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Spontaneously Formed Biocompatible Surfaces in Water by Segregation of Amphiphilic Block Copolymers HIDEAKI YOKOYAMA, The University of Tokyo, TAKASHI ISHIZONE, Tokyo Institute of Technology, NAOYA TORIKAI, High Energy Accelerator Research Organization, JAROSLAW MAJEWSKI, Los Alamos National Laboratory, AYAKO OYANE, AIST — Reduction of hydrophobic interaction in water is important in biological interfaces. We have found that poly(styrene-*b*-oligo ethylene glycol methyl ether methacrylate) (PS-PMENMA) segregates the PMENMA block to the surface in hydrophobic environment such as in air or in a vacuum, and shows remarkable resistance against adsorption or adhesion of proteins, platelets and cells in water. We studied the interfacial structures between PS modified by the spontaneous segregation of PS-PMENMA and water using neutron reflectivity and adhesion force measurement using atomic force microscope with hydrophobic probes. The interfacial structure and hydrophobic interaction depend on the number of ethylene glycol (EO) units in PMENMA. PMENMAs with two or more EO units show distinct swollen layers with two sharp interfaces at polymer/water interfaces, which effectively reduce hydrophobic interaction in water, while PMENMA with one unit of EO diplays broader single interface with unsatisfactory reduction.

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