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## Preface

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The boundary between scientific research and practical applications is becoming increasingly blurred, driving advances in fields such as environmental protection, clean energy reuse, biomedicine, semiconductors, and emergent materials. Indeed, the combination of scientific findings and real-world uses is forming a solid ground supporting societal advances. For the volume presented this year, the editorial committee prepare 32 compelling stories to highlight 37 endeavors happening at the NSRRC, and catalogize them according to the subjects including emergent quantum phenomena and next-generation electronic and spintronic platforms (Physical Science); atomic-level chemical structures and dynamic processes (Chemical Science); structural biology of biomolecules and biomedical applications (Life Science); structure–chemistry–function relationships in novel materials (Materials Science); magnetic structures, spin dynamics, and lattice behavior investigated by neutron scattering (Neutron Science); and sustainable energy, energy storage, and environmental remediation (Green Science).

For the facility development, it was a busy but exciting year. Five key updates are reported in the chapter on Facility Development and Status: the performance of the TLS and TPS accelerators, feasibility studies for future TPS upgrades, development of the nonlinear in-vacuum kicker, the radio-frequency system upgrade, and the integration of AI-driven technologies. We also highlight the commissioning of the TPS 20A Two-Dimensional X-ray Diffraction Beamline, the design of the beamline attenuator, and the progress of NSRRC’s industrial application program.

The Facts and Figures chapter summarizes NSRRC’s operational and administrative metrics, user statistics, beamline status, major events, conferences and forums, and training courses. The Appendix lists publications and student dissertations produced using NSRRC facilities in the year.

Finally, I would like to thank all users who have come to our facility. It was a great year to work with you. I am looking forward to more collaboration and innovation as we move forward into a new year.



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