

REPORT

103rd BRNS-IANCAS National Workshop on “Radiochemistry and Applications of Radioisotopes” held at Department of Chemistry, National Institute of Technology, Rourkela, during April 12-16, 2022

The 103rd BRNS-IANCAS National Workshop on “Radiochemistry and Applications of Radioisotopes” was jointly organized by IANCAS and Department of Chemistry, National Institute of Technology (NIT), Rourkela, during April 12-16, 2022. The title of the Workshop was National Workshop on “Nuclear Science and Application of Radioisotopes”. Dr. Sudipta Chakraborty, Radiopharmaceuticals Division, was the Co-ordinator of this Workshop. Prof. Rupam Dinda, Department of Chemistry, NIT, Rourkela was the local Convener. The Workshop was attended by 120 participants from various departments of NIT Rourkela and other nearby Colleges. Each participant was given a Workshop Participation Certificate and a set of IANCAS books (i) Fundamentals of Radiochemistry and (ii) Nuclear Materials.



The inaugural function of the Workshop was held on April 16, 2022 at 9:45 am at Pranakrushna Parija Auditorium, NIT Rourkela. Prof. K. Uma Maheshwar Rao, Director, NIT Rourkela, Dr. A.K. Nayak, Head, RTD, BARC, Prof. P. Dash, Head, Department of Chemistry, NIT Rourkela, Dr. Sudipta Chakraborty, Workshop Coordinator from BARC, Prof. Rupam Dinda, Local Convener and Prof. Sabita Patel, Local Co-convener of the Workshop were at the dais. The function started with the lighting of the lamp. Prof. Dinda welcomed the participants and introduced the guests. Dr. Sudipta Chakraborty briefed the audience about the various activities of IANCAS and about the theme of Workshop. He said that the Workshop will provide an excellent platform to the participants to receive hands on training from experienced scientists which will help them enhancing their knowledge in the field of radiochemistry and radioisotope applications. Prof. P. Dash highlighted various activities and achievements of Department of Chemistry of NIT Rourkela. Prof. K. Uma Maheshwar Rao in his address highlighted significant contributions of Department of Atomic Energy in socio-economic development in India and shared

his experience of working with DAE in uranium exploration. Dr. A.K. Nayak highlighted various activities of DAE and later delivered keynote lecture on the topic “Relevance of nuclear power for a decarbon energy sector and unreasoned fear of radiation”. Prof. Patel proposed the vote of thanks at the end of the inaugural function.

The technical program of the Workshop (enclosed) comprised of 14 Lectures, covering the fundamental of nuclear and radiochemistry, interaction of radiation with matters, radiation detection and measurements, nuclear reactors, production and application of radioisotopes in healthcare, agriculture, food preservation, water resource management and industry. These lectures were delivered by 4 resource persons, and 2 guest speakers. A special lecture was also delivered by Shri Hemant Agnihotri of BRNS on BRNS-UGC-DAE collaborative programme. All the lectures were held during the morning sessions, whereas experiments were conducted in the afternoon sessions. A quiz competition was organized, which was well received by the participants. Afternoon experiments included: (1) GM Counter -Plateau and counting statistics, (2) Determination dead time of GM counter and (3) Gamma-ray Spectrometry using NaI(Tl) detector.

Valedictory function was held on April 16, 2022. Dr. H.J. Pant, Head, RTDD, BARC was the Chief Guest. All the participants were given participation certificates by the chief guest. On behalf of IANCAS, one NaI(Tl) scintillation gamma ray spectrometer and one GM Counter were donated to NIT, Rourkela. Prof. Rupam Dinda, Local Convener of the Workshop, declared the Workshop a grand success and thanked IANCAS for the effort in his valedictory speech. He mentioned that through this Workshop, the participants could acquire the knowledge of nuclear science and technology and their utilization for societal benefits. Prof. Samal of Department of Chemistry, NIT, Rourkela, proposed the vote of thanks, and declared the end of the five days National Workshop.

The Workshop including the inaugural and valedictory functions, were covered in local print media.

Prof. Rupam Dinda
(Local Workshop Convener)

Dr. Sudipta Chakraborty
(Workshop Coordinator)

Technical Program of 103rd IANCAS Workshop at NIT, Rourkela

Time	Lecture / Title	Lecturer
April 12, 2022 - Tuesday		
10:00 – 10:30	Inaugural Program	
10:30 – 11:00	Tea break	
11:00 – 12:30	Keynote Address: Relevance of nuclear power for a de-carbon energy sector and unreasoned fear of radiation	Dr. A.K. Nayak
12:30 – 13:30	L1: Introduction to Radioactivity and Radioactive decay	Dr. Arnab Sarkar
13:30 – 14:30	Lunch	
14:30 – 15:30	L2: Interaction of Radiation with Maters	Dr. Debasish Banerjee
15:30 – 16:00	L3: BRNS Funding to Scientific Research Projects for DAE Programmes	H. Agnihotri (Online)
16:00 – 16:30	L4: Introduction to Practical	Shri D.P. Rath
April 13, 2022 - Wednesday		
09:45 – 10:45	L5: Radiation Detection and Measurement	Dr. Debasish Banerjee
10:45 – 11:00	Tea break	
11:00 – 12:00	L6: Introduction to Nuclear Reactors	Dr. Arnab Sarkar
12:00 – 13:00	L7: Aspects of Radiation Safety	Shri D.P. Rath
13:00 – 14:00	Lunch	
14:00 – 16:00	Hands on Experiments with Nuclear Detectors	
April 14, 2022 - Thursday		
09:45 – 10:45	L8: Nuclear Structure and Stability	Dr. Debasish Banerjee
10:45 – 11:00	Tea break	
11:00 – 12:00	L9: Nuclear Reactions and Production of Radioisotopes	Dr. Sudipta Chakraborty
12:00 – 13:00	L10: Application of Radioisotopes and Radiation Technologies in Agriculture and Food Preservation	Dr. S. Gautam (Online)
13:00 – 14:00	Lunch	
14:00 – 16:00	Hands on Experiments with Nuclear Detectors	
April 15, 2022 - Friday		
09:45 – 10:45	L11: Application of Radioisotopes in Human Healthcare	Dr. Sudipta Chakraborty
10:45 – 11:00	Tea break	
11:00 – 12:00	L12: Setting up of Radiological Laboratory	Shri D.P. Rath
12:00 – 13:00	L13: Clinical Nuclear Medicine at Radiation Medicine Centre, BARC	Dr. Sandip Basu (Online)
13:00 – 14:00	Lunch	
14:00 – 16:00	Hands on Experiments with Nuclear Detectors	
April 16, 2022 - Saturday		
9:45 – 10:45	L14: Application of Radioisotopes and Radiation Technologies in Industry and Water Resource Management	Dr. H.J. Pant
10:45 – 11:15	Tea break	
11:30 – 13:00	Valedictory, Instrument Donation & Distribution of Participation Certificates.	
13:00 – 14:00	Lunch	

Experiments:

1. GM Counter - Plateau & Counting Statistics
Dr. Debashish Banerjee
2. GM Counter – Determination of dead time
Shri D.P. Rath
3. NaI(Tl) detector-Energy and efficiency calibration
Shri G. Meena

IANCAS Faculties

1. Dr. Sudipta Chakraborty, RPhD, BARC (Coordinator from BARC)
2. Dr. Arnab Sarkar, FCD, BARC
3. Dr. Debasish Banerjee, RCD, BARC (Kolkata)
4. Shri D.P. Rath, HPD, BARC
5. Shri G. Meena, RCD, BARC

Guest speakers: Dr. A.K. Nayak, Head, RTD, BARC
Dr. S. Gautam, Head, FTD (Online)
Dr. Dr. H.J. Pant, Head IRAD
Dr. Sandip Basu, Radiation Medicine Centre (Online)
Shri M.K. Shri Hemant Agnihotri, BRNS