Preface

I am pleased to introduce the NSRRC Activity Report 2022, of which I had the privilege of being Editor in Chief. In the year that the pandemic continued, the experimental techniques available at the Taiwan Light Source and Taiwan Photon Source remain active and strong to provide us with superior avenues to make discoveries over a broad range of topics. The editors have worked diligently to ensure a balanced and thorough representation of the outstanding research activities conducted at the NSRRC. However, because of the limited space available in this issue, the difficult decision was made to omit some remarkable works.

This issue presents extensive coverage of NSRRC's activities in several chapters, including Research Highlights, Facility Development and Status, Facts and Figures, and the Appendix. The Research Highlights chapter features 35 fascinating topics related to fundamental and applied sciences in the fields of Physics and Materials Science, Chemical Science, Soft Matter, Life Science, Energy Science, Environmental and Earth Sciences, and Neutron Science. These studies demonstrate that synchrotron radiation is an incomparable tool for scientific exploration.

The Facility Development and Status chapter describes the operational status of NSRRC's light sources and the most recent developments in our accelerator technology, and it also includes two introductory reports on the experimental facilities that were opened in 2022. The editors have highlighted some inventions of moderate scale whose roles are immense in the operation of our facility, including the radio frequency system for energy-saving operations, the pulsed wire system for magnetic field measurements, and the EPU vacuum system using lumped NEG-ion combination pumps.

The Facts and Figures chapter contains statistics on NSRRC's operation and users; a beamline list; major events; and reports on outreach activities, such as forums and training courses that have resumed after a hiatus due to the COVID-19 pandemic. Finally, the Appendix lists each of the publications and student dissertations containing research using NSRRC facilities during 2022.

I would like to express my sincere gratitude to the editors and reporters for their hard work and dedication in bringing this report to life. Together with them, we hope, this report can give you deeper insight into the exciting research and development that has taken place at the NSRRC over the past year and inspire you to embark on your scientific journey exploring the limitless possibilities of synchrotron radiation.

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