



EDITOR'S MESSAGE

This issue of BARC Newsletter is a compendium of articles, which encapsulate activities in various domains of basic sciences and engineering, as a part of research and development mandate of the Department of Atomic Energy (DAE). The activities of BARC pertaining to the development of new technologies and materials that contribute to the ongoing efforts for ensuring affordable healthcare, smart and efficient energy systems, neutron generators, pulsed capacitors, which impact positively to the technology landscape, are covered in this issue.

BARC continues a strong impetus for expanding the spectrum of activities in laser based isotope enrichment. It has been pursuing new approaches in process as well as associated diagnostics domain for optimizing the existing laser enrichment processes. Biomaterials find immense applications in curative healthcare industry. It had been demonstrated that the life and bio-efficiency of these materials can be enhanced by coating their surfaces with suitable materials. Corrosion and tribological studies carried out in BARC using zirconia protective coatings on bio alloys have produced a satisfactory outcome and also opened new range of opportunities to the researchers working in this domain. To address the potential issues associated with the leaching of glass material employed in vitrification processes as part of nuclear energy waste management, Molecular Dynamics simulation studies were performed for the first time for ascertaining the efficacy of titanium oxide doped sodium borosilicate glass, which is covered in the form of an article in the issue.

Besides, this issue also reports the in-house development of a sealed D-T neutron generator capable of producing 14.1 MeV high energy neutrons, with practical applications in detection of uranium in bore holes. New outcomes in the domain of Control and Instrumentation are discussed in two articles of this issue.

Globally, water resources management has become a key priority for policymakers in their efforts to ensure holistic and inclusive development. A scholarly work published in the form of a book by a leading expert dealing with scientific aspects of riverine systems and their management, has been covered in this issue in the form of a book review.

We hope this publication would find considerable appeal among the readers. I take this opportunity to thank everyone for their committed efforts that have contributed positively to the preparation and timely release of this issue of newsletter.

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Editor and Head, SIRD

