

**REPORT ON THEME MEETING ON “SYNCHROTRON BASED
CHARACTERIZATION TECHNIQUES” HELD ON 4TH AND 5TH SEPTEMBER
ORGANIZED BY AMITY INSTITUTE OF NANOTECHNOLOGY (AINT) AND AMITY
CENTRE FOR SPINTRONICS MATERIAL (ACSM)**

Amity Institute of Nanotechnology (AINT) and Amity Centre for spintronics materials (ACSM) organized a theme meeting on “Synchrotron based characterization techniques” on 4th and 5th September, 2018 at Amity University Uttar Pradesh. Five scientists from Raja Ramanna Centre for Advanced Technology had come as resource persons for the theme meeting.

The aim of the meeting was to create awareness about synchrotron facility among science students. Over 19 participants from different institutes and Universities like Kalindi College, Gargi College, Deshbandhu College, Delhi University, Shiv Nadar University and Inter University Accelerator Centre registered for the meeting. Over 90 participants from Amity University registered.



Participants at the theme meeting

The program started at 10:20am with the opening remarks by Dr. Richa Krishna. She gave a warm welcome to all guests, participants and speakers. The dignitaries, Dr. A.K. Sinha, Prof. Ajay Gupta and Prof. D. K. Avasthi were invited to the dais.



Dignitaries sitting on the dias

Thereafter, the overview of theme meeting was given by Prof. D. K. Avasthi, Director, AINT. He specially thanked Dr. P. A. Naik, Director, RRCAT, Indore for deputing a team of expert scientists to visit Amity University to broaden our knowledge on synchrotron and its application in science and technology.



Prof. Devesh Avasthi, Director, AINT giving the overview of theme meeting

Blessings received from the Founder President, Dr. Ashok K. Chauhan was read out by Dr. Richa Krishna.

Dr. A.K. Sinha from RRCAT, Indore gave an “Introduction to Synchrotron” explaining the main functioning and the working principles of Synchrotron to undergraduate students. He mentioned that the synchrotron facility at Indore is free of cost and students and faculty availing the facility for their research work will be given travel support by RRCAT.



Dr. A. K. Sinha giving an Introduction to Synchrotron

Dr. A.K. Sinha, from RRCAT was again invited to give details of X-ray diffraction technique using synchrotron. He also explained the difference between a lab source and synchrotron source and the potentials of synchrotron. Prof. Ajay Gupta and Prof. D.K. Avasthi felicitated Dr. Sinha. In the meantime, Prof. Avinash Chandra Pandey, Director, Inter University Accelerator Centre also joined. He was welcomed and invited for the inaugural address. He mentioned the potentials of various accelerator facilities in India. He was felicitated by Prof. Ajay Gupta and Prof. Avasthi.



Prof. A.C. Pandey, Director, IUAC, being felicitated

After the lunch, Dr. M.H. Modi, from RRCAT was invited for his lecture on X-ray reflectivity (XRR). Dr. Modi explained the scope of the technique and its importance in studies of surfaces and interfaces. He further explained the analysis of XRR in the tutorial session which followed.



Dr. M.H. Modi explaining the scope of X-ray reflectivity

The lecture session was followed by tea and poster session. During poster session researchers from Delhi University, IUAC, Shiv Nadar University and Amity University (ACSM, AINT and AIAS) presented their works related to synchrotron.



Participants at the poster session

The second day of theme meeting started with lecture on X-ray Fluorescence (XRF) spectroscopy given by Dr. M.K. Tiwari from RRCAT. He explained that XRF is an extremely useful technique for elemental characterization. Since the measurement is done in air, so all types of samples can be analyzed. XRF done with synchrotron extends its applicability in the detection of elements presents in a material in extremely small (ppb) amount.



Dr. M.K. Tiwari talking about XRF

Dr. Soma Banik, from RRCAT explained Photoelectron Spectroscopy (PES) which involves ultraviolet photoelectron spectroscopy (UPS) and X-ray photoelectron spectroscopy (XPS). She also talked about Angle Resolved photoelectron spectroscopy and hard X-ray photoelectron spectroscopy. In the tutorial part she discussed some case studies.



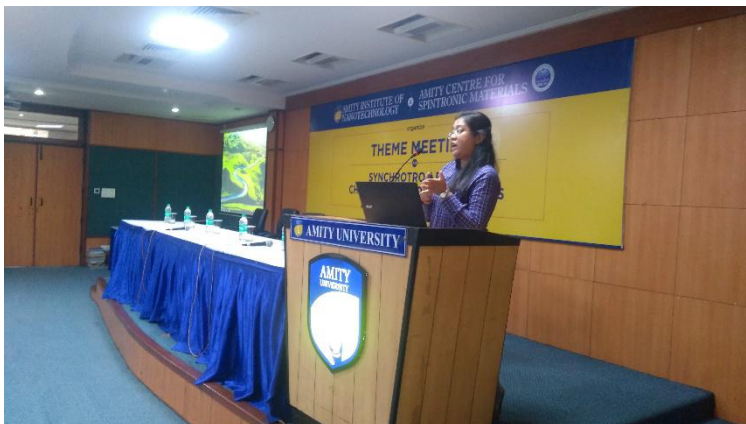
Dr. Soma Banik explaining PES

After each lecture, a rigorous brain storming took place. Participants asked a number of questions related to the technique, analysis of data, scope of the technique etc.



Brain storming during the theme meeting

Dr. Parasmani Rajput, from BARC talked about Extended X-ray absorption fine structure (EXAFS). She explained that EXAFS can be utilized for the study of local structural environment of any sample. The coordination number and nearest neighbor distance can be found out using this technique. She also mentioned that the EXAFS results need to be analysed very carefully.



Dr. Parasmani from BARC explaining about EXAFS

The session ended up with the Concluding Remarks, Certificate Distributions, by Prof Ajay Gupta and Prof. D.K. Avasthi.



Prof. Ajay Gupta, Director ACSM giving concluding remarks

Various participants from Delhi University, Inter University Accelerator Centre, Shiv Nadar University and Amity University gave their valuable feedback.

Prof. Avasthi mentioned that a similar program could be conducted shortly mainly for biological applications.

The two days program ended with the vote of thanks given by Dr. Sambhu Nath Bera from ACSM.