

Structural Biology at NSRRC and recent applications

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Abstract

The National Synchrotron Radiation Research Center (NSRRC) is operating two synchrotron rings— The Taiwan Light Source (TLS) of 1.5 GeV since 1994 and the new Taiwan Photon Source (TPS) of 3 GeV since 2016. The TPS provides great and new opportunities for advanced research on the various fields of sciences, including life sciences, with its high brightness and low-emittance. 7 phase-I beamlines and 9 phase-II beamlines of TPS have been open to users. NSRRC is constructing another 9 phase-III beamlines starting from 2021. I will briefly introduce the current status and future of beamlines and facilities related to structural biology and bioimaging at TPS and TLS of NSRRC.

Synchrotron protein crystallography (PX) has been effective for structure determination of biological macromolecules, especially membrane proteins and large molecular assemblies, such as viruses. With the advanced PX beamlines at NSRRC, complicated and challenging structures of biological macromolecules can be resolved at atomic resolution. Some recent applications of structural studies on various viruses and enzymes, such as methanol dehydrogenase from *Methylococcus capsulatus* (Bath), will be presented.

Key words: Synchrotron Radiation, protein crystallography, structural biology, viruses, enzymes