



From the Convener's Desk...

The Editorial Board of RRCAT Newsletter is delighted to bring out the first issue of the Newsletter of 2015, which gives an account of various activities that have taken place in RRCAT during second half of the past year.

The Newsletter begins with reports covering different aspects of research and development in the area of accelerators. The first report discusses the up-gradation of Indus-2 synchrotron radiation source with two insertion devices, which is a noteworthy achievement that heralds its entry into 3rd generation storage ring regime. Improvements in various other sub-systems of Indus-1 and Indus-2 machines are described in other interesting reports. The beamlines of Indus-1 and Indus-2 are extensively used, which is evident in several reports, like probing of chemically and spatially resolved atomic profile at buried interfaces using reflectivity beam line of Indus 1, study of crystal structure of PepQxc enzyme using protein crystallography beamline of Indus-2, etc. The other important reports are on performance characterization of first 1.3 GHz five cell SCRF cavity, protection of intellectual property rights on laser welding technology for SCRF cavities, etc.

Then there is an account of various accomplishments in the field of lasers and its applications. The first report discusses laser cutting of yoke assembly triangular blocks of coolant channels in pressurized heavy water reactors (PHWR), which is an important application of laser in the area of nuclear technology. The other reports are related to the development of 25 W of eye-safe ytterbium-free erbium-doped fiber laser, laser driven high energy proton acceleration by thin foils, development of long pulse (60 ns) XeCl excimer laser, investigations of mechanical and transport characteristics of tunneling nanotubes in tumor spheroids by optical trap and microbeam, etc.

Several important works on development of infrastructure in our Centre are also reported in the Newsletter. A new gate, named as North Gate of RRCAT, has been constructed to facilitate transportation of heavy materials for large scale construction activities for future mega projects. A NISARGRUNA Biogas Plant was constructed in RRCAT for processing biodegradable waste to maintain natural balance of the environment along with providing high quality manure and cooking fuel (methane gas).

There are three theme articles, which focus on three important areas of R & D activities in RRCAT. The first article gives an account of development and characterization of a compact soft-x-ray laser operating at a wavelength of 46.9 nm. The second article gives a perspective of cryogenic aspects of testing SCRF cavities. The third article discusses optics design of a bunch compressor transfer line for CLIC test facility at CERN. The publications from RRCAT in Journals, Conference Proceedings, etc., during July 2014 – December 2014, are also listed in the Newsletter.

Several important events, viz. Graduation function of 14th batch of BARC Training School at RRCAT, Vanasanchar at RRCAT, and various activities carried out in our Centre for promotion and propagation of Hindi are reported 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 have 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,

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Indore

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Convener
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