N.2: Interaction meeting on the use of photoelectron spectroscopy

The tenth interaction meeting on the use of Photoelectron Spectroscopy was held on 29th and 30th day of August 2013. The aim of the meeting was to enhance interaction among photoelectron spectroscopy experimentalists, beam line users of Indus-I and to attract new users to carry out their experiments using synchrotron radiation sources (SRS). The program included lectures by the following scientists: Prof. S K Kulkarni, IISER, Pune; Prof. S K Gupta, BARC, Mumbai; Prof. K Maiti, TIFR, Mumbai; Prof. Shikha Verma, IOP, Bhubaneshwar; Dr. S R Barman, UGC-DAE CSR, Indore; Dr. Dinesh Topwal, IOP, Bhubaneshwar; Dr. V Rama Rao Medicherla, ITER, Bhubaneshwar; Dr. R S Singh, IISER, Bhopal and Dr. R J Choudhary, UGC-DAE CSR, Indore.

Additionally, following users of Indus-I photoelectron spectroscopy beam line also gave their presentations.Prof. DG Kuberkar, Saurashtra University, Rajkot; Dr. Alka Deshmukh, Fergusson College, Pune;Dr. Shubha Gokhale, IGNOU, Delhi; Dr. V. K. Dixit, RRCAT, Indore; Dr. Ratnesh Gupta, DAVV, Indore; Dr. Ram Prakash, Mata Vaishnodevi University, Katara and Dr. Soma Banik, RRCAT, Indore.

The meet was inaugurated by Dr. P. Chaddah, Director, UGC-DAE CSR, Indore and Shri. P. R. Hannurkar, Head IOAPDD, RRCAT. The welcome address to participants of the interaction meet was presented by Dr. D. M. Phase, UGC-DAE CSR, Indore. Shri. P. R. Hannurkar, Head IOAPDD, RRCAT gave overview of Indus and other programme of our centre. Dr. P. Chaddah, Director, UGC-DAE CSR shared his view on the theme of this interaction meeting and emphasized on the importance of it. Dr. Shailendra Kumar, co-convenor of this meeting presented the vote of thanks. The meet was attended by 37 participants from different parts of the country and about 7 participants from Indore, 25 participants from UGC-DAE CSR, and 53 participants from RRCAT, Indore.

There were nine invited talks and seven user presentations delivered by the leading experts of photoelectron spectroscopy from different Indian institutes and national research laboratories. The scientific session of the meeting was commenced with the invited talk delivered by Prof. S. K. Kulkarni, IISER, Pune. She discussed the history, basics and the importance of synchrotron radiation in the photoelectron spectroscopy technique. This was followed by a talk by Dr. R. J. Choudhary, UGC-DAE, CSR, Indore, who presented their work on the resonant photoemission using synchrotron radiation source. Prof. S. K. Gupta, BARC introduced hard x-ray photoelectron spectroscopy technique to the participants. Prof. Shikha Verma, IOP, Bhubaneshwar spoke about the use of photoelectron spectroscopy in oxide based semiconductors. Dr. R. S. Singh, IISER, Bhopal presented his work on the electronic structure determination of low dimensional structures. Experimental demonstration at AIPES beam line on Indus-1- to the participants was performed by Dr. D. M. Phase, UGC-DAE, CSR, Indore. Data analysis to the participants was given by Dr. Soma Banik, RRCAT and Komal Bapna, UGC-DAE, CSR. The visit of Indus-I and Indus-II to the participants was conducted by Dr. Shailendra Kumar, RRCAT and Dr. Tapas Ganguli, RRCAT.

On the second day, Dr. S. R. Barman, UGC-DAE, CSR, Indore explained the unraveling nature of collective and single particle excitations by photoemission. Prof. K. Maiti, TIFR, Mumbai explained the physics of some of the Fe-based superconductors. Dr. Dinesh Topwal, IOP, Bhubaneshwar spoke about the spectroscopic Investigations of Quantum Confinement Effects. Dr. V. Rama Rao Medicherla, ITER, Bhubaneshwar explained the Manifestation of disorder in core levels of TM alloys using photoelectron spectroscopy. Thereafter seven presentations of their work by the Indus-I beam line users were also made to the participants to enhance the user base. The theme meeting was concluded by Dr. P. D. Gupta, Director, RRCAT.

Reported by:
S.D.Singh (devsh@rrcat.gov.in)
and Shailendra Kumar

N3: Interaction meeting on X-ray lithography and microfabrication

An interaction meeting on "X-ray lithography and microfabrication" was organized during December 5-6, 2013. Dr. V K Suri, Head Precision Engineering Division, BARC and Dr. S K Deb, Head Indus Synchrotrons Utilization Division were the conveners of the meeting. Around 45 participants from IITs, National research laboratories and Universities attended this meeting. Dr. G S Lodha welcomed all the invited speakers and participants and gave outline of the requirements of such interaction meetings. The interaction meeting was inaugurated by Dr. P D Gupta, Director RRCAT. In his inaugural address Dr. Gupta informed about the rise in the users base for Indus national synchrotron radiation facility and emphasized the role of the theme meetings which are being organized at RRCAT. He reiterated that lithography activity is multi-disciplinary in nature and expressed his cheerfulness by seeing the gathering of many professors and scientists from IITs, universities and research institutes of varying disciplines. Dr. Gupta thankfully acknowledged the support of the office of Principal Scientific

adviser to the government of India in organizing the interaction meetings. Dr. Gupta assured full support to all the participants and faculty members for the utilization of the Indus Synchrotron facility.

Participants of the Interaction meeting on X-ray lithography and microfabrication

Dr. V K Suri delivered the first lecture where he pointed out the need of micro and nano fabrication facilities for producing micro-nano engineering products. Dr. S K Deb gave an overview about the present and previous meetings held for x-ray lithography and a brief update about the Indus-2 synchrotron facilities. Prof. Shuji Miyamoto, Director of Laboratory for Advanced Science and Technology, Hyogo University, Japan and Prof. A Yamaguchi, Hyogo University delivered the lectures on the x-ray lithography facilities and nano magnets engineering respectively. Prof. B Bhattacharya (Jadavpur University), Prof. S Bhhattacharya (IIT Kanpur), Prof. Monica Katiya (IIT Kanpur), Dr. Sunil Bhand (BITS-Pilani Goa Campus), Prof. N J Vasa (IIT Madras), Dr.V B Chandratre (BARC), Prof. Uday Dixit (IIT Gauwahati), Prof. A Sidpara (IIT Kharagpur), Dr. P Ram Sankar (RRCAT), Dr. Arvind Srivastava (RRCAT), Shri Vishal Dhamgaye (RRCAT) and Dr. Rahul Shukla (RRCAT), delivered the lectures during the interaction meeting covering various aspects of microfabrication.

There was a special session to discuss science involved in microfabrication and to identify new projects. Dr. Suri and Dr. Lodha chaired the session. The participants were asked to discuss their projects for 2-5 minutes. Following the interests of the participants it was decided to further explore the projects and its viability by the exchange of knowledge. It was also decided that all the necessary facilities and beam time at Indus-2 X-ray lithography beamline will be provided to carry out these projects.

Reported by:
Vishal Dhamgaye Prabhakar (vishal@rrcat.gov.in)

N.4:One Day Interaction Meeting on Engineering Applications of Beamline on Indus-2

One day interaction meeting was organized on 14th December 2013 on engineering applications of beamline. This meeting was organized to compile the needs of engineering research community in the country. This beamline is mainly based on x-ray diffraction experiments having the possibilities of both monochromatic and white beam. This beamline can be used for powder diffraction, stress and texture measurements in large size components up to 1 m in dimension. It can also be used for testing large size reflective x-ray optics. Scientists are invited from various national research centers and academic institutes for this meeting. In the meeting, the current plan of experiments on the beamline and ray tracing results were presented to participants. Thereafter, the invited scientists presented their plan and requirements from such a beamline. At the end, the inputs regarding facilities required in the experimental station were also taken from participants. These inputs are very useful to meet the requirements of a large user base.

Reported by:
Sanjay K Rai (sanjayrai@rrcat.gov.in)

N.5: Indus Interaction meeting titled "Indus beamlines: their development and utilization"

A one day interaction meeting on Indus beamline utilization titled: "Indus beamlines: their development and utilization" was held on the 18th December 2013 at RRCAT. The speakers in this meeting were Dr. B.N.Jagatap (BARC), Dr. Chandrabhas Narayana (JNCASR, Bangalore), Dr. Shankar Ghosh (TIFR, Mumbai), Prof. B.D.Shrivastava, (Univ. of Ujjain), Dr. D.M.Phase (UGC DAE CSR, Indore) Dr. P.Ch. Sahu (IGCAR, Kalpakkam), Dr. G.S.Lodha (RRCAT) and Dr. Ravi Makde (BARC/RRCAT).The speakers talked about the various experiments carried out at the Indus beamlines and their personal association with the development and utilization of Indus-1 and Indus-2 beamlines. The meeting was attended by various scientists and researchers from different institutes, including, UGC-DAE-CSR, Indore; DAVV Indore; Univ. of Ujjain and RRCAT.

This meeting also coincided with the birthday of Dr. S.K.Deb, the then Head of Indus Synchrotrons Utilization Division, who superannuated on 31st of December 2013. It was an opportunity to felicitate Dr. Deb, and recount the immense contributions made by him towards the development of the beamlines at Indus and enhancing their utilization. The last session of this meeting was thus devoted to his felicitation where several senior scientists who had a