

Industry Academy Alliance Project in SPring-8; BL03XU Advanced Soft-material SAXS/WAXS/GISWAXS Beamline (FSBL)

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ABSTRACT

Scientific and engineering research on soft materials requires precise structural analysis to understand their hierarchical structure and dynamics. A new beamline, the BL03XU frontier soft-material beamline, that is dedicated to scattering experiments of soft materials was installed at the third-generation synchrotron facility, SPring-8, in Japan. Construction of the FSBL was carried out as a joint project between industrial and academic members of FSBL consortium, with the technical support of JASRI and the RIKEN Harima Institute. It was completed at the end of March in 2010. Because of the in-vacuum undulator and the highly brilliant light source, the photon flux of the obtained X-ray can reach 10^{13} photons sec^{-1} , and an energy resolution of $\Delta E/E=10^{-4}$ has now been achieved. There are two experimental hutches: the front one is for GISAXS, GIWAXD and XR measurements, and the second one is for simultaneous SAXS/WAXD and USAXS measurements. Preliminary measurements of SAXS/WAXD on collagen, Vinyon (poly(vinyl alcohol)) and polypropylene revealed the high performance of the BL03XU FSBL beamline. Furthermore, it was revealed that the GISAXS/GIWAXD and XR system has a high performance for characterization of surface higher order structure of polymeric solids and organic thin films. Some of our recent experimental results will be presented at the symposium.

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SHORT BIOGRAPHY



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