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**Interdiffusion at Ring-Shaped Polystyrene / Its Deuterated Counterpart Bilayer Interfaces** DAISUKE KAWAGUHI, ATSUSHI TAKANO, Dept. of Appl. Chem., Nagoya Univ., KEIJI TANAKA, TOSHIHIKO NAGAMURA, Dept. of Appl. Chem., Kyushu Univ., NAOYA TORIKAI, KENS, KEK, ROBERT DALGLIESH, ISIS, YUSHU MATSUSHITA, Dept. of Appl. Chem., Nagoya Univ. — Time evolution of interfacial thicknesses between a cyclic polystyrene (c-hPS) / its deuterated counterpart (c-dPS) and a linear polystyrene (l-hPS) / its deuterated counterpart (l-dPS) bilayer films was investigated by neutron reflectivity as a function of molecular weight. The interfacial thickness of (c-hPS/c-dPS) film with molecular weight of 15k was almost equivalent to that of (l-hPS/l-dPS) one at any given annealing time. In contrast, the interfacial thickness of (c-hPS/c-dPS) film with molecular weight of 115k was significantly larger than that of (l-hPS/l-dPS) film at any given annealing time, indicating that the diffusion constant of c-PS ( $D_c$ ) is qualitatively larger than that of l-PS ( $D_l$ ). It might be explained in terms of less topological constraint of the entanglement for the cyclic PS at high molecular weight region.

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