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Neutron Reflection Studies on Nanophase-Separated Structures of Block Copolymers with Composition Distribution ATSUSHI NORO, Nagoya University, MASATOSHI OKUDA TEAM, FUMITAKE ODAMAKI TEAM, NAOYA TORIKAI TEAM, ATSUSHI TAKANO TEAM, YUSHU MATSUSHITA TEAM — The effect of composition distribution on nanophase-separated structures of AB diblock and BAB triblock copolymers was investigated by neutron reflectometry. Three monodisperse polystyrene-*d*₈-*block*-poly(2-vinylpyridine) (DP), three labeled triblocks (PDP) with constant molecular weight and with different volume fractions, and unlabeled counterparts were prepared by living anionic polymerizations. The selective labeling method was employed by blending three parent copolymers for segmental distribution studies while three labeled polymers were mixed for interfacial studies. Blend thin films were produced by spin-coating and successive thermal annealing. It was confirmed by morphological observation that all samples having composition distribution show simple alternating lamellar structures. It was found that a longer chain is localized at the center of the domain while a shorter chain is localized near the domain interface. Furthermore, interfacial thickness increases with an increase in composition distribution index for both diblock and triblock systems. The increment of the increase for the triblock system was larger than that for the diblock system.

Atsushi Noro
University of Minnesota

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