

REPORT

105th BRNS-IANCAS National Workshop on “Radiochemistry and Applications of Radioisotopes” at the Sidho-Kanho-Birsha University (SKBU), Purulia, West Bengal September 05-09, 2022.

The 105th BRNS-IANCAS National Workshop on “Radiochemistry and Applications of Radioisotopes” was jointly organized by IANCAS & **Sidho-Kanho-Birsha University (SKBU), Purulia, West Bengal during September 05-09, 2022.** Dr. Dhanadeep Dutta, Radiochemistry Division, BARC was the coordinator for this Workshop. Dr. Chiranjib Barman, Assistant Professor, SKBU was the Local Convener. The Workshop was attended by about 50 registered participants from Physics Department, SKBU and other nearby Universities such as Calcutta University, Jadavpur University, NIT Durgapur, Diamond Harbour Womens’ University etc. Each participant was given a Workshop Participation Certificate and a set of two IANCAS books: (i) Fundamentals of Radiochemistry and (ii) Nuclear Materials. Inaugural function of the Workshop was attended by Dr. Jane Alam, Director Physics Group, VECC, Kolkata, Prof. Subol Chandra De, Controller of examinations, SKBU, Prof. Narugopal De, Dean of Arts, SKBU, Prof. Subrata Kumar De, Dean of Science, SKBU, Prof. Susanta Lahiri, Adjunct Professor, SKBU, Prof. Ardhendu Sekhar Patra, Director, IQAC, SKBU, Dr. Dhanadeep Dutta, Workshop coordinator, BARC. In the inaugural function, Prof. Ardhendu Sekhar Patra welcomed the participants and delegates and briefed about the Workshop. Dr. Jane Alam briefed the audience about the various activities of IANCAS. Later, he delivered a keynote lecture on the topic “DAE at a Glance” along with the fundamentals of radiation and matters of the Universe. Dr. Dhanadeep Dutta briefed about the theme of the Workshop and emphasized that the Workshop would provide an excellent platform for the students to interact with the experts of the subject during the five days of program through lectures and hands on experiments. In the brief address, Dr. Subol Chandra De, the controller of examination urged the participants for their active participation in the Workshop to get the experience and knowledge of radiochemistry and radioisotope by the resource persons of this Workshop. Prof. Susanta Lahiri conducted the inaugural function.



The technical program of the Workshop (*enclosed*) comprised of 13 Lectures, covering the fundamentals of nuclear and radiochemistry, interaction of radiation with matters, radiation detection and measurements, chemistry of actinides and trans-actinides, nuclear reactors, health safety, production and application of radioisotopes in healthcare, agriculture, food preservation and industry. These lectures were delivered by 6 resource

persons, and 2 guest speakers. One lecture on health safety by Mr. Sunil Yadav, HPD, BARC was delivered online; all other lectures were delivered offline. All the lectures were held during the morning sessions, whereas the experiments were conducted in the afternoon sessions. Every day there were 3 lectures in the morning session and after the last lecture of each day, quiz competitions were organized, which were eagerly participated and highly appreciated by the participants. Each day six quiz questions were asked, and the winners were awarded with a small gift (Pen). The participant who gave the maximum correct answers in all four days quiz questions, was announced as the champion and awarded with special prize in the valedictory function. Afternoon experiments included: (1) plateau and dead time determination in GM Counter, (2) Gamma-ray energy calibration and attenuation coefficient determination using NaI(Tl) detector, (3) U/Th separation by solvent extraction, and (4) Radioimmunoassay.

The valedictory function was held on September 09, 2022 at 02:30pm. Prof. Deepak Kumar Kar, the Vice Chancellor, SKBU was the Chief Guest, and Dr. Tapas Das, Head, RPhD, BARC was the Guest of Honor. All the participants were given participation certificates by the Chief Guest and the Guest of Honor. On behalf of IANCAS, Dr. Tapas Das handed over one GM counter to the Vice Chancellor, SKBU as a donation. It was promised from IANCAS that one NaI(Tl) detector would be sent to SKBU in future depending on its availability. Prof. Kar, Vice Chancellor, SKBU, in his valedictory address, declared the Workshop a grand success. He mentioned that this kind of Workshop may be regularly arranged for the students to acquire knowledge of Nuclear Sciences and Technology and their utilization for mankind. Prof. Ardhendu Sekhar Patra, Director, IQAC, SKBU mentioned in his comment that this was a unique Workshop where both the basic science of radiation and its application in advanced field are discussed. Some participants gave their feedback acknowledging the enrichment of their knowledge on radiochemistry and application of radiation in mankind from this five days Workshop. The Vice-Chancellor in his remarks urged the participants and faculties of the SKBU to utilize the experience and knowledge gained in the Workshop in their teaching and research fields. Finally, Dr. Arunasis Bhattacharyya, the practical coordinator, BARC proposed the vote of thanks, and thus the five days National Workshop was concluded.



**105th DAE BRNS-IANCAS NATIONAL WORKSHOP ON
RADIOCHEMISTRY AND APPLICATION OF RADIOISOTOPES
(September 5 – 9, 2022)**

Technical Program

Time	Lecture / Title	Speaker
Sept 5, 2022 (Monday)		
9:30 – 10:00	Inauguration Session	
10:00 – 10:30	Tea break	
10:30 – 11:30	Keynote Speaker: DAE at a Glance	Dr. Jan-e-Alam
11:30 – 12:30	L1: Introduction to Radioactivity and Decay	Dr. S. Sodaye
12:30 – 13:00	Introduction to Practicals and group formation	Dr. A. Bhattacharyya
13:00 – 14:00	Lunch	
14:00 – 16:00	Hands on Experiments with Nuclear Detectors	
Sept 6, 2022 (Tuesday)		
9:30 – 10:30	L2: Nuclear Structure, Nuclear Stability and Introduction to Nuclear Reactions	Dr. S. Sodaye
10:30 – 10:45	Tea break	
10:45 – 11:45	L3: Interaction of Radiation with Matters	Dr.D. Dutta
11:45 – 12:45	L4: Radiation Technology: A versatile approach for agriculture and food preservation	Dr.B. Sanyal
12:45-13:00	Quiz	
13:00 – 14:00	Lunch	
14:00 – 16:00	Hands on Experiments with Nuclear Detectors	
Sept 7, 2022 (Wednesday)		
9:30 – 10:30	L5: Radiation Detection and Measurements	Dr. D. Dutta
10:30 – 10:45	Tea break	
10:45 – 11:45	L6: Chemistry of Actinides	Dr. A. Bhattacharyya
11:45 – 12:45	L7: The Transactinides	Prof. S. Lahiri
11:45 – 12:45	Quiz	
13:00 – 14:00	Lunch	
14:00 – 16:00	Hands on Experiments with Nuclear Detectors	
Sept 8, 2022 (Thursday)		
9:30-10:30	L8: Introduction to nuclear Reactor	Dr.A. Bhattacharyya
10:30-10:45	Tea break	
10:45 – 11:45	L9: Industrial application of Radiation	Dr.S. Sodaye
11:45-12:45	L10: Health Safety (online)	Mr. S. Yadav
13:00 – 14:00	Lunch	
14:00 – 16:00	Hands on Experiments with Nuclear Detectors	
Sept 9, 2022 (Friday)		
9:30-10:30	L11: Isotope production	Dr.T. Das
10:30 – 10:45	Tea break	
10:45-11:45	L12: Radioisotopes in Health care	Dr.T. Das
11:45-12:45	L13: Nuclear Medicine - a historical sketch and present international scenario	Prof. S. Lahiri
13:00 – 14:00	Lunch	
14:00 – 15:30	Valedictory, Instrument Donation & Distribution of Participation Certificates.	

Experiments:

1. GM Counter – D. Dutta (Plateau, Dead time & Statistics)
2. NaI(Tl) – Mr. S. Soren and Dr. S. Sodaye (Energy Calibration, attenuation coefficient)
3. Radio-immuno Assay –Mr. S. Patra
4. Separation – Dr. A. Bhattacharyya (U/Th Separation)

List of Resource Persons

1. Dr Dhanadeep Dutta, RCD
2. Dr. A. Bhattacharyya, RCD
3. Dr. (Mrs.) Suparna Sodaye, RCD
4. Dr. Bhaskar Sanyal, FTD
5. Mr. Sunil Yadav, HPD
6. Mr. Sourav Patra, RPhD
7. Mr. Siburo Soren, RCD

List of Guest Speakers

1. Dr. Jane Alam
Director, Physics Group, VECC, Kolkata
2. Dr. Susanta Lahiri
Adjunct Professor, SKBU, Purulia.
3. Dr. Tapas Das
Head, RPhD, BARC

Glimpses of the Workshop



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