



(ARCI) & Dr. L M Kukreja (RRCAT) covered the basics of laser material processing and applications of lasers in high-resolution spectroscopy was covered by Dr. B M Suri (BARC). Dr. K K Pant (RRCAT) and Dr. D S Rana (IISER Bhopal) discussed Free electron lasers and THz sources respectively. Lasers in Biophotonics was covered by Dr. P K Gupta and Dr. Sanjeeb Chatterjee (RRCAT) covered various techniques of Optical Metrology. Laser based Instrumentation was covered by Dr. Sendhil Raja S.

The School also organized lab experiments to expose the participants to hands-on experiments on some of the areas covered in the School. These included Diode pumped solid state laser characterization, Yb doped fiber laser characterization, femto second laser pulse characterization, copper vapour pumped dye laser, XeCl excimer laser characterization, laser welding of stainless steel, laser rapid manufacturing, optical coherence tomography, optical micro-manipulation, and magneto-optic Kerr effect.



SERC School Participants and Faculty posing for a group photo.

Five evening lectures were also arranged as part of the school delivered by Dr. L M Gantayet (BARC), Dr. D D Bhawalkar (Quantalase), Prof. Kankan Bhattacharya (IACS), Prof. Deepak Mathur (TIFR), and Dr. A Maini (Lastec).

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N.4: 1st Interaction Meeting on Synchrotron Utilization

RRCAT is home to two synchrotron sources Indus-1 and Indus-2. There are 7 commissioned beam-lines in Indus-2 and 5 beam-lines in Indus-1. In order to enhance the utilization of these national facilities and increase the user base in the country, it has been planned to hold regular interaction meetings with leading scientists and researchers from different parts of the country. Further, students and young researchers from different institutions are invited for these talks. This will bring them in contact with the latest international research scenario and also open up the possibility of experiments by these students at the Indus

facilities. Each such interaction meeting is proposed to be focused on a specific experimental technique with emphasis on the facilities present at/to be added to the beam-lines.



Participants of the 1st interaction meet on Synchrotron Utilization posing for a group photograph.

The first such interaction meeting on synchrotron based X-ray diffraction was held on 24th - 25th January 2012. The theme of this meeting was 'Structure determination using X-ray diffraction at ambient and high pressures'. The programme included lectures by the following eminent scientists in X-Ray diffraction, Prof. T.N.Guru Row, IISc, Bangalore, Prof. Chandrabhas Narayana, JNCASR, Bangalore, Dr. S.N.Achary, BARC Mumbai, Dr. N.P.Lalla, UGC DAE CSR Indore, Dr. Nandini Garg, BARC Mumbai, Dr. Anthony Arul Raj, IGCAR Kalpakkam and Dr. Amitabh Das, BARC Mumbai. The total number of student participants from various institutes other than RRCAT was about 50.

The lectures covered the range of experiments that are presently being performed at ADXRD and EDXRD beamlines. Prof. T.N.Guru Row talked about the various issues related to the single crystal diffraction and several aspects related to the determination of the crystal structure from the diffraction pattern of single crystals. Prof. Chandrabhas Narayana gave a detailed account of high pressure experiments and the physics behind high pressure studies. He also explained the details of the high pressure XRD setup that he has been involved in developing at the ADXRD beamline at Indus-2. Dr. N.P. Lalla, Dr. Anthony Arul Raj and Dr.S.N.Achary talked about the details of powder diffraction experiments, data reduction and data fitting procedures. Dr. Nandini Garg talked about the details of the Energy dispersive mode of X-Ray diffraction and some of the recent results obtained from that beam-line. Dr. Amitabh Das talked about another important and interesting aspect of diffraction: analysis of X-Ray data from amorphous samples. There was a hands-on session in the second day afternoon where the students were exposed to the techniques of XRD data analysis and structure refinement.

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