

Message from Director

With the publication of Activity Report 2003/2004, we are pleased to share the results of scientific research performed at NSRRC and to report the progress of facility development.

There have been excellent user research programs conducted and we are proud to support over three thousand user-runs in one year, a growth of twenty percentages from the previous year. Many important papers with high impact have been published in the year 2004. Thanks to the great effort of our staffs, several major tasks were conducted simultaneously and completed on schedule, including re-organization of NSRRC as a non-profit entity, international review in early 2004, feasibility study on top-up mode, superconducting wavelength shifter and wiggler installation, and completion of six new beamlines. The installation of superconducting RF cavity, scheduled in October 2004, is now at its final stage and is expected to bring up higher beam current starting early next year. Behind the intensive facility developments and fast growing number of users' publications, the challenge continues in maintaining superior standard of operation and enhancing world-class scientific research.

Our vision in the next ten years remains unaltered: to become one of the world's leading synchrotron radiation facilities. To accomplish this, we continue working to preserve the excellent performance of the existing facility, the Taiwan Light Source, by upgrading accelerator, beamlines and end stations. Most importantly, we are now planning a new 3 - 3.3 GeV electron energy and 518.4 m circumference synchrotron radiation storage ring with better than 2 nm·rad emittance, dubbed the Taiwan Photon Source, which will ensure a state-of-art scientific research infrastructure in Taiwan for the decades to come.



Dr. Chien-te Chen
August 2004



NSRRC in brief

The National Synchrotron Radiation Research Center (NSRRC) located in Hsinchu Science Park, Taiwan, is the first third-generation synchrotron facility built in Asia. NSRRC's mission is to operate a cutting-edge synchrotron radiation facility for pioneering scientific research. In recent years, NSRRC has expanded its operations through various channels including construction of synchrotron equipments at facility aboard, starting with two beamlines at SPring-8 light source in Japan.



Preface

Last year we celebrated the special occasion of 10 years operation with an extended issue of the Activity Report. This year, we are back to regular business but with many new and exciting changes ahead. First of all, the cryogenic plant has been setup and the superconducting RF cavities will be installed in the coming few months to provide higher beam current to users. Superconducting wavelength shifter beamlines have been commissioned, accompanied with a number of new end stations for X-ray absorption spectroscopy, diffraction and small angle X-ray scattering. Under the national medical genome initiative, a new superconducting wiggler has been installed for future development of protein X-ray crystallography. The enhanced activities in life science in the past three years are already reflected by an increased number of highlight articles in the biology section of this year's issue.

The synchrotron laboratories around the world are preparing for the new generation of facilities with higher brightness and shorter pulse in order to provide the experimental tools to match the demands in bio and nano sciences at smaller length and shorter time scales. This year's Activity Report should therefore not only demonstrate the status of the current research activities with 28 highlight articles and an increasing number of user research reports but also encourage readers to think beyond the present scope and help planning the future of our facility and a new generation of experiments.

We are looking forward to a bright future of Taiwan's synchrotron community!

**Editorial Committee
August 2004**