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Observation of *Fddd* structure in SI diblock copolymer/homopolymer blends MYUNG IM KIM, Kyoto University, SATOSHI AKASAKA, TSUTOMU WAKADA, MIKIHITO TAKENAKA, HIROKAZU HASEGAWA — We previously reported the discovery of a novel bicontinuous microdomain structure with *Fddd* symmetry in polystyrene-*block*-polyisoprene (SI) diblock copolymer. Then we confirmed the stability of *Fddd* structure and found *Fddd* structure exists as an equilibrium structure in SI diblock copolymer. Also we determined the stable region of *Fddd* structure in the phase diagram of SI diblock copolymers. It is well known that blending homopolymer with diblock copolymer causes order-order transition under wet brush condition. We can anticipate that homopolymer - diblock copolymer blend exhibits *Fddd* structure even though the neat block copolymer does not have *Fddd* region. In this study, we, hence, investigated the phase behaviors of SI diblock copolymer-PS homopolymer blends with various compositions by small-angle X-ray scattering (SAXS) and transmission electron microscopy (TEM) and explored how blending homopolymer affects the *Fddd* region. Consequently, we could confirm that addition of polystyrene homopolymer (hPS) induces morphology transformation and determine the region of *Fddd* phase in the SI diblock copolymer/hPS blends that is similar to that of SI diblock copolymers we reported.

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