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# PNS Newsletter

Nuclear for Peace

A Quarterly Newsletter of the Pakistan Nuclear Society

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## Vision

*To become a resource centre for disseminating information and to promote practical applications on peaceful uses of nuclear science, engineering and technology for sustainable socio-economic development. The principal tools to be used for this purpose would be PNS Website and PNS Newsletter.*

## Announcements

**PNS Symposium**  
on Commercial Potential and  
Societal Impact of Nano Technology,  
8th May 2024, NCP, Islamabad

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## From the desk of Editor-in-Chief

PNS is keeping up its glorious traditions of honoring the heroes who have rendered invaluable services to make our motherland an atomic power. These legendary figures are not only pride of the nation but also role-models for our future generations. Our youth are required to follow their footsteps and make this country technically and economically strong. Since, youngsters constitute more than 60% of our country's population, and have great potentials, therefore, PNS always tries to address and encourage the young scientists and engineers as well as university/ college students to play their role in constructive national development activities and become responsible citizens of the society. To achieve this goal, PNS holds lectures on ethical and moral values for youth at various places in the country, alongside imparting awareness about the beneficial uses of nuclear technology.

During the first quarter of 2024, PNS organized two important meetings. The first meeting was of the Scientific Advisory Board (SAB), which comprises of experienced scientists and engineers of the country, with the aim to critically discuss and analyze PNS programmes and future guidelines. The second was the Administrative Advisory Board (AAB) Meeting, which comprises of prominent personalities in multifarious domains viz, strategic issues, foreign affairs, academia, business, lawyers community, social media figures for public awareness and greater visibility in higher circles. PNS Council has shown its commitment to follow the recommendations and suggestions with best of their abilities.

Efforts are underway to utilize the expertise of retired scientists and engineers having lifelong practical experience and in-depth knowledge in specific fields, for the socio-economic development of the country. For this purpose, linkages are being established with certain organizations, industry and commercial institutions, who have shown positive intentions to utilize their experience for beneficial purposes. It is expected that PNS will be able to participate in some commercial projects through national organizations and the services of our experts would be utilized as advisors/consultants. Experts in different areas are encouraged to take part in the nation building programmes.

## Activities During the 1st Quarter

### Lifetime Achievement Awards

Pakistan Nuclear Society (PNS) feels pride to pay homage to those dignitaries who have rendered their valuable services for the development of nuclear science and technology, and grant them prestigious awards for their accomplishments both for peaceful applications as well as strategic needs of the country. The Lifetime Achievement Award is one of the most distinct honor, which PNS gives to its highly distinguished members. For the year 2023, this award was given to **Dr. Inam-ur-Rehman, H.I, S.I, AK** and **Engr. Sultan Bashiruddin Mahmud, S.I**. These scientists and engineers are legends in their respective fields, and have made exceptional contributions and recognizable achievements. The award giving ceremony was held on 30th December, 2023 at the PAEC Rest House, G-8/3, Islamabad. The event was graced by a remarkable turnout of guests, family members, and colleagues who applauded and honored the extraordinary services to the nation of Dr. Inam and Engr. Bashiruddin. The programme commenced with a recitation from the Holy Quran. Dr. Muhammad Tahir Khaleeq, President PNS warmly welcomed the participants and provided overview of the Lifetime Achievement Awards.



Dr. Mohammad Mohsin, General Secretary PNS highlighted the significant achievements of Dr. Inam-ur-Rehman. Before joining the Pakistan Atomic Energy Commission (PAEC) in 1959, he did his M.Sc (Physics) from Government College, Lahore. He obtained his MS in Nuclear Engineering from MIT, USA in 1962, and Ph.D from North Carolina State University, USA in 1969. Upon his return, he initiated a training programme for young scientists and engineers in a small room within the Commission and played a key role in the establishment of 'Reactor School' which was renamed as Center for Nuclear Studies (CNS) in 1976. The School expanded with time and upgraded as a university named Pakistan Institute of Engineering and Applied Sciences (PIEAS), which obtained the degree-awarding charter in 2000. Although, Dr. Inam stepped down from his administrative responsibilities in 1997 upon his retirement, however, he remained dedicated to the institution he had built from a single room to Pakistan's top engineering university and nurturing the country's scientists and engineers in nuclear science and technology. In recognition of his exceptional services, the Government of Pakistan bestowed

upon him distinguished civil awards, including Hilal-i-Imtiaz, Sitara-i-Imtiaz, and Aizaz-i-Kamal. Keeping these credentials in view, PNS had the honor to credit him with Lifetime Achievement Award.



Mr. M. Abbas Qamar, Executive Member PNS presented the formal introduction of Engr. Sultan Bashiruddin Mahmud and highlighted various significant milestones from his career. Engr. Bashiruddin obtained Electrical Engineering degree from the Engineering University, Lahore, securing the first position. He then joined PAEC and proceeded to England to pursue higher education. He earned MS degree in Nuclear Reactors Control Engineering from Manchester University College of Science and Technology and gained valuable experience while working on diverse nuclear reactors. In November 1974, when he was only 33 years of age, he assumed the charge as the founding director of Pakistan's uranium enrichment programme which is recognized as the Kahuta Plant. Under his leadership, the project made significant progress. Additionally, he was the main person behind the design, construction, and operation of an indigenous research reactor, utilizing domestic resources that played a pivotal role in making Pakistan a nuclear power. For his significant contributions to the field of science and engineering, the Pakistan Academy of Sciences (PAS) awarded him a Gold Medal in 1991, and then President of Pakistan bestowed upon him Sitara-i-Imtiaz. In recognition of his remarkable services, PNS honored him with the Lifetime Achievement Award.

The Chief Guest, Dr. Samar Mubarkmand, N.I, H.I, S.I, Former Chairman NESCOM, presented these awards (memento shields), while the Guest of Honor, Engr. Pervaz Butt, N.I, H.I, S.I, Former Chairman PAEC, presented the certificates. Following the receipt of the awards and certificates, Dr. Inam and Engr. Bashiruddin expressed their gratitude to PNS for bestowing the awards and shared their thoughts with the audience. The ceremony continued with thought provoking and emotional speeches from Dr. Samar Mubarak, Engr. Pervaz Butt and Dr. Raja Ali Raza Anwar, Chairman PAEC, acknowledging the occasion as a remarkable one. Ms. Nazia Kashif, Executive Member PNS, diligently fulfilled the role of stage secretary for the event, ensuring its smooth proceedings.

## AGM of PNS

The Annual General-body Meeting (AGM) of the Pakistan Nuclear Society was held on 30th December, 2023 at the PAEC Rest House in Islamabad. About 80 PNS members were present on the occasion. The meeting was commenced with a recitation from the Holy Quran by Mr. Waqar A. Butt. President PNS provided an overview of current activities, new initiatives and future programmes. General Secretary PNS gave facts and figures about the activities undertaken by the Society during 2023. He highlighted the growth of PNS membership including associate and student memberships. He also elaborated on public awareness programmes, knowledge sharing sessions and support provided to a large number of students.



Mr. Ghulam Sarwar, Finance Secretary PNS, presented the summary of financial report for 2023. He gave an overview of society's income and expenditure, financial statement and prudent management. The financial reserves maintained by PNS ensured sustainability and enabled the implementation of successful programmes. Mr. Sarwar expressed gratitude towards various organizations and stakeholders for their contributions, emphasizing the society's commitment to transparency and accountability through meticulous record-keeping and audits procedure.

During the meeting, a resolution was presented proposing the establishment of a forum for previous presidents of PNS. It was discussed in detail, and couple of members showed a bit of reservation in its adoption. Therefore, the resolution could not be passed.



Overall, the AGM provided valuable insights into the society's achievements in the previous year. The reports presented by the General Secretary and Finance Secretary showcased the society's dedication to advancing nuclear science and technology while ensuring responsible financial management. Discussion was also held on finding ways and means of funds generation. The members appreciated the idea of holding PNS elections by electronic voting. Vice President PNS concluded the meeting by clarifying certain issues raised by the members and also by delivering a vote of thanks.

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## Scientific Advisory Board Meeting

The 3rd meeting of the PNS Scientific Advisory Board (SAB) was held on January 27, 2024 at PAEC Rest House, G-8/3, Islamabad. The meeting was attended by the following Board Members:

- i. Engr. Pervaz Butt (Chair), N.I.H.I.S.I
- ii. Mr. Muhammad Naeem, N.I.H.I.S.I
- iii. Dr. Abdullah Sadiq, S.I
- iv. Engr. Waqar Murtaza Butt, S.I, T.I (on Zoom)
- v. Engr. Syed Ziauddin
- vi. Dr. Rakhshanda Bilal
- vii. Dr. Javed Hanif
- viii. Dr. Muhammad Tahir Khaleeq (Secretary)



All the PNS Council Members were present. Mr. Khawaja Zahid Shakeel participated as an observer. The Chairperson presided the meeting. After recitation from the Holy Quran, President PNS formally welcomed the members. He gave a presentation on PNS activities conducted during 2023. In addition, he displayed the calendar of events/ activities planned in 2024. During the interactive presentation, Board members continued providing useful discussion and suggestions. Highlights of the meeting are as follows:

1. The suggestions proposed by the Board Members during the 2nd SAB meeting were well addressed by the Council. The actions taken on the recommendations have shown significant progress in enhancing collaborations, communication and support for young scientists/ engineers as well as university and college students. The review of scientific activities in 2023 showed substantial achievements and successful initiatives.
2. In order to generate funds for PNS activities, the idea of establishing a company was discussed in detail. It was proposed that the company would seek funding from government or non-governmental organizations (NGOs) and then donate a portion of these funds to PNS for its operation. This approach may generate adequate financial sources for the society, ensuring its continued functioning and enable the society to serve its members and the community more effectively. The Board agreed to this proposal with suggestions that proper planning and adherence to legal and ethical guidelines would be ensured for transparency and accountability in the management of funds.
3. Regarding the linkages with industrial sector in the country, it was suggested that PNS should create a strong connectivity between retired professionals and the industry. The experts



should be encouraged to share their experiences and skills with the industrial organizations. It should also have financial benefits both for the individual and PNS.

4. Discussion was held on the issue of finalizing the criteria for PNS fellowships which was withheld for many years. Consequently, a three-member committee comprising of Dr. Javed Hanif, Dr. Rakhanda Bilal and Dr. Javed Iqbal Saggi was formed to chalk out a comprehensive criterion that would be fair and transparent for all applicants.

5. It was informed that as per its mandate, PNS conducts seminar at various PAEC centres for disseminating knowledge and updating latest developments in the fields of interest to PAEC. The support is usually provided by nuclear power related centres in the form of transportation and stay of speakers and Council Members. However, in other sectors of PAEC, such a support is lacking.

Similarly, to organize seminars in specific areas of interests, guidance has to be sought from PAEC authorities, specifically for the softer image of the country as a responsible nuclear state. To address these concerns and ensuring a smoother and more efficient work of PNS, Mr. Muhammad Naeem, suggested holding of a meeting with Chairman PAEC. Engr. Pervaz Butt endorsed the suggestion to resolve these types of issues at the top management level.

In the end, President PNS thanked the honorable members of the Board for their valuable suggestions and guidance. He assured that all possible efforts will be made to implement the suggestion of SAB members in true letter and spirit. The continued guidance and valuable support of SAB is a source of inspiration and motivation for PNS council.

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## Administrative Advisory Board Meeting

The 3<sup>rd</sup> meeting of the PNS Administrative Advisory Board (AAB) was held on March 9, 2024 at PAEC Rest House, Islamabad. The meeting was attended by the following Board Members:

- i. Dr. Ansar Parvez, (Chair), H,I
- ii. Senator Nauman Wazir Khattak
- iii. Prof. Dr. Robina Farooq, T.I
- iv. Air Commodore Khalid Banuri
- v. Mr. Muhammad Kamran Akhter
- vi. Dr. Muhammad Tahir Khaleeq (Secretary)

Dr. Ansar Parvez, former Chairman PAEC presided the meeting. All the nine Council Members were present. A special guest, Mr. Shakeel A. Hashmi, Director/Producer PTV was invited as an observer. After recitation from the Holy Quran, President PNS welcomed the Board members and delivered a presentation on PNS activities conducted during 2023. An overview of the proposals made by the Board Members during the last AAB

meeting and actions taken on these was also presented. The Chair appraised that Council is doing exceptional work, but it is important to focus on developing the capabilities within a defined scope. Therefore, instead of simply performing tasks, aim should be to transform the goals and objectives into actionable plans. He advised to establish Key Performance Indicators (KPIs) to measure the effectiveness of PNS activities and track the progress. By continuously improving capabilities and focusing on meaningful interactions, one can maximize impact and achieve greater success in work.

Senator Nauman Wazir Khattak reiterated his views about strong linkage of PNS with the industry to stand on firm footing. Being a businessman, who is running a large industrial setup, he has already offered his cooperation to support technical experts in various science and engineering fields as well as students. He informed that some charity organizations have the potential to play a crucial role in providing learning opportunities for people interested in acquiring skills related to small technical jobs such



as welding, car tire repairs, plumbing, electric appliances and other similar trades. By partnering with these organizations, individuals from under prevailed backgrounds or with limited access to formal education can gain valuable skills that can help improve their livelihoods and economic prospects. He hinted that exploring the model of British Executive Service Overseas (BESO) can offer valuable insights into how similar programs can be implemented elsewhere. Engaging in discussions with them and potentially forming a joint venture can facilitate knowledge sharing and collaboration, leading to the development of more effective and sustainable learning initiatives in other regions. PNS should think of adopting this model.

Dr. Robina Farooq emphasized that there was a growing need for universities to adopt new advancements in teaching mathematics and machine learning to meet the demands of modern education. By integrating innovative teaching methods and technologies, universities can enhance the learning experience for students and better prepare them for careers in these fields. Additionally, incorporating discussions on economic issues into the curriculum can provide students with a more comprehensive understanding of the real-world implications of their studies, helping them apply their knowledge more effectively in practice. The focus should be on applicable courses such as software development, artificial intelligence, and other emerging technologies which can provide students with specialized training and skills that are in high demand in the job market. Such courses can offer practical, hands-on learning experiences and industry-relevant projects. PNS should arrange seminars for students on the importance and

benefits of these courses.

Air Commodore Khalid Banuri, in response to the career counseling initiative of PNS, said that it can be tailored to individuals based on their unique needs, aspirations, and circumstances. By providing personalized guidance and support, career counselors can help individuals navigate their career paths more effectively, leading to greater satisfaction and success in their chosen fields. He also deliberated that creating small and attractive contents for social media platforms like Facebook, YouTube, Tweeter etc. are crucial for engaging audiences and increasing reach. Social media applications can help bridge the gap between different generations by providing platforms for sharing and exchanging ideas, experiences, and perspectives. By crafting short video clips that are concise, visually appealing, and relevant to the target audience, can effectively capture the attention of users and convey the required messages. He suggested that PNS should have a meeting with relevant officials in NUTECH University that is actively involved in addressing a variety of projects and emerging challenges. It can open a way to potentially collaborate on projects of mutual interest.

Mr. Kamran Akhter informed that the Nuclear Energy Summit, scheduled on 21st March in Belgium, presents a significant opportunity to explore crucial topics such as climate change, energy sustainability, and the role of fossil fuels. Discussions are expected to cover a wide range of issues, including the potential of small modular reactors and regulatory frameworks. PNS involvement in such domains can be useful, offering insights into regulatory practices and fostering international collaborations. He further stated that there is a growing need to promote nuclear energy and related opportunities in Pakistan. He added that collaboration with the Pakistan Academy of Sciences can provide a platform to advocate for nuclear energy and highlight its importance for the country's energy security and economic development. Similarly, sharing the research and achievements of organizations like



NIAB and NIBGE can be highly beneficial. Developing social media content to showcase these research outcomes can help raise awareness among the public for socio-economic development. He said that PNS collaboration with the Foreign Office can also be advantageous in developing informative and engaging content. With reference to PNS initiative to support the activities of Women in Nuclear (WiN)-Pakistan Chapter, he stated that discussing the role of women in science and highlighting their contributions can be a valuable aspect of promoting gender equality and diversity in the field.

Mr. Shakeel A. Hashmi said that PTV's support can be extended to joint scientific endeavors aimed at publicizing research through media and TV channels, as well as creating other social media content focused on science and technology. This collaboration can

help bridge the gap between academia and the public, fostering a better understanding and appreciation for scientific advancements and their real-world implications. Through informative content, PTV can play a crucial role in promoting scientific literacy and inspiring new generation of innovators.

In the end, President PNS thanked the honorable members of the Board for sparing their valuable time especially to those who travelled from other cities to support PNS. Their valuable suggestions and guidance are a source of encouragement. He assured that with the cooperation of Board members who are influential personalities in their fields, PNS Council will make wholehearted efforts to implement the suggestion of AAB members.

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## PNS College Conference at Jhelum

PNS organized a College Conference at Government Graduate College (GGC), Tahlianwala, Jhelum on January 15, 2024. This was a full-day event with the theme 'Benefits of Nuclear Science and Technology in Health, Agriculture, Power, Industries, etc.' Mr. Safdar Ali Khan, General Manager of the Mangla Dam Organization, graced the occasion as the Chief Guest, while Mr. Raja Hassan Raza, Deputy Director of Water Management, Jhelum, was the guest of honor. The conference commenced with a recitation from the Holy Quran, followed by a heartfelt Naat and the National Anthem. Dr. Shahid Hussain Qureshi, Principal, GGC Tahlianwala, warmly welcomed the guests, PNS Council members from Islamabad, and all the participants. Dr. Anjum Iqbal, the Event Coordinator, presented an introduction to the conference.

PNS President gave a brief introduction of the Society and its nationwide activities, emphasizing the peaceful uses of nuclear technology. The Chief Guest and the Guest of Honor shared their views on the seminar. Vice President PNS made a presentation on the Benefits of Nuclear Sciences and Technology that ended in 'never give up in life' message to the students. A walk-through of posters and a visit to stalls by the Chief Guest accompanied by PNS

officials, principals, and guests was conducted. Three colleges from Jhelum namely, Govt. Graduate College Tahlianwala, Govt. Graduate College, G.T Road and Govt. Graduate College for Women participated in the poster competition.

In the afternoon session, short presentations of 4-5 minutes each were delivered by the contestants of the posters. The competition presented a wide range of topics related to the peaceful uses of Nuclear Science and Technology through visually appealing and informative dissertations. On that occasion, the Principals of the three colleges, Dr. Shahid Hussain Qureshi, Dr. Ghazalah Yasmin and Mr. Zahid Hussain Sahi shared their views on fruitful conduct of the conference.

The evaluators of the posters, Mr. M. Abbas Qamar, Mr. Muhammad Jamil Ch. Director-IT (Retd.) APP and Syed Zahid Hussain, Executive Member PNS, made their decisions based on these presentations and walk-through observations. As per result, GG College for Women got the 1st Position, GG College, G.T Road got 2nd Position and GG College, Tahlianwala got 3rd Position. Cash prizes were given to the winners of the Poster Competition by President PNS. The stage secretaries of



the sessions, Mr. Ihtesham Zafar, Lecturer GGC Tahlianwala, Ms. Iffat Ilyas, Lecturer GGC Women and Mr. Jamroz Kayani, Lecturer GGC GT Road coordinated the events in a very efficient manner.



The conference served as a platform for experts from different fields to discuss nuclear energy, safety, and environmental concerns. Through knowledge sharing and best practices, participants learned how to work towards safer and more sustainable nuclear technologies, fostering cooperation and ensuring peaceful nuclear energy use.

Overall, the Conference was a successful and memorable event organized through collaboration between PNS and the three colleges of Jhelum. Such events contribute significantly to



knowledge enhancement, training, exposure, and networking. The organizers showed their determination to arrange similar fruitful events in the future.



### PNS Seminar at the University of Wah



PNS with the collaboration of the Department of Chemistry and UW Environmental Society of the University of Wah organized a student session on 7th March 2024. Ms. Liaba Noor, PNS Focal Person gave introductory remarks about the seminar at start of the session. Ms. Irum Fatima, Senior Lecturer Chemistry/Head of UW Environmental Society welcomed the guests in her opening remarks. PNS President briefed about Society's activities related to students. Dr. Imtiaz Ahmad, S.I, former DG (International Affairs), PAEC talked about the environmental changes and its effect on earth and human. Dr. Masroor Ikram, T.I, former Dean Research, PIEAS talked about Laser and its application in health. He elaborated the advances in research of lasers on cancer therapy



in a simplified way. At the end, Dr. Faisal Nawaz, Chairperson Chemistry Department, gave concluding remarks and praised the talks of learned scientists. More than 150 students and faculty members from various science departments participated. They asked meaningful questions and engaged in discussions with the speakers. Overall, the session concluded with a sense of realization and motivation among the students. Before start of the session a visit of PNS delegates was conducted to different labs and classes of the campus. A meeting with the Vice Chancellor, Prof. Dr. Jameel-un-Nabi was also arranged. It is worth mentioning that Prof. Dr. Uzma Ghazanfar, Dean Sciences, Dr. Faisal and Ms. Irum played a pivotal role in organizing such an insightful session.

## Motivational lecture by Dr. Inam ur Rahman

As a part of its social, moral and cultural activities and as a follow up of the College Conference in January 2024, PNS arranged an academic seminar at the GGC for Women, Jhelum on 5th March in which Dr. Inam ur Rahman gave an impressive lecture. Dr. Inam is regarded as a model teacher and an institutional builder in nuclear science and technology. In his colorful slides, he talked about the foundation of Centre for Nuclear Studies, which is now one of the leading universities of Pakistan named as PIEAS. After a brief

history of atomic achievements of Pakistan, his motivational talk focused on ethical and moral values. With many practical examples he explained that such values lead to peace of mind which is lacking in the lives of many. About 200 participants, mostly science students benefited from his lecture in the main auditorium of the college which was followed by a meaningful question/ answer session. In the end, Dr. Inam gave certificates to the winners of posters competition held on 15th January 2024 at GGDC Tahlianwala.



## Career Counselling

PNS arranged a counselling session by Dr. Tariq Jamal Solaija, H.I, S.I, former DG Technical/ DG Planning, PAEC on February 17, 2024 at PAEC Rest House, Islamabad. Many retired, in-service officials and students came to get benefit from the useful session of about three hours. Dr. Solaija attended more than 10 persons in one-on-one meetings cum discussions. On that occasion, Dr. Shaukat Hameed Khan, Dr. M. Tahir Kaleeq, Mr. M. Abbas Qamar and Dr. Ahmad Ahsan Nawaz interacted with the students in the main lobby of the guest house and provide useful guidance about their pursuits for higher studies. PNS Students Coordinators, Mr. Hamza and Miss Ayesha Baig also talked to the students to help them in tackling certain problems during their studies.



## Outreach and Linkages

### Meeting with Additional Foreign Secretary

The government of Pakistan has set up a Special Investment Facilitation Council (SIFC) to facilitate investors for cooperation among all relevant Government Departments, and fast track project development as a 'One Window Operation'. The main objective is to establish a platform that can be utilized to contribute towards achieving national economic development goals. Mr. Rizwan

Saeed Sheikh, Additional Foreign Secretary is a member of SIFC. Thanks to Mr. Shams ul Ahad and Kh. Zahid Shakeel for arranging a meeting in the Ministry of Foreign Affairs (MoFA) to discuss about utilizing expertise and experience of retired PNS Members for economic development of the country. Mr. Rizwan informed that the focus of SIFC activities is on four main sectors; IT, Energy, Mining, and Agriculture, in which foreign companies have expressed willingness to invest in Pakistan. PNS President briefed about the initiatives of PNS on industry and academia linkages. Detailed discussions were held on how experienced human resources in the pool of PNS can contribute towards scientific and engineering support to local industries related to SIFC tasks. Mr. Rizwan appreciated PNS efforts in this regards and proposed to have a meeting with the coordinator of SIFC.



## Meeting with Director General NCP

Dr. Qaisar Ahsan, T.I has asumed the charge as new Director General, National Centre for Physics (NCP). Consequently, Dr. M. Tahir Khaleeq and Mr. Waqar A. Butt made a courtesy call on him in his office on 17th January 2024. Many issues of common interests came under discussion including holding of seminars and training programs. One such symposium has been planned in the field of nano-technology on 8th May 2024 at NCP. Dr. Qaisar appreciated holding of such activities and ensured all possible help. It is worth mentioning that PNS has already inked MoU with NCP to carry out joint ventures. A meeting with the officials working in the Nano-tech department and a visit to the relevant labs was also conducted.



## Public Awareness Programme

After the students session in Jhelum on 5th March, 2024, a seminar was held at Al Markaz Hall Jhelum with the efforts of Dr. Anjam Iqbal which was attended by prominent personalities from welfare associations, business community, social media and academia. Dr. Inam ur Rahman was the Guest of Honour who gave an eye opening speech followed by a discussion session

related to nuclear capabilities and achievements of Pakistan as well as the prevailing situation of distress and hopelessness in the country. Dr. Inam hoped that the situation will change if we keep on fulfilling our responsibilities with honesty and dedication as there is always a bright day after a dark night.



## Media linkages

As a follow-up of the Administrative Advisory Board meeting, Mr. Shakeel A. Hashmi arranged a session at the International Islamic University (IIU), Islamabad with the students of media and communication. PNS President and Vice Presidents were invited to communicate with the students for promotional activities of PNS. After a brief introduction of the guests, Mr. Hashmi elaborated the purpose of the meeting. Dr. Tahir Khaleeq gave details of what PNS wants from relevant students for awareness of public about peaceful uses of nuclear technology

through media sources. It was indicated that short term projects and internships can be offered to achieve these objectives. Mr. Waqar Butt emphasized that one of the purposes of PNS is to remove fear of the word 'Nuclear' from minds of people that this technology only leads to devastation and destruction. He mentioned many applications of nuclear technology in health, environment, industry, agriculture, and power production which are extremely beneficial for inhabitants of the globe. During the interactive session, students asked questions for clarification and further interaction by becoming Associate Members of PNS. It is to mention that apart from his official responsibility as Director/ Producer in PTV, Mr. Shakeel is also rendering his teaching services at IIU and Bahria University. Therefore, with his support, similar sessions will be arranged at other places in coming days.



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## Silent Heroes

### Dr. S. M. Bhutta

*Remembered as a very competent engineer*



Dr. Sakhi Muhammad Bhutta was born at Ludhiana on 2nd June 1940. After partition, his family migrated to Pakistan and settled in Chiniot. He did his B.Sc Engineering (Electrical Power) from University of the Punjab, Lahore in 1961 and joined PAEC in February 1962. He completed his M.Sc in Nuclear Instrumentation from University of Michigan Ann-Arbor, USA in 1964 and obtained Ph.D. (Engineering Nuclear for Electrical Power Generation) from University of Gent (Belgium). He worked for design team of Atomic Power Development Associate in USA during the design of Fermi Fast Breeder Reactor. He also worked in Reactor Operation Division of PINSTECH for installation and start-up of Pakistan's first atomic reactor during 1965-66, re-designing of electrical works of PINSTECH Phase-I which

has saved significant funds to PAEC. He worked in the design of Pakistan's first re-processing plant and Nuclear Material Lab (1968-1970), served as Director KANUPP Project Division in PAEC Head Office. In 1972, he was transferred to PINSTECH. He worked at the "Centre D'Etude Energie Nucleaire" Mol, Belgium at the BR3 reactor from April 1974 until July 1975. After return from his training in Belgium, he was posted at Chashma Nuclear Power Project as Head Quality Assurance Division, Islamabad. In 1990, he went to Ministry of Water and Power and remained there till 1998 as Chief Engineering Advisor, Islamabad. From 1998 to 2001 he served as Senior Technical Advisor in NEPRA and from 2003 to 2007 as Consultant micro hydel power plant design in Alternative Energy Development Board. Then he was appointed as Eminent Professor at UET Texla and as Distinguished Professor at International Islamic University Islamabad till his death. He passed away on 18 November 2012.

May Allah Kareem rest his soul in Jannat-ul-Firdous.

## A Historical Photo

### Legends of Pakistan's Nuclear Programme



(From left) Dr. Samar Mubarakmand, Engr. Pervaz Butt, Dr. Ishfaq Ahmad, Mr. Munir Ahmad Khan, Mr. M. Hafeez Qureshi, Dr. Masood Ahmed and Mr. Anwar Ali)

## Nuclear News and Views

### International

#### What is Net Zero? What is the Role of Nuclear Power and Innovations?

*IAEA Weekly News*

January 05, 2024

In the pursuit of a sustainable and climate-resilient future, achieving net zero greenhouse gas (GHG) emissions has emerged as a target around the world. Accomplishing net zero means either utilizing technologies that do not emit any GHGs; such as renewables, hydropower and nuclear power or allowing some levels of emissions and removing an equal amount from the atmosphere through carbon capture or other technologies.

“There is consensus within the climate community that, to ensure global warming is limited to 1.5 degrees by the end of the century, the energy system, which is the main source of GHG emissions, needs to be carbon neutral. This means no emissions, or net zero,” explained Henri Paillere, Head of the Planning and Economics Studies Section at the IAEA. The 2015 Paris Agreement - an agreement adopted by 196 countries - aims to limit global warming to below 2 degrees Celsius.

There is also scientific consensus that human activity is the main driver of climate change. Burning fossil fuels and clearing land and forests, including mangroves, generates GHGs such as

carbon dioxide and methane, which trap heat and lead to higher temperatures. The increasing frequency of extreme weather events, rising sea levels and global temperature changes underscore the urgency to transition to a carbon-neutral society.

Nations worldwide have committed to reducing their GHG emissions to curtail their impact and address the climate crisis. “Achieving net zero requires a multifaceted approach that includes reducing fossil fuel consumption and increasing reliance on clean energy sources,” Paillere said. Nuclear power provides 10% of the world’s total electricity and one quarter of its low carbon supply, according to the World Energy Outlook 2022 published by the International Energy Agency (IEA). “Nuclear power, renowned for its low carbon footprint and reliable energy generation, emerges as a key player in the clean energy transition,” Paillere added.

Full story: <https://www.iaea.org/bulletin/what-is-net-zero-what-is-the-role-of-nuclear-power-and-innovations>.

#### New Material Efficiently Extracts Uranium from Seawater

*Energy China Uranium*

January 9, 2024

Recent research published in the journal ACS Central Science describes a new material that, through electrochemical extraction, attracts hard-to-get uranium ions from seawater more efficiently than existing methods. According to the Nuclear Energy Agency, 4.5 billion tons of uranium are floating around the ocean as dissolved uranium ions. This reserve is over 1,000 times more than what’s on land. Extracting these ions has proven to be challenging, though, as the materials for doing so don’t have enough surface area to trap ions effectively.

This is where the new invention comes in. Rui Zhao, Guangshan Zhu and colleagues from the Northeast Normal University, Changchun developed an electrode material with lots of microscopic nooks and crannies that could be used in the electrochemical capture of uranium ions from seawater. To create the electrodes, the team began with flexible cloth woven from carbon fibers. They coated the cloth with two specialized monomers that were then polymerized. Next, they treated the cloth with hydroxylamine hydrochloride to add amidoxime groups to the polymers. The natural, porous structure of the cloth created many tiny pockets for the amidoxime to nestle in and easily trap the uranyl ions.

In experiments, the researchers placed the coated cloth as a cathode in either naturally sourced or uranium-spiked seawater, added a graphite anode and ran a cyclic current between the electrodes. Over time, bright yellow, uranium-based precipitates accumulated on the cathode cloth. In the tests using seawater collected from the Bohai Sea, the electrodes extracted 12.6 milligrams of uranium per gram of coated, active material over 24 days. The coated material’s capacity was higher than most of the other uranium-extracting materials tested by the team. Additionally, using electrochemistry to trap the ions was around three times faster than simply allowing them to naturally accumulate on the cloths. In the researchers’ view, this work offers an effective method to capture uranium from seawater, which could open up the oceans as new suppliers of nuclear fuel.

<https://www.mining.com/new-material-efficiently-extracts-uranium-from-seawater/>

## National

### Production of Radiopharmaceuticals and Quality Control

*Business Recorder*

February 03, 2024

Pakistan has approved the production of radiopharmaceutical in line with the International Atomic Energy Agency (IAEA) guidelines. In this connection, the Drug Regulatory Authority Pakistan (DRAP) released a decision titled, “Acceptance of IAEA technical reports on radiopharmaceuticals as regulatory reference,” saying the authority has approved the IAEA Technical Report 466 and other technical reports of radiopharmaceuticals production and quality control issued by the IAEA as one of the regulatory references of DRAP for radiopharmaceuticals products. The authority in its 176th meeting held in December 2023 has

observed that the IAEA has published various documents of technical guidance for member states on radiopharmaceuticals which are considered as a reference in addition to those specified in pharmacopeia. The development took place in September 2023 when the Director General (DG) IAEA, Rafael Mariano Grossi, launched a publication, Pakistan enabling the country to become partner with IAEA for Strengthening South-South Cooperation to highlight the role of Pakistan in strengthening South-South Cooperation through the promotion of peaceful uses of nuclear technology.

### Impending Climate Change and Nuclear Energy

March 22, 2024

The horror of global warming is real. The European Union’s Copernicus Climate Change Service declared last month that 2023 was the hottest year in last 173 years. During this time, global average temperatures rose 1.52 degrees Celsius above average world temperatures present at the start of the industrial revolution. Furthermore, for the third year in a row, sea ice coverage around Antarctica has dropped below 2msq km – a threshold never recorded before.

Greenhouse gasses emitted from the fossil-fueled thermal power plants have been one of the main causes of global warming. Nuclear energy is environmentally clean and sustainable source of energy, and the world has now risen to this fact. The first ever Nuclear Energy Summit organized jointly by the IAEA and Belgium was held in Brussels on 21-22 March 2024. World leaders came together to reaffirm their commitment to nuclear energy as a way to reduce carbon emissions and meet development goals. Pakistan was represented at the conference by its foreign minister Mr. Mohammad Ishaq Dar.

Addressing the Summit, the Foreign Minister highlighted Pakistan’s achievements in peaceful uses of nuclear technology particularly in the generation of electricity. He underscored the importance of nuclear energy to address the challenges of climate mitigation and adaptation. He stressed that as a country severely affected by climate change and climate-induced disasters, Pakistan was keen to diversify its energy mix with low-carbon energy sources.

The Foreign Minister called for enhanced international cooperation, including technical assistance and provision of financial assistance by multilateral financial institutions, to ensure energy security of developing countries, and to enable them to meet their energy needs and achieve zero emissions goals.

Since the ‘Nuclear Energy Summit’ was held when PNS Newsletter was ready to go to press, a detailed article would be given in the next Newsletter.

*(Mr. Saleem Ansari)*

## News about PNS Members

### New Responsibility



**Dr. Shazia Fatima**, Chief Medical Officer, former Executive Member of PNS has been appointed as Director General Nuclear Medicine & Oncology (DG NMO), PAEC. She has served as Head Nuclear Medicine at NORI, Islamabad and Director KIRAN Hospital, Karachi before assuming the

charge at PAEC HQ. She is also the President of Pakistan Society of Nuclear Medicine (PSNM) as well as President Women in Nuclear (WiN) Pakistan Chapter. PNS Council congratulates her upon her well-deserved position.

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## Honored with NCA Award 2023



**Dr. Sumera Javeed**, Principal Scientist, PINSTECH, a Lifetime Member of PNS has received NCA Award for the year 2023 in research. She is an active member of the group working on the indigenous development of Linear Accelerators (LINACs) for medical and industrial applications. She has designed and developed electromagnets

and diagnostics equipment for Pakistan's first indigenous high energy LINAC. She also worked in the European Organization for Nuclear Research (CERN) which is one of the world's largest and most respected centres for scientific research. During the visit of the Prime Minister to Switzerland in 2016, when Pakistan became an Associate Member of CERN, she spoke to the media on behalf of Pakistanis working there. She is also a Lindau Alumni, who was selected on merit to attend the prestigious meeting of Nobel Laureates in Lindau, Germany.

## Obituaries

### Dr. Hameed A. Khan, H.I, S.I



Dr. Hameed Ahmed Khan was born at Rangoon (Burma) in 1942 and migrated to Pakistan in 1947. He received his college and university education at F.C. College and Govt. College, (Lahore) and obtained his B.Sc. (Hons.) and M.Sc. degrees from Punjab University in 1963 and 1964, respectively winning 'Role of Honors'.

The results of his M.Sc. thesis were published in 'Nature'; a rare distinction for a Pakistani M.Sc. student. He joined PAEC in 1965 and participated in the commissioning of Pakistan's first Research Reactor (PARR-1). He was sent to UK for higher studies by PAEC in 1968 from where he obtained M.Sc. in Reactor Physics in 1969 and Ph.D. in Radiation Physics from Birmingham University in 1972. His Ph.D. research work produced about 20 international publications; again, a great pride for a Ph.D. student. He also has the honor of working on Moon-Samples brought by Apollo (American) and Luna (Russian) space missions. After completing his Ph.D., he carried out post-doctorate in the same University till 1974. He was awarded prestigious degree of Doctor of Science (D.Sc.) in Physics and Space Research from Birmingham University in 1994.

Dr. Khan had more than 500 research publications in international and national journals of repute. The President of Pakistan conferred upon him prestigious civil awards of Hilal-i-Imtiaz and Sitara-i-Imtiaz in recognition of his high quality research work. The National Book Council of Pakistan bestowed upon him 'Scientist of the Year-1987' award which carried a Prime Minister's Gold Medal and a Cash Prize on the development

and applications of solid state nuclear track detection (SSNTD) technique. The Pakistan Academy of Sciences (PAS) awarded him a Gold Medal in 1975, elected him a Fellow in 1990 and awarded "INFAQ Foundation Gold Medal" in physical sciences in 1994. He won the Alexander von Humboldt Foundation of Germany award in 1981. The Islamic Academy of Sciences (IAS) elected him a fellow in 1988 with the honor for being the Youngest Fellow. The Iranian Research Organization for Science & Technology (IROST) awarded him "Kharazmi Prize" in 1993. National Book Foundation awarded him first prize in Physics for the years 1991, 1992 & 1993. The Third World Network of Scientific Organizations (TWNSO), Trieste, Italy awarded him the prestigious "1998 TWNSO Prize in Technology". Dr. Khan developed and applied an extremely inexpensive technique for uranium and thorium exploration with a view to use these minerals in nuclear power generation programme of PAEC. The application of this technique has reduced exploration costs and has helped in savings of enormous amount of foreign exchange. He was given the administrative responsibility of Associate Director of PINSTECH in 1994 and after two years he was elevated to the rank of Director General of this institute. In March 2000, he was entrusted with the responsibility of heading COMSATS as Executive Director. After completion of his service, he served as visiting professor at COMSATS Institute of Technology till his health issues became severe. Dr. Khan passed away on 12th February 2024.

May the Almighty rest the departed soul in eternal peace.

*(Naveed Khan, son)*

### Dr. Syed Arif Ahmad



Dr. Syed Arif Ahmad, a distinguished lifetime member of the Pakistan Nuclear Society (PNS), was born on May 25, 1950, in Lahore. He began his educational journey at Central Model School Lahore and completed his Senior Cambridge in 1965. Then obtained his B.Sc. Honors in Physics from Punjab University in 1970 and M.Sc. degree in 1971. After that, he joined Centre for Nuclear Studies (CNS) and earned his M.Sc. in Nuclear Technology from Quaid-i-Azam University in 1974. Then he went to United States for higher studies and obtaining MS in Engineering (Mechanical/Nuclear) in 1981, and Ph.D. from the University of California, Los Angeles in 1987. Throughout his career, he accumulated 20 years of teaching experience at institutions including PIEAS, NUST, AIR University, and the

University of California, USA. Additionally, he served as the Scientific Secretary of the International Nathiagali Summer College from 1997 to 2000.

Dr. Arif dedicated 42 years of service to PAEC, retired as Chief Scientist in 2010 and Director General of the Directorate General of Safety (DOS), which he founded in 2002. His contributions were instrumental in the development of nuclear safety and radiation protection infrastructure within PAEC. His commitment to knowledge dissemination and his role as a safety expert at PAEC will be remembered. Dr. Arif took his last breath on 5th February, 2024 and was laid to rest in the H-8 graveyard, Islamabad.

May Allah bless the soul with the highest rank in Jannah.

(Mr. M. Abbas Qamar)

### Bakhtyar Majid, S.I



Mr. Bakhtyar Majid, born on August 01, 1952 in Lahore, received his early education in Sialkot and Sargodha. He pursued Electrical Engineering at UET, Lahore and was graduated in 1975. He started Nuclear Engineering studies at the Centre for Nuclear Studies (now PIEAS) and obtained his Master degree in 1977. He started his career as a lecturer at CNS from July 1977 to August 1980 and delivered lectures to M.Sc. students on Radiation Shielding, Control Systems, and Numerical Analysis. Subsequently, from August 1980 to March 1984, he served as System Manager at the Computer Centre in PINSTECH. He then pursued further studies leading to M.Sc. Microprocessor Engineering & Digital Electronics in Manchester, UK. Upon returning, he became a Group Leader for process automation and computer interfacing at Pakistan Research Reactor (PARR-1).

His career included roles such as Head of Computer Division at PINSTECH from August 1992 to July 1995, Technical Manager at the Electromagnetic Radiation Directorate in May 2000, and Director R-Block until his retirement on July 31, 2012, as Chief Engineer. He subsequently served as Advisor to Member System, PAEC for One year. In 2015, he joined the University of Sargodha as In-charge of the Department of Electrical Engineering & Technology, where he remained for approximately two years. Recognized for his exemplary service, the Government of Pakistan awarded him the Sitar-e-Imtiaz on August 14, 2006. He was also inducted as a Fellow of the Pakistan Nuclear Society in 2007. He took his last breath on December 31, 2023.

May the Almighty ALLAH rest the departed soul in eternal peace.

(Fahid Bakhtyar, Son)

## WiN Activities

### Participation in an International Event on the Role of Pakistani Women in Nuclear Science and Technology

The Permanent Mission of Pakistan in Vienna, Austria organized an event entitled “Role of Pakistani Women in Nuclear Science and Technology” at the Vienna International Centre/IAEA on March 7, 2024. The purpose of the event was to highlight the role and contribution of Pakistani women in the field of nuclear science & technology. Several Ambassadors/ Diplomats of Vienna based Permanent Missions and officials of the International Atomic Energy Agency (IAEA) participated in the event.

H.E. Mr. Aftab Ahmad Khokher, the Ambassador of Pakistan, highlighted the contribution of Pakistani women in the development of country in general and specific in the field of nuclear science & technology. Educational opportunities at Pakistan Institute of Engineering and Applied Sciences (PIEAS), a partner institute of IAEA for Marie Sklodowska Curie Fellowship Program were presented through a slide show. Ms. Najat Mukhtar, DDG Nuclear Applications, IAEA applauded the contributions of Pakistani women nuclear scientists in the field of food security,



water resource management, agriculture and human health and urged more women participation in the nuclear field.

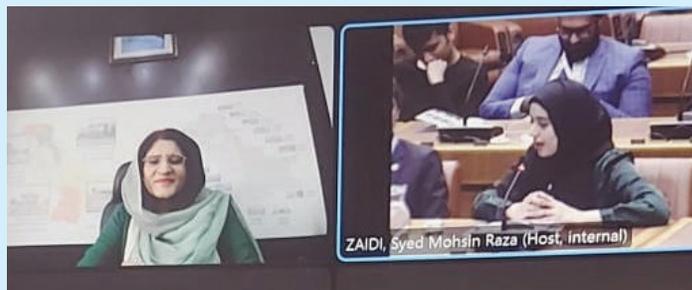
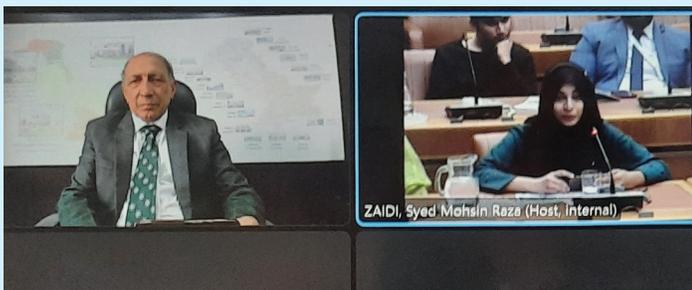
Dr. Ghiyas ud Din, Minister Technical, Permanent Mission of Pakistan in Vienna coordinated the programme. The representatives from Pakistan Nuclear Society (PNS) and WiN-Pakistan attended the event virtually. Dr. Shazia Fatima, President WiN-Pak spoke on “Women in Pakistan - Striving to extend better health care” while Dr. Samreen Shehzadi, Secretary WiN-Pak, delivered a talk on “Activities of WiN-Pakistan for the promotion of Nuclear Science & Technology”. She mention that WiN activities in Pakistan are being carried out under the umbrella of Pakistan Nuclear Society. Two young Pakistani IAEA Marie Curie fellows shared their experiences during their fellowship at PIEAS.

Ms. Janette Donner, President WiN-IAEA appreciated the role of WiN-Pakistan chapter for strengthening the women in nuclear field and emphasized on its representation at the forums of WiN-IAEA and WiN-Global. In his remarks,

Mr. Waqar A. Butt, Vice President PNS highlighted active role of WiN-Pak for promotion of nuclear science & technology in the country and desired to have international events in Pakistan for which PNS can provide assistance. He also thanked Permanent Mission of Pakistan in Vienna for organizing this useful event.

Overall, the event was very successful for highlighting the contribution of Pakistani women in nuclear S&T and to promote more participation of women in future.

\*\*\*\*\*



## Students' Corner

**HYBRID COURSE**

**ARTIFICIAL INTELLIGENCE (AI) IN BIOTECHNOLOGY**

**REGISTER TODAY**  
<https://pns.org.pk/AI-courses>

Course Fees: Rs. 1000  
 Students/Associate Members: Rs. 500  
 Last Date of Registration: 15 February 2024  
 Course will be started on 17 February 2024  
 Time: 2pm to 5pm

**The Target Audience Include**

- AI Professional Students
- Healthcare Professionals
- Medical and Biosciences Researchers
- Biotechnology Enthusiasts, and
- Interested in Advancements at the Intersection of Artificial Intelligence and Biotechnology

**DR. AHMAD AHSAN NAWAZ**  
 PNS Faculty Member  
 AI Expert  
 Served as Facility Head at Max-Planck Ins, Germany

**Pakistan Nuclear Society**

### A session on Artificial Intelligence

Dr. Ahmad Ahsan Nawaz, Principal Scientist, PAEC who has been actively involved in PNS academic affairs, conducted a hybrid interactive session on ‘Artificial Intelligence in Biotechnology’ on February 24, 2024. The participants attended the session in person at PNS Office, G-8/3, Islamabad as well as on zoom link. The lecture was made interesting by living examples and short video clips to conceptualize the subject.

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## Social Events

### Hike cum get to gather

The first short hike of the year for families of PNS members was arranged on Sunday, 10th March 2024 at the traditional charming track of Trail-5 in Margalla Hills. About 70 persons including children moved through lush green pathway mostly up to the first spring which is only 2km from the parking site. A traditional spot on the grassy lawn opposite to CDA

Nusrery was selected for get to gather after the walk. The new participants briefly introduced themselves to establish linkages and friendships. Thanks to Syed Zahid Hussain and Dr. Imran Zaka who made arrangements of tea at the spot and refreshments boxes which were served to all the participants.



### Visit to Mangla

Taking advantage of the participation in two seminars in Jhelum on 5th March 2024, the group of PNS Members from Islamabad (Dr. Inam ur Rahman, Dr. Asma Rahman, Dr. M. Tahir Khaleeq, Mr. Waqar A. Butt, Dr. Anjam Iqbal with spouse, Mr. Fazal-e-Qadar, Mr. Ikram ul Haq, Mr. Jamil Ahmad and Mr. Aamir Hashmi) made a trip to Mangla Dam

with the curtesy of Engr. Safdar Ali Khan, General Manager of Mangla Dam Organization. A detailed visit was conducted to the main sections of the dam including the operation room, huge turbines, generators and spillways. The group also enjoyed the attractive view of the dam from the viewpoint on Mangla Fort.



### A Training Course on Hajj and Umrah Performance

A two-hour session on how to Perform Hajj and Umrah: step by step was arranged at the PAEC Rest House on March 02, 2024. The course was designed for the blessed individuals who are about to embark on the spiritual journey of Hajj and Umrah. The course was conducted by

Mr. M. Abbas Qamar. The speaker is the author of three books: "A User Guide on Hajj and Umrah" (English); "The Sacred Journey of Hajj-2006" (a travelogue in English); "Hijaz e Muqaddas ka Safar 2019" (a travelogue in Urdu). The comprehensive training session provided expert guidance and practical tips to the participants. Around 14 individuals participated in this session. The speaker covered the following topics: Basic Terminology; Umrah Performance; Hajj Performance; Masjid-e-Haram and Ziarat in Mecca Mukarrama; Masjid-e-Nabvi and Ziarat in Madina Manawwara. At the end of the session, the user guide entitled "A User Guide on Hajj and Umrah" was gifted to the participants by the author.





Issue 14/2024

April-June, 2024

# PNS Newsletter

Nuclear for Peace

A Quarterly Newsletter of the Pakistan Nuclear Society

**Patron:**

Dr. Muhammad Tahir Khaleeq

**Editor-in-Chief:**

Mr. Waqar Ahmad Butt

**Editors:**

Dr. Muhammad Sadiq

Mr. Saleem A. Ansari

Mr. M. Abbas Qamar

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## Vision

To become a resource centre for disseminating information and to promote practical applications on peaceful uses of nuclear science, engineering and technology for sustainable socio-economic development. The principal tools to be used for this purpose would be PNS Website and PNS Newsletter.

## Announcements

**PNS Seminar on the Role of Nuclear Techniques in Achieving SDGs, 24-25 Sept. 2024, Islamabad**

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## From the desk of Editor-in-Chief

**Youm-e-Takbeer** **یوم تکبیر**

May 1998

پاکستان یوم تکبیر سماجی و علمی کامیابی کی جانب سے قائم اہل وطن یوم تکبیر مبارک ہے۔

اس یادگار موقع پر ہم ان تمام سائنس دان، انجینئرز، ٹیکنیشنز، سپورٹنگ اسٹاف اور وہ تمام ادارے اور افراد جو کہ اس عظیم کارنامے کو سر انجام دینے میں شامل رہے ان کی خدمات کا اعتراف کرتے ہیں اور ان کو مبارکباد پیش کرتے ہیں۔ ہماری دعا ہے کہ اللہ تعالیٰ پاکستان کو نئی وگنی وگنی ترقی عطا فرمائے اور سائنس اور ٹیکنالوجی کے میدان میں کامیابیوں اور کامرائوں کا سفر سوار جاری رہے۔ آمین۔

پاکستان زندہ باد۔

**Pakistan Nuclear Society**  
<https://pns.org.pk>

Throughout the histories of nations, certain days stand out as symbols of unparalleled pride and honor. Youm-e-Takbeer symbolizes a momentous occasion, marking our rise to a distinguished position in the nuclear arena on the global stage. PNS orchestrated a special seminar at the PAEC Rest House, graced by eminent nuclear scientists and engineers, who illuminated the contributions made within their respective domains. Encouragement was extended to younger generation, urging them to emulate the laudable endeavors of their predecessors.

During the second quarter of 2024, PNS organized seven seminars at various places in the country, including three in different cities. Additionally, there were three dedicated sessions for students and three initiatives for Women in Nuclear (WiN). PNS extends its gratitude to the Pakistan Atomic Energy Commission (PAEC), the Pakistan Science Foundation (PSF), and some other organizations for financial assistance in hosting these events. Special thanks are also

due to individuals whose generous donations have contributed significantly. However, given the prevailing high inflation rates in the country, these resources are insufficient. Consequently, the remaining funds are drawn from PNS reserve funds, which are gradually dwindling.

The passive option would be to curtail the activities. But the Council is of the view and the Members would also like to maintain the current momentum. One proposal involves establishing an endowment fund and soliciting contributions from relevant organizations to ensure long-term sustainability. Another suggestion is to appeal to PNS Lifetime Members for donations, which would be allocated to a fixed account. Members are encouraged to provide further suggestions on how to generate funds for PNS programs.

## Activities During the 2<sup>nd</sup> Quarter

### Pakistan's Achievements in Nuclear Fields

*(A seminar with reference to Youm-e-Takbeer)*

May 28, 1998 marks one of the most significant and joyous occasions in the memory of Pakistani people. On that day, our scientists and engineers with financial assistance from the government and logistic support from strategic organizations conducted five nuclear tests at Chaghi. This monumental effort established Pakistan as the first Muslim and the seventh nuclear power state in the world. The day is commemorated nationwide as Youm-e-Takbeer with immense enthusiasm and passion.

Recognizing the profound significance of this historic day, the PNS organized a special seminar titled 'Pakistan's Achievements in Nuclear Fields', on 24th May, 2024, at the PAEC Rest House in Islamabad. In line with PNS mandate to promote the peaceful applications of nuclear technology and raise awareness about its countless benefits for the socio-economic advancement of the nation, distinguished nuclear scientists and engineers were invited to highlight significant achievements in this field.

The speakers looked into key contributions of nuclear technology in areas such as electricity generation, materials science, industry, agriculture, and human health. The seminar attracted over 80 personnel, including many retired senior officials from various organizations and universities, who participated in person. Additionally, as a hybrid event, over 100 individuals joined online via the Zoom platform.



The welcome address was given by Mr. Waqar A. Butt, Vice President, PNS. He elaborated that although the credit of conducting successful nuclear tests mostly goes to the scientists, engineers, technicians and support staff of PAEC, who worked day and night to make that miracle happen, yet other establishments also played pivotal role in bringing that dream true. It includes R&D institutions, defence organizations and military personnel for developing the required infrastructure and providing necessary technical and logistic support including safety and security arrangements at Chaghi. After that, the introductory remarks were given by Dr. Muhammad Tahir Khaleeq, President PNS. He highlighted the importance of holding such seminars not only to recall our achievements and successes but also to motivate younger generation to work hard for greater national causes. He thanked the speakers for accepting the invitation to deliver their talks on a short notice.

Dr. Ansar Parvez, H.I, former Chairman PAEC delved into the prospects of nuclear energy, specifically focusing on the development of nuclear power in the country. He compared the

cost of building nuclear power plants in Pakistan with similar plants constructed in developed countries, and emphasized that this cost was much lower in Pakistan. He praised the efforts of all those PAEC engineers who kept the first nuclear power plant (KANUPP) running when the vendor support was withdrawn as a result of embargoes imposed after the nuclear device test of India in 1974.

Mr. Muhammad Naeem, N.I, H.I, S.I, former Chairman PAEC, shed light on Pakistan's achievements in the nuclear fuel cycle, highlighting the country's advancements in this critical area. He applauded the hard work and dedication of those who made indigenous efforts from mining of uranium to the final product by completing all the difficult steps for both civil and defence requirements.

Dr. Yusuf Zafar, T.I, former Chairman Pakistan Agriculture Research Council (PARC), emphasized the pivotal role of nuclear technology in agriculture, highlighting Pakistan's notable progress in this sector. He specifically mentioned that the nuclear agriculture centres operating under PAEC had made tremendous progress in developing new varieties of various crops to deal with food security issues. He mentioned that Laser Land Levelers developed by PAEC had benefitted the farmers a lot for enhancing their crop productivity. However, he showed concern that the contribution of nuclear agriculture technology in overall national agriculture programme is very little and this must be enhanced.

Engr. Ziauddin, former Member Engineering (PAEC), provided insights into the application of nuclear technology in industries, underscoring its significance in driving innovation and progress. He emphasized on the need of enhancing national innovation index at global level and cited the need of using nuclear technology for developing Small Modular Reactors (SMR), Molten Salt Reactors, fusion reactors, waste management and advanced materials testing. He mentioned that scope of Pakistan Radiation Services (PARAS) in Lahore has increased tremendously after the installation of Electron Beam facility for irradiations of surgical goods and food items. He emphasized upon indigenization of industrial products for self-sufficiency and sustainability of our projects.



Dr. Mustansar Jahangir, former Director General Pakistan Institute of Nuclear Science & Technology (PINSTECH), explored the role of nuclear technology in human health, using the facilities of research reactors, mentioning the significant contributions in this field. He gave a good account of the radio-pharmaceuticals which are prepared at PINSTECH and are supplied to more than 70 hospitals in the country for cancer diagnostics and treatments saving a huge amount of foreign exchange.

Dr. Walayat Hussain, former Member Science, KRL amused the audience with poetry specially written just after the nuclear tests in 1998. Dr. N. M. Butt, Chairperson Preston Institute of Nano Science & Technology (PINSAT), Dr. Shaukat Hameed Khan, former Rector GIKI and Prof. Dr. Rao Afzal, former Vice Chancellor, Islamia University of Bahawalpur also expressed their views and gave thought provoking suggestion on that occasion.

Engr. Pervaz Butt, N.I, H.I, S.I, former Chairman PAEC, made the concluding remarks. He summarized the key takeaways from the seminar and highlighted the importance of continued advancements in nuclear technology. He specifically mentioned the contributions of PAEC’s engineering setups for the world renowned European Centre for Nuclear Research (CERN) in Switzerland. He recalled the technical expertise of those workshops who made delicate spare parts for KANUPP when the supplier backed out due to international pressure.

In the end, Dr. Mohammed Mohsin, General Secretary PNS, extended a heartfelt vote of thanks to all participants, speakers, and organizers, acknowledging their valuable contributions to the success of the seminar. The ceremony ended with a cake cutting ceremony to commemorate and celebrate the great day.

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### Commercial Potential and Societal Impact of Nanotechnology

*(A symposium on Nano Technology at NCP)*

A Symposium titled “Commercial Potential and Societal Impact of Nanotechnology” was held on 8th May, 2024 at National Centre for Physics (NCP), Islamabad. The event was jointly organized by Pakistan Nuclear Society (PNS), National Institute for Biotechnology and Genetic Engineering (NIBGE)-Faisalabad and National Centre for Physics (NCP). The financial assistance for that event was provided by Pakistan Science Foundation (PSF). More than 120 participants from different cities participated in the one-day scientific discourse.

During the opening ceremony, Dr. Qaisar Ahsan, Director General NCP presented the welcome address. Dr. M. Tahir Khaleeq gave the inaugural speech and Prof. Dr. Waheed S. Khan, the main organizer of the symposium, made the introductory remarks. Dr. Shoaib Ahmad, Former Member Science, PAEC graced the event as Chief Guest. He highlighted the importance and potential applications of emerging area of Nanotechnology in Pakistan.



Ten invited speakers presented their S&T endeavors, highlighting different aspects of nanotechnology emphasizing its immense

potential for contribution in multifarious industries including textile, energy, cosmetics, diagnostic, chemical, paint, etc. The symposium comprised of two technical sessions. The first one was chaired by Dr. Muhammad Rafi, Director NILOP and Co-chaired by Prof. Dr. Javairia Qazi from QAU. The title of the talks in the 1st session are listed below:

1. “Designing Functionalized Nanomaterials for Biomedical and Environmental Applications” by Dr. Asma Rehman, Principal Scientist, NIBGE
2. “Lipid nano-carriers-smart drug delivery platform” by Dr. Ayesha Ihsan, Principal Scientist, NIBGE
3. “Innovation opportunities and challenges in commercialization of nanomaterials” by Prof. Dr. M. Akhyar Farrukh, University of Central Punjab, Lahore
4. “Nanotechnology and Society: Building a Sustainable Future” by Dr. Habib Aslam Gaba, Chairman Standing Committee on Industry Academia Linkages & Policy Advocacy, Faisalabad Chamber of Commerce and Industry
5. “NS &TD: Nanotechnology Vision for Societal Needs” by Dr. Syed Khalid M. Shah, NCP, Islamabad

The 2nd session was chaired by Prof. Dr. Asghari Masood from Air University, Islamabad and Co-chaired by Dr. Khalid Thebo from DESTO. The title of the talks in that session are listed below:

6. “Nano-fibers: From concept to consumers” by Prof. Dr. Zeeshan Khatri, Mehran University of Engineering and Technology, Jamshoro, Sindh.
7. “Nanotechnology and Rapid Testing: New Horizons of Commercial Opportunities” by Dr. Sadia Zafar Bajwa, Principal Scientist, NIBGE
8. “Nanotechnology: Its Commercial Viability and Potential for Changing Society” by Dr. Waheed S. Khan- Deputy Chief Scientist/Manager-ORIC, NIBGE
9. “Nanotechnology and its Industrial, Scientific, Educational and Social Aspects” by Prof. Dr. N.M. Butt, SI, Chairman PINSAT, Preston University, Islamabad
10. “Graphene: Status and Prospects” by Dr. Rashid Jalil, Associate Professor, UET Lahore





Participants showed keen interest in the lectures, and the question-and-answer sessions were highly informative. A poster competition was also held, featuring over 25 posters. The competition attracted significant attention and sparked fruitful

discussions among the participants. Dr. Shoaib Ahmad presented shields to the speakers and distributed cash prizes and certificates to the winners of the poster competition. In the end, Dr. Waheed S. Khan gave the concluding remarks.

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### **Role of Environmental Management in the Safety of NPPs** (One day seminar at Chashma)

PNS organized a seminar on the “Role of Environmental Management in the Safety of Nuclear Power Plants (NPPs)” on 23rd April 2024 at CHASNUPP Center for Nuclear Training (CHASCENT) with the collaboration of Chashma Nuclear Power Generating Station (CNPGS) and Pakistan Nuclear Regulatory Authority (PNRA). Mr. M. Anwar Habib, Former Chairman PNRA was the Chief Guest of that event. The welcome address was delivered by Mr. Najeeb Ullah, General Manager, CNPGS. He thanked the PNS team and praised their efforts for conducting the seminar at CHASCENT. An introduction to PNS was given by Dr. Muhammad Tahir Khaleeq. He elaborated about the activities that PNS is performing all over the country emphasizing upon the peaceful uses of nuclear technology for the benefit of mankind. After that the Chief Guest addressed the audience. He admired the efforts of PNS for conducting the seminar on a very important

topic with special reference to nuclear safety of such facilities.

In the academic session, there were four presentations on various topics. The following lectures were delivered:

1. “Genesis of Nuclear Safety” by Mr. M. Anwar Habib, former Chairman PNRA
2. “Environmental Monitoring for Safety of NPPs” by Mr. M. Abbas Qamar, CS(R), former Director DOS
3. “Role of PNRA in Environmental Monitoring at different places in Pakistan” by Mr. Naveed Shahzad, PSO, RNSD-II, PNRA
4. “Environmental Monitoring at CNPGS” by Mr. Abubakar Mubarak, SS, CNPGS



More than 80 personnel attended the seminar. After the lectures, a question/answer session was conducted by Mr. M. Abbas Qamar, Executive Member PNS and the participants raised a number of pertinent questions. Mr. Yasir Arafat, Head Emergency Planning and Environmental Monitoring, CNPGS was the Stage Secretary and conducted a well-coordinated session.

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### Radioactive Waste Management

*(One day seminar at CPC)*

A one-day seminar on “Radioactive Waste Management” was organized by PNS in collaboration with Chemical Plants Complex (CPC) on Thursday, 30th May at CPC Auditorium, DG Khan. The seminar was coordinated by Dr. Muhammad Abdullah, DCS from CPC and Mr. M. Abbas Qamar, Executive Member PNS. The Chief Guest of the event was Mr. Faheem Ikram, Director General CPC. The welcome address was delivered by Dr. Abdullah. Dr. Muhammad Tahir Khaleeq, then provided an introduction to PNS, highlighting its nationwide activities emphasizing the peaceful uses of nuclear technology. Subsequently, the Chief Guest addressed the audience, acknowledging and appreciating the efforts of PNS in conducting the seminar on a subject that is very much relevant to the work being carried out at CPC site.

The technical session commenced following the Tea break. During the academic session, three lectures were delivered on various topics.

1. “Radioactive Waste Management at CPC” by Dr. Muhammad Abdullah, DCS, Manager CPC
2. “Leadership, Management, and Culture for Safety in Radioactive Waste Management” by Mr. M. Abbas Qamar, CS (R), Executive Member PNS
3. “International Radioactive Waste Management Practices” by Dr. Safdar Ali, CS, Director Disposal Safety, Directorate General of Nuclear Repository (DGNR)

Over 50 persons attended the seminar. Following the lectures, participants engaged in a question and answer session which was moderated by Mr. Abbas Qamar. Mr. Salman Azhar, SE, CPC, assumed the role of Stage Secretary who efficiently coordinated the session. The seminar concluded with a vote of thanks delivered by Mr. Waqar A. Butt.

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### Nuclear Techniques in Industry

*(A seminar at NIFA, Peshawar)*

On June 25, 2024, the Nuclear Institute for Food and Agriculture (NIFA) in Peshawar hosted a seminar on “Applications of Nuclear Techniques in Industry.” The event was jointly organized by the Pakistan Nuclear Society (PNS) and NIFA and sponsored by the Pakistan Science Foundation (PSF). About 75 participants, including students, researchers, research scholars, and scientists from various universities and organizations across Khyber Pakhtunkhwa (KP), as well as NIFA officials participated in the

fruitful activity. The seminar was comprised of three sessions: Inaugural, Technical, and Concluding sessions.

Dr. Gul Sanat Shah, Chief Scientist, Director NIFA presented the welcome address. He emphasized the importance of the seminar in promoting nuclear techniques in industry. Dr. Muhammad Tahir Khaleeq, then provided an overview of the Pakistan Nuclear Society’s initiatives and achievements, setting the stage for the day’s discussions. The Chief Guest, Dr. Yusuf Zafar delivered the inaugural address. He highlighted the significant role of nuclear technology in various sectors, including industry and agriculture, and emphasized how these technologies can enhance food security through improved agricultural practices. He gave a brighter picture of the initiatives taken by the present government to improve food security situation in the country.

The technical session featured several insightful presentations which are as follows:

1. “Role of Nuclear Technology in Food Security” by Dr. Yusuf Zafar
2. “Development of Improved Varieties for Disease Resistance High Yielding Crops using Radiations and other Techniques” by Dr. Syed Sarwar Alam, DCS(R), NIAB
3. “Phytomining Technology - Role of Plants in metal extraction from Minerals Resources” by Dr. Tariq Mahmood Bhatti, DCS(R), DGNFC
4. “Introduction to Electron Beam / X-ray Technology and its Useful Applications in Food” by Mr. Asim Irshad, JS, NIFA
5. “Phyto-sanitary Irradiation Treatments to Improve the Safety and Quality of Agricultural Products” by Dr. Inamullah Khan, DCS, NIFA

The concluding session featured a vote of thanks by Mr. Waqar A. Butt, Vice President PNS. He expressed gratitude to all the speakers, participants, and organizers for their contributions to the seminar’s success. He also displayed a motivational message for the students “Never give up in life”.





Dr. Muhammad Amin, Manager ORIC, NIFA, was the coordinator from NIFA for this event. The houseful gathering was mainly due to his dedicated efforts and linkages. He fulfilled the responsible so

efficiently that each segment of the seminar proceeded smoothly and well on time.

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### Quality Management System Standard ISO-19443:2018

*(A seminar at SES)*

Quality Assurance Division (QAD), NEW-1, Scientific and Engineering Services (SES), PAEC in collaboration with Pakistan Nuclear Society conducted a seminar on “Quality Management System (QMS) standard ISO-19443:2018”, which is an extended version of ISO-9001:2015 and adopted by PSQCA as Pakistan standard in June, 2023. The standard includes safety requirements specified by IAEA for the organization in supply chain of Nuclear Energy Sector. The mandate of NEW-1 is design and manufacturing of small to medium scale mechanical equipment and structures besides providing inspection and testing services. Apart from manufacturing equipment, NEW-1 is also providing field service to various organizations in maintaining and installation of equipment all over the country. Taking cognizance of the vital national need, NEW-1 took this initiative of adopting ISO-19443 into its management system, anticipating its need for the supply chain and support of Nuclear Power Plants. For that, NEW-1 and PNS jointly arranged a seminar on 30-04-2024 at

SES with more than 40 participants from NEW-1, NEW-2, HMC-3, ICCC, DQM and PNS.

Syed Kaleem Haider Jafri, DG, SES was the Chief Guest of the seminar who appreciated the cooperation between PAEC and PNS. He highlighted the importance of this standard and explained the motivation behind acquiring ISO 19443 as a Nuclear Management Quality standard to create long-term, sustainable relationships between the power plant and supplier. He acknowledged the efforts of NEW-1 for taking an initiative for performing internal gap analysis between its current QMS based on ISO-9001:2015 with latest QMS standard of ISO-19443:2018. Participants and guests appreciated the efforts of QAD and the coordinating team of PNS and praised the interactive session of seminar. The seminar concluded with calls to immediate actions such as arrangement of workshop to perform independent gap analysis and training need assessment of NEW-1 at SES in near future.



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### Certification for Sustainable Technical Support of NPPs *(A workshop at NEW-1)*

On 6th June, 2024, the Quality Assurance Division (NEW-1) of Scientific and Engineering Services (SES), PAEC, in collaboration with the Pakistan Nuclear Society (PNS), organized a one-day workshop on Gap Analysis for ISO-19443:2018 with the aim of Certification for Sustainable Technical Support of Nuclear Power Plants (NPPs). The workshop was attended by 24 participants from various organizations, including NEW-1, PNRA, DOS, HMC-3, ICCG, CeSP, PNAC, PINSTECH, DQM, and PNS.

The workshop commenced with the welcome address by Mr. Saeed ur Rahman, Director Quality Assurance NEW-1. Dr. Anjum Iqbal, the Coordinator of the PNS Focus Group for Quality Management, emphasized the significance of the workshop, which encompasses lectures, group discussions, and panel discussions aimed at providing recommendations for NEW-1. Two speakers from PNS, Mr. Zahid Salman and Mr. Muhammad Abbas Qamar, presented an overview of the standards ISO 19443:2018 and ISO/TS 23406:2023, respectively.

Mr. Salik Qadeer Butt, Senior Director, NEW-1, was the Chief Guest of the event while Dr. Muhammad Tahir Khaleeq accompanied him as a Guest of Honor. Mr. Butt commended the collaborative efforts focusing on quality for sustainable indigenous development. He underscored the significance of ISO-19443 and expressed NEW-1 management’s unwavering commitment to obtaining certification. He recognized that an Independent Gap Analysis of NEW-1 QMS conducted by a team of experts from PNS would facilitate the path towards ISO-19443:2018 certification. The forum concluded with two recommendations: (a) PNS should establish a Panel of Experts to support the ISO 19443:2018 certification process, and (b) PNS should organize an Independent Gap Analysis of NEW-1 conducted by a Team of Experts. The stage was coordinated by Mr. Farhan Babar, PE, NEW-1 in a very efficient manner.

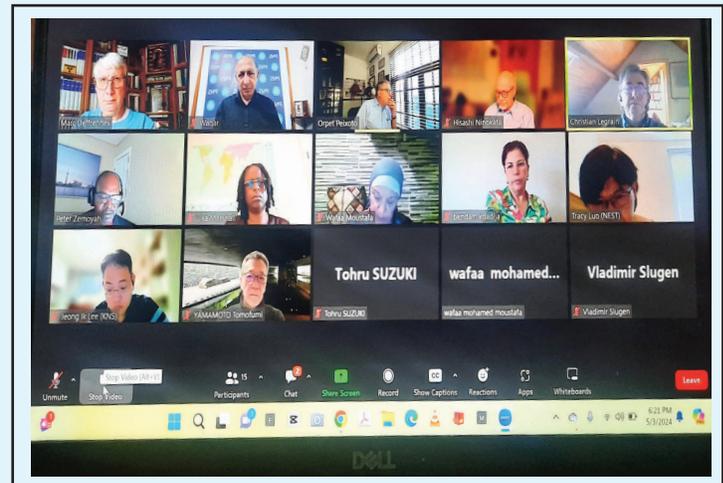


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## Outreach and Linkages

### Participation in the First Meeting of INSC in 2024

On May 03, 2024, Annual Meeting of the International Nuclear Societies Council (INSC) was convened virtually, drawing participation from representatives of 17 Nuclear Societies worldwide. As a longstanding member, PNS has consistently engaged in these programmes. Mr. Waqar A. Butt joined the session via Zoom link, which was opened by Mr. Orpet Peixoto, Chair of INSC. Following customary introductions by all attendees, the Treasurer presented the financial report and proposed budget as per agenda. Key topics discussed included the participation of INSC delegates in the Nuclear Energy Summit which was held in Brussels, the sponsorship of two students to attend COP-29, calls for nominations for INSC Global Awards, and the announcement of the next meeting to be held in Vienna during the General Conference of the IAEA in October 2024. Further details can be accessed on the INSC Website.



## Meeting with EDB Advisors

A meeting aimed to collaboratively envisage a sustainable mechanism to meet technical requirements of local industry was held on May 07, 2024 at the Committee Room of Engineering Development Board (EDB). It was coordinated by Mr. Muhammad Shahzad, DGM (EDB). The EDB Advisors of various sectors who participated in the meeting were Mr. Amin Mahmood, Dr. Shahid Razzaque, Mr. Malik Muhammad Naem, Mr. Mushtaq ur Rehman, Mr. Ali Jawad Usmanai and Mr. Muhmmad Fahad. Mr. Muhammad Ashraf, DGM (EDB) and Engr. Amna Zaheka, AM (EDB) were also present. PNS team comprised of Syed Ziauddin, Former Member (Engineering), PAEC, Dr. M. Tahir Khaleeq, Mr. Waqar A. Butt and Dr. Anjum Iqbal. It was agreed that initially a comprehensive gap analysis of the domestic industry will be conducted, focusing on key aspects such as metals/metallurgy,

design & development, standards & certifications, materials, workmanship, technology, and testing requirements within priority sectors for export enhancement. Following the assessment of needs in these areas, PNS will provide an interface between industry stakeholders and strategic organizations possessing in-house engineering and product development facilities. EDB will share sectorial studies focusing on industries such as fan manufacturing, cutlery, and surgical instruments. Furthermore, the findings gathered from sectorial sessions and stakeholders will also be shared with PNS after preliminary gap analysis conducted by EDB Advisors. It was further agreed that to ensure ongoing coordination and collaboration, regular meetings will be scheduled between EDB and PNS to enhance future planning and coordination efforts between the two entities.



## Silent Heroes

### Dr. Ahsan Mubarak, S.I

*(A Pioneer of Health Physics in Pakistan)*



Dr. Muhammad Ahsan Mubarak was a renowned Nuclear Seismologist known for his groundbreaking contributions to health physics, earthquake sciences, and seismic research in Pakistan. Born on 10th May, 1935 in Multan, he received his early education from Govt. Islamia High School, Aam Khas Bagh, Multan. He pursued his B.Sc. (Honors) and later his M.Sc. (Physics) from Govt. College, Lahore, graduating in 1958. Following his master's degree, Dr. Mubarak served as a lecturer at Govt. College Multan for approximately two years before joining the PAEC in 1961 as an Officer on Special Training (OST). He was awarded a scholarship under the Colombo Plan for higher studies and pursued his doctoral program at Imperial, College London, completing his Ph.D. on Low-Level Radon Measurements in 1965. Subsequently, he conducted post-doctoral research at AERE Harwell in the USA. Returning to Pakistan in 1967, Dr. Mubarak assumed the role of the first Head of the Health Physics Division (HPD) at PINSTECH. In 1969, he participated in a bilateral agreement between Pakistan and Italy,

where he established a National Fallout Monitoring Programme and Facilities, achieving remarkable progress within a short span of time. He was appointed as a representative of PAEC on the Inter-service Explosives Storage and Transport Committee and later served as Project Incharge and Director of the Micro Seismic Study Project (MSSP). Under his leadership, a national seismic network, meeting international standards was established.

Dr. Mubarak also contributed to the development of the Chaghi site and participated in the team that conducted nuclear tests. In recognition of his exceptional achievements, he was honored with Sitara-i-Imtiaz by the Government of Pakistan in 1994. He retired from PAEC services on May 09, 1995 and re-employed as the founding Director of the Center for Earthquake Studies (CES). In 2008, he represented Pakistan as the Chief Scientist at the Global Network for Forecasting of Earthquakes (GNFE). Later, in 2010, he served as a visiting professor of Geophysics at the Department of Earth Sciences, Quaid-i-Azam University.

Dr. Ahsan Mubarak passed away on 4th May, 2017 and was laid to rest in Islamabad. May Allah Kareem grant him eternal peace in the Heaven.

## A Historical Photo

### A game changing meeting in Multan - 1972



*(From left) Dr. Ishfaq Ahmad, Dr. Abdus Salam, Mr. Zulfikar Ali Bhutto and Dr. I. H. Usmani*

Till that time, Pakistan's Nuclear Programme was entirely for peaceful purposes. But in the meeting it was decided that we should go for defence application as well and build an Atomic Bomb.

## Members Contribution

### Why Nuclear Energy is important in 21st Century?

*Mr. Saleem Ansari, CS(R), PAEC (Pride of Performance)*

**Nuclear energy is green:** In 2015, nearly 200 countries and parties signed the Paris Agreement, an international treaty to mitigate hazardous gaseous emissions and lower Earth's average temperature by 1.5°C to around 34.7°. It is estimated that over 40% of energy-related carbon dioxide emissions are due to the burning of fossil fuels for electricity generation. On the other hand, nuclear fission does not produce any CO<sub>2</sub>. Over its life-cycle, nuclear energy produces almost the same amount of CO<sub>2</sub>-equivalent emissions per unit of electricity as wind, and about one-third that of solar. For both nuclear and renewable, carbon emissions are produced indirectly; for example during the construction of the plant.

**Nuclear Power Plants have the Highest Capacity Utilization Rate.** In Pakistan, during the period July 2022 to March 2023, nuclear power plants (NPPs) accounted for only 8.6% of the country's installed electricity generation capacity (in MW); however, they generated 21% of the country's total electricity units (MWh) in the same period. In dry winter season, nuclear becomes the leading source of electricity generation in the country; ahead of hydro. Globally, also, nuclear has the highest capacity utilization rate. In previous years, the average capacity utilization rate of nuclear energy was at nuclear (72%), followed

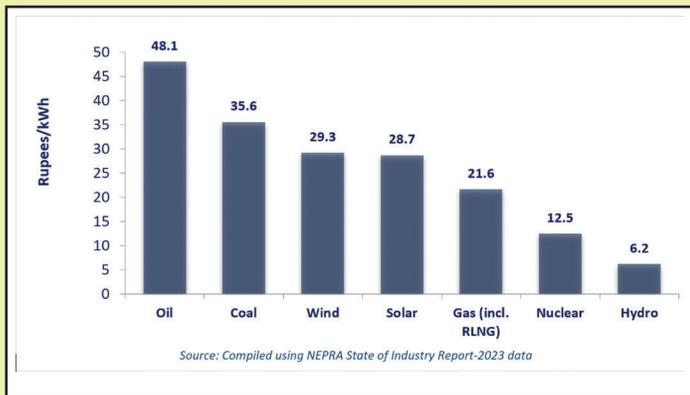
by hydro (45%), thermal (38%), wind (27%) and solar (19%). Thus, for the same power capacity (MW), NPP would produce two times more electric units than a thermal power plant during a year. The main reason for this high plant availability is immense energy released in nuclear fission. An NPP requires very little fuel and can operate for up to 18 months without refueling.

**Nuclear is the most reliable source of energy:** This is primarily due to its high capacity factor and long plant lifetime. A revealing example is that of USA, that has no new NPP installed since more than twenty years. Still, in 2023, nuclear provided almost 20% of the country's electricity requirement.

Hydroelectric is geographically limited and has huge environmental impact in terms of large area requirement, massive deforestation, population migration and rivers natural flow. NPP construction evades most of these impacts. Similarly, one estimate suggests that a wind farm needs 360 times more land to generate the same energy as an NPP.

**Cost Economics:** Nuclear power plants are expensive to build but cheap to run. Safety costs, including waste disposal and decommissioning costs, are included in their operating costs.

Despite having large capital investment, the cost of electricity generated through nuclear power plants is less than coal or gas power plants. This is specifically true for countries like Pakistan, which depend heavily on import of RLNG and fossil fuel for energy. France, South Korea, India and Japan are other such examples where imported fossil fuel results in much higher electricity cost than nuclear. The Pakistan Atomic Energy Commission published comparative cost of electricity generation from different energy sources in Pakistan, for year 2023, which is shown in the bar chart.



**Note:** since 2025, the carbon tax will most likely be imposed on the cost of electricity generation. The electricity cost from

fossil fuel would increase further vis-à-vis nuclear. Also, system costs for nuclear power are much lower than for intermittent renewables. [IAEA (2023). Power Reactor Information System (PRIS). [www.iaea.org](http://www.iaea.org).]

Nuclear energy is an advanced technical enterprise and serves as a catalyst for job creation, spanning a wide range of industries and sectors. From construction and operation to research, supply chain management, and decommissioning, the nuclear energy sector supports millions of jobs worldwide.

As of mid-2023, 407 reactors with 365 GW capacity were operating in over 30 countries, generating 10% of the world’s electricity. China, Russia and India alone are constructing 57 new reactors. Additionally, more than 50 countries use nuclear energy in 220 research reactors, which produce isotopes for medical and industrial applications, and are used for training.

Whether nuclear energy is a viable alternative to traditional fossil fuels depends upon high level of safety in design, construction and operation of nuclear power plants. Modern, Gen-III, NPPs have endeavored to address all these issues. Another drawback of nuclear power plant is the waste they produce. However, considerable improvements have been made in recent past in nuclear waste disposal and storage. Extraction of plutonium from discharged fuel and its use as new fuel in NPPs can further reduce the electricity cost by about 10 %.

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### Financial Support for PNS Activities

PNS Council is thankful to **Ms. Shazia Fayyaz**, PNS Lifetime Member for generous financial contribution (second time) from her personal account to promote PNS activities. She is from

PNRA and currently working as a Unit Head in the Department of Nuclear Safety and Security, IAEA.

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## WiN Activities

### Women in Nuclear S&T and Allied Disciplines

*(Seminar on nuclear safety and security at PNRA)*

The Women in Nuclear Pakistan Chapter (WiN-Pak), in collaboration with the Pakistan Nuclear Society (PNS) and the Pakistan Nuclear Regulatory Authority (PNRA), organized a one-day seminar on “**Knowledge Sharing with Women in Nuclear Safety and Nuclear Security**”. The seminar was held under the initiative of “Women in Nuclear Science and Technology and Allied Disciplines”. One of the objectives was information exchange and awareness on recent trends in nuclear safety and security. About a hundred female officers participated in the well managed seminar.

inaugural address, explained the genesis behind WiN Pakistan Chapter. He elaborated that Pakistan has been participating in WiN Global activities since 1992, with the formal structure of the WiN-Pak Chapter established through an election by PNS in July 2023. Within a year, WiN-Pak has gained recognition both nationally and internationally and aims to strengthen ties with WiN-IAEA and WiN-Global. Then, Dr. Shazia Fatima, Director General (Nuclear Medicine & Oncology)/ President WiN-Pak, in her pictorial presentation highlighted the chapter’s activities on both national and international levels, acknowledging the support of PNS, PNRA, and PSF.

Dr. Ansar Parvez, HI, former Chairman Pakistan Atomic Energy Commission (PAEC) was the Chief Guest. The welcome note was presented by Mrs. Hina Younis, Executive Member WiN-Pak/ Coordinator of the Seminar. Dr. M. Tahir Khaleeq, in his

The seminar comprised of two main sessions: a plenary session and a technical session. In the plenary session, senior female officers shared their career experiences in nuclear fields. This

session was moderated by Dr. Samreen Shazadi, Secretary WiN-Pak. Three panelists, Ms. Fauzia Ansari, Former Secretary PNRA, Ms. Rahila Hammad, DG PNRA and Dr. Amina Bano, Former Director PNRA were on the stage. The audience were much amused to listen about their life long struggle to reach at such elevated positions. That interactive session generated lot of interest among the young participants. Two video messages by Ms. Abida Khatoun, Former Director PNRA from USA and Ms. Shazia Fayyaz, Unit Head IAEA from Vienna were also shared with the audience.

The technical session focused on human resource and professional development for women in nuclear domain, gender inclusion in organizational setups, and the role of women in safety and security. The discussions also addressed the existing and future challenges in these areas and explored opportunities for women. The titles of the talks are given below:

1. “HR Perspective of WIN-International Trends and Way forward for PNRA” by Mr. Abdul Shakoor, Director PNRA and Mrs. Attiya Rahman, SSO



2. “Educational/Fellowship Programs for Women in Nuclear Safety and Nuclear Security-Pakistan Perspective” by Dr. Inam Ul Haq, PIEAS Faculty
3. “Gender Inclusive Regulatory Body of Pakistan” by Mrs. Noreen Iftakhar, SRO, PNRA
4. “Role of Women in Safety Assessment” by Dr. Imama Zaidi, Manager PSA, DOS/PAEC

The session was moderated by Mrs. Zahra Khanum, SSO, PNRA. In the end, Mr. Muhammad Rahman, Member (Executive), PNRA who was the Chief Guest at the closing session, commended PNS and WiN-Pak for their valuable initiative. He expressed gratitude to everyone involved in organizing the successful seminar. Additionally, he presented shields to the panelists and presenters. Mrs. Zahra thanked the Organizing Committee, PNS, WiN-Pak and PNRA management for making this event a great success.



## Awareness and Promotional Programmes

Dr. Samreen Shehzadi, Secretary WiN-Pakistan, gave a presentation titled “Overview of the activities of Pakistan Nuclear Society (PNS) and WiN-Pakistan” at the 13th Chemistry Conference on **Chemistry in Engineering and Life Sciences**. The conference, jointly organized by PINSTECH, DGNFC, NCC, and PIEAS, took place from April 23-25, 2024. Approximately 200 participants, including 78 female attendees from various universities and R & D organizations, attended the event. The primary objective of her presentation was to foster awareness among students regarding PNS and to encourage aspiring female professionals to consider a career in the nuclear field. She provided an insightful overview of PNS’s introduction, mandate,

and ongoing activities. Additionally, Dr. Samreen shed light on the objectives and initiatives of the WiN-Pakistan chapter, emphasizing its role in empowering women in nuclear science and technology. The female student participants from institutions such as NUST, COMSATS, University of Wah, GC University Faisalabad, UMT-Lahore, Allama Iqbal Open University, PIEAS, and University of Poonch, Rawalakot, exhibited keen interest in WiN-Pakistan and its endeavors. For many of them, it was their first exposure to WiN-Pakistan and WiN Global, sparking excitement as they discovered a platform both nationally and internationally available for women pursuing careers in the nuclear field.



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## Participation in an International Conference



The 4th International Conference on Nuclear Security (ICONS), hosted by the International Atomic Energy Agency (IAEA) from May 20-24, 2024 in Vienna, saw the participation of over 2000 officials from 178 member states, including a delegation from Pakistan. Among the Pakistani delegates was Mrs. Hina Younis, Senior Scientific Officer at the Pakistan Nuclear Regulatory

Authority (PNRA), who presented a paper titled “Regulatory Approach for Managing Nuclear Safety and Nuclear Security”. She also actively engaged in various sideline activities during the conference, including the WiN-IAEA event. It is noteworthy that she is a Lifetime Member of PNS and also serves as an Executive Member of WiN-Pakistan Chapter.

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## Interaction with Students

On May 29, 2024, Dr. Samreen Shehzadi delivered a lecture titled “Introduction & Overview of the activities of PNS and WiN-Pakistan” at PAEC Model College, Nilore. The lecture attracted over 150 students, including both boys and girls, along with faculty members. During the session, Dr. Samreen provided a comprehensive overview of PNS, elucidating its mission and activities, with a particular focus on initiatives tailored for students. Additionally, she shed light on WiN-Pak and highlighted

the significant contributions of women scientists on the global stage, who have reshaped the landscape of nuclear science. The students displayed keen interest, especially during the visual presentations showcasing renowned women nuclear scientists. Dr. Samreen inspired the students to consider a career in the nuclear field and shared valuable information about the opportunities available for young girls within the nuclear sector, as recognized by organizations such as the IAEA and WiN Global. The lecture

served as an informative and motivational session, offering insights into the remarkable achievements of nuclear scientists and inspiring the students to pursue excellence in the field. In

recognition of her contribution, Dr. Samreen was honored with a shield presented by the Director of Education, PAEC.



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## Students' Corner

### Promoting Nuclear Energy and its Benefits

*(Students session at Mianwali)*

A seminar on the “Benefits of Nuclear Technology” took place at the Abaseen Club in PAEC Colony at Chashma, Mianwali on April 24, 2024. The primary objective of the seminar was to educate the students about evaluation of atomic theory, beneficial uses of nuclear technology, and the impacts of radiation. This event was a collaborative effort between PNS and the Chashma Education Centre. Mr. Azhar Shoaib Shah, Lecturer, Boys College Chashma performed the duty as the Focal Person of this programme. Dr. Muhammad Maqsood, Coordinator, Directorate of Education (DoE), PAEC Headquarters oversaw the organization of the seminar. More than 100 students and faculty members from various educational institutions in Chashma participated in the event. The key focus of the seminar was awareness about the peaceful applications of nuclear energy in various sectors.

across the country, focusing on the peaceful use of nuclear technology, encouraging research and development, and fostering collaboration between professionals in the field. Mr. Waqar A. Butt gave an insightful presentation on various aspects of atomic energy. He emphasized the benefits of nuclear energy as a clean and reliable source of electricity, citing examples from different sources that have successfully employed nuclear power plants to meet energy demands. Mr. M. Abbas Qamar in his presentation gave the Introduction of Radiations and their Effects on Human Health. He also shed light on the measures taken by professionals to ensure safe working environments in the nuclear industry.

Students from different colleges/schools actively participated in the event. An engaging QR Code Activity on radiation awareness was conducted by the education center. A well-managed tableau was presented by students showcased the effects of radioisotopes in different fields of agriculture, health, and industry. Young



The program commenced with a recitation from the Holy Quran and a heartwarming Naat performed by students of boys and girls colleges respectively. Mr. Azhar delivered the welcome address and efficiently coordinated the stage. Dr. Muhammad Tahir Khaleeq, introduced PNS and highlighted its various activities



students from Girls College and Junior Model School (JMS) enthusiastically participated by displaying creative models and engaging activities that demonstrated their understanding of nuclear energy and its applications coupled with interesting surprise quizzes.

At the end of session, Prof. Nargis Irfan, Head of Education Center, appreciated the efforts of the organizers, presenters, and participants in making the event a success. She applauded that the seminar has provided a valuable platform to raise awareness

about nuclear energy, its advantages, and the importance of responsible practices in the field. Syed Zahid Hussain, Executive Member PNS, gave the concluding remarks and delivered the Vote of Thanks. He said that PNS highly appreciated the efforts of the Chashma education centre in particular and DoE in general for their coordinated efforts in dissemination of nuclear science and technology education. He assured that the Society will extend maximum support for promoting S&T in the educational institutions of PAEC.

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### Peaceful uses of Nuclear Technology *(Students session at Ghazi University)*

Ghazi University in DG Khan hosted a one-day seminar on “Peaceful Uses of Nuclear Technology” on May 31, 2024. The event, jointly organized by the Pakistan Nuclear Society (PNS) and the Department of Physics at Ghazi University, attracted over 150 students and faculty members. The seminar aimed to raise awareness about the peaceful applications of nuclear energy in various fields. Mr. Tahir Taj, PNS Students’ Coordinator, was the main person behind the arrangements of that event.

The welcome address was delivered by Mr. Abdul Qudoos, Head of the Physics Department. Dr. Muhammad Tahir Khaleeq then introduced PNS and briefed the audience on its nationwide activities. Mr. Waqar Ahmed Butt gave a lecture on “Applications of Nuclear Technologies in Pakistan,” while Mr. Muhammad Abbas Qamar presented on “Introduction to Nuclear Radiation and Its Effects on Human Health” who also facilitated the question-



and-answer segment. Dr. Abid Mahmood Alvi, Registrar of Ghazi University, provided concluding remarks, praising PNS for organizing such an informative session on a significant topic. The seminar concluded with a vote of thanks from Mr. Muhammad Nasir Naeem, a faculty member of the Physics department. Ms. Hamna Saleem and Ms. Mahnoor took up the responsibility as stage secretaries in a graceful manner.



## Beneficial uses of Nuclear Technology (Seminar at AL-QADIR University)

Upon the invitation from AL-QADIR University, PNS held a session at their campus in Sohawa under the theme 'Nuclear Technology: Shaping tomorrow, energizing today'. As it is a new residential university having only two departments so far, therefore almost all the students and faculty members, around 100, were present in the seminar on "Beneficial uses of Nuclear Technology" delivered by Mr. Waqar A. Butt. Before that Dr. M. Tahir Kahleeq gave an introduction of PNS emphasizing upon the initiatives of the society for counselling of students. Prof. Dr. Zahoor Ullah Al-Azhari, Head of the Islamic Studies Department presented a welcome note and Dr. Muhammad Amjad-ur-Rehman, Executive Director gave the concluding remarks. At the end of the session, a round trip to the campus was also conducted. Fruitful



discussions were held for future collaboration with generous offer of using the facilities available at the campus by PNS events. This visit was arranged by Dr. Anjam Iqbal and well-coordinated by the Student Coordinator Ms. Iqra Aziz.



## Nuclear News and Views

### Breakthrough in Nuclear Fusion Energy: New Record Achieved in Energy Generation

A team of European scientists at Oxford achieved a new record in nuclear fusion energy bringing the clean, futuristic power source a step closer to reality. Using the Joint European Torus (JET) - a huge, donut-shaped machine known as a tokamak - the scientists sustained a record 69 mega joules of fusion energy for five seconds, using just 0.2 milligrams of fuel. This energy is sufficient to power roughly 12,000 households for five seconds.

At the same time, a ground breaking research article was published in February, in respected scientific journal "Nature". For the first time, scientists were able to apply Artificial Intelligence to predict plasma tearing in the Tokamak reactor of National Fusion Facility

in San Diego, with the help of reinforcement learning. Such a fault, scientists claim, would have disrupted the fusion reaction.

Additionally, at UN Climate Change Conference (COP28) meeting held in December last year, US special climate envoy John Kerry announced an international plan to boost nuclear fusion as an emissions-free technology. In May 2023, Microsoft announced a deal with private US nuclear fusion company Helion to buy electricity made using fusion technology in 2028. So far, various companies have raised around \$5 billion in private funding for nuclear fusion, in a quest to replicate the power source that fuels the sun, Reuters says.

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### Latest Nuclear News from around the World

- After lapse of over twenty years, United States has finally added two new AP1000 reactors to its fleet in 2023-24. The 1100 MW Vogtle Plant Unit 4 has completed fuel loading and power tests this year.
- Three advanced reactor designs to be submitted in 2024. Construction permit applications for the advanced Generation-IV reactors, viz., Sodium-cooled fast reactor; High-temperature gas cooled reactor and BWRX-300 advanced light water small modular reactor will be submitted to the U.S. Nuclear Regulatory Commission this year. Also, in 2024, two existing nuclear power plants would be used as hydrogen production purpose projects. According to Bloomberg, China is expected to leapfrog France and the US to become the world's largest source of nuclear power by the end of this decade.
- Advancement in Nuclear Waste Disposal: France, Sweden, USA and many other countries are investigating deep geological disposal as country's official policy. A High-Level Radwaste Facility is already constructed in Finland. Sweden is working on its KBS-3 disposal concept uses a copper container with a steel insert to contain the spent fuel. After placement in the repository about 500 meters deep in the bedrock, the container would contain a high level of radioactivity over long time period.
- Head of the International Energy Agency (IEA) criticized Germany's decision to phase out nuclear power as a "Historic Mistake". Mr. Fatih Birol has said that Germany should have at least left the remaining nuclear power plants online, instead of shutting them down last year.

*(Mr. Saleem Ansari)*

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## Social Events

### Eid Milan

PNS continued the tradition of celebrating Eid Milan of its Members and their families. Accordingly, on the occasion of Eid-ul-fitr this year, a party was arranged at PAEC Rest House on Sunday, 21st April, 2024, which was attended by about 160 persons. Many senior retired officials including four former Chairmen graced the occasion. The participants got much delighted to meet their colleagues after long times. The younger ones developed cordial relation among themselves.

They enjoyed hi-tea with Eid ul Fitar specialties like Sheer Khurma. As usual, the hectic responsibility of coordination and management was on the shoulders of Syed Zahid Hussain, Executive Member PNS which he fulfilled in a professional manner as usual. The cooperation of Rest House Administration is deeply acknowledged and the arrangements of delicious dishes as well as well managed serving by the staff is appreciated.



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Issue 15/2024

July-September, 2024

# PNS Newsletter

Nuclear for Peace

A Quarterly Newsletter of the Pakistan Nuclear Society

## Patron:

Dr. Muhammad Tahir Khaleeq

## Editor-in-Chief:

Mr. Waqar Ahmad Butt

## Editors:

Dr. Muhammad Sadiq

Mr. Saleem A. Ansari

Mr. M. Abbas Qamar

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## Vision

*To become a resource centre for disseminating information and to promote practical applications on peaceful uses of nuclear science, engineering and technology for sustainable socio-economic development. The principal tools to be used for this purpose would be PNS Website and PNS Newsletter.*

## Announcements

*International Conference on Women in Nuclear S&T and Emerging Technologies, 25-26 Nov. 2024, Islamabad*

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## From the desk of Editor-in-Chief

The future of a nation heavily depends on how its youth are prepared to confront the challenges hindering its progress and prosperity. This preparation begins at home and continues through school, college, and university. Academic institutions bear the responsibility of instilling in young people a sense of responsibility to contribute efficiently to the socio-economic development of their homeland.

The Pakistan Nuclear Society (PNS), within its limited capacity, has actively supported this mission through various initiatives such as student counseling, capacity-building programs, and motivational activities. In addition to organizing seminars in colleges and universities, a significant initiative is the establishment of the Youth-in-Nuclear (YiN) forum, under the auspices of PNS. A formal committee of volunteer students has been formed to develop future programs.

Another significant initiative is the introduction of in-house discussions on various high-priority topics in nuclear research and development. These discussions aim to engage top-quality experts in relevant fields, working professionals, and young scientists and engineers and formulate some creative proposals. Each session begins with a brief presentation (5-10 minutes) by a highly experienced expert in the field, followed by an in-depth discussion lasting 1-2 hours. The recommendations generated from these discussions are then forwarded to the relevant authorities for implementation.



## Activities during the 3<sup>rd</sup> Quarter

### A tribute to Mr. M. Hafeez Qureshi, NI, HI, SI

To pay tribute to Mr. Muhammad Hafeez Qureshi, PNS organized a memorial reference on August 12, 2024, at the NORI Hospital Auditorium in Islamabad. The event was attended by a large gathering of young and senior scientists, engineers, technologists, and people from various walks of life, all eager to learn about the extraordinary initiatives of that legendary figure.

The ceremony began with the recitation from the Holy Quran, followed by a welcome address by Dr. Muhammad Tahir Khaleeq, President PNS. He emphasized the importance of commemorating such influential individuals. Mr. Waqar Ahmad Butt, Vice President PNS, then provided a formal introduction of Mr. Qureshi, briefly outlining his academic and professional life while highlighting his significant achievements. Fatiha were offered not only for Mr. Qureshi but also for PNS members who had passed away during 2023-24.

Several renowned figures then shared their memories and reflections on working with Mr. Qureshi.

**Engr. Parvez Butt**, NI, HI, SI, Former Chairman PAEC, mentioned Mr. Qureshi's consistent personal interest in mentoring young engineers and technicians and his strong friendships with colleagues.

**Dr. Samar Mubarakmand**, NI, HI, SI, Former Chairman NESCOM, recalled the golden memories of working with the highly capable and technical skilled person.

**Mr. Muhammad Naem**, NI, HI, SI, Former Chairman PAEC, emphasized Mr. Qureshi's special interest in classified activities of national interest.

**Dr. Inam ur Rahman**, HI, SI, AK, DG CNS (now PIEAS), remembered how people frequently visited Mr. Qureshi's home, shared meals with him, and received his support in their professional matters.

**Dr. Tariq Jamal Solaija**, HI, SI, remarked on Mr. Qureshi's fearless approach to every project, always thoroughly prepared and fully dedicated. He also shared memories of their last moments together in the hospital.

**Dr. Nabeel Hayat Malik**, HI, Former Chairman NESCOM, described Mr. Qureshi as a fatherly figure who took a personal interest in the financial well-being of his colleagues.

**Mr. Ghulam Nabi**, NI, HI, SI, Former Member Technical PAEC, highlighted Mr. Qureshi's unwavering commitment to his work and his ability to manage effectively with limited resources.

**Dr. M.N. Qazi**, Former Director Research, PAEC, spoke of Mr. Qureshi as a great person with a very helpful attitude toward his colleagues.

**Mr. Asghar Ali Khan**, Former Director NCNDT, shared various stories from his time with Mr. Qureshi, emphasizing his dedication to work in all situations.

**Dr. Shakeel Abbas Rofi**, DG DTD, presented a heartfelt poem in memory of Mr. Hafeez Qureshi.



**Mr. Syed Salman Hafeez**, Mr. Qureshi's son, shared his father's final moments, reflecting his courage and unwavering trust in Allah, The Almighty.

**Mrs. Hafeez Qureshi** expressed her gratitude to all the speakers for sharing their cherished memories of her late husband and thanked PNS for organizing this memorable event in his honor.

These recollections collectively painted a picture of the man who was not just a colleague but also a mentor, friend, and guiding light to those fortunate enough to work with him.

The event was attended by more than 100 people, providing motivation and inspiration for the younger generation. Ms. Hina Younis, a lifetime member of PNS, served as the stage secretary. The program concluded with a vote of thanks by Dr. Mohammad



Mohsin, General Secretary PNS, who also acknowledged the cooperation and support of the Member Technical, Director Administration and Director NORI in making the event a success.

The video recording of the whole programme is available at PNS YouTube channel linked through PNS website.

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### Role of Nuclear Technology in Achieving SDGs

The United Nations' Sustainable Development Goals (SDGs) set for 2015 aim to transform our world focusing on protecting the planet, and ensuring that all people enjoy health, justice and prosperity. Realizing the importance of that initiative, PNS organized a one-day seminar titled "The Role of Nuclear Technology in Achieving SDGs" on September 25, 2024, at Islamabad Hotel, G-6 Markaz, Islamabad. The seminar aimed to highlight the significant contributions that nuclear technology can make towards achieving the prescribed goals for 2030. It was attended by over 100 professionals and provided a platform for experts from various fields to share insights on how nuclear technology is supporting national and global efforts toward sustainable development.



Dr. Muhammad Tahir Khaleeq welcomed the participants and highlighted the usefulness of the seminar. The first keynote address was delivered by Ambassador Ali Sarwar Naqvi, Executive Director, Centre for International Strategic Studies (CISS), who spoke about Pakistan's initiatives to meet the SDGs challenges. This was followed by an illuminating presentation on "Vision 2030 and SDGs" by Dr. Shaukat Hameed Khan, former Coordinator General of COMSTECH.

One of the key highlights of the seminar was to honor two highly distinguished nuclear scientists with the PNS Lifetime Achievement Awards. These prestigious awards for the year 2024 were given to Dr. N.A. Javed, SI, Chief Engineer (R) and Dr. Amin Uddin Ahmed, TI, Chief Scientist (R), in recognition of their outstanding contributions and extraordinary achievements in the field of nuclear science and technology.

The Chief Guest, Dr. Ansar Parvez, HI, former Chairman PAEC/Advisor NCA, in his speech emphasized the important role of nuclear technology in boosting Pakistan's sustainable development. He appreciated the efforts of PNS for organizing the seminar, which provided a valuable platform for raising public awareness about the benefits of nuclear technology and added that such initiatives are essential for fostering a deeper understanding of the role of technology in enhancing socioeconomic development

of the country.

Dr. Mohammad Mohsin, Director (HRD), PAEC/General Secretary PNS, provided an "Overview of Nuclear Technology in Pakistan and its Alignment with SDGs", setting the stage for more focused discussions on specific goals. He mentioned that out of 17 United Nations SDGs, 9 are directly related to nuclear technology.

The seminar featured a series of expert presentations on how nuclear technology is contributing to those nine goals as per following chronology:

**SDG 3: Good Health and Well-Being** – Dr. Shazia Fatima, Director General, Nuclear Medicine and Oncology (NMO) PAEC, discussed the applications of nuclear technology in healthcare, particularly in cancer treatment and medical diagnostics.

**SDG 4: Equitable Quality Education** – Dr. Jamil Ahmed, Pro Rector, PIEAS, highlighted how nuclear education and research are fostering innovation and high-quality education in Pakistan.

**SDG 6: Clean Water and Sanitation** – Dr. Hifza Rasheed, Director General, Pakistan Council for Research on Water Resources (PCRWR), spoke about the role of nuclear technology in water purification and sustainable water management.

**SDG 7: Affordable and Clean Energy** – Dr. Ansar Parvez, former Chairman PAEC, discussed the contribution of nuclear energy as a clean and reliable source of electric power in Pakistan. He provided a comparison of other energy resources with worldwide application of nuclear technology.

**SDG 9: Industry, Innovation, and Infrastructure** – Engr. Syed Ziauddin, former Member Engineering, PAEC, emphasized the importance of nuclear technology in fostering industrial growth and infrastructure development.

**SDG 13: Climate Change and its Impact/Net Zero** – Dr. Syed Javaid Khurshid, former Director (Projects Coordination), explained how nuclear technology can help mitigate the effects of climate change and contribute to achieving net-zero by controlling carbon emissions.

**SDG 14: Life Below Water** – Dr. Nadeem Yaqoob from the Pakistan Institute of Nuclear Science & Technology (PINSTECH) presented the use of nuclear techniques in marine biology and environmental conservation.

**SDG 15: Life on Land** – Dr. Niaz Ahmad, Deputy Chief Scientist (R) PINSTECH, explored how nuclear technology is being applied to enhance agricultural productivity and land conservation.

**SDG 17: Global Partnerships for the Goals** – Dr. Imtiaz Ahmed, SI, former Director General, International Affairs PAEC, discussed how international cooperation in nuclear technology is helping to enhance global partnerships for development. He emphasized that the other goals cannot be met without considering the global partnerships.

Following the expert presentations, the seminar opened the floor for discussions and recommendations, where participants shared their views and proposed actionable steps to further enhance the role of nuclear technology in achieving SDGs.



In his concluding address, **Mr. Muhammad Naeem**, *NI, HI, SI*, former Chairman PAEC, summarized the seminar's key takeaways. He brought attention to the critical need for continued collaboration among stakeholders to harness the potential of nuclear technology for promoting socioeconomic development and improving the quality of life of its people. He reiterated Pakistan's unwavering commitment to the United Nations Sustainable Development Goals and its dedication to achieving the ambitious targets set forth in these global aspirations. The event concluded with a vote of thanks by Mr. Waqar Ahmad Butt, who appreciated the contributions of speakers, interest of participants, and dedication of organizers in making the seminar a success.



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### In-house Discussion with Experts on Pakistan's Nuclear Power Programme

A discussion session on Pakistan's Nuclear Power Programme was conducted on July 31, 2024 at the PAEC Guest House, Islamabad. The event was organized by PNS in collaboration with the Center for International Strategic Studies (CISS) and the Arms Control & Disarmament Affairs (ACDA) Division. In line with PNS's mandate to promote peaceful uses of nuclear technology and to raise awareness about its socio-economic benefits, eminent atomic scientists and engineers were invited to highlight major achievements in the fields beyond defense applications. The discussion covered several key topics, including Nuclear Power and Environmental Concerns, Nuclear Fuel Cycle and Baseless Rumors, Trends in Pakistan's Nuclear Diplomacy, Radiation and its Effects on Humans, and Nuclear Waste and Fuel Handling. More than 70 participants, including retired senior officials and university students, attended the event.



Dr. Muhammad Tahir Khaleeq in his welcoming remarks, underscored the significance of convening such seminars. He emphasized that the event served as a platform not only to showcase PNS achievements and successes but also to inspire the younger generation to dedicate their efforts to the noble cause of national progress. He also expressed his gratitude to all the esteemed speakers for graciously accepting the invitation to share their valuable insights.

Dr. Ansar Parvez, HI, SI, Former Chairman, PAEC and Advisor to the National Command Authority (NCA), delved into the prospects of nuclear power and environmental concerns. He gave a comparison of various energy sources-nuclear, solar, wind, and hydro-with a specific focus on air pollution. He emphasized that unlike other sources, nuclear power does not produce greenhouse gases, making it a cleaner option. He advocated for not only the involvement of scientists and engineers but also encouraged awareness of general public regarding benefits of using nuclear technology over other energy sources and their associated critical issues.

Ambassador Ali Sarwar Naqvi, Executive Director CISS, discussed major trends in Pakistan's nuclear diplomacy, emphasizing the importance of Article-6 of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) and its implications. He also elaborated on the challenges Pakistan faces in the Nuclear Suppliers Group (NSG) compared to India. Ambassador Naqvi highlighted Pakistan's strategic and diplomatic efforts on the international stage to promote the peaceful use of nuclear technology and ensure regional stability. However, he strongly supported the production of electricity by nuclear plants.

Mr. Muhammad Naeem, N.I, H.I, S.I, Former Chairman, PAEC, highlighted Pakistan’s achievements in the nuclear fuel cycle with focus on both the frontend and backend processes. He explained that during open pit mining and in-situ leaching, the activities were managed with great efficiency, including monitoring the public and environment through the collection of groundwater, vegetation, blood and urine samples to assess radiation levels. He comprehensively addressed the nuclear fuel cycle, dispelling baseless rumors and emphasizing the advancements and self-sufficiency which Pakistan has achieved in this area.

Mr. Muhammad Abbas Qamar, CS (Retd.), Former Director, Safety Oversight, PAEC discussed the effects of radiation on humans. He described the sources of ionizing radiation and the doses associated with them. He provided detailed information about the safety measures in place to protect both the public and workers from radiation exposure, addressing common fears and misconceptions about nuclear radiation.

Mr. Musharraf Hussain Rizvi, CE (Retd.), Former Director General of the National Repository, shared his insights on nuclear waste and fuel handling activities in Pakistan. In his speech, he elaborated various kinds of radioactive waste and its disposal processes. He highlighted the protocols and technologies used for the safe disposal and management of nuclear waste, ensuring both environmental protection and public safety.

After the presentations, a comprehensive two-hour discussion session was held, during which distinguished experts provided detailed responses to the questions posed by the audiences on the above mentioned topics. Dr. Mohammad Mohsin, General Secretary of PNS, proficiently coordinated the program, ensuring its smooth and efficient execution. This interactive session proved to be highly beneficial for the participants as they gained valuable insights and clarifications on the matters discussed.

In concluding the event, Mr. Waqar A. Butt extended his sincere gratitude to all the esteemed speakers, participants, and organizers whose invaluable contributions were instrumental in making the seminar a successful event.

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**PNS and NEW-1 (SES) Achieves Milestone towards ISO-19443 Certification**

The Quality Management Focus Group of PNS conducted an independent Gap Analysis of NEW-1 (SES) over three days from July 29-31, 2024. This marked a significant milestone



towards achieving ISO 19443:2018 certification. ISO 19443 is a new international standard for the Quality Management System (QMS) of manufacturers and suppliers providing items critical to nuclear safety (ITNS) for nuclear power plants (NPPs).

This important initiative was led by scientists and engineers from PAEC organizations, including CNPGS, ICCG, DQM, and HMC-3, without the usual requirement of foreign training for such specialized tasks. The Director General of the Pakistan National Accreditation Council (PNAC), Ms. Ismat Gul Khattak, was the Chief Guest at the opening session, with the President and Vice President of PNS, Dr. Muhammad Tahir Khaleeq and Mr. Waqar Ahmad Butt, as Guests of Honor.

Mr. Saliq Qudeer Butt, Senior Director of NEW-1 (SES), warmly welcomed the guests and participants, reaffirming his organization’s commitment to obtaining ISO 19443 certification. Ms. Khattak informed the forum that PNAC is ready to accredit this new certification. Dr. Anjum Iqbal, PNS Coordinator, emphasized PNS’s role as a key resource in managing the certification process locally, a task that would not have been possible without PNS’s involvement.

Mr. Muhammad Abdul Rahman, Team Leader for the Gap Analysis and Director Coordination & Oversight at CNPGS, explained the methodology of the analysis and positively responded the participants’ questions. The Quality Management Team of NEW-1 (SES), led by Director QA, Mr. Saeed-ur-Rahman, is now working diligently to close the identified gaps in their QMS to meet ISO 19443 requirements.

*(Mr. Farhan Babar)*



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## Outreach and Linkages

### University-Industry Collaboration

A joint session among Pakistan Institute of Engineering and Applied Sciences (PIEAS), Engineering Development Board (EDB), and Pakistan Nuclear Society (PNS) was held on July 23, 2024, aiming to strengthen the collaboration between academia and industry. The meeting was attended by the Rector PIEAS, the Pro-Rector, the Director ORIC, and nearly all the department heads. Two senior advisors, Dr. Tariq Jamal Solaija, former DG Technical, and Engr. Syed Zia Uddin, former Member Engineering, PAEC were invited as experts. Additionally, three advisors from EDB participated, along with the President and Vice President of PNS, who attended in their role as coordinators.

certification services to local industry. Mr. Ali Jawad Usmani, Advisor Business Development EDB explained the mandate given to the advisory team by the EDB. He shared the government's vision to increase GDP by 3 trillion USD by 2050 and advocated for the triple helix model for industrial development in Pakistan. He mentioned various industrial sectors with significant potential to boost exports, such as power consuming devices, solar panel manufacturing, mineral resource development, surgical goods, inverter-based fan production, smart watches etc. Dr. Shahid, Advisor (economics) mentioned about the seriousness of Ministry of Industries and Production for seeking developmental projects



Dr. Muhammad Tufail, Director ORIC formally commenced the proceedings, followed by a warm welcome by Dr. Naseem Irfan, Rector PIEAS who elaborated various collaborative projects between universities and industries. He expressed the importance of target-oriented research to address industrial problems. Dr. Waqas Ahmad, Head PRD presented an introduction to PIEAS and then each HoD elaborated the activities of the respective Department.

Dr. Muhammad Tahir Khaleeq, thanked PIEAS administration for organizing the meeting. He highlighted PNS's efforts to connect PIEAS with EDB and explained PNS's programmes and activities. He said that PNS can play a crucial role for EDB in linking strategic organizations for industrial testing and development projects. Mr. Waqar Ahmad Butt highlighted various opportunities for industries, such as food preservation by radiation, materials development & characterization, their value addition by nuclear techniques etc. He discussed how PNS can bridge the gap between universities and industries.

Mr. Muhammad Fahad, Advisor Industrial Engineering, EDB shared ideas for standardization, characterization, and product testing. He expressed interest in utilizing PIEAS facilities for industry testing and producing various standardization and certification tests based on ASME. He highlighted EDB's efforts to collaborate with industries like Bureau Veritas to provide standardization and

with the help of all stakeholder including R&D institutions and universities. He acknowledged the defense sector's capacity and sought help in aligning resources for economic development.

Engr. Zia Uddin mentioned the limitations of available data for project planning. He stated that PIEAS can only provide lab-scale solutions and have a limited scope to undertake industrial level projects. EDB should assist in marketing these projects to the industry. He highlighted NESPAK's micro-hydel potential in Pakistan and added that universities can design micro-hydel turbines. Dr. Tariq Jamal Solaija highlighted policy and implementation issues, perceiving that industry should invest in technology development. He emphasized the need for developing a nationally and internationally accredited facility for product testing and certification. Confidence-building measures should be provided by EDB, which should convince the industrialists to trust academia. He outlined a roadmap, which includes, nominating a focal person for collaboration with EDB and signing a Memorandum of Understanding (MoU) for furthering the activities.

At the end of the meeting, the Rector PIEAS thanked the EDB team for visiting PIEAS and appreciated the efforts of PNS for coordination. He hoped a tangible outcome of the day-long deliberations and ensured all possible support from PIEAS for future endeavors.

After the meeting, a technical tour of PIEAS was conducted by Dr. Muhammad Tufail and Dr. Khalid Waheed. The tour began at the Physical Cyber Security Lab in the Department of Electrical Engineering where IoT-based systems developed at PIEAS with real-time monitoring for early fault detection were demonstrated. This was followed by a visit to Filtered Containment Venting System (FCVS) Lab, highlighting PIEAS's expertise in addressing industrial challenges. A full-scale simulator of C-1 and C-2 in Nuclear Reactor Simulation Lab inside DNE building was shown where the students perform real-time experiments to gain hands-on experience before joining PAEC.

The EDB team expressed gratitude for the very successful meeting, nice hospitality and detailed technical tour of PIEAS facilities.



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### Involvement in INSC Affairs

The International Nuclear Society Council (INSC) bestows a Global Award annually to outstanding individuals or groups in recognition of their international efforts in developing nuclear technology for sustainable societal welfare. The Award aims to promote innovative initiatives for the safe and economically responsible peaceful



application of nuclear science and technology. The selection of this award is made by a high-level committee formed from INSC Member States. This year, the committee comprises Dr. Marc Deffrennes, 1st Co-Chair, Dr. Khadija Bendam, 2nd Co-Chair, and Mr. Waqar A. Butt, Representative from Pakistan/ At-Large Group. After careful evaluation of the candidates' CVs, considering the Award's objectives and thorough discussions via zoom link, Prof. Dr. Hamid Ait Abderrahim, Deputy Director General of the Belgian Nuclear Research Centre was declared the winner. The award bearing a certificate was given to him during the IAEA General Conference in Vienna held in the 3rd week of September 2024.

### Participation in INSE Annual Meeting

The annual meeting of INSC was held on September 17, 2024 during the General Conference of IAEA in Vienna, Austria. Due to financial limitations, no one from Pakistan could travel to Vienna. Therefore, Mr. Ejaz Maitala, from AEMC/PAEC who is already working in IAEA was requested to participate in that meeting as Pakistan Representative on behalf of PNS. Mr. Ejaz attended the meeting and participated in the deliberations as per set agenda.

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### Awareness about peaceful uses of the Nuclear Technology

The Centre for International Strategic Studies (CISS) invited PNS to arrange a lecture on 'Peaceful Uses of Nuclear Technology and Pakistan' during its 5th Workshop for Trainers on Strategic Matters. The workshop was held from 3-5 September 2024 at the CISS Orchard House in which officials from various strategic organizations participated. The lecture was delivered by Mr. Waqar A. Butt starting from the historical ventures to the latest developments in nuclear technology in the country. It was followed by a thought-provoking question/ answer session. A memento shield was presented to the speaker by Ambassador Ali Sarwar Naqvi, Executive Director CISS.



## Center For International Strategic Studies Islamabad



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### Civil Nuclear Technology in the service of Humanity

Rabita Forum International (RFI) Digital TV channel produced a program highlighting Pakistan's achievements in its civil nuclear program, tracing its history from the mid-1950s. The one-hour show was released on August 14, 2024, as part of the Independence Day celebrations. The program was hosted by renowned anchor Mr. Nusrat Mirza from SUCH TV and featured

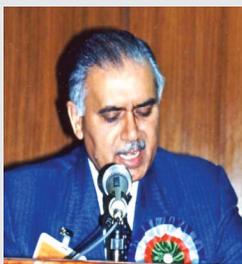
guests including Mr. Shahid Riaz Khan, spokesperson of PAEC, Dr. M. Tahir Khaleeq, and Mr. Waqar A. Butt from PNS. The discussion centered on Pakistan's significant successes in the peaceful applications of nuclear technology, particularly in agriculture, new varieties of crop, water resource management, and addressing climate change challenges. The recording is available on the PNS YouTube channel.



## Silent Heroes

### Mr. M. Shafique

*(Former Sr. Member, PAEC)*



Mr. Muhammad Shafique was born in Jullundur, East Punjab (India) on November 8, 1935. His family migrated to Pakistan in 1947 and settled in Salu Gujran, Sialkot. He completed his matriculation from Islamia High School in 1951 and F.Sc. from Murray College, Sialkot, in 1953. He then enrolled at the Government College of Engineering

and Technology, Punjab University, Lahore, and graduated with a B.Sc. in Electrical Engineering.

In September 1957, Mr. Shafique traveled to USA to attend a practical training course on Nuclear Reactor Technology at the International School of Nuclear Science and Technology in Argonne National Laboratory. After successfully completing the training, he returned to Pakistan and joined PAEC as a Research Officer on May 4, 1959. He remained on various key positions at the Pakistan Atomic Energy Commission (PAEC).

In January 1960, he again went to USA for special training on Swimming Pool Reactors. He gained firsthand experience in reactor installation, startup, operation, and maintenance. He then completed M.Sc. in Nuclear Engineering and a Master's in Desalination from the University of Virginia, USA, in 1962. Upon returning to Pakistan, he was posted at the Pakistan Institute of Nuclear Science and Technology (PINSTECH), where he headed

the Reactor Operation and Maintenance Division from 1965 to 1968.

Mr. Shafique was then transferred to the Karachi Nuclear Power Plant (KANUPP), where he served as Project Group Incharge for about three years. He later worked as Director of the Desalination Division at the PAEC Secretariat in Karachi. In 1972, he was reposted to PINSTECH, where he served as Head of the Nuclear Engineering Division (NED) until 1974, supervising and guiding young engineers and scientists in the operation and maintenance of Pakistan's first research reactor (PARR). During this period, he also conducted a feasibility study for a nuclear power plant in the northern zone of Pakistan, which was later named CHASNUPP.

In 1979, Mr. Shafique was transferred to Karachi as Plant Manager of KANUPP. In 1983, he was transferred back to CHASNUPP. In 1990, he was appointed as Member (Power) at PAEC Headquarters for three years and was later elevated to Senior Member. Due to serious health issues, he got retirement from PAEC service on October 31, 1994.

After retirement, Mr. Shafique lived in Islamabad and passed away peacefully on 17th January 1995. May Allah Kareem rest his departed soul in eternal peace.

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## A Historical Photo



*Dr. Manzoor Atta, Dr. Ishfaq Ahmad, Dr. Ahsan Mubarak, Dr. Riazuddin, Dr. Javed Aslam, Mr. Manan (from Electro Nuclear), Dr. Mannan, Prof. M. Yaqub (USA), Mr. Jan Muhammad, Dr. Arshad M. Khan and Dr. N. M. Butt.*

## Members Section

### PNS Members Decorated with Civil Awards

National Civil Awards-2024 were announced with reference to Pakistan's Independence Day. The following PNS Lifetime Members have been decorated:

	1. <b>Dr. Masood Iqbal, Member Science, PAEC</b>	<b>Sitata-i-Imtiaz</b>
	2. <b>Mr. Khalid bin Sagheer, Member Systems, PAEC</b>	<b>Sitata-i-Imtiaz</b>
	3. <b>Mr. Qayyum Khan, DG, PNRA</b>	<b>Sitata-i-Imtiaz</b>
	4. <b>Mr. Muhammad Aqil ur Rahman, DG RMC</b>	<b>Sitata-i-Imtiaz</b>
	5. <b>Dr. Muhammad Irfan, DG ICC</b>	<b>PoP</b>
	6. <b>Dr. Sarah Qureshi, CEO, Aero Engine Craft Private Ltd.</b> Daughter of Engr. Masood Latif Qureshi	<b>Tamgha-i-Imtiaz</b>
	7. <b>Mr. Shahid Riaz Khan, CS, Dir. SIPR, PAEC</b>	<b>Tamgha-i-Imtiaz</b>
	8. <b>Dr. Samina Waseem, CE, PAEC</b>	<b>Tamgha-i-Imtiaz</b>

## Members Contribution

### Prospects of Nuclear Electricity Installation: 2025 -2050

*Saleem A. Ansari*

According to the United Nations estimates, population of the world is expected to grow from about 8 billion in 2024 to around 9.8 billion by 2050. It is also foreseen that approximately two-third of the world's population would be living in urban areas by 2050 (up from about 55% at present). The process of urbanization is adding a city of the size of Shanghai every four months or so. This would more likely rise the electricity demand by more than half between 2022 and 2040. To meet this electricity demand, the world will need significant increase in energy supply in the future. However, the menace of gaseous emissions and global warming has also increased alarmingly. In 2023, global energy-related carbon dioxide emissions rose to 37.4 Gigaton, which were over 60% above the total in year 2000 (23.2 Gt). The greatest future challenge is to meet the rapidly growing energy demand, whilst reducing harmful emissions of greenhouse gases.

The International Energy Agency (IEA) annual report 2022 on Nuclear Power and Secure Energy Transitions had concluded that nuclear energy can help make the energy sector's journey

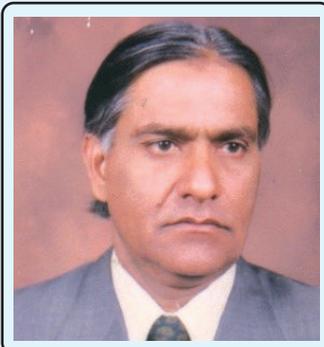
away from unabated fossil fuels faster. The report emphasized the significant role nuclear power plants can play in securing the global pathway to net zero carbon emission. Almost all other reports on future energy supply from major organizations (viz. OECD) also support an increasing role for nuclear power.

At present, nuclear power provides about 10% of the world's electricity, and about 20% of Europe's electricity. Cleaner air is a vital need. According to the World Health Organization (WHO), air pollution is the world's largest environmental risk. The WHO estimates that about seven million people die prematurely as a result of air pollution. Much of the fine particulate matter in polluted areas arises from industrial sources such as power generation or from indoor air pollution which could be averted by electricity use.

IAEA estimates that the installed capacity of nuclear would increase to 890 GWe by 2050, in the high utilization case (if carbon emissions are to be strictly controlled).

## Obituaries

### S.D. Orfi



Mr. Saraj Din Orfi (SD Orfi) was born on 15th June, 1946 in Village Kakrala Khurd, Distt. Ludhiana, East Punjab. His parents migrated to Pakistan in 1947 and settled in Shorkot, District Jhang. He received his early education from Distt. Jahng and did his master in Physics in 1968 from Dhaka University, then East Pakistan. He joined PAEC in September 1969 at Atomic Energy Centre (AEC), Lahore. He served as Head Health Physics Division (HPD) at AEC, Lahore, CPC, DG Khan and PINSTECH, Islamabad. He also served as Head RED, DNSRP, Islamabad. PAEC sent him for a fellowship for 18 months in Radioactive Waste Management Operation at ORNL, Oak Ridge, USA. He has 25 International and 21 National research papers to his credit.

Mr. Orfi served PAEC for about 37 years and retired as Chief Scientist in June 2006. He was quite instrumental in promoting Health Physics and Radiation Protection culture and infrastructure in the country. He had leadership abilities and served on managerial positions at different PAEC establishments. He was elected as Member Executive Council, Treasurer and then President PNS. After retirement, he started a social cum academic programme in collaboration with an NGO 'Jhang Association' to polish the students of country-side in Tehsil Shorkot. He was titled as "Sir Syed of Shorkot" by that Association in recognition of his contributions in the field of education.

Mr. SD Orfi took his last breath on August 17, 2024 and was laid to rest in Army Graveyard, Rawalpindi Cantt. May the Almighty Allah rest the departed soul in eternal peace.

*(Dr. Abdul Jabbar, Dir. Coordination, PINSTECH)*

### Condolence Reference

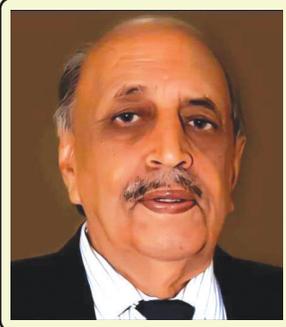
Former PNS presidents, family members, close friends, colleagues, and subordinates of Mr. S.D. Orfi gathered at the PAEC Rest House in Islamabad on August 31, 2024 to mourn the passing away of the great legend with heartfelt condolence. Dr. Tahir Khaleeq delivered a formal presentation on the life and achievements of Mr. Orfi. Those who shared their memories on this occasion included:

1. Dr. N.M. Butt, former DG PINSTECH
2. Dr. Amin Uddin Ahmed, former ADG PINSTECH
3. Brig. Fayyaz Orfi s/o Mr. S.D. Orfi
4. Mr. Maqsood Ahmed, friend of Mr. Orfi
5. Prof. Asghari Maqsood, Air University
6. Dr. Salman Ahmad, former Dir. Systems & Services
7. Dr. Ghani Akram, former Member Technical PAEC
8. Dr. Asad Farooqi, former Minister Scientific Affairs, Beijing
9. Dr. Shams ud Din, DCS (R), NSSP, PAEC
10. Mr. M. Abbas Qamar, CS (R), former Dir. DOS

Mr. Waqar A. Butt expressed gratitude to all the participants for attending the condolence gathering. A prayer (Dua-e-Maghfirat) was also offered for the departed soul with deep sorrow.



## Dr. Anwar Nasim



Dr. Anwar Nasim was born on December 7, 1935, in a village near Pasrur in the Sialkot District. He received his early education in Sialkot and F.Sc. from FC College, Lahore in 1953. He graduated with a B.Sc. in Molecular Biology from Gordon College, Rawalpindi, in 1955, securing first position and completed his M.Sc. in Botany with a Gold Medal from the University of the Punjab, Lahore, in 1957.

He began his career as a lecturer in Govt. College, Multan and then Government College, Lahore. He got a scholarship for higher studies and went to Edinburgh Scotland, UK in 1962. He completed his PhD in Biochemical Genetics from University of Edinburgh in 1966.

In 1966, Dr. Nasim went to Canada, where he worked as a Research Officer at the Atomic Energy of Canada, Chalk River, and later as a Senior Research Officer at the National Research Council of Canada. After returning from Canada, he worked at the Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad in 1981 and at Centre for Advanced Molecular Biology (CAMB),

Punjab University, Lahore in 1985. His remarkable career included roles such as Secretary General and later President of the Pakistan Academy of Sciences, Advisor to COMSTECH, and Adjunct Professor at both the Department of Microbiology and Immunology, University of Ottawa, and the Department of Biology, Carleton University, Ottawa. He also led the Molecular Genetics Group at King Faisal Specialist Hospital and Research Center in Riyadh, Saudi Arabia. He served as a Visiting Scientist at the Max Planck Institute in Tübingen, Germany, and at the Stanford University, USA. Dr. Nasim was a Fellow of the Pakistan Academy of Medical Sciences, the Islamic Academy of Sciences, and the Academy of Sciences for the Developing World (TWAS).

He served on several international editorial boards and made significant contributions to Molecular Genetics, Environmental Mutagenesis, Biotechnology, and Bioethics. Due to his distinguished achievements in his professional career, he was honored with numerous awards, including the Pride of Performance in Molecular Genetics (1995) and Sitara-i-Imtiaz (1999) by the Government of Pakistan.

Dr. Anwar Nasim passed away on September 1, 2024, in Toronto, Canada. May Allah Kareem grant his departed soul in eternal peace.

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## Tariq Rashid



Mr. Tariq Rashid was born on July 6, 1968, in Baghbanpura, Lahore. He completed his early education at the Government Comprehensive High School in 1983 and graduated from University of the Punjab, Lahore, in 1988. He obtained his M.Sc. in Physics from Rabwah College in 1991. Subsequently, he was selected for the first batch of Nuclear Power Engineering at the

Karachi Institute of Nuclear Power Engineering (KINPOE) under PAEC and dedicated nearly 29 years of invaluable service to the Pakistan Atomic Energy Commission (PAEC).

Upon completing his Nuclear Power Engineering degree, he was appointed as a Scientific Officer (SO) in the Instrumentation & Special Project Group (ISPG) at the Institute for Nuclear Power (INUP) on May 30, 1995. In 2007, when INUP was integrated into the Directorate of Nuclear Power Engineering Reactor (DNPER), he was promoted as Manager of the Nuclear

Measurement Division. He consistently earned his promotions in a timely manner and became Chief Scientist (CS) on December 1, 2022.

In March 2023, following the reorganization of EDO as the Directorate General of Nuclear Power Engineering (DGNPE), he was appointed Director of Specialized Measurement and Asset Management (SMAM). Mr. Rashid made significant contributions to the PAEC's self-reliance strategic program, including the development of the Surveillance Capsule Testing Facility (SCATF) for reactor RPV life assessment. In recognition of his outstanding contributions, he was awarded the Gold Medal by PAEC in 2008.

Known for his friendly demeanor towards colleagues and subordinates, Mr. Rashid was at the pinnacle of his career when he was suddenly diagnosed with pancreatic cancer. He battled the disease with immense courage and patience but passed away on August 19, 2024, four years before his retirement. He was laid to rest in Baghbanpura graveyard, Lahore.

May Allah grant him eternal peace and the highest place in Jannah.

*(Muhammad Asif, DCS - his colleague)*

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## Students' Corner

### Creation of Youth-in-Nuclear Pakistan (YIN-Pak)

Pakistan Nuclear Society (PNS) held a meeting on August 17, 2024, to establish the Youth-in-Nuclear Pakistan (YiN-Pak) Chapter. The event was attended by ten PNS lifetime members and the PNS Council. The formation of this chapter marks a significant step in engaging young people below the age of 35 in the country's nuclear science and technology sector, under the auspices of PNS. This platform will enable young ambitious professionals to exchange ideas, learn about advancements in nuclear technology, and explore career opportunities in nuclear fields. The initiative aims to inspire the youth to pursue careers in nuclear science, contributing to the country's sustainable development and ensuring its safety and security.

After introduction of the participants, Dr. M. Tahir Khaleeq welcomed the young scientists and engineers, presenting an overview of PNS activities and emphasizing the importance of launching the YiN-Pak Chapter. Mr. Waqar A. Butt then provided

a brief outline of how YiN members could support the peaceful use of nuclear energy. The meeting was concluded with a general discussion on the future activities of the young forum.

The YiN members were encouraged to form a volunteer committee to oversee the chapter's activities and future programs. With the agreement of the meeting participants, the following committee has been established:

i.	Syed Ashher Alim, COMSATS	Convener
ii.	Ms. Attia Rehman, SSO, PNRA	Member
iii.	Mr. Hassan Raza Zaidi, SS, PINSTECH	Member
iv.	Ms. Rija Rehman Awan, JS, NILOP	Member



### Seminar at the University of Gujrat

PNS organized a seminar titled “Nuclear Technology in the Service of Humanity” at the University of Gujrat (UoG) on September 19, 2014. The event was attended by about 120 students and faculty members. The prime objective of the seminar was to raise awareness of the participants about the peaceful applications of nuclear technology in various fields.

In his welcome address, Prof. Dr. Abdul Majid, Chairman of the Department of Physics, appreciated PNS for bringing such a unique program to the university. Dr. M. Tahir Khaleeq introduced PNS and its activities and encouraged students to become Associate Members to explore career opportunities in nuclear science and technology.



Mr. Waqar A. Butt delivered a presentation on the “Beneficial Uses of Nuclear Technology in Pakistan,” stressing upon the importance of nuclear power for electricity generation. He also gave a motivating message for the students with attracting examples of great personalities to pursue their goals in life. Mr. M.

Abbas Qamar spoke about “Radiation and its Effects on Human Health,” addressing common misconceptions and fears about nuclear radiation. The seminar concluded with a question/ answer session. The event was efficiently coordinated by Dr. Mudassar Minhaj from the Department of Physics.



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## Nuclear News and Views

### International

#### **Small Modular Reactors: flexible and affordable power generation**

Global interest in small and medium-sized or modular reactors has been increasing due to their ability to meet the need for flexible power generation for a wider range of users and applications and replace ageing fossil fuel-fired power plants. They also display an enhanced safety performance through inherent and passive safety features, offer better upfront capital cost affordability, and are suitable for cogeneration and non-electric applications. In addition, they offer options for remote regions with less developed infrastructures and the possibility for synergetic hybrid energy systems that combine nuclear and alternate energy sources, including renewables.

There are over 80 SMR designs and concepts globally. Most of them are in various developmental stages and some are claimed as being near-term deployable. There are currently four SMRs in advanced stages of construction in Argentina, China and Russia,

#### **Nuclear weapons may be the best means of protecting the Earth from asteroids- say scientists from China's deep space exploration program**

A team of researchers analyzed a variety of defense methods and their feasibility in protecting the planet from asteroids of different sizes, densities, and warning periods. Their findings suggest that on short notice – for example, one week until impact – nuclear warheads would be the only defence capable of altering an asteroid's course to avoid a collision. The team suggested to develop a global nuclear-based defense system that should include swift-launchers able to send nuclear warheads from the ground into space from seven days to one month. It should also be equipped with rockets with precise strike ability – a margin of error of less than 100 meters.

#### **Pakistani Students Shine in INSO-2024**

It's a pride for the nation that four Pakistani students have won distinctions in the first ever International Nuclear Science Olympiad (INSO) held from 1-6 August 2024 in Philippines. This year, the subject of nuclear science was added to the list of Olympiads, and the event was held on the occasion of International Youth Day. The competition was organized under the umbrella of IAEA. The project is designed to promote interest in the nuclear field among secondary school students in Asia and the

and several existing and newcomer nuclear energy countries are conducting SMR research and development.

India, among other countries, is taking a keen interest in developing SMRs. While presenting Union Budget for 2024-2025 in Lok Sabha, Indian Finance Minister has emphasized the importance of nuclear energy and announced plans to partner with the private sector, to what he named as Bharat Small Reactors. India is planning to invite private firms to invest some US\$ 26 billion in its nuclear energy sector, and holding talks with several private firms to secure investments to support the construction of some 11,000 MWe of new nuclear.

The IAEA is coordinating the efforts of its Member States to develop SMRs of various types by taking a systematic approach to the identification and development of key enabling technologies, with the goal to achieve competitiveness and reliable performance of such reactors. The Agency also helps them address common infrastructure issues that could facilitate the SMRs' deployment.

It may be recalled that in November 2022, in NASA's Double Asteroid Redirection Test (DART) a rocket strike on the asteroid Dimorphos had successfully altered Dimorphos' orbit.

However, the researchers admitted that their idea is challenging for a number of reasons. Firstly, no nation currently has the ability to launch nuclear warheads into deep space, which means that new launch vehicles would have to be developed. Secondly, China, along with most other nuclear states, are part of the 1967 Outer Space Treaty and the Comprehensive Nuclear Test Ban Treaty, which prohibit signatories from stationing weapons of mass destruction in space. Thirdly, nuclear explosions cause radioactive pollution even in space, which poses a threat of secondary harm to Earth and other celestial bodies in its proximity.

*SCIENTIA SINICA Technologica, Volume 54, Issue 8: 1435 - 1445 (2024).*

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### National

Pacific. The Olympiad brought together 55 talented students from Bahrain, Iran, Jordan, Malaysia, Mongolia, Oman, Pakistan, the Philippines, Qatar, Saudi Arabia, Singapore, Sri Lanka, Thailand and the United Arab Emirates to showcase their knowledge and skills in the field of nuclear science. Each participating country was represented by up to four students, pre-selected through national competitions and other competitive processes. Pakistan Team was represented by two students from Siddique public School, Rawalpindi, and one each from Lahore Grammar School and Karachi Grammar School.

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In a remarkable debut, Pakistani students have achieved outstanding success. Suleman Nouman and Subhan Kashif won silver medals, while Ehban Awan and Qasim Salam secured bronze medals, showcasing their exceptional knowledge in nuclear science. Congratulations to these remarkable students for their brilliant accomplishments, which have brought great honor to our nation. This success not only highlights the talent and dedication of these students but also underscores Pakistan's

capabilities in nuclear science on an international stage. The support from the Pakistan Atomic Energy Commission (PAEC) played a pivotal role in this achievement. PAEC's commitment to promoting nuclear science and technology education for peaceful purposes, as well as the team's preparation through the Department of Nuclear Engineering at PIEAS, was crucial in their selection and success.

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### **Nuclear-derived agricultural practices to boost rice yield in Pakistan**

*IAEA and the Food and Agriculture Organization (FAO) of the United Nations have trained farmers from Punjab and Sindh to employ nuclear-derived climate-smart agricultural practices to optimize rice productivity. It is reported that a combination of chemical and organic fertilizer customized for local soil and crops, known as the 'IAEA/FAO Integrated Option' led to an 188% increase in basmati rice yield in field trials conducted in six regions of Sindh, Punjab and Khyber Pakhtunkhwa. By increasing*

*rice production, farmers enhance food supply and security in their region while promoting sustainable farming practices that can be replicated by other countries, according to details announced by IAEA on August 30. Pakistani farmers were among the farmers in six Asian countries who received training on nuclear and isotopic techniques under the IAEA's technical cooperation programme. Farmers from Bangladesh, Myanmar, Nepal, Pakistan and Vietnam saw particular success with rice production increased from 1 to 2.5 tons per hectare.*

*(Published in Dawn Newspaper, September 2nd, 2024)*

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Monthly meeting of PNS Council in September 2024



Issue 16/2024

October-December, 2024

# PNS Newsletter

Nuclear for Peace

A Quarterly Newsletter of the Pakistan Nuclear Society

**Patron:**

Dr. Muhammad Tahir Khaleeq

**Editor-in-Chief:**

Mr. Waqar Ahmad Butt

**Editors:**

Dr. Muhammad Sadiq

Mr. Saleem A. Ansari

Mr. M. Abbas Qamar

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## Vision

*To become a resource centre for disseminating information and to promote practical applications on peaceful uses of nuclear science, engineering and technology for sustainable socio-economic development. The principal tools to be used for this purpose would be PNS Website and PNS Newsletter.*

**Announcements**  
*International Conference on Opportunities for Women in Nuclear Science and Emerging Technologies,*  
 12-13 Feb. 2025, Islamabad

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## From the desk of Editor-in-Chief

The elections of PNS Council for 2025-26 term were conducted on December 30, 2024 at the PAEC Rest House, G-8/3, Islamabad. The elected nine-member Council includes four in-service professionals and five retired personnel. Eight of them are those who have been serving the Society in previous terms that indicates satisfaction and confidence of PNS Members upon them.

It is noteworthy that, for the past four years, the Council has maintained successfully the tradition of holding monthly meetings without any interruptions. Holding of regular meetings underscores the commitment of PNS to its mandate and objectives. It is expected that the practice of discussions on various issues with mutual consent will continue in future.

As per established practice, a calendar of activities for 2025 will be developed, with utmost efforts to align the Society's mission to promote the peaceful applications of nuclear technology. PNS members are encouraged to propose topics for seminars, conferences, and training programs that could have a meaningful impact on various sectors to benefit from nuclear technology.

The Council extends its heartfelt gratitude to the members who have generously volunteered their time and efforts to contribute to PNS programs. Their invaluable support has been instrumental in advancing the Society's objectives. Their lifelong practical experience has been beneficial for many sectors that are playing a pivotal role for the socio-economic uplift of the country.



Dr. M. Tahir Khaleeq  
President



Waqar Ahmad Butt  
Vice President



Dr. Mohammad Mohsin  
General Secretary



M. Abbas Qamar  
Finance Secretary



Ghulam Sarwar  
Executive Member



Dr. Javed Iqbal Saggu  
Executive Member



Syed Zahid Hussain  
Executive Member



Nazia Kashif  
Executive Member



Zahra Khanum Kousri  
Executive Member

## Activities during the 4<sup>th</sup> Quarter

### Annual General Meeting (AGM) of PNS

In accordance with constitutional requirements, the Annual General-body Meeting (AGM) of the Pakistan Nuclear Society (PNS) was held at the PAEC Guesthouse on December 30, 2024, coinciding with the PNS elections for the new Council for 2025–26. The event was well-attended, with approximately 100 members participating.

Ms. Huma Qamar, an Executive Member of PNS, served as the Stage Secretary. The meeting began with a recitation of verses from the Holy Quran by Mr. M. Abbas Qamar, also an Executive Member of PNS. Following this, Dr. Mohammad Mohsin, General Secretary, presented the annual report, which outlined the major initiatives undertaken in 2024. He highlighted key activities, including seminars, meetings, and other programs organized by PNS, and emphasized the Council's vision to elevate the Society to the standards of globally recognized organizations. In addition to academic endeavors, PNS also addressed the welfare of retired employees from strategic organizations and organized social activities such as hiking and picnics for its members.

The Annual Financial Report was presented by Mr. Ghulam Sarwar, Finance Secretary, and received approval from the members present. However, Mr. Sarwar expressed concerns over diminishing funds in the PNS account and the lack of external financial support, despite significant personal contributions from Council Members in terms of time and resources.

Mr. Waqar Ahmad Butt, Vice President, raised the issue of revising the PNS Constitution to incorporate changes already in practice and addressed evolving needs. The members engaged in an enthusiastic discussion and offered constructive suggestions for constitutional amendments. In response, a committee has been formed to review and revise the constitution, comprising the following members:

1. Mr. M. Anwar Habib (Convener), former Chairman PNRA
2. Engr. Sohail Mazhar, CE(R), former DG SES
3. Dr. Riffat M. Qureshi, CS(R), Dir. Admin, PAS
4. Dr. Sham ud Din, DCS(R)/PAEC, Lawyer
5. Syed M. Ayub Shah, Chief IT/CTO, FPSC
6. Waqar A. Butt, CS(R), VC PNS (Secretary)

Certificates of Coordination were awarded to three persons for their outstanding volunteer services. Dr. Abdullah Sadiq, former Rector of PIEAS and GIKI, and a member of the PNS Scientific Advisory Board, presented the certificates to the following individuals:

**Engr. Kh. Zahid Shakeel**, Chief Engineer (R), former DG (Technical & Design), PAEC, for fostering linkages between PNS and ministries, government departments, and chambers of commerce and industry.

**Dr. Anjam Iqbal**, DCS(R), PAEC, for promoting quality management in nuclear and allied disciplines and facilitating connections between government and private organizations through PNS.

**Dr. Muhammad Khalid**, Principal, Islamabad Model Postgraduate College, H-8, for organizing student sessions in schools and colleges under the PNS public awareness program.



Dr. M. Tahir Khaleeq, President of PNS, outlined the Society's future initiatives and programs. He proposed the establishment of an endowment fund to ensure the Society's financial stability. Additionally, he suggested launching a student membership program targeting A-Level and F.Sc. students to provide career planning support. To implement this, awareness seminars will be organized in schools and colleges nationwide. In the end he thanked the participants for taking time out to attend the important event and giving thought provoking suggestions.

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### Seminar on Operation Safety Management at KNPGS

Pakistan Nuclear Society (PNS) organized a one-day seminar on "Operation Safety Management at Nuclear Power Plants (NPPs)" in collaboration with the Karachi Nuclear Power Generating Station (KNPGS) on Tuesday, November 12, 2024, at the Karachi Institute of Nuclear Power Engineering (KINPOE). More than 60 scientists and engineers attended the Seminar. The event coordinator, Syed Imran Shah, CS/Director (C&O), KNPGS, provided the welcome remarks.

Dr. M. Tahir Khaleeq introduced the Pakistan Nuclear Society by highlighting its activities being held in various cities while focusing on promotion of the peaceful uses of nuclear technology. The Chief Guest, **Mr. M. Anwar Habib**, former Chairman of the Pakistan Nuclear Regulatory Authority (PNRA), delivered a keynote lecture titled "*Genesis of Nuclear Safety and Operational*

*Safety Management.*” In his address, he emphasized the importance of robust safety measures in nuclear power plant operations. He commended PNS for organizing the seminar on such a critical topic and reiterated that the seminar will provide a platform to discuss best practices and the latest developments in safety management at nuclear facilities, fostering a collaborative environment for knowledge-sharing among professionals in the field.

The first lecture was delivered by **Mr. Muhammad Atiq**, DCE, Manager Basic Training, KINPOE on “*Fostering Nuclear Safety Culture and Effective Monitoring of Operational Safety Management at NPPs*”. He emphasized the importance of cultivating a robust safety culture and implementing effective monitoring strategies to ensure operational safety at nuclear power plants.

**Mr. Muhammad Usman Ashraf**, Shift Supervisor at K-2, spoke on “*Management of Operational Safety at NPPs*”, and provided insights into the strategies and practices used to manage safety during plant operations, highlighting their critical role in maintaining plant integrity and public trust.

**Mr. M. Abbas Qamar** presented the concluding lecture by focusing on “*The Importance of Leadership and Management in Operational Safety of NPPs*”. Mr. Qamar underscored the pivotal role of strong leadership in fostering a safety-oriented environment



and ensuring compliance with safety protocols. Following his lecture, Mr. Qamar conducted a Q&A session that led to a detailed discussion and exchange of ideas among the participants.

The event concluded with a vote of thanks by Mr. Waqar A. Butt, who expressed gratitude to the speakers, organizers, and attendees for their contributions in making the seminar a significant and well-received initiative. He also lauded the logistic support from PAEC, specially Member Power and GM KNP GS, for the travel and stay of PNS delegates. An excellent coordination of the event by Syed Imran Shah, as Stage Secretary, was highly appreciated.

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### Seminar on Advances in Cancer Diagnostic and Radiotherapy at MINAR

The Pakistan Nuclear Society (PNS), in collaboration with the Multan Institute of Nuclear Medicine and Radiotherapy (MINAR), organized a seminar at the PAEC Cancer Hospital in Multan on November 14, 2024. The event was specifically arranged for physicians, surgeons, general practitioners, and healthcare professionals from Nishtar Hospital, PAEC General Hospital in D.G. Khan, private hospitals, and medical colleges in South Panjab. The primary aim was to introduce the advanced diagnostic and treatment facilities available at MINAR, encouraging healthcare providers to refer patients to the local institute instead of sending them to other cities like Lahore, Islamabad and Karachi.

**Dr. Rashid Qamar Rao**, Principal of Nishtar Medical College, graced the event as the Chief Guest. In his speech, he appreciated the medical treatment services of MINAR for diagnostic and treatment of cancer. He lauded the efforts of Dr. Muhammad Saeed Akhtar, Chief Consultant Nuclear Physician/ Director MINAR in advancing this noble cause. The seminar began with a welcome address by **Dr. Saeed Akhtar**. He highlighted MINAR’s latest advancements in cancer treatment technologies, including the introduction of cutting-edge equipment such as the Dual Head SPECT Gamma Camera, SPECT CT System, 128-Slice CT Machine, 1.5 Tesla MRI Machine, Brachytherapy, CT-Simulator, and the state-of-the-art Dual Energy LINAC Radiotherapy machine. To provide an in-depth understanding of these technologies and their applications, the program included expert-led lectures on innovative techniques for treating various types of cancer. These lectures served as an educational platform for medical practitioners in the region to enhance their knowledge and skills.

Following lectures were delivered in the seminar:

1. Benefits of radiotherapy with Dual Energy Linear Accelerator (LINAC) and new techniques of radiation to tumors using IMRT, by Dr. Allah Rakha Adil, Head Oncology & Radiotherapy
2. Use of Photodynamic Therapy to cancer area and Brachytherapy for treatment of carcinoma of Cervix by Dr. Famyra Abdullah, Consultant Radiation Oncologist
3. Advantages of SPECT-CT System and Hybrid Imaging on planer Nuclear Medicine Scans by Dr. Muhammad Saqib Khan, Head Nuclear Medicine
4. Removing misconceptions in general public and medical community, Dr. Muhammad Saeed Akhtar, Director MINAR

5. Importance of MDM with oncologists to decisions with consensus about difficult cases, by Dr. Irshad Hussain, Surgical Oncologist at INDUS Hospital, Muzaffargarh.

The program was coordinated by Dr. Quratulain Hashmi, Senior Medical Officer and Radiation Oncologist, along with Mrs. Kanwal Qureshi, Administrator at MINAR, who efficiently performed as Stage Secretary. Mr. Waqar A. Butt delivered a vote of thanks to the audience at the conclusion of the seminar and highly appreciated Director MINAR for organizing such an insightful seminar at the request of PNS. He also acknowledged



the excellent hospitality provided to the PNS delegates, ensuring their stay very comfortable.

The program concluded with a guided tour of the hospital’s main facilities, led by the Director. This visit allowed participants to observe the advanced medical technologies and services offered at the institute, further underscoring its significant contribution to cancer diagnostics and treatment in the region by MINAR.



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### Seminar at Karachi University

Pakistan Nuclear Society (PNS) and the Department of Physics of Karachi University jointly organized a one-day seminar on “Peaceful Uses of Nuclear Technology” during the International Week for Science and Peace at the Karachi University on November 11, 2024. The aim of the seminar was to raise awareness about the applications of nuclear energy for peaceful purposes in various fields. Over 100 students and faculty members attended the session. It provided a unique opportunity for students to engage directly with experts, gaining valuable insights into the field of nuclear science.

**Dr. Intikhab Ulfat**, Chairman of the Department of Physics inaugurated the seminar with a welcome address. He mentioned that the initiatives like this play a pivotal role in fostering the scientifically curious and informed generation to harness nuclear technology for the country’s progress. For students, the opportunity to interact with professionals from the PNS goes beyond conventional classroom learning. Nuclear science, with its complex theories and sophisticated applications, can be seen



distant to students in an academic setting. However, engaging directly with experts who are actively involved in the field may help to bridge this gap, bringing the realities of nuclear technology to life. This interaction offers students an in-depth perspective on current advancements and challenges within nuclear science, enhancing their knowledge and potentially guiding their future career paths.

Dr. M. Tahir Khaleeq introduced the Pakistan Nuclear Society, highlighting its nationwide initiatives promoting the peaceful utilization of nuclear technology, especially for students who are likely to be future leaders, educators, and decision-makers. Mr. Waqar A. Butt delivered a lecture on the “Applications of Nuclear Technologies in Pakistan”, exploring how nuclear advancements benefit the country. By highlighting the positive contributions of nuclear technology in energy, agriculture, and medicine, he aimed to educate students on its potential to address vital issues like energy shortages, food security, and healthcare. This was followed by a presentation by Mr. M. Abbas Qamar on the “Introduction of Nuclear Radiations and their Effects on Human Health”, discussing the impacts of nuclear exposure and highlighted safety measures for protection from radiation hazards. He provided valuable insights into the safe uses of radiation and inform the students that radiation safety help counteract the fears about radiations. Learning about applications like medical imaging and cancer treatment demonstrated how responsible use of radiation can significantly improve healthcare.



Dr. Shabana Rizvi, a faculty member of the Department of Physics, concluded the seminar with a vote of thanks by expressing gratitude to the speakers and attendees for their participation. She thanked PNS delegates for coming to Karachi University for holding a productive seminar.

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### Awareness Session at PAF-IAST

Pak-Austria Fachhochschule Institute of Applied Sciences and Technology (PAF-IAST) is a public university located in Mang, Haripur, KPK that specializes in cutting-edge technologies such as artificial intelligence, nanotechnology, mineral resources, and agricultural technologies. Pakistan Nuclear Society (PNS), with the cooperation of Prof. Dr. Muhammad Mujahid, Rector PAF-IAST, who is also a member of the PNS Administrative Advisory Board, organized an enlightening session on October 29, 2024, featuring a motivational lecture by Dr. Inam ur Rahman, H.I, S.I, A.K. The lecture, titled “Inner Peace and Happiness in Times of Turbulence”, was designed to inspire and educate the participants about the evolution of nuclear technology in Pakistan. The event began with welcome address by the Rector. After that, Dr. M. Tahir Khaleeq provided an overview of PNS initiatives, particularly those aimed at supporting and guiding students. Dr. Inam’s lecture commenced with a historical evolution of nuclear technology in Pakistan, seamlessly transitioning into an exploration of human values essential for achieving inner peace that leads to real happiness. His talk was enriched with references to Quranic verses and Ahadees, offering profound insights relevant to the topic. In the end, Dr. Mujahid thanked PNS for organizing such a thought provoking lecture at the Institute. He also presented a memento shield to the speaker.



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## Outreach and Linkages

### Public Awareness through Social Media

**Mr. Nusrat Mirza**, a former minister, renowned journalist, writer, and prominent figure in both print and digital media, hosted all five members of the PNS delegation during their visit to Karachi for an exclusive session on the peaceful applications of nuclear technologies and their future directions. Mr. Mirza, who is also a member of the PNS Administrative Advisory Board, is well-known for his engaging shows and meaningful interviews on Such TV. For over a year, he has been conducting similar programs on Rabita Forum International (RFI), a digital TV channel.

During the session, Mr. M. Anwar Habib, Dr. M. Tahir Khaleeq, and Mr. Waqar A. Butt participated in an hour-long interview. The discussion covered a range of topics, including the beneficial applications of regulatory framework for ensuring safety of nuclear technology, advancements in power generation, environmental concerns, human health, food security, agriculture, and industry development.

It is noteworthy that RFI broadcasts news and programs in various provincial languages, making the content accessible to a diverse audience. The video recording of this program is available for viewing on the PNS website.



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### Meeting with the President ICCI



Dr. Muhammad Tahir Khaleeq along with Mr. Ghulam Sarwar, Finance Secretary of PNS, and Khawaja Zahid Shakeel, PNS Coordinator for Industries, visited the Islamabad Chamber of Commerce and Industry (ICCI) on October 12, 2024 for holding a meeting with its newly elected president, **Mr. Nasir M. Qureshi**. During the meeting, Mr. Ghulam Murtaza, Secretary General of ICCI, was appointed as the coordinator for future collaboration between PNS and ICCI. It was agreed that PNS would provide a list of experts and organize a seminar for ICCI members. This collaboration is expected to foster valuable connections between PNS and various industries.

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### PNS Meeting with RCCI

A delegation of Pakistan Nuclear Society (PNS) visited Rawalpindi Chamber of Commerce and Industry (RCCI) on October 28, 2024 to have a meeting with the newly elected management of RCCI under PNS industrial support programme. The PNS delegation comprised of Dr. M. Tahir Khaleeq, Engr. Tayyab Muhammad Ali, Sr. Chief Engineer(R), Former DG, PAEC, Engr. Abdul Hai, Chief Engineer(R), Former DG (SES), Engr. Khawaja Zahid Shakeel, Chief Engineer(R), Former DG, PAEC and Dr. Mohammad Mohsin, General Secretary PNS. Members from RCCI including Mr. Khalid Farooq Qazi, Senior Vice President, Mr. Fahad Barlas, Vice President and Mr. Mustaali Ismailji, owner of TIME & TUNE attended the meeting. The main objective of this preliminary meeting was to show the expertise available with PNS to support local industries. It was decided that RCCI will collect the requirements from various industries and arrange meetings of interested industrialists with PNS experts. It

was further decided that Engr. Tayyab Muhammad Ali will be the Coordinator from PNS and Mr. Mustaali Ismailji will be the focal person from RCCI for future line of action.

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### Visit to NORIN Hospital

PNS delegation made an overnight stop on their return journey from Karachi at the guest house of the PAEC Cancer Hospital in Nawabshah, courtesy of **Dr. Sadiq Hussain Nohairo**, Director of the Nuclear Oncology and Radiotherapy Institute Nawabshah (NORIN). Despite the late hour, Dr. Sadiq graciously provided a guided tour of the hospital's various sections and laboratories, showcasing its facilities and operations. The delegates were highly impressed by Dr. Sadiq's extraordinary efforts in securing funding from multiple sources, particularly from the Sindh Government, to develop and enhance the hospital's services for patients.

The delegation also held a meeting with the hospital's doctors. During this session, Dr. Tahir Khaleeq briefed the attendees on PNS programs and activities, sparking interest among the doctors, many of whom expressed their desire to join the society.

Dr. Sadiq also expressed a strong interest in collaborating with PNS and proposed organizing a symposium at NORIN in the future, highlighting his commitment to advancing knowledge and fostering partnerships in the field of nuclear technology and healthcare.



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### A Brain Storming Session on National Energy Policy

The Pakistan Academy of Sciences (PAS) is continually assisting the Planning Commission of Pakistan by gathering and presenting expert feedback on critical national policies. Following its successful review and upgrade of the National Science Technology & Innovation Policy 2022, PAS was tasked with undertaking a similar review of recent National Energy Policies.

To facilitate this effort, PAS organized a brainstorming session on December 5, 2024, at its Video Conferencing Room. Stakeholders from various sectors were invited, including the Pakistan Nuclear Society (PNS) which is actively pursuing academia-industry-government linkages. The PNS delegation comprised of Dr. M. Tahir Khaleeq, Mr. Waqar A. Butt, Engr. Kh. Zahid Shakeel, Mr. G.R. Athar, Dr. Farzana Naqvi, Dr. Noor Jamal and Mr. Imtiaz Hussain. Additionally, Mr. Ahmad Mumtaz, former Director Applied System Analysis Division, PAEC, participated remotely via Zoom.

The session began with a welcome address by Dr. M. Aslam Baig, Secretary General of PAS. Dr. Sara Qaisar, Director SAG Unit at PAS, delivered a comprehensive presentation outlining the theme

and objectives of the review exercise. She highlighted critical gaps and recommendations from key institutions, including NEEC, PAEC, SDPI, PCRET, PIDE, NUST and PAS itself, underscoring the need for a holistic approach to tackling the energy crisis.

Over three hours of in-depth discussions, participants explored strategies to address Pakistan's growing energy demands by leveraging renewable energy sources and nuclear power generation. They emphasized identifying innovative solutions, new initiatives considering local challenges, and ensuring effective implementation through careful planning and optimal resource utilization.

As per way forward by PAS, Dr. Sara will compile the Workshop suggestions in the form of Minutes and share the same with all its participants. The final recommendations will be submitted to the Planning Commission, after being vetted by the Advisory Committee of the SAG Unit, thereby ensuring adequate steps are taken to merge the multiple present energy policies into a single comprehensive National Energy Policy.



### Representation of PNS in the International Conference

Upon the invitation of Government College Women University Faisalabad (GCWUF), Dr. M. Tahir Khaleeq, President Pakistan Nuclear Society (PNS), gave a presentation highlighting the objectives and activities of PNS. His talk focused on the peaceful applications of nuclear energy and its allied fields in contributing to the socio-economic development of Pakistan.

This presentation was part of the 3-Day International Conference cum Workshop on Natural Products: Biological and Pharmaceutical Applications, held jointly at Riphah International University Faisalabad (RIUF) and GCWUF from December 18 to 20, 2024. The event featured renowned speakers from various universities and research centers, who shared insights into recent advancements in the field.

The conference was inaugurated by Prof. Dr. Khalid Mehmood Khan, S.I, former Vice-Chancellor of Arid Agriculture University, Rawalpindi, who attended as the Chief Guest. The opening session was further graced by the presence of four Vice-Chancellors from other universities, who served as Guests of Honor.

Throughout the conference, highly informative lectures were delivered on the latest trends and developments in the fields of natural products, biological sciences, and pharmaceutical applications. The conference was a valuable platform for knowledge exchange and collaboration among academics and researchers.

Further details about the event can be found on the GCWUF website.

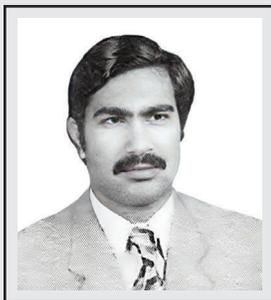


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## Silent Heroes

### Engr. M. Yaqoob Chohan (Martyred)

*(Manager Baghalchur Mines)*



Mr. Muhammad Yaqoob Chohan was born in Faisalabad. He completed his early education from Faisalabad, and did his B.Sc. Mining Engineering from UET Lahore in 1970. Then he joined Baghalchur Mining Project DG Khan as Sr. Engineer in 1977. He was promoted as Pr. Engineer and appointed as Manager Baghalchur Mines in 1983. These Mines was the first

Uranium Mining project of Pakistan located in tribal belt of Koh-e-Suleman Range. It was a very difficult and challenging task for PAEC from technical and management point of view. Mr. Yaqoob Chohan, a young and capable officer, showed his extraordinary professional skills and leadership qualities during successful open-pit and underground mining. He supervised a team of more than 1800 employees. He led his team with boosted morale to work round-the-clock in extreme conditions and successfully achieved the production targets. The devotion and unprecedented efforts

of PAEC team led to the un-matched success where underground mining in soft rocks, below water table was carried out and enabled mining of uranium from an underground mine. He made substantial contribution during the remarkable efforts of more than a decade (1977-1989) where uranium was successfully obtained and supplied for national requirement. On 21st September, 1989 while moving from site to DG Khan, Mr. Yaqoob Chohan and his driver Mr. Muhammad Jamil were assassinated in Baghalchur area by local tribe men for unknown reason. A daring, competent and highly devoted officer who rendered valuable services for PAEC embraced Shahadat on duty leaving behind a legacy of excellence and dedication that served long for the strategic program of PAEC and the glory of our homeland.

*(Mr. Arshad Ali Farooqi, Member Fuel Cycle, PAEC)*

*(Dr. Abdul Jabbar, Dir. Coordination, PINSTECH)*

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## A Historical Photo



*First Row: Dr. Samar Mubarakmand, Lt. Gen. Khalid Kadwai, Dr. A. Q. Khan, Dr. Ishfaq Ahmad, Lt. Gen. Mustafa,  
Second Row: Dr. Khalil Qureshi, Dr. N.M. Butt, Dr. Masood Ahmad, and Dr. Ali Rusheed*

## Nuclear News and Views

### International

#### **Nuclear Power in COP29 Spotlight as Countries and Companies Eye Climate Solutions**

Director General IAEA, during the United Nations Climate Change Conference (COP29) held in Azerbaijan in November 2024 emphasized that reaching global de-carbonization targets by 2050 will require a significant expansion of nuclear power. He said that in COP28, more than 20 countries had pledged to seek to triple nuclear capacity. “But to get there, capital is urgently needed. From 2017-2023, the world spent about \$50bn on nuclear energy every year. Tripling global nuclear capacity by 2050 would

require yearly investments of about \$150bn.

That sounds like a lot. But to put it into perspective, it is just a tenth of what is needed every year to triple renewable capacity by 2030”. In significant developments at the Conference, US announced plans to deploy 200 GWe of nuclear capacity by 2050. Italian Prime Minister advocated the use of nuclear energy as an alternative to fossil fuels, given the absence of other practical options. Countries like, Kazakhstan, Poland and Slovakia pledged to promote their uranium exports, plans for small modular reactors as well as recycling used fuel.

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### Optimized Radiotherapy Approach Could Extend Treatment to 2.2 Million More Cancer Patients

A recent report of IAEA-led Lancet Oncology Commission states that implementing hypo-fractionation – fewer but higher doses of radiation per daily treatment session over a shorter time frame – has shown benefits of lower costs, increased treatment precision and reduced treatment time, as compared with conventional

radiotherapy in prostate and breast cancer. About 50 to 70 per cent of all patients with cancer need radiotherapy, and more than 50 per cent of this population reside in low income countries. About 80 percent substitution of conventional radiotherapy with hypo-fractionated radiotherapy could result in cost-savings of \$4.41 billion for prostate and breast cancer. At 80 percent substitution, this grows to billion. This may also provide radiotherapy for an additional 2.2 million patients globally.

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### NPPs operational life extension in UK

EDF, a British integrated company Energy plans to extend the operational life of four of its five nuclear power plants in the UK. The company is to extend the Sizewell B PWR plant in Suffolk for a further 20 years. UK Energy minister has said the extensions are

a major win for our energy independence – powering millions of homes while supporting 3,000 good jobs. We can't achieve clean power by 2030 without nuclear, which provides an all-important steady supply of home-grown clean energy.

*www.neimagazine.com | 05 December 2024*

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## National

### International Seminar on Pakistan's Energy Crisis: Role of Nuclear Power

The Center for Strategic Studies (CISS), Islamabad, organized one-day seminar on the role of nuclear power in socio development of Pakistan in October 2024. The seminar attracted a number of individuals from national and international organizations, including PAEC, IAEA, think tanks, and universities. The discussions centered on nuclear energy's potential to transform Pakistan's energy landscape, with experts calling for its greater integration into the national energy mix. The participants highlighted the advantages of nuclear energy, including its long

lifecycle — up to seven or eight decades — and high efficiency rates compared to other sources of energy. Nuclear power plants can achieve 80 to 90 percent efficiency, while the cost per megawatt is approximately \$4.5. In comparison, hydropower, which costs around \$2.5 per megawatt, operates at a much lower efficiency of about 40 percent, and over much shorter period. They advocated for Pakistan's increased investment in nuclear power projects to mitigate energy price volatility due to geopolitical risks and decrease reliance on fossil fuel imports. There was a consensus that nuclear energy offers a reliable, long-term solution for the country's energy crisis, ensuring economic stability and clean energy production.

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### Share of Electricity from NPPs in Pakistan Increased to a Record 17.4 Percent in 2023.

The World Nuclear Industry Status Report (WNISR) 2024, issued in October 2024, states that with an operational nuclear generation

capacity of 3,262 megawatts, this share has increased from 16.2 in 2022 to 17.4 per cent last year. In contrast, the total renewable electricity capacities of wind and solar energy were 1.8GW and 1.2GW respectively.

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### Development of 32 new cotton varieties with the help of Nuclear Science Techniques since 1970 in Pakistan.

On the occasion of world Cotton Day celebrated on October 07, 2024, the IAEA Director General has highlighted that with the

use of these new varieties with improved traits adapted to climate change, Pakistan has been able to benefit more than 40 per cent of its cotton-producing areas.

*(Saleem A. Ansari)*

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### PNRA issues licence to construct C-5

*Published in Dawn,*  
December 29, 2024

The Pakistan Atomic Energy Commission (PAEC) has received a license to construct Chashma Nuclear Power Plant Unit 5 (C-5), which will be the largest nuclear power plant in the country, with a generation capacity of 1,200 MWe. The Pakistan Nuclear Regulatory Authority (PNRA) issued the license after completing a comprehensive review process.

PAEC had applied for the license in April this year, submitting a Preliminary Safety Assessment Report along with other documents covering key aspects such as nuclear safety, radiation protection, emergency preparedness, waste management, and nuclear security. The PNRA press release stated that the license

was granted after a thorough evaluation to ensure compliance with national and international regulatory standards.

The C-5 is an advanced third-generation Pressurized Water Reactor based on the Chinese Hualong design. It incorporates both active and passive safety features, including double-shell containment and a reactor-filtered venting system. The plant has a lifespan of 60 years, making it a long-term asset for Pakistan's energy sector.

This will be the third nuclear power plant in Pakistan using the Hualong design. The other two, Karachi Nuclear Power Plant Units 2 and 3 (1100 MWe each), are already operational and contributing electricity to the national grid. The Executive Committee of the National Economic Council (ECNEC) has approved the C-5 project, which is estimated to cost \$3.7 billion.

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### First Concrete Pouring of C-5

Pakistan Atomic Energy Commission has formally started the construction of Chashma Nuclear Power Plant Unit-5 (C-5), in Mianwali. The event was attended by Minister for Planning and Development Mr. Ahsan Iqbal, Chinese Ambassador Jiang Zaidong and other Chinese and Pakistani dignitaries. Addressing the ceremony as Chief Guest, Mr. Ahsan Iqbal said C-5 Project bears testimony to Pak-China friendship which will create

thousands of jobs for the people of Pakistan and will also provide electricity to the national grid at cheap rates. He said it is the need of the hour that Pakistan should strive to become techno-economy. Addition of C-5, which will be the largest and most advanced Nuclear Power Plant in the country will add another 1200 MW of clean and economical energy in the national grid increasing nuclear energy to 4760 MW and boost socio-economic development.

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## Members Section

### *Congratulations*



**Mr. Dr. Humera Mahmood**, Chief Medical Officer and Oncologist, has been appointed as the Director of the Nuclear Medicine, Oncology, and Radiotherapy Institute (NORI). She is also the Vice President of Pakistan Society of Clinical Oncology. PNS Council extends its heartfelt congratulations to Dr. Humera on her well-deserved appointment.

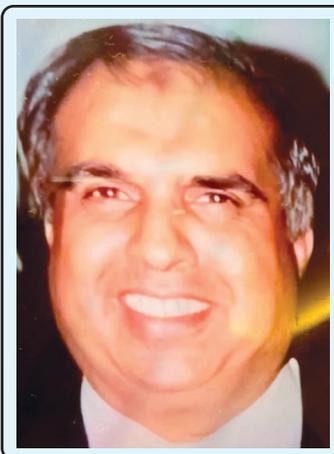
**Dr. Nasir Ahmad Saeed**, Chief Scientist, has been appointed as Director National Institute for Biotechnology and Genetic Engineering (NIBGE). Before that, he was the Head of Agricultural and Biotechnology Division there. PNS Council extends its heartfelt congratulations to Dr. Nasir on his well-deserved appointment.



**Dr. Waheed Shamraz Khan**, Deputy Chief Scientist, has been appointed as the Director of the Industrial Biotechnology Division at PAEC Headquarters. Prior to this, he served as the Group Leader of the Nanobiotechnology Research Group at NIBGE. The PNS Council extends its heartfelt congratulations to Dr. Waheed on this well-deserved appointment.

## Obituaries

### **Dr. Muhammad Shabbir, SI,HI**



Dr. Muhammad Shabbir, one of the most well-known figures in Pakistan's nuclear fuel cycle, was born on 29th August 1939 in Lahore. After doing F.Sc. from Islamia College Lahore he did his B.Sc. (Hons) and M.Sc. (Chemical Engineering) from the Institute of Chemical Technology, University of the Punjab in 1963. The very next year, he joined PAEC at the Atomic Energy Centre Lahore and set up a pilot plant of refining uranium from local mines. In 1974, he got a scholarship for higher studies in Australia and completed his Ph.D.

from the School of Chemical Engineering, University of New South Wales. In 1978, he was transferred to CPC as Project Incharge, then Plant Manager in 1980 and General Manager CPC in 1991. In the same year, he received a Gold Medal from the Pakistan Academy of Sciences and Sitara-i-Imtiaz from the Government in 1992. He was posted to PAEC HQ as DG DNFC in 1994 and then served as Managing Director MDP. For his meritorious services, he was decorated with Hilal-i-Imtiaz in 1999. After his retirement in 1999, he was appointed Advisor to Chairman PAEC. He also worked at the Ministry of Foreign Affairs for about two years. Afterward, he got involved in Thar coal project till his last. He passed away on 21st December 2024 and buried in Islamabad.

*May Allah Kareem rest the departed soul in Jannat ul Firdaus.*

### Dr. Muhammad Tufail



Dr. Muhammad Tufail was born on March 9, 1961 in a village near Hafizabad in Gujranwala district. He completed his basic education from Hafizabad and pursued his M.Sc. Chemistry from Government College Lahore. After that, he joined PAEC in October, 1985 and worked at PINSTECH in the Nuclear Chemistry Division. He did his Ph.D in In-Organic

Chemistry from Koln University Germany in 1999 and joined Directorate of Technical Development (DTD) in 2001 and served as Group Head, Head of Department and Deputy Director till his retirement.

His contributions were instrumental in the development of catalyst plates for Passive Autocatalytic Recombiner (PAR). The

PAR- plates mitigate hydrogen released after LOCA occurrence in a nuclear power plant and keep its level less than explosion limit of 4% hydrogen in air. A total of 800 indigenous PAR plates have been installed in 10 PARS inside C-1 reactor after qualifying their performance witnessed by PNRA and End-user.

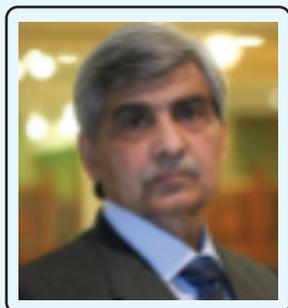
Dr. Tufail dedicated 37 years of service to PAEC, retiring in 2021 as Chief Scientist and Deputy Director, R-Block. On the basis of his devotional work he received PAEC Gold Medal in 2004 and was awarded Pride of Performance by president of Pakistan in 2005. Dr. Muhammad Tufail was a true gentleman, embodying the values of humility, enthusiasm, and thoroughness in everything he accomplished.

Dr. Muhammad Tufail took his last breath on November 8, 2024, in Islamabad, and was laid to rest in a graveyard in Islamabad. May Allah bless him with the highest rank in Jannah. Ameen.

(M. Abbas Qamar)

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### Dr. Muhammad Arif Ch.



Dr. Muhammad Arif Chaudhry served in various capacities as a scientist at the Pakistan Atomic Energy Commission (PAEC) from 1978 to 2013. He was born in Rawalpindi in 1953 and obtained his early education from there. He completed his M.Sc. in Chemistry from Quaid-e-Azam University, Islamabad, in 1977 and began his career at the Atomic Energy Mineral Centre (Lahore) in 1978.

But after only a few months, he was transferred to PINSTECH, Nilore. There, he joined the Nuclear Chemistry Division, where his work focused on the measurement of fission neutron spectra of various elements, radiochemical neutron activation analysis, and

atomic absorption spectrometry. His group published numerous papers in esteemed international journals.

Dr. Chaudhry's research achievements earned him a Ph.D. in Chemistry from the University of the Punjab, Lahore, in 1998. Subsequently, he was awarded a two-year Post-Doctoral Fellowship by the Japan Society for the Promotion of Science at Kanazawa University, Japan, starting in June 2000. In recognition of his exceptional contributions to research and development, the Government of Pakistan honored him with the Pride of Performance award. He also served as the Head of Chemistry Division, PINSTECH and retired as Deputy Chief Scientist in 2013, leaving behind a legacy of dedication and excellence. Dr. Arif passed away on December 23, 2024.

May Allah, the Almighty, grant him a high place in *Jannah*.

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### WiN Activities

**Dr. Samreen Shehzadi**, Secretary of WiN-Pakistan, attended the 31st WiN Global Annual Conference held from October 28-31, 2024, in Mexico. The event brought together approximately 300 participants from various countries. During the conference, Dr. Samreen presented her paper, titled "Neutron Activation Analysis and Atomic Absorption Spectrophotometry of Watermelon Rind as a Potential Bio-Adsorbent for Toxic Metals Decontamination of Water". Her work was well-received and appreciated by the attendees.



Additionally, she served as a co-facilitator in a mentorship workshop, leading a group discussion on “Leadership Pathways for Women”. Dr. Samreen actively participated in multiple sessions and engaged in discussions with scientists to explore potential

collaborations between WiN-Pakistan and other WiN chapters. In recognition of her contributions, she was awarded a certificate, and her paper has been accepted for publication in the conference proceedings.

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## Students’ Corner

### Nuclear Technology in the Service of Mankind

PNS arranged an awareness session for students at the Department of Physics, Model Postgraduate College (MPGC), H-8, Islamabad on October 1, 2024. This college is the oldest one in the capital city of Islamabad. Prof. Dr. Muhammad Khalid, Principal MPGC in his welcome address appreciated PNS officials for sparing time to interact with the students. Dr. M. Tahir Khaleeq made an introductory speech on PNS activities especially for the guidance and opportunities for students. This was followed by two lectures. The first one by Mr. Waqar A. Butt on the ‘Beneficial uses of Nuclear Technology in Pakistan’ and the second one by Mr. M. Abbas Qamar on ‘Radiations and their Effects on Human Health’. Afterwards, a useful question/answer session was held. In the end Dr. Muhammad Azam, Vice Principal who was instrumental in organizing this event presented the vote of thanks.





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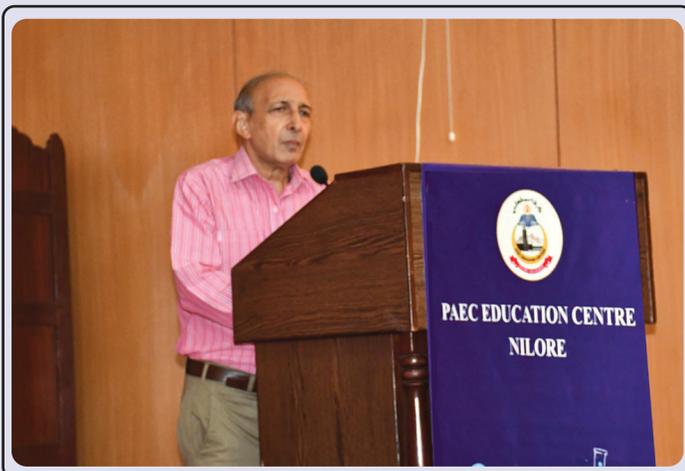
### Nuclear Science & Technology and Inquiry-Based Science Education Week / Exhibition 2024

The Directorate of Education, PAEC HQ, organized Science Exhibitions during the Science Week, focusing on Nuclear Science & Technology (NST) and Inquiry-Based Science Education (IBSE). The event aimed to promote a culture of scientific inquiry and innovation at PAEC Education Centers. Science Expo 2024 was held at PAEC Model College, Nilore, from October 23-25, 2024 to provide students with a platform to implement their ideas, showcase their innovative skills, and apply scientific knowledge in a unique ways. The expo also included lectures and interactive sessions led by experts in nuclear science and engineering.

The exhibition was inaugurated by Mr. Waqar Ahmad Butt, Vice President Pakistan Nuclear Society (PNS), former Minister Technical/Director General International Affairs and Training.

Mr. Butt expressed great enthusiasm in the students' projects and their explanations. He also delivered an insightful talk on the applications of nuclear science and technology and the significant role of PAEC in the socio-economic development of Pakistan.

The closing ceremony was graced by Dr. Naseem Irfan, Rector of PIEAS, and Prof. Aziz-Ur-Rehman, Director Education, PAEC. They visited the projects displayed in the Boys, Girls, and Junior Campuses. Prof. Aziz commended the students for their creativity and stressed the importance of innovation in education. He congratulated the organizers, coordinators, and participants for successfully executing the event.





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## Social Events

### Hike cum Entertainment

As part of the yearly tradition, the second short hike for the families of PNS members was organized on Sunday, October 27, 2024, along the picturesque Trail-5 in the Margalla Hills. Approximately 60 participants, including children, enjoyed the walk through the lush green pathway leading to the first spring, located just two kilometers from the parking area. Following the

hike, a customary gathering was held on the grassy lawn opposite the CDA Nursery. New participants briefly introduced themselves, fostering connections and friendships. As usual, the responsibility for preparing traditional tea on-site and distributing refreshment boxes to all participants was managed by Syed Zahid Hussain and Dr. Imran Zaka, Head Electronics Division, PINSTECH.



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