPP are nearing completion, 70% of the field work for installation of auxiliary systems such as the seawater supply system and Intermediate Coupling Loop (ICL) system has been completed. The NDDP project is scheduled to be commissioned by 3rd quarter of year 2008 and shall be able to provide the much needed freshwater for the existing KANUPP-1 and for the needs of infrastructure development of future NPPs at the same site. Extension of the plant for the supply of water to the neighboring Karachi city is feasible.

With the successful operation and maintenance of RO Based desalination plant and MED plant being installed, KANUPP/PAEC has acquired the much needed expertise in the two major areas of sea water desalination (i.e. RO and MED) the two most commonly used desalination technologies. This expertise can be utilized in Pakistan for the future desalination projects. One such example is that KANUPP provided consultancy services to Gwadar Development Authority for the RO based desalination plant now operational.

## Upgradation of PAEC's Cancer Hospital at Karachi

Pakistan Atomic Energy Commission is upgrading its Atomic Energy Medical Centre (AEMC) at Jinnah Post Graduate Medical Centre (JPMC) Karachi. After upgradation and expansion, AEMC Karachi would become one of the most advanced and state-of-the-art nuclear medical centre for the diagnosis and treatment of cancer, allied diseases and heart ailments in the country.

The upgradation of AEMC is being carried out by PAEC to establish a comprehensive and modern cancer diagnosis, treatment and research facility with the objective to adopt research methodologies for the prevention and treatment of cancer. PAEC's aim is to provide treatment and respite to those who do not have the ability to pay huge amounts required for the treatment of this dreaded disease.

The total cost of this upgradation project is Rs. 414 million, which includes Rs. 138 million for civil work and Rs. 276 million for the medical equipment. The project is being supervised by Director, AEMC, Karachi, Dr. Shahid Kamal. Earlier, Dr. Shahid Kamal has successfully undertaken the task of establishing the Karachi Institute of Radiotherapy and Nuclear Medicine (KIRAN, Hospital) Karachi.

AEMC would provide its services to the patients in coordinated collaboration



*A view of AEMC New Campus.*

with all the departments and units of JPMC, particularly the Cancer Unit. AEMC Karachi is a pioneering Medical Centre of PAEC, established in 1960 at the premises of JPMC, Karachi.

AEMC Karachi is currently providing Nuclear Medicine facilities on routine basis to indoor and outdoor patients referred by Jinnah Hospital, Aga Khan University Hospital, NICVD, NICH, Civil Hospital, Lyari General Hospital, PNS Shifa, Abbasi Shaheed Hospital and all other nearby hospitals.

It is the sole reference centre for thyroid disorders in Karachi, where all facilities for thyroid gland investigations are available. The physiological information obtained from renal scintigraphy is helpful to the clinicians for devising management strategy.

The AEMC also has the facility of transplant studies, which are helpful in

evaluating the early rejection of the graft. All types of Nuclear Cardiology facilities are provided by AEMC. This includes myocardial perfusion study; first pass study and multigated cardiac study etc.

The studies are performed by Thallium-201, and Tc-99m labeled MIBI used for the staging of malignant disorders. In addition to the above mentioned investigations, AEMC also provides the facilities of bone scanning, brain scanning, hepatobiliary imaging, lung scanning and scintimammography. Thyroid, pituitary and steroid hormones are analyzed by using the facility of RIA. This centre is also providing mammography and colour Doppler ultrasound facility in breast care clinic.

In the current set-up more than 3000 patients per month are getting diagnostic and treatment facilities.

# PAEC's Directorate of Safety organizes workshop on Inventory Management of Radioactive Sources

Directorate of Safety (DOS) has been involved in developing a comprehensive data-base of Inventory of Sealed Radioactive Sources in order to ensure their safe custody and control over malicious acts. It is relevant to mention that DOS already managed the inventory of radioactive sources in many facilities of PAEC, which include all medical and agriculture centers, nuclear power plants, PARAS, etc. The physical verification and categorization of all the sources at those establishments was also performed by this Directorate. In this regard, DOS has developed sealed radioactive source inventory FORMS (SRS-I, SRS-II and SRS-III). Subsequently the forms have been improved and would now be filled by the remaining PAEC establishments. The objective of this workshop was to provide the participants an in-depth knowledge about categorization and inventory management of sealed radioactive sources.

In this workshop, a very healthy participation was observed and forty two participants from various establishments of PAEC attended the workshop. The workshop was

coordinated by Mr. Safdar Ali, Principal Scientist, Directorate of Safety. The speakers covered all aspects dealing with the subject. The participants were provided a folder along with CD, containing the most current and relevant reference documents.

The concluding session was presided by Mr. Muhammad Naeem, Member (Fuel Cycle). The Member in his address appreciated the DOS efforts

for organizing this workshop timely and emphasized the need for adequate inventory management of all sealed radioactive sources maintained in the user custody. He further added that this academic activity should be continued to up-date knowledge on the subject. He hoped that this workshop will prove to be beneficial to the participants in enhancing awareness on the subject. Certificates were distributed by Member (Fuel Cycle).



*Mr. Muhammad Naeem, Member (Fuel Cycle) is awarding a certificate to one of the participants at the concluding ceremony.*

## PAEC's National Centre for Non-Destructive Testing (NCNDT) Upgrades Ultrasonic Data Evaluation Capabilities for Nuclear Island Pressurized Components

NCNDT is in the process of gradual enhancement of its capabilities to carry out NDT inspection and data analysis in the nuclear island of nuclear power plants. As part of these efforts, an IAEA Technical Cooperation project titled "Development of Capabilities on Automatic Ultrasonic Testing and Material Corrosion Test for Structural Integrity Assessment" has been approved by IAEA. Under this project IAEA has procured a data analysis software called MESERA for NCNDT. This software was used by TECNATOM, Spain for the verification of ultrasonic testing data of reactor pressure vessel of C-1 during RFO-1 and RFO-3.

A two member team from NCNDT comprising of Mr. Zaheer Ahmad, P.E., and Mr. Shabbir Ahmed, P.E., visited



*NCNDT personnel with the TECNATOM trainers at Madrid, Spain.*

TECNATOM, Madrid, Spain from 10-14 March, 2008 for the training on the use of this software for data verification. The training was arranged by IAEA and TECNATOM as part of the package between IAEA and TECNATOM.

With this software and the training of its personnel by TECNATOM, NCNDT is now in a position to carry out independent verification of the data obtained by foreign contractors of the automatic ultrasonic testing of RPV and other pressurized components.

# 33<sup>rd</sup> International Nathiagali Summer College on Physics and Contemporary Needs, 23<sup>rd</sup> June - 5<sup>th</sup> July, 2008, Nathiagali, Pakistan

International Nathiagali Summer Colleges (INSC) on Physics and Contemporary Needs have been organized every year since 1976, mostly at the scenic hill resort of Nathiagali near Islamabad, Pakistan. 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 of the Third World. The primary aim of these Colleges is to break the isolation of the scientists in the developing countries by enabling them to interact with an international faculty and colleagues from the Third World.

The college is primarily intended for scientists actively engaged in teaching and research activities in developing countries. Advance graduate students from Pakistan are also encouraged to attend. During the last 32 years, about 570 eminent scientists including 06 Nobel Laureates as faculty from developed countries shared their knowledge and experience with more than 950 foreign & 6200 local scientists from over 72 developing countries.

Every year one or two subjects of current interest and their applications for technological development, with special reference to the needs of the developing world, are highlighted. This year college is covering the following topics:

## First Activity (23<sup>rd</sup> June - 29<sup>th</sup> June, 2008) Astrophysics, Cosmology and Particle Physics, Plasma Physics & Controlled Nuclear Fusion

During this week we would like to cover the Standard Model of Particle Physics and Cosmology, Astrophysics and Astroparticle physics. The topics are; Cosmological constant problem, Dark Matter and Dark Energy, Leptogenesis and Baryogenesis, Electroweak Physics, CP Violation and Flavor Physics, Physics Beyond Standard Model, Heavy Ion Physics, Quark-Gluon Plasma. As Large Hadron Collider (LHC) will become operational this year, the week will also cover the results coming out of the Compact Muon Solenoid Detector (CMS) from the data of LHC.

The Plasma Physics activity will cover important aspects of recent thermonuclear fusion research on Tokamaks including a discussion on International Thermonuclear Experimental Reactor (ITER). The astrophysical and space plasma will also be discussed. The lectures will include some topics of planetary ionosphere,

magnetosphere, interstellar and intergalactic medium and solar physics.

## Second Activity (30<sup>th</sup> June - 5<sup>th</sup> July, 2008) Nano-Transport and Patterning, Advanced Materials

Nano-Transport will cover the electrical, magnetic, spin and other forms of transport using nano-scale materials. Emphasis will be on fundamental understanding as well as device applications. The topics of Molecular Electronics, Spintronics, Single Molecule, Quantum Computing and Carbon based materials (CNT, grapheme) will be covered. Nano Patterning, will cover methodology, fundamental and applications of self assembled mono-layers and devices such as MEMS / NEMS.

The research and development of new materials have a key role in the advancement of a country. New and advanced materials have better mechanical as well as chemical properties over the conventional materials. The fabrication and characterization of advanced materials will also be discussed.

## New Dimensions of INSC

From the last year new dimensions in the activities of the INSC has been added i.e.

holding Pre-INSC activity at University level and to carry out the intense Post-INSC activity on one of topics discussed in Summer College. This year Pre-INSC colleges have been arranged at Lahore and Karachi and Post-INSC activity was conducted on the eve of the visit of Dr. David Farley, EISED, Osaka, Japan to develop collaborative research projects at PIEAS/PINSTECH in Laser induced Plasmas, sputtering & spectroscopy. As Post-INSC activity a National Symposium was also arranged by INSC on Plasma Physics, Jan. 28-29, 2008 Islamabad. The Objective of this Symposium was to discuss the requirement of upcoming Tokomak Project. About 75 scientists from PAEC & Universities participated in the symposium. It was addressed by seven invited speakers including Dr. Nodar Tsintsadze and Dr. Tamaz Kladze from Tbilisi, Georgia, Dr. Saleemullah from Bangladesh, Dr. Ghulam Murtaza, NTFP, PAEC, Dr. Hamid Saleem, PPD, PAEC, Dr. Zakauallah, & Dr. A. M. Mirza, QAU. Besides this, 12 presentations were also made by the young scientists. The Symposium covered the Basic Plasma Physics, Plasma Dynamics, Controlled Thermonuclear Fusion, Plasma Diagnostics, Plasma Heating Systems, Plasma-Wall Interaction, Space and Astrophysical Plasmas, Dusty Plasma, Low Temperature Plasma and Plasma Technologies.

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## MINAR gets ISO Certification

On 9<sup>th</sup> of March, 2008 MINAR became the 3<sup>rd</sup> PAEC cancer hospital to receive ISO 9000:2001 certification. The certification was achieved in a remarkably short time due to the untiring efforts of the local Management Representative Dr. Muhammad Kashif, MO and DMR Mr. Arif, SSO and the management of the DQA, specially Mr. Nasir Butt who worked along the MINAR team to achieve this milestone. The ISO certification ceremony coincided with the conclusion of the National Course on Nuclear Medicine held at MINAR and was attended by the Member Biosciences, Dr. Abdul Rashid; DG NM&O Dr. S. Razaqat Ali Jaffri; Associate Director DQA Mr. Shahid Jaffri and Mr. Nasir Butt also from the DQA.

commitment to quality. MINAR is already associated with the IAEA for a TC project on quality assurance in nuclear medicine which is another acknowledgment of MINAR's contribution to the concept of quality within the PAEC medical establishments.



*Award of Certification, from (L to R) Mr. Nasir Butt, DQA, Dr. Durr-e-Sabih, Director, MINAR, Dr. Abdul Rashid, Member (Biosciences), Dr. S. Razaqat Ali Jaffri, D.G., Nuclear Medicine and Oncology and Mr. Shahid Jaffri, Associate Director, DQA.* ■

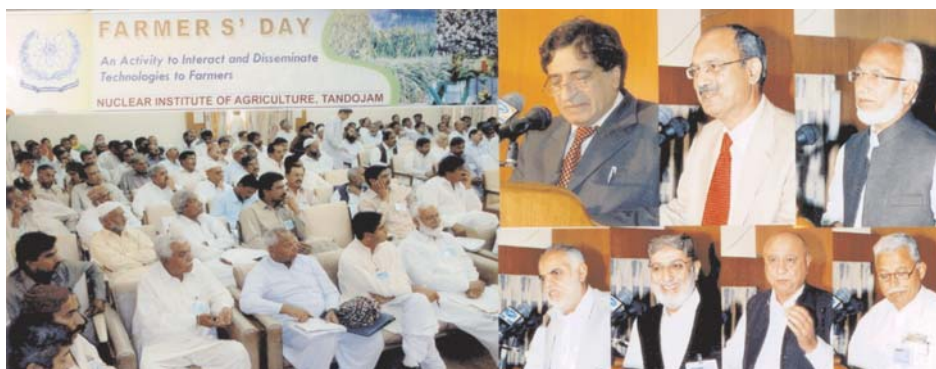
# Farmers' Day 2008 at NIA

Farmers' Day is a regular annual feature of the PAEC's Nuclear Institute of Agriculture (NIA) Tandojam and is being hosted for the last 26 years. This gracious event was organized on the 5<sup>th</sup> of March this year. A large number of growers, stakeholders, scientists from relevant departments and representatives of different agricultural bodies participated.

Syed Khursheed H. Shah, the Director, NIA while highlighting the successes of the Institute informed the august house that NIA, being the pioneer institute of PAEC in Agriculture has contributed significantly in raising the socio-economic conditions of the poor masses by evolving 22 high yielding and good quality varieties of important crops like wheat, rice, cotton, sugarcane, mungbean. The recently released wheat varieties Khirman and Sussi are gaining popularity due to their distinctive characters and wide adaptability in different regions. Khirman being the drought tolerant variety is being grown on residual moisture especially in rice tract and in those areas where water is a limiting factor. Sussi has also unique character of resistance against existing rust races. Rice variety Mehak is the second variety after Khusboo released by the institute which has excellent aroma and higher yield potential. Non-aromatic rice variety Shandar has also very high yield potential of 95 maunds/acre with better grain quality. The cotton variety Sadori has additional characteristics of tolerance to jassid and CLCV along with high yield, good fiber and early maturity. NIA has a pride of releasing first ever lentil variety NIA-Masoor-05 for Sindh. Rapid regeneration of disease free banana through micro propagation is also one of the innovations engendered by the Institute.

The Institute has the honor of being pioneer in developing technique like biological control for insect pest management. The eco-friendly technique widely adopted by the farmers has lessened the use of insecticides, thus saving both the money and environment.

Fertigation and foliar fertilization



*Dr. Abdul Rashid, Member (Biosciences) (front in the inset) addressing Farmers' day gathering at NIA.*



*A view of the wheat field at NIA.*

techniques have also been introduced which are cost effective and economical in terms of fertilizer use for better crop harvest. Introduction of bio-saline technology and investigation of salt tolerance mechanism in different crops have provided the ways to utilize the degraded lands for profitable earnings.

After the inaugural address of Director NIA, many representatives of different forums of farming community expressed their views about the contribution of NIA in agriculture development and their problems in agriculture sector. They were all of the view that NIA has made tremendous achievements in agriculture research particularly in Sindh. They showed their grievances over price hike regarding agricultural inputs and lower rates of agricultural commodities.

Dr. Mazhar H. Naqvi in his address commended the remarkable achievements made by NIA so far and was optimistic in saying that NIA will continue to play its role for development of agriculture sector to meet the upcoming challenges in the country.

The Chief Guest on the occasion, Dr. Abdul Rashid, Member (Biosciences) while addressing the audience appreciated the scientists for their dedicated efforts and significant contributions in terms of high yielding crop varieties and improved technologies. He was confident that pace of research activities and the momentum achieved so far will not only be sustained but will enhance further in the years to come.

Scientific exhibition and field visit were also arranged for the farmers.

## MINAR conducts breast screening awareness programme at NMC1 and CPC, DG Khan

PAEC's Cancer Hospital MINAR, Multan conducted 4 lecture sessions on breast cancer awareness and the importance of screening at PAEC establishments at DG Khan. There was also an Oncological consultation clinic during these visits. This was part of MINAR's public awareness programme in the region. The lectures were delivered by Dr. Zahida Sabih, PMO and in-charge of the women's clinic at MINAR and the Oncological consultations were provided by Dr. Rab Nawaz Maikan, head Oncology section at MINAR.

Free screening facility to PAEC employee's families is now offered at MINAR.



*Dr. Zahida Sabih, PMO, delivering a lecture.*



## AEMC Services for the Mitigation of Earthquake Disaster

An earthquake is a spasm of ground shaking caused by sudden release of energy in earth's lithosphere. The physical consequences of earthquakes are viewed in terms of loss of life and property and it can be mitigated through earthquake resistant design of civil structures. Potential seismic hazard assessment and determination of Peak Ground Acceleration ("g" value) provide architects and engineers an important criterion for design process. The sensitive civil structures like nuclear facilities, dams, chemical plants, and facilities of strategic importance etc. demand greater attention.

The Geotectonic Division of AEMC, Lahore is serving the nation by providing geological database, an essential requirement for determination of Peak Ground Acceleration and Seismic Hazard Assessment. AEMC has accomplished seismotectonic investigation for more than 25 sites of national and strategic importance till to date. PAEC has proposed six new nuclear power plants (NPP) sites in different parts of the country. AEMC has so far assessed potential of surface rupture under earthquake loading at four proposed sites while investigations at two sites are under progress. Earlier,

seismotectonic studies of CHASNUPP and KANUPP (K1) are the big achievements of the AEMC. The paleoseismological studies of C-2 are going to be carried out shortly. Tsunami Risk Evaluation for KANUPP and Makran coast is another achievement of Geotectonic Division. The tsunami risk evaluation of KANUPP and Makran coastal areas were carried out well before the disastrous tsunamigenic earthquake of Sumatra 2004. It is worth mentioning here that AEMC is the pioneer to start and develop expertise in the field of seismotectonics and tsunami risk evaluation within the environment of PAEC.



## Minister visits PAEC's Nuclear Institute for Food and Agriculture (NIFA), Peshawar

The future of Pakistan depends on the success of Agriculture on sound footings, said Mr. Arbab Ayub Jan, NWFP Minister for Agriculture. He added that the present government is fully committed to the development of agriculture and will use all the means available to achieve the target of self sufficiency in food items. He was paying a courtesy visit to NIFA, after taking charge as Provincial Minister for

Agriculture on Thursday 10<sup>th</sup> April, 2008. He said all efforts especially in agriculture research need to be focused towards economic growth in the country, particularly in NWFP. The Minister visited the Exhibition Lobby at the institute. He showed keen interest in the technologies developed by NIFA's scientists. He expressed the hope to have a Food Irradiation facility

in the province. Earlier, Dr. Farooq-e-Azam, Director NIFA highlighted the achievements made by NIFA's scientists in the discipline of Food and Agriculture. The mission was highly appreciative of the contribution of NIFA to provincial agriculture. Mr. Ayub Jan expressed the desire of further strengthening the cooperation between NIFA and provincial agriculture system.



## Assignment of PAEC Experts Abroad as National Consultants

□ Dr. Asif Salahuddin, Director General (IA & Training) and Khawaja Munir Samad, Director (International Affairs), PAEC HQ, Islamabad participated in the Meeting of the National Liaison Officers held at IAEA, Vienna (Austria) from 07-09 January, 2008.

□ Dr. Syed Waqar Hyder, Director, Dr. Ahmad Qureshy, Principal Medical Officer and Dr. Irfanullah Khan, Principal Scientist, Institute of Nuclear Medicine and Oncology (INMOL), Lahore visited IAEA Vienna (Austria) from 14-18 January, 2008 for discussing Implementation of Project Establishment of Cyclotron and Positron Emission Tomography Facility for Clinical Nuclear Medicine Practice in Pakistan.

## Assignment as IAEA Expert

□ Mr. Hamid Mahmood, Senior Director (DNPES), Islamabad carried out assignment as an IAEA Expert at IAEA Headquarters, Vienna (Austria) from 26-28 March, 2008 for Task: Preparatory Mission for the Review of Chapter 3 of Bushehr NPP FSAR, as defined in the Project's Work plan under Project-Strengthening Owner's Capabilities for Commissioning and Start-Up Bushehr Nuclear Power Plant.

□ Mr. Asghar Ali Khan, Advisor, National Centre for Non-Destructive Testing (NCNDT), PAEC, Islamabad carried out Mission as an IAEA Expert at Doha (Qatar) from 30 March, 2008 to 03 April, 2008 for Task: Establishment Facilities for Non-Destructive Testing under Project-Establishing a Quality Assurance and Training Lab for Non-Destructive Testing.

## Assignment as KANUPP Representative

□ Mr. Shahab Mukhtar, Deputy Chief Engineer, Karachi Nuclear Power Complex (KANUPP), Karachi

proceeded to Canada on 26-02-2008 for undertaking assignment as KANUPP Representative with Candu Owners Group (COG) Office, Toronto, Canada for a period of six months.

## Assignment of IAEA Experts in Pakistan

□ Dr. Mohammd Safaei Keshtgar, FRCS (England) and Dr. Raffaele Mario Tarquinio Giubbini (Italy) participated at Speakers in National Seminar on Nuclear Medicine at MINAR, Multan from 13-17 March, 2008 under Project Developing a Quality Assurance Programme for Radiation Medicine.

□ Mr. Milorad Dusic, (Slovenia) Safety Assessment Section, IAEA, carried out assignment as an IAEA Expert at KNPC, Karachi from 17-19 March, 2008 to Review Progress of the Project-Improving Safety Features of Karachi Nuclear Power Complex (KNPC) and also discussed the Minutes of the last Steering Committee Meeting and requirements of Expert Missions and Fellowships/ Scientific Visits.

□ Dr. John Zakhnun (Austria), IAEA Technical Officer visited INMOL, Lahore from 27-30 March, 2008 to evaluate current nuclear medicine activities in Lahore and to review progress of Project - Developing a Quality Assurance Programme for Radiation Medicine and Project - Establishment of a Cyclotron and Positron Emission Tomography Facility for Clinical Nuclear Medicine Practice in Pakistan.

## Posting Abroad

□ Mr. Junaid Miraj, Senior Accounts Officer, KCP-II, Jauharabad has been appointed as First Secretary in the Embassy of Pakistan, Beijing, People Republic of China since 16-03-2008.

## Participation in the Meeting of IAEA Board of Governors

□ Dr. Asif Salahuddin, Director General (IA & Training), PAEC HQ, Islamabad attended Meeting of the IAEA Board of Governors held in Vienna (Austria) from 03-07 March, 2008.

## Visit of Foreigners to Pakistan under IAEA Technical Cooperation Projects

□ Mr. Ahmed Abdullah Mohammad (Yemen National) is undergoing Fellowship in the field of Radiation Metrology and Dosimeter at PIEAS, Islamabad from 11 February, 2008 to 10 February, 2009.

□ Dr. Bahaa M. Hussain Abbas (Iraqi National) is undergoing fellowship training at INMOL, Lahore in the field of Radioactive Waste Management Technology and Infrastructure from 27 February, 2008 to 26 March, 2008.

□ Mr. Sayfulla Boboyev (Uzbekistan National) is undergoing fellowship in the field of Plant Breeding at NIBGE, Faisalabad from 22 March, 2008 to 17 September, 2008. ■

## PINSTECH Scientist awarded Ph.D. Degree

Mr. Sohail Ahmad Janjua, Principal Scientist, Head Charged Particle Accelerator group, Physics Division, PINSTECH has been declared successful for the award of Ph.D. in Physics by Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad. His topic of research was "Study of physical mechanisms of regenerative sooting discharges". During his Ph.D. Mr. Janjua has published seven research papers in reputed international journals. ■



# MINAR Holds National Course on Nuclear Medicine

PAEC's Multan Institute of Nuclear Medicine and Radiotherapy (MINAR) held the first ever National Course on Nuclear Medicine from 13<sup>th</sup> to 17<sup>th</sup> March. This course had sessions on nuclear medicine quality assurance, paediatric nuclear medicine, nuclear cardiology and nuclear thyroidology. The final two days were dedicated to a workshop on sentinel node scanning. The course had two foreign IAEA experts, Dr. Raffaele Mario Guibbini, Chair of nuclear medicine at the University Hospital Brescia, Italy and Dr. Mohammed Reza Keshtgar from the Royal Free Hospital London. The programme also had an extensive local faculty with over twenty participants from all over the country.

The workshop was conducted on a sentinel node scanning simulator, specially sent over by the IAEA from Austria. The scanning sessions on the simulator were followed by actual sentinel node scanning and identification/removal in the operation theatre. It is now planned that MINAR would participate as the national training centre for sentinel node scanning once the train-the-trainer workshops are attended by the joint MINAR-Nishtar breast team in the third quarter of 2008 and the relevant clinical audit data is submitted to the international coordination centre in the UK.

This course had participants from all 13 cancer hospitals of the PAEC, the Aga Khan University Hospital, Shaukat Khanam Memorial Hospital, Armed Forces Institute of Pathology, Punjab Institute of Cardiology, Multan Institute of Cardiology, Nishtar Medical College and Hospital, PIEAS and the PAEC headquarters. This course also offered the participants the opportunity to have extensive discussions/read-with-the-experts sessions and a working group to draw up a consensus statement on management of thyroid eye disease

was formed with Dr. Rafia Toor from AEMC Karachi as its coordinator.

The conclusion ceremony was graced by Dr. Abdul Rashid, Member, (Biosciences), PAEC and Dr. Syed Razaqat Ali Jafri, DG, Nuclear Medicine and Oncology. The Principal, Nishtar Medical College, Dr. Laiq Hussain Siddiqui and Chairman Board of Governors, Nishtar Institute and the Provincial Minister for Industries, Khwaja Jalal Uddin Rumi were also present at the ceremony.



*Group Photo of the participants.*

## Initiation of MS in Radiation and Medical Oncology at PIEAS

PAEC's Pakistan Institute of Engineering and Applied Sciences (PIEAS) has launched a two-year MS degree programme in Radiation and Medical Oncology for medical doctors this year. This programme is being initiated to provide qualified doctors in the field of Radiation and Medical therapies for the cancer patients, primarily, to cater the needs of PAEC Cancer Hospitals. It may be recalled that PAEC is the single largest provider of diagnostic and treatment facilities in the country for cancer related diseases, running thirteen Cancer Hospitals across the country with five more at the developmental stages. The degree

programme in Radiation and Medical Oncology at PIEAS will enhance the quality of the care and management of a large number of cancer patients visiting the PAEC Cancer Hospitals. PIEAS is already providing highly trained and qualified nuclear medicine physicians to all PAEC medical centres through its internationally and Pakistan Medical & Dental Council (PMDC) recognized MS (Nuclear Medicine) programme.

It may be worth mentioning that PIEAS is the only institution in Pakistan offering postgraduate degree programmes in diverse disciplines in

engineering, physical sciences and medical sciences. PIEAS has already been conducting Ph.D. and MS programmes in Nuclear Engineering, Systems Engineering, Process Engineering, Materials Engineering, Mechanical Engineering, Medical Physics, Laser, Plasma and Computational Physics, Computer Science and Nuclear Medicine.

It is noteworthy that based upon its educational resources and academic standards, PIEAS has been declared as number one engineering institute of the country by the Higher Education Commission (HEC).