



From the Editor's desk....

A warm welcome to the second issue of the RRCAT Newsletter of the year 2011. It covers, as usual, scores of activities the Centre has witnessed over the earlier half of the current year.

The Newsletter starts with a range of reports spanning the different aspects of research and developments in the area of accelerators. The most significant of these is surely enhancement of the performance of Indus-2 and new development of solid state RF amplifiers (operating at 505.8 MHz) that can be coupled with the Indus-2 cavities. The other important development which is worth mentioning is setting up and commissioning of two more beamlines: a soft and hard X-ray lithography beamline and an X-ray fluorescence (XRF) microprobe beamline. Reports of other significant research and developments include analysis of lunar stimulant samples for Chandrayan project, use of X-ray lithography beamline for fabrication of a prototype micro fluidic device based on nickel ferrite ferrofluid and automation of Betatron tune measurement system of Indus-2, among others.

Following these is an account of various accomplishments in the field of lasers and its applications. These comprise reports varying from studies on shock wave propagation in silicon crystal by ultrafast time-resolved X-ray diffraction to the development of tools and technology for cutting and welding operations for leak repair in the standpipe bellow of the nuclear reactor at Kaiga Atomic Power Station using the fibre-coupled remotely controlled Nd:YAG laser. Other noteworthy examples are development of polarization sensitive optical coherence tomography setup for near real time imaging of tissue birefringence, generation of femtosecond laser pulses from mode-locked Yb-doped fibre laser and use of diode-pumped Nd:YAG laser for selective laser melting among others. The Infrastructure section of the issue depicts various important developments related to scientific computing, software and the different computer networking and communication systems for smooth flow of information. This is followed by the three theme articles, which focus on three important areas of research activities: indigenous development of high power microwave systems and associated technologies for self reliance in particle accelerators, research and development activities on optoelectronic materials and devices at RRCAT and the third on investigations carried out on higher order modes in RF cavities of accelerators under the Young Scientist Forum.

It is really heart warming to put together all these expositions. We feel glad to acknowledge the kind support and encouragement of all those who contributed directly or indirectly to bring the Newsletter out. Last but not the least, the Editorial Board would like to express its deepest gratitude to the Director, RRCAT for his keen interest and support.

S. K. Majumder
Chief Editor

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