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LDOT Diblock Copolymers: Specific Interactions, Compressibility, and Fluctuations JUNHAN CHO, Dankook University, DUYEOL RYU, University of Massachusetts at Amherst, JIN KON KIM, Pohang University of Science and Technology — We perform the recently developed compressible Hartree analyses on the phase behavior of LDOT-type diblock copolymers based on polystyrene and homologous poly(n-alkyl methacrylates). Specific interactions between dissimilar monomers, compressibility difference between block components, and concentration fluctuations are all considered to illuminate the complicated phase behavior of those homologous copolymers. Microphase transition temperatures and their pressure dependence are compared with the corresponding theoretical values for the copolymers. We provide suggestions for the design of a better nanostructured material using those copolymers.

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