International Conference on the

Applications of Nuclear Techniques for Sustainable Socio-economic Development

24-26 October 2022, Islamabad Hotel, Islamabad, Pakistan

Organized by

Pakistan Nuclear Society

in collaboration with

PAEC PSF NCP PAS PNRA

Introduction

Nuclear technology has proven its worth in many areas of socio-economic development in the fields of agriculture, health, industry, materials, energy, environment, geology and hydrology etc. Apart from nuclear power plants and research reactors utilization, nuclear applications in agriculture and bio-technology have led the formations of many new varieties of crops, pesticide control and yield enhancement. In nuclear medicine, diagnostic and treatment of cancer has a game changing impact on human health. In water resource management, radiotracer techniques for ground water movement and recharge as well as sea water desalination have solved many problems faced by certain communities. In the industrial sector, non-destructive testing of small and large components, improvement of electrical and mechanical properties and value addition in materials, sterilization of surgical goods and preservation of food items have resulted in quality products. Another important area is safety and security of nuclear installations especially nuclear power plants as well as nuclear waste management. The importance, implications and improvement in the aforesaid areas is a need of the time.

Considering the usefulness of nuclear technology in all these areas, it would be worthwhile to familiarize these subjects not only to a layman but also to the scientific community which is not aware of the countless benefits. It is also significant to apprise general public aware of the notable achivements of Pakistan in nuclear applications; the varieties of cotton developed at the Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad brought a white revolution in Pakistan; about 80% of the cancer patients in the country are treated at nuclear medical centres of the Pakistan Atomic Energy Commission (PAEC); radioisotopes for digonastic and treatment of cancer are produced at the Pakistan Institute of Nuclear Science & Technilogy (PINSTECH); and the production of unintrupted, clean and green electricity from nuclear power plants that can take the baseload.

In pursuance of the mandate of the Pakistan Nuclear Society (PNS), this international conference is aimed to promote and educate people about the peaceful uses of nuclear technology for the benifits of mankind. Other than PAEC, the national organizations like Pakistan Science Foundation (PSF), Pakistan Nuclear Regulatory Authority (PNRA), Pakistan Academy of Sciences (PAS) and National Centre for Physics (NCP) are the callaborators in this venture.

Objective:

The theme of this conference is to seek input from experts on multiple aspects in the application of nuclear techniques in agriculture, human health, environment, water resource management, value addition in materials, high-tech industry and electricity generation. Its recommendations will be sent to the relevant authorities for appropriate actions.

Scope of the Conference:

It is envisaged that the conference speakers will cover the following themes with emphasis on viable solutions and recommendations:

- ***Agriculture/Livestock***
  Food security is a major concern in many countries. Nuclear techniques can help in tackling this issue by developing new crop varieties with higher yield, disease resistance crops, pesticides control, etc.
- ***Human health***
  Nuclear techniques are regarded as most powerful tools for diagnostic and therapeutic treatment in various types of cancers. Production and supply of radio-pharmaceuticals used for these processes are essential requirement for the hospitals.
- ***Environment***
  Ionizing radiations are applied for global environmental pollution control and different types of radioactive isotopes are used for environmental monitoring.
- ***Water resource***
  Water availability, storage, supply and its quality are among the main issues, which the world is facing at present. Water quality surveillance and monitoring strategies to supply safe and drinkable water is essential. Specially, the nuclear desalination to treat the brackish, sea and contaminated water needs to be addressed.
- ***Industry***
  Non-destructive testing of in-service components has proven its worth in many industrial units. Fire-resistant materials made from polymers and rubbers can be produced by radiation cross-linking (wires, cables, etc.). Similarly, value addition in different materials especially in gemstones is carried out by using gamma rays and neutron irradiations.
- ***Safety and security***
  The sustainable application of nuclear techniques for socio-economic development is associated with strong and effective national nuclear safety and security framework/ infrastructure which must ensure the protection of worker, public and the environment from the harmful effects of ionizing radiation. The regulatory framework covers wide range of nuclear and radiation facilities and oversight of nuclear or radioactive material from cradle to grave approach from both safety and security perspective.
- ***Electricity generation***
  The electricity generated from nuclear & hybrid energy systems are considered as one of the major sources of clean and green energy, the share of which is increasing day by day in the energy mix. Many countries of the world are acquiring nuclear power plants.
- ***Non-electric applications of nuclear energy***
  Nuclear energy has the potential to increase worldwide energy and water security through non-electric applications, such as hydrogen production, sea water desalination, district heating and other industrial applications.

Call for papers and posters

Papers and posters are invited from scientists, researchers, technologists, university students and teachers, professionals of the related fields in agriculture, health, environment, water resources, industry and electricity power generation.

The abstracts of papers should be of 100 to 200 words in Arial font of size 12, bearing the title and the names of authors, indicating corresponding author, his/her institution/ organisation and email address along with phone number submitted to the Conference Secretary before 17th August 2022. The full text paper is required to be submitted by 30th September 2022 for timely publication in the proceedings of the conference.

A Poster Competition will also be held in which cash prizes of Rs. 20,000/-, Rs. 15,000/- and Rs. 10,000/- will be given to the top three posters. Moreover, Certificate of Participation will be presented to all registered participants.

Organisational Support:

Pakistan Atomic Energy Commission (PAEC)
Pakistan Nuclear Regulatory Authority (PNRA)
National Centre for Physics (NCP)
Pakistan Science Foundation (PSF)
Pakistan Academy of Sciences (PAS)

Organizational structure:

Patron: Dr. Raja Ali Raza, Chairman PAEC
Chief Organiser: Dr. Muhammad Tahir Khaleeq, President PNS
Conference Secretary: Mr. Waqar Ahmad Butt, Executive Member PNS

Organizing Committee:

1. Dr. Muhammad Mohsin
2. Mr. Ghulam Sarwar
3. Dr. Niaz Ahmed
4. Dr. Shazia Fatima
5. Syed Zahid Hussain

Advisory Committee:

1. Engr. Parvez Butt, former Chairman PAEC
2. Dr. N. M. Butt, Chairman PINSAT
3. Dr. Shahid Mahmood Baig, Chairman PSF
4. Dr. Yusuf Zafar, former Chairman PARC
5. Mr. Anwar Habib, former Chairman PNRA
6. Mr. Faizan Mansoor, Chairman PNRA
7. Syed Yusuf Raza, former Member Power, PAEC
8. Mr. Saeed ur Rahman, Member Power, PAEC
9. Engr. Aslam Umar, Member Engineering, PAEC
10. Dr. Masood Iqbal, Member Science, PAEC
11. Dr. Nasir Majeed Mirza, Rector PIEAS
12. Dr. Mansoor Hameed Inayat, DG NCP
13. Prof. Dr. Aslam Baig, Fellow PAS

Technical Committee:

1. Dr. Ali Rusheed
2. Dr. Syed Arif Ahmad
3. Dr. M. Javed Akhtar
4. Dr. M. Ashraf Ch.
5. Dr. Imtiaz Ahmad
6. Dr. Iftikhar Ahmed
7. Dr. Riffat M. Qureshi
8. Dr. Manzoor Ahmad Ch.
9. Mr. M. Abbas Qamar
10. Dr. Syed Waseem Akhtar
11. Dr. Tariq Mahmood Bhatti
12. Dr. Niaz Ahmad
13. Dr. Shazia Fatima

Registration:

The participants from different institutes, organisations and universities may register by filling the participation form at the web-site: **https://pns.org.pk** along with the proof of registration fee deposit.

Registration Fee:

The registration fee for the participants is mentioned below:

- Foreign Participants: US$ 100
- Local Participants: Rs. 5000/-
- PNS Members: Rs. 2500/-
- Students: Rs. 2000/-

Payment can be made through crossed cheque in favour of Pakistan Nuclear Society or online deposit at NBP, Margalla Branch, Islamabad, ***IBAN:*** PK18NBPA1725004018982691 *or cash deposit with Finance Secretary PNS (Mr. Ghulam Sarwar, Ph. No. 0334 8509801)*

Financial support:

Limited funds are available to cover stay and travel of foreign as well as local speakers.

Contact persons:

1. **Dr. Muhammad Tahir Khaleeq** Ph.0321 5017845
   Email : mtkhaleeq@hotmail.com
2. **Mr. Waqar Ahmad Butt** Ph. 0322 8883339
   Email: waqaraaabutt@gmail.com
3. **Dr. Niaz Ahmad** Ph. 0342 9707058
   Email: chandoor92@gmail.com

Pakistan Nuclear Society

PAEC Rest House, Hanna Road, G-8/3, Islamabad, Pakistan

https://pns.org.pk, **council@pns.org.pk**

Ph.Nos. +92-51-8895193 & 8895194, Fax. +92-51-9261823