

Dr. S K Deb, Head ISUD, gave an overview of various beamlines on Indus synchrotron radiation sources. Dr. S N Jha, Convener, EXAFS-TM, 2012, delivered the vote of thanks.

First lecture after the inaugural function was delivered by the Dr. Giuliana Aquilanti (ELETTRA, Italy) on basics of EXAFS technique and its application to material science. In the subsequent technical sessions, there were presentations by scientists on catalytic applications of EXAFS technique including an extensive overview of application of EXAFS in catalysis by Dr. Carmelo Prestipino (CNRS, Rennes, France).

Second day of the meet was focused on EXAFS applications in material science, in which first speaker was from SOLEIL, France who discussed the research carried out at ODE beamline, SOLEIL for high pressure EXAFS and XMCD applications. Other presentations included EXAFS application on magnetic and nano materials and other technologically important materials. Last session had two parallel sessions consisting of experimental demonstrations and data analysis training as well as presentations from various user groups to discuss new proposals suitable for dispersive EXAFS(BL-8) beamline at Indus-2.

The concluding session, held on 28th Sept was presided over by Dr. S Kailas, Director Physics Group, BARC. The prime objective of this interactive session was designated for receiving remarks, viewpoints and feedback from the highly enthusiastic participants. As observed, the participants were very satisfied with the overall arrangements of the meeting, both scientifically as well as interaction point of view. There are also discussions and suggestions catering to the need of emerging requirements for the experimental station of EXAFS beamline like high temperature cell for in-situ EXAFS studies. Dr. Kailas, Director Physics Group, in his concluding remarks emphasized the need for similar theme meeting to enhance the user-base for synchrotron based EXAFS researches in India. Dr. D Bhattacharyya, Secretary, EXAFS-TM, 2012, summarized the proceedings of the theme meeting and thanked all the participants for their overwhelming support.

Reported by: N.K. Sahoo, S.N. Jha(snjha@rrcat.gov.in )& D. Bhattacharyya

# N.8: DAE (Excellence in Science, Engineering & Technology) Awards 2011

The DAE awards scheme was instituted in the year 2006 to recognize outstanding accomplishments and exceptional achievements of the DAE staff, who are engaged in scientific research, technology development, engineering /project implementation, teaching, healthcare and support services. These awards are given annually. The awards for the year 2011 were given on the eve of Founder's Day on October 30, 2012 in BARC. These were presented to the winners by the Chief Guest, Dr. M R Srinivasan, Former Chairman, Atomic Energy Commission. The following scientists/engineers from RRCAT bagged the DAE awards for the year 2011:

### HomiBhabha Science & Technology Award



Dr. T K Sharma, SO/G Solid State Laser Division has been conferred with the Homi Bhabha Science and Technology Award for "Basic research on semiconductor quantum wells and development of Semiconductor Lasers". Under his leadership, significant progress on the development of laser diodes has been made where lasing action at many

different wavelengths varying from 670 nm to 1000nm have been achieved at RRCAT. Furthermore, Dr. Sharma made significant contributions in enhancing the understanding of some novel fundamental physical phenomena related to semiconductor quantum structures e.g. Discovery of the compositional dependence of bowing parameter for highly strained InGaAs/GaAs quantum wells which was otherwise thought to be a constant and explanation of high polarization switching behavior of nitride deep ultraviolet light emitters. He made invaluable contributions on the spectroscopic characterization of quantum structures and also on the characterization of mid infrared semiconductor laser structures by inventing the FTIR-SPS technique. Homi Bhabha Science & Technology Award carries a Cash award of Rs. 5 Lakh, a Citation and a Medal.

#### Scientific & Technical Excellence Award



Shri Tushar A Puntambekar, SO/H & Head Beam Diagnostics Section, Accelerator Control and Beam Diagnostics Division has been conferred with the Scientific & Technical Excellence Award for the year 2011 for his contribution in the field of beam

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diagnostics of Indus accelerators. Shri Puntambekar has made outstanding contributions as a team leader in the development and implementation of beam diagnostics systems for Indus accelerators like beam orbit measurement system for closed orbit correction, online betatron tune measurement system and transverse and longitudinal coupled bunch modes measurement system for beam instability studies. The beam parameter data obtained from these systems have been crucial in achieving the current status of Indus-2 operation at 2.5 GeV, 100 mA. He has also contributed in the development of upgraded version of the beam diagnostic devices as a replacement for the old devices and development of beam diagnostics devices for front-end of H-linac. The Scientific & Technical Excellence Award carries a Cash award of Rs. 1 Lakh, a Citation and a Medal.



Dr. P K Mukhopadhyay, SO/F Solid State Laser Division has been conferred with the Science and Technology Excellence Award for the year 2011 for his contribution in the field of Diode Pumped Solid State Laser with Intracavity Frequency Conversion. During the last five years Dr.

Mukhopadhyay has made outstanding contribution in the field of diode pumped solid state lasers. His effort is pivotal in the development of indigenous green laser photocoagulator for the treatment of diabetic retinopathy which has been a laudatory development that contributed to the direct translation of R&D efforts in DAE laboratories to societal applications. He has to his credit the achievement of the highest CW green power (82 W) by intra-cavity frequency doubling of Nd: YAG laser. The coupled cavity technique invented by Dr. Mukhopadhyay is a major breakthrough in generating high average power green beam with short pulse duration. The green laser system developed based on this technique meets all the required specification for efficient pumping of dye lasers and can potentially replace the bulky CVLs used in the laser isotope separation schemes. A green laser dazzler for defense needs is in the process of being developed based on his work on high power pulsed green lasers. He has recently developed for the first time in India, a modelocked femtosecond fibre laser-amplifier of 250mW average power, generating pulses of 200fs duration at 37 MHz. The Scientific & Technical Excellence Award carries a Cash award of Rs. 1 Lakh, a Citation and a Medal.

### Young Scientist Award



Shri Raktim Dasgupta, SO/F Laser Biomedical Applications and Instrumentation Division has been conferred with the Young Scientist Award 2011 for his contribution in the field of Optical manipulation of microscopic objects. Shri Raktim

Dasgupta has made outstanding contributions to the development of optical techniques for manipulation of microscopic objects, successful indigenuous development of Holographic Optical Tweezers and the utilization of these for various scientific studies. Young Scientist Award carries a Cash award of Rs. 50,000/-, a Citation and a Medal.



Dr. Himanshu Singhal, SO/E Laser Plasma Division has been conferred the Young Scientist Award for the Year 2011 for his contributions in the field of high order harmonic generation from plasma plumes with ultra-short pulse lasers. He has done frontline work in the field of high order harmonic generation in plasma plumes

using ultra-short laser pulses. He has devised several new ways to improve the yield of the harmonics, their wavelength tunability, and the harmonic cut-off. He has achieved up to two orders of magnitude increase in harmonic intensity of selective harmonics through resonance intensity enhancement. He has also shown an order of magnitude increase in the conversion efficiency of the harmonics using novel targets such as metal nanoparticles, fullerenes, and carbon nano-tubes, as well as through breaking of the inversion symmetry in harmonic generation by mixing second harmonic with the input laser pump. Since May 2012, Dr. Singhal is on postdoctoral fellowship at Korean Advanced Institute of Science & Technology, Daejon, S.Korea, working on generation of attosecond laser pulses. Young Scientist Award carries a Cash award of Rs. 50,000/-, a Citation and a Medal.



#### Special Contributions Award



Shri R C Sharma, SO/F has been conferred with Special Contribution Award for his outstanding contributions in the field of Cryogenics Engineering. He has contributed immensely in the operation and maintenance of Liquid Helium and Liquid Nitrogen plants and their in-house maintenance. He has also

played a pivotal role in training his subordinates and cryogenic plant operating staff at RRCAT. Shri Sharma has played an important role in meeting the requirements of liquid helium and liquid nitrogen to its user community at RRCAT. He has also played an active role in the development of indigenous Cryocoolers. Shri Sharma was one of the active members of the team who successfully commissioned a helium liquefier, which is designed and developed indigenously. This achievement, using indigenously developed components, was for the first time in the country. Special Contributions Award carries a cash award of upto Rs. 50,000/-, a Citation and a Medal.

## Group Achievement Award

Group Achievement Award winners receive a medal, a Citation and a cash awards for each group commensurate with the group size and its overall achievement. The following six teams were awarded with Group achievement awards:

- 1. Capillary Discharge Soft X-ray Laser System: A team of 10 members from Laser Electronics Support Division and Laser Plasma Division, headed by Shri C P Navathe, SO/H & Head, Laser Electronics Support Division was awarded with Group Achievement Award for the year 2011 in recognition of outstanding contributions in the field of Capillary Discharge Soft X-ray Laser System. The Group has carried out outstanding work on building up a high voltage capillary discharge system wherein acurrent pulse of 40 kA with ~50 ns risetime is passed through an argon gas discharge to produce hot, dense plasma column having lasing conditions to achieve x-ray lasing at 46.9 nm.
- Development of High Power Solid State RF amplifiers and their deployment in Indus-2 Synchrotron Radiation Source to achieve beam current of 100mA at 2.5 GeV: A team of 44 members headed by Shri P R Hannurkar, Outstanding Scientist

- & Head, Radio Frequency Systems Divisions was awarded with Group Achievement Award for the year 2011 in recognition of outstanding contributions for the development of High Power Solid State RF amplifier and their deployment in Indus-1 Synchrotron Radiation Source to achieve current of 100 mA at 2.5 GeV.
- 3. Development of Non-Evaporable Getter coating Technology for accelerators: A team of 21 members headed by Shri S K Shukla, SO/H & Head, Ultra High Vacuum Technology Division was awarded with Group Achievement Award for the year 2011 in recognition of outstanding contributions for the development of Non-Evaporable Getter coating Technology for accelerators.
- 4. Development, Installation, Commissioning and Utilization of ADXRD, XRF-microprobe and XDSRL beamlines at Indus-2 Synchrotron Source: A team of 53 members headed by Dr S K Deb SO/H and Head, Indus Synchrotron Utilization Division was awarded with Group Achievement Award for the year 2011 in recognition of outstanding contributions for the Development, Installation, Commissioning and Utilization of ADXRD, XRF-microprobe and XDSRL beamlines at Indus-2 Synchrotron Source.
- 5. Design & Development of High Power Laser Facility: Collaborative achievement by Laser & Plasma Technology Division, BARC and Laser System Engineering Section, RRCAT was awarded with a Group Achievement Award for the year 2011 for the deploying and supporting 18 in-house developed copper-vapour-lasers (CVL) at BARC. Configuring the CVLs to produce high average power laser beams and achieving regular operations for pumping a multi-wavelength tunable laser system for Project RIS. The RRCAT team of 24 members was headed by Shri S V Nakhe, SO/H & Head Laser System Engineering Section.
- 6. Machine Vision based PHWR Fuel Pellet Inspection System: A RRCAT team of 6 members headed by Shri C P Navathe, SO/H & Head, Laser Electronics Support Division was awarded with Group Achievement Award for the year 2011 in recognition of outstanding contributions in the development Machine Vision based PHWR Fuel Pellet Inspection System.