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Study on the strength of intermonomer interactions for PS-b-PMMA using compressible RPA[1] HYUNGJU AHN, DU YEOL RYU, Yonsei University, YOUNGMIN KIM, Hongik University, KWANG HYUN SONG, KYUNG WOOK KWON, JUNHAN CHO, Dankook University — PS-*b*-PMMA copolymer is one of the most useful nanoscopic materials that can be used as passive electronic materials, and also as templates and scaffolds. It is then clear that the better knowledge on the strength of intermonomer interactions for the PS-*b*-PMMA is of great importance in fabricating nanomaterials from it. Using a compressible random-phase approximation (RPA) theory, we discuss mainly the second-order vertex function in the compressible Landau free energy. This vertex function is involved in the exchange energy between self and cross interactions along with the self interaction difference. Ordering transition temperatures are predicted and compared with experimental measurements using small-angle X-ray scattering (SAXS) and depolarized light scattering. A close relationship between barotropicity (ordering upon pressurization) and the energetic vertex term for the copolymer is argued.

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