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Molecular Weight Distribution Effect on Microphase-Separated Structures from Block Copolymers ATSUSHI NORO, DONGHYUN CHO, ATSUSHI TAKANO, YUSHU MATSUSHITA, Department of Applied Chemistry, Graduate School of Engineering, Nagoya University — The effect of molecular weight distribution on microphase-separated structures for both AB diblock and BAB triblock copolymers was investigated. Monodisperse three poly(styrene-*b*-2-vinylpyridine) (SP) and poly(2-vinylpyridine-*b*-styrene-*b*-2-vinylpyridine) (PSP) parent block copolymers each with composition of almost 0.5 were synthesized by living anionic polymerizations. They were blended variously with keeping both number-average molecular weight and composition constant but having different molecular weight distribution. It has been found that both SP and PSP show simple lamellar structures when molecular weight distribution is relatively wide and that domain spacing increases with increase in molecular weight distribution. Furthermore the increment of domain spacing with molecular weight distribution for PSP is larger than that for SP as is the case for composition distribution. It is thought that the expansion phenomena of microdomains must be caused by the common feature of chain length distribution of each block chain.

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