

## Driving Fundamental and Allied Research through Heavy Ion Accelerator Program

**W**e are extremely delighted to get this opportunity to bring out this thematic issue of the BARC newsletter on Frontiers in Heavy-ion Research and Accelerator Technology. The Pelletron LINAC facility (PLF), a joint venture between BARC and TIFR, has completed more than three-and-a-half decades of successful operation, catering to a large community of scientists in the country. The laboratory is equipped with several state-of-the-art experimental facilities to pursue cutting edge research in nuclear, atomic, condensed matter and interdisciplinary areas. A number of application-based research activities have also been established over the years. While most of the research activities are led by the researchers from BARC and TIFR, scientists and students from universities and other research centres within and outside the country have also been the active users of this accelerator. About 170 PhD theses and over 750 publications in peer reviewed journals, including 37 publications in Physical Review Letters and other letter papers, have resulted from the research activities of this laboratory.

As the Pelletron LINAC facility (PLF) continues to be a centre of excellence in heavy ion research, it is planned to augment this accelerator with new generation high gradient accelerating tubes and Superconducting Radio Frequency (SCRf) Niobium cavities. Further to cater the growing demand of the vibrant research community, a versatile ECR (Electron Cyclotron Resonance) Ion Source (IS) based heavy ion accelerator facility capable of accelerating stable and unstable nuclei with higher beam currents to energies beyond the capability of BARC-TIFR Pelletron-LINAC Facility, is planned as a greenfield facility at the BARC-Vizag accelerator complex.

This thematic issue of BARC Newsletter contains articles encompassing the full spectrum of research activities carried out by the research groups in BARC and TIFR in the past along with our future endeavours. We take this opportunity to acknowledge all the authors for their valuable contributions in this thematic issue. We are thankful to Dr. S. M. Yusuf, Former Director, Physics Group and Dr. Anit Kumar Gupta, Former Head, Nuclear Physics Division (NPD) for their keen interest, guidance and encouragement in bringing out this issue. We earnestly acknowledge the guidance of Shri Manoj Singh (Head, SIRD and Editor, Newsletter), the sincere and hardworking role of the newsletter editorial team of SIRD for the compilation of the articles, the creative work by the editorial team in designing the front cover and their dedicated efforts in bringing out BARC Newsletter in a time-bound manner. We also take this opportunity to express our deepest gratitude to all our past and present colleagues, who have played a very vital role in establishing, operating, and maintaining PLF as a world-class facility. The constant support from NPD (BARC), Department of Nuclear and Atomic Physics (TIFR), Electronic Division (BARC), Central Workshop (BARC & TIFR) and Technical Services (TIFR) towards this facility is greatly appreciated.

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