



From the Convener's Desk...

The Editorial Board of RRCAT Newsletter is delighted to bring out the first issue of the Newsletter of 2016, which gives an account of various important activities that have taken place in RRCAT in recent past.

The Newsletter begins with reports covering different aspects of research and development in the area of accelerators. The first report discusses about the increased utilization of Indus beamlines and the second report about the upgradation of Indus-2 with installation and commissioning of Advanced Planar Polarized Light Emitter (APPLE-2) undulator. There are interesting reports on some aspects of the Indus-2 machine, like operation of Indus-2 at 100 mA, 2.5 GeV with undulator U1 and development of OFE-Copper RF cavity for Indus-2. There are important reports on processing and testing of single-cell 650 MHz SCRF cavity, indigenous development of semi-automatic cavity tuning machine and development of a CBP machine for 650 MHz SCRF cavity. The other important reports are on development of compact power supplies for explosive detection system, and development of an infra-red free electron laser. There are reports on micro-structural analysis of nanolayered materials at BL-16 beamline and structural analysis of $Ni_{1-x}Zn_xO$ and its correlation with XANES data from Indus-2.

Then there is an account of various accomplishments in the field of lasers and its applications. The first two reports discuss removal of Q-16 coolant channel of Kakrapar Atomic Power Station Unit-2 reactor by laser cutting and laser cutting of steam generator tubes at Kudankulam Nuclear Power Project Unit-2 reactor, which are important applications of lasers in the area of nuclear technology. There are some reports, which are related to several developmental activities like development of all-fiber thulium-doped CW fiber laser, development of optoelectronic devices based on III-V semiconductors, generation of UV beam by frequency summing of outputs of Copper-HBr laser, two-isotope magneto-optical trap for noble gas Krypton atoms, etc. The other interesting reports are on quasi-mono-energetic Au ion acceleration using high intensity lasers, photonic nanojet for enhancement of transmission through nano apertures and use of Raman optical tweezers for cell cycle analysis.

Several important works on development of infrastructure in our Centre are also reported in the Newsletter. Several buildings were constructed for various scientific activities, like Peta-watt laser lab., Accelerator components design & fabrication lab., Extension of accelerator test facility and Cavity processing lab.

There are three theme articles, which focus on three important areas of R & D activities in RRCAT. The first article presents an overview on development of a novel technology for Niobium to Austenitic Stainless Steel brazed joints. The second article gives an account of laser optogalvanic spectroscopy and its applications. The third article discusses beam lifetime studies in Synchrotron Radiation Source Indus-2.

There are reports on two important events, viz. 32nd DAE Safety & Occupational Health Professionals Meet and 24th DAE-BRNS National Laser Symposium, which were successfully organized at RRCAT. The Newsletter also covers the participation of RRCAT in National level Industrial Exhibition cum Vendor Development Programme at Indore. A brief report is given on one day theme meeting on "Indus synchrotrons utilization", which was organized by RRCAT with Anand Niketan College, Gondwana University at Anandwan, Dist. Chandrapur, Maharashtra. The various activities carried out in our Centre for promotion and propagation of Hindi and various programs of public outreach during Diamond Jubilee Year of DAE are given in the Newsletter.

The publications from RRCAT in Journals, Conference Proceedings, etc., and patents during July 2015 – December 2015, are also listed in the Newsletter. The Newsletter describes the accomplishments of our distinguished colleagues, who have received various honours and awards at different forums during this period and we congratulate them. The Newsletter also remembers those colleagues, who are superannuated during this period and we wish them a happy and healthy post retirement life.

We feel privileged in compiling these reports to bring out a comprehensive picture of new developments at RRCAT. The publication of the present issue of the Newsletter has been possible only due to excellent cooperation from many colleagues of different Divisions of RRCAT. We express our sincere gratitude to all of them. In the last but not the least, we would like to express our deepest gratitude to the Director, RRCAT, for his keen interest, stimulating support and continuous encouragement.

With warm regards.

February 26, 2016

RKhare

(Rajeev Khare)
Convener
RRCAT Newsletter