



From the Convener's Desk...

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

The Newsletter begins with reports covering different aspects of research and development in the area of accelerators. The first report discusses the results from an Infra-red Free Electron Laser (IR-FEL), which has been built at RRCAT and designed to lase at 15-50 μm wavelength band. The other important reports are on development of filament arc discharge based multicusp H⁻ ion source, implementation of a new control system of microtron for Indus complex, studies on low-Z/low-Z multilayers using synchrotron based soft x-ray reflectivity, enhancement in the diffraction efficiency of gratings using localized surface plasmon resonance (LSPR), etc. There are several interesting reports on various aspects of the Indus-2 machine.

Then there is an account of various accomplishments in the field of lasers and its applications. The first report discusses the development of a frequency doubled CW fiber laser of 5 W power, operating at 515 nm. There are some reports, which are related to several developmental activities at RRCAT, like development of all solid state RF powered 2 kW axial flow CO₂ laser system, development of 18 kHz dye laser pumped by DPSSL, development of a large beam liquid reference Fizeau interferometer, development of atom chip magneto-optical trap for Rb atoms, etc. The Newsletter also covers two interesting reports on bio-medical applications of Raman spectroscopy. Several important works on development of infrastructure in our Centre are also reported in the Newsletter.

There are three theme articles, which focus on three important areas of R & D activities in RRCAT. The first article presents an overview of development strategy, technical challenges and characterization of pulsed septum and kicker magnets for Indus accelerators. The second article gives an account of pulsed laser deposition as a versatile process to grow technologically advanced materials. The third article discusses surface and interface studies on short period multilayer structures, which can be used as monochromator for hard x-rays on Indus-2 beamline and normal incidence mirrors for soft x-rays on Indus-1/ Indus-2 sources. The publications from RRCAT in Journals, Conference Proceedings, etc., during January 2016 – June 2016, are also listed in the Newsletter.

The Newsletter reports about LIGO-India project in which RRCAT is responsible for development of interferometer detector, its installation and commissioning along with development of narrow line-width laser and ultra-precise optics. Celebration of several important events in RRCAT, viz. Foundation Day, National Science Day, Fire Service Week, Women's Day, National Yoga Workshop, etc. are covered in the Newsletter. A list of RRCAT seminars during January 2016 – June 2016 are also listed in the Newsletter. The report on the second Orientation Course on Accelerators, Lasers and related Science and Technologies (OCAL) - 2016 at RRCAT and various activities carried out in our Centre for promotion and propagation of Hindi are given 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.

RKhare
(**Rajeev Khare**)
Convener
RRCAT Newsletter