



Special issue: Cutting Edge of Scattering from Softmaterials

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Observing structures and their dynamical behaviors are essential to understand polymers, but quite challenging because their spatial and time ranges are quite large: at least 3 or 4 orders of magnitude. Such observation is also a key in industry because controlling polymeric materials in their morphology determines performance in the final products. Synchrotron X-ray may be an only solution for these demands.

X-rays were discovered in 1895 by W.C. Röntgen and named “X-rays” because of their unknown nature. In 1912, M. von Laue and P. Knipping obtained the first X-ray diffraction pattern from a crystal, a ground-breaking discovery as a powerful tool to explore nanoscale structures of materials. Synchrotron X-rays were first observed in 1947 and soon began to be recognized as an exceptionally useful tool because of its bright light, more than 10^6 times stronger than conventional X-rays. The construction of the third-generation synchrotron facility and the brightest light source in the world: SPring-8 was initiated in Japan in 1991 and its operation was started in 1997. Among the various beamlines in SPring-8, a new beamline dedicated to polymers was constructed in 2009 for use in the simultaneous small- and wide-angle X-ray scattering measurements, small- and wide-angle X-ray scattering under grazing incidence, X-ray diffraction, and X-ray reflectivity [1, 2].

This Polymer Journal special issue is aimed to focus on the studies by use of synchrotron X-rays to clarify the structures and their dynamical behaviors of polymeric materials. Most of the articles are the out-come of

academic–industrial collaborations, under the Advanced Softmaterial Beamline Consortium, which is commonly known as Frontier Soft Matter Beamline (FSBL). We wish that this characteristic issue will show an interesting as well as profound aspect of polymers, similarly to the success of the preceding special issues [3–9].

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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