

Abstract Submitted  
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**Non-Newtonian Behavior of Diblock and Triblock Copolymer Solutions** HIROSHI WATANABE, ICR, Kyoto University — Non-Newtonian flow behavior was examined for butadiene-styrene (BS) diblock and BSB triblock copolymers dissolved in a S-selective solvent, dibutyl phthalate (DBP). Spherical domains of the non-solvated B blocks were arranged on a bcc lattice in both solutions at equilibrium, as revealed from SANS. The solutions exhibited significant thinning under steady flow, which was well correlated with the disruption of the bcc lattice detected with SANS. The lattice disruption was most prominent at a shear rate comparable to the frequency of B/S concentration fluctuation. For the BS/DBP solution, the recovery of the lattice structure after cessation of flow was the slowest for the most heavily disrupted lattice, as naturally expected. In contrast, for the BSB/DBP solution, the recovery rate was insensitive to the magnitude of lattice disruption. This peculiar behavior of the BSB solution suggests that the rate-determining step of the recovery in this solution is the transient B/S mixing required for reformation of the S bridges connecting the B domains.

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