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Development of BioSAXS Beamlines at NSRRC

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During the last decade, a rapid increase in the use of small-angle X-ray scattering (SAXS) for non-crystalline biomolecular structures has driven a quick growth of dedicated Bio-SAXS beamlines at synchrotron facilities worldwide. Consequently, increasingly large amount of BioSAXS-related results, complimentary to that from traditional tools of X-ray crystallography, NMR, and/or other spectroscopis, have impacted greatly the research of structural biology. Embroiled with such environment, National Synchrotron Radiation Research Center (NSRRC) has launched a project to develop BioSAXS facility for cutting-edge researches on, such as, solution structures of proteins and protein complexes, conformational changes of protein-protein or protein-DNA assemblies under in situ environmental stimulation, protein/membrane structural kinetics, and hierarchical biology textures. This talk will cover a recent upgrade of the current SAXS beamline with the Taiwan light Source (TLS) at NSRRC for immediate BioSAXS applications, and the conceptual design of the dedicated, state-of-the-art 13A-BioSAXS beamline of an undulator X-ray source of the 3-GeV Taiwan photon source (TPS).