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Grazing Incident X-Ray Diffraction using Synchrotron Light at SLRI

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This work demonstrates the capability of the BL7.2W:MX diffraction beamline at SLRI for investigation of crystallinity of nano-films. The beamline utilizes hard X-rays from a 6.5-Tesla Superconducting Wavelength Shifter, originally designed for protein crystallography. Its x-ray optical beamline employs a collimating mirror, double-crystal monochromator and focusing mirror. The photon energy can be chosen between 7 to 18 keV with a photon flux of more than 1010 photons/sec at 100mA stored electron beam. The X-ray beam size can be reduced to 20 micron, allowing X-ray diffraction (XRD) measurements with grazing geometry. The description of the synchrotron beamline and grazing incidence XRD (GIXRD) setup will be given with commissioning results. The advantages of synchrotron GIXRD will also be demonstrated in this work.

Primary author: Ms SRIPAKDEE, Miskawan (Suranaree University of Technology)

Co-author: Prof. SONGSIRIRITTHIGUL, Prayoon (Suranaree University of Technology)

Presenter: Ms SRIPAKDEE, Miskawan (Suranaree University of Technology)

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