

## REPORT

### **112<sup>th</sup> DAE-BRNS-IANCAS National Workshop and Outreach Program on “Nuclear Sciences and Applications of Radioisotopes” held at DDU Gorakhpur University, Gorakhpur, U.P. during November 10-14, 2025**

The 112<sup>th</sup> DAE-BRNS-IANCAS National Workshop and Outreach Program on “Nuclear Sciences and Applications of Radioisotopes” was jointly organized by IANCAS & Department of Physics, **Deen Dayal Upadhyaya Gorakhpur University, Gorakhpur, Uttar Pradesh during November 10-14, 2025**. Dr. Seraj Ansari, Radiochemistry Division, BARC was the coordinator for this Workshop. Prof. Shantanu Rastogi, Pro-Vice-Chancellor, DDU Gorakhpur University was the Local Convener. The Workshop was attended by about 75 participants from various Departments of the Host University, MMM University of Technology, Gorakhpur, Lucknow University, and other nearby PG Colleges. Each participant was given a Workshop Participation Certificate and IANCAS book on Fundamentals of Radiochemistry.



The inaugural function of the Workshop was graced by Prof. A.C. Pandey, Director, Inter-University Accelerator Centre (IUAC), New Delhi as the Chief Guest, and Dr. Tapas Das, Head, RPhD, BARC as Guest of Honour. The session was also graced by the august presence of Prof. Poonam Tandon, Hon. Vice-Chancellor, DDU Gorakhpur University. In his welcome address, the Vice-Chancellor highlighted the crucial role of nuclear science in societal development and urged participants to make full use of the opportunity to learn from the

distinguished experts. Prof. A.C. Pandey highlighted that the IUAC at Delhi is providing the world-class accelerator-based research facilities to universities for internationally competitive research. It serves as a central hub, enabling universities to conduct research in fields like nuclear physics, materials science, and radiation biology. Dr. Tapas Das briefed the audience about the various activities of IANCAS in particular, and about DAE in general. Later, he delivered a keynote lecture on the topic “Role of DAE in Building Our Society” which was well received by the audience.

Dr. S.A. Ansari briefed about the theme of the Workshop and emphasized that the Workshop would provide an excellent platform for interaction with eminent scientists and would provide hands-on training with nuclear detectors. Prof. Rastogi, Pro-Vice Chancellor & Local Convener of the Workshop, in his brief address, urged the participants for their active participation in the Workshop for gaining the experience and knowledge of nuclear sciences by the eminent resource persons. Prof. Rakesh Tiwari, Head, Dept. of Physics, proposed the vote of thanks at the end of the inaugural function.

The technical program of the Workshop (enclosed) comprised of 14 Technical Lectures, covering the fundamentals of Nuclear and Radiochemistry, interaction of radiation with matters, radiation detection and measurements, radioanalytical techniques, actinide chemistry, nuclear reactors, production and application of radioisotopes in healthcare, agriculture, hydrology and industry. These lectures were delivered by 6 resource persons, and 3 guest speakers. The technical lectures also included two special talks: (i) BARC Technologies for Society, and (ii) BRNS activities, BRNS Research Funding and Career opportunities in DAE. All the lectures were held during the morning sessions, whereas the experiments were conducted in the afternoon sessions. Afternoon experiments included: (1) GM Counter, (2) Gamma-ray Spectrometry using NaI(Tl) detector, and (3) U/Th separation by solvent extraction. On the last day of the Workshop, a quiz competition was organized which was eagerly participated and appreciated by the participants.

Valedictory function was held on November 14, 2025. Dr. R. Acharya, Head, IRAD, BARC was the Chief Guest of the function. All the participants were given participation certificates by the Chief Guest. On behalf of IANCAS, Dr. Acharya donated one GM Counter to the Dept. of Physics, DDU Gorakhpur University for their academic use. Prof. Shantanu Rastogi, Pro-Vice Chancellor & Local Convener of the Workshop, in his valedictory address, declared the Workshop a grand success. He mentioned that through this Workshop the participants could acquire the knowledge of Nuclear Sciences and Technology and their utilization for mankind. He urged the participants and faculties of the University to utilize the experience and knowledge gained in the Workshop in their teaching and research. Dr. Finally, Dr. Udai Bhan Singh, Dept. of Physics, DDU Gorakhpur University proposed the vote of thanks, and the five days National Workshop was concluded with the National Anthem.

Each day of the Workshop, including the inaugural and valedictory function, was well covered by the electronic media and various local Hindi newspapers.

**S.A. Ansari**  
Workshop Coordinator

## Technical Program

| Time   | Lecture / Title  | Proposed speaker  |
|--|--|-------------------|
| <b>November 10, 2025 – Monday</b>                      |  |                   |
| 09:45 – 10:30  | Inauguration Session   |                   |
| 10:30 – 11:00  | Tea break  |                   |
| 11:00 – 12:00  | <b>Keynote address:</b> Role of DAE in Building Our Society                                    | Dr. Tapas Das     |
| 12:00 – 13:00  | <b>L1:</b> Introduction to Radioactivity and Decay   | Dr. Ashutosh      |
| 13:00 – 14:00  | Lunch  |                   |
| 14:00 – 15:00  | <b>L2:</b> Nuclear Structure and Stability   | Dr. Pratik Das    |
| 15:00 – 16:00  | <b>L3:</b> Introduction to Practicals, and Formation of Groups                                 | Dr. S.A. Ansari   |
| <b>November 11, 2025 – Tuesday</b>                     |  |                   |
| 09:45 – 10:45  | <b>L4:</b> Interaction of Radiations with Matters  | Dr. Ashutosh      |
| 10:45 – 11:00  | Tea break  |                   |
| 11:00 – 12:00  | <b>L5:</b> Radiation Detection and Measurements  | Shri Manish Singh |
| 12:00 – 13:00  | <b>L6:</b> Chemistry of Actinides  | Dr. S.A. Ansari   |
| 13:00 – 14:00  | Lunch  |                   |
| 14:00 – 16:00  | Hands on Experiments with Nuclear Detectors  |                   |
| <b>November 12, 2025 – Wednesday</b>                   |  |                   |
| 09:45 – 10:45  | <b>L7:</b> Production of Radioisotopes for Societal Application and Industry                   | Shri VijuChirayil |
| 10:45 – 11:00  | Tea break  |                   |
| 11:00 – 12:00  | <b>L8:</b> Nuclear Reactors  | Dr. S.A. Ansari   |
| 12:00 – 13:00  | <b>L9:</b> Application of Radioisotopes in Healthcare  | Shri VijuChirayil |
| 13:00 – 14:00  | Lunch  |                   |
| 14:00 – 16:00  | Hands on Experiments with Nuclear Detectors  |                   |
| <b>November 13, 2025 – Thursday</b>                    |  |                   |
| 09:45 – 10:45  | <b>L10:</b> Nuclear Analytical Techniques in Research  | Dr. R. Acharya    |
| 10:45 – 11:00  | Tea break  |                   |
| 11:15 – 12:00  | <b>L11:</b> BARC Technologies for Society  | Shri Rajesh Jain  |
| 12:00 – 13:00  | <b>L12:</b> Radiation Safety and Setting up a Radiological Laboratory                          | Dr. N.L. Mishra   |
| 13:00 – 14:00  | Lunch  |                   |
| 14:00 – 16:00  | Hands on Experiments with Nuclear Detectors  |                   |
| <b>November 14, 2025 – Friday (DAV College Campus)</b> |  |                   |
| 09:45 – 10:45  | <b>L13:</b> Applications of Radiation and Radioisotopes in Agriculture, Hydrology and Industry | Dr. R. Acharya    |
| 10:45 – 11:00  | Tea break  |                   |
| 11:00 – 12:00  | <b>L14:</b> BRNS activities, BRNS Research Funding and   | Dr. N.L. Mishra   |

|               |   |  |
|---------------|---|--|
|               | Carrier opportunities in DAE  |  |
| 12:00 – 13:00 | Quiz competition, Interaction of faculties, participants with resource persons. |  |
| 13:00 – 14:00 | Lunch   |  |
| 14:00 onward  | Valedictory, Instrument Donation & Distribution of Participation Certificates   |  |

### **Experiments:**

1. GM Counter – Shri Manish Singh and Shri Yogendra Kumar  
(Plateau, Dead time & Statistics)
2. NaI(Tl) – Dr. Pratik Das and Shri VijuChirayil  
(Calibration, Resolution & Attenuation)
3. U/Th Separation by solvent extraction – Dr. S.A. Ansari  
(Solvent extraction Principle, Liquid ion-exchangers and Demonstration)

| <b><u>Resource persons</u></b> | <b><u>Guest speakers</u></b>    |
|--------------------------------|---------------------------------|
| 1. Dr. S.A. Ansari, RCD        | 1. Dr. Tapas Das, Head, RPhD    |
| 2. Dr. N.L. Mishra, Ex-FCD     | 2. Dr. R. Acharya, Head, IRAD   |
| 3. Dr. Ashutosh Srivasta, RCD  | 3. Shri Rajesh Kumar Jain, TTCD |
| 4. Dr. Pratik Das, PDD         |                                 |
| 5. Shri Manish Sigh, FCD       |                                 |
| 6. Shri VijuChirayil, RPhD     |                                 |
| 7. Shri Yogendra Yadav, RPhD   |                                 |

## Glimpses of Workshop

