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SANS and SAXS Investigations of Selective Distribution of Single-Walled Carbon Nanotubes in a Polymeric System JAE-MIN HA, HYUNG-SIK JANG, SUNG-HWAN LIM, SUNG-MIN CHOI, KAIST — Single-walled carbon nanotubes (SWNTs) have remarkable electrical, thermal, and mechanical properties which provide new possibilities for various applications, such as transparent conductive film, bio-sensor, composite and energy storage. For those applications, the fabrication of the self-assembly or guided assembly of SWNTs into highly ordered superstructures with well-defined morphology, density, and direction is demanded to enhance their physical properties and is the key to the realization of various potential applications of SWNTs. Block copolymers exhibit rich phase behaviors and have been extensively used as excellent templates for various nanostructured materials. Many efforts have been made to incorporate various nanoparticles into self-assembling block copolymers as an efficient and scalable way of fabricating well-controlled and highly ordered nanoparticle superstructures with various architectures. Recently, this approach has been successfully applied for SWNTs, but it is in its early stage. In this presentation, we will report the investigations of selective distribution of functionalized SWNTs in block copolymer systems using small-angle neutron and x-ray scattering.

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