

Abstract Submitted
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Neutron Reflectometry and Small Angle Neutron Scattering of ABC Miktoarm Terpolymer Thin-Films¹ MATTHIAS M. L. ARRAS, WEIYU WANG, JYOTI P. MAHALIK, KUNLUN HONG, BOBBY G. SUMPTER, GREGORY S. SMITH, Oak Ridge National Laboratory, SERGEY CHERNYI, Technical University of Denmark, HYEYOUNG KIM, THOMAS P. RUSSELL, University of Massachusetts Amherst — Due to the constraint of the junction point in miktoarm terpolymers, where three chains meet, ABC miktoarm terpolymers are promising to obtain nanostructured, long-range ordered materials. We present details of the thin-film structure of ABC miktoarm terpolymers in the poly(styrene), poly(isoprene), poly(2-vinylpyridine) (PS-PI-P2VP) system, investigated by neutron reflectometry and small angle neutron scattering. To this end, we synthesized partially deuterated versions of the PS-PI-P2VP and investigated annealed samples, spin-coated to various thicknesses of the bulk repeat period. Furthermore, we investigated the structural change upon selective blending with homopolymers or fullerenes. We find that thin-film constraints on the morphology can vanish after only twice the repetition period. In addition, it is indicated that nanoparticles improve the ordering in these systems, however, this seems to be not necessarily true for homopolymer blending.

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