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Phase coherence upon heating in diblock copolymer films JUNHAN CHO, Dankook University, KWANWOO SHIN, Gwangju Institute of Science and Technology, KWANG SOO CHO, Seoul National University, YOUNG-SOO SEO, SUSHIL K. SATIJA, National Institute of Standards and Technology — We have performed the neutron reflectivity measurements on the thin films of diblock copolymers that microphase separate upon heating in the bulk. The thin films are confined between two different surfaces, i.e., silicon substrate and air contact. The density profiles of block components were obtained through the film thickness as a function of temperature. The decay lengths of the observed surface ordering and phase coherence transitions upon heating were determined from the profiles. The recently developed compressible Landau analysis has been applied to the copolymer films to interpret the experimental reflectivity results. It was shown that specific interactions and finite compressibility are the two major issues concerning the observed behavior for the copolymers.

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