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Preparation and Morphology of ABn Mictoarm Block Copolymers. ATSUSHI TAKANO, MOMOKA WATANABE, YUSUKE ASAI, Department of applied chemistry, Graduate School of Engineering, Nagoya University, JIRO SUZUKI, High Energy Accelerator Research Organization (KEK), YUSHU MATSUSHITA, Department of applied chemistry, Graduate School of Engineering, Nagoya University — A series of ABn mictoarm block copolymers (bottle brush copolymers) consisting of polystyrene (S) as a backbone and polyisoprenes (I) as grafts were precisely synthesized by an anionic polymerization, and their microphase-separated structures were investigated by transmission electron microscopy (TEM) and small-angle X-ray scattering(SAXS). A copolymer with composition of φS=0.57 and number of grafts(n) of 10 shows characteristic cylindrical structure, where microdomains of S reveals hexagonal cross section with non-constant mean curvature interface. While a sample with composition of φS=0.37 and number of grafts(n) of 40 shows spherical structure with rather large S isolated domains and characteristic domain packing manner was found. Furthermore composition dependence of microphase-separated structures for SIn mictoarm block copolymers were investigated and compared to SI diblock copolymer system.

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