

MESSAGE FROM THE DIRECTOR

In last year's Activity Report, we addressed the focusing of the activities at Taiwan Light Source (TLS) to a user-driven priority, and the plan of a new low-emittance 3 GeV synchrotron, the Taiwan Photon Source (TPS). I am very happy that significant progresses have been made on both fronts at NSRRC.

In year 2006, the machine group had increased user beam time to 5344 hours from 4541 hours in 2005. The top-up operation delivered a normal current 300 mA with an up-time of 97.5% for the users. The monthly machine operation meeting of NSRRC's machine staff is replaced with a weekly user's operation meeting to obtain faster response from our user's feedbacks. In essence, based on the major efforts of the past several years, the TLS has reached its top performance as a third generation 1.5 GeV machine. Future work on the facility will be strongly coupled with user's demands.

However, the fact that we have a mature machine does not mean that our research potential has been saturated. In fact, the opposite is true. To help the realization of a new world of research opportunities, we are now redirecting our resources to enhance scientific activities. The education of PhD students program has taken the highest priority. The implementation of joint courses with our two neighboring universities, Tsing-Hua and Chiao Tung is now in place, and it will be extended to include other universities. This is a new avenue to attract the next generation of synchrotron researchers.

Following the successful operation of the core facility of protein crystallography for National Medicine Genome Program in the last three years, a similar program on NanoBio Medical Imaging has been launched recently with the National Nano-Science and Technology Program. NSRRC will continue its efforts in making alliances with other



institutions and national programs to make full use of its advanced capabilities for research. New research funds are also allocated for joint research initiatives with outside groups.

The TPS is a major new project for year 2007-2013. NSRRC has been preparing for this project since year 2001. With initial government funding obtained in 2005 and 2006, we have now reached some major milestones of the project. Most importantly, we have overcome the limitations of the current site to come up with a construction plan of a 3 GeV machine of 24 straight sections with circumference of 518.4 meters, and a machine lattice is now in place with excellent beam dynamics behavior. Such a machine is expected to deliver a bright beam of emittance of 1.7 nano meter-rad, as compared to 25 nano meter-rad of TLS. As the TLS set record for the first third generation machine in Asia, we expect that the TPS will be the brightest 3 GeV synchrotron in the Asia-Oceania region in the future. We envision that the combined capabilities of TLS and TPS will offer bright new scientific opportunities not only for Taiwan but also for the international community in many years to come.

A handwritten signature in black ink, reading "Keng S. Liang".

Dr. Keng S. Liang
August 2007