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Interaction of Peo-Ppo-Peo Block Copolymer with Model Lipid Membranes GUOHUI WU, University of Chicago, JAROSLAW MAJEWSKI, Los Alamos National Laboratory, CANAY EGE, University of Chicago, KRISTIAN KJAER, Ris National Laboratory, MARKUS WEYGAND, Ris National Laboratory, JYOSTANA LAL, Argonne National Laboratory, KA YEE C. LEE, University of Chicago — The interactions between Poloxamers (nonionic PEO-PPO-PEO copolymers), known to seal damaged membranes, with phospholipids monolayers and bilayers are documented based on x-ray and neutron scatterings. X-ray reflectivity and grazing incidence diffraction on the molecular structure of lipid/poloxamer thin film at air/water interface reveal the effect of poloxamer on lipid ordering and the location of P188 in the lipid matrix. P188 *selectively* inserts into low lipid-density regions of the membrane and "corrals" lipid molecules to pack tightly, leading to unexpected Bragg peaks at low nominal lipid density and inducing lipid/poloxamer phase separation. At tighter lipid packing, the once inserted P188 is squeezed out, allowing the poloxamer to gracefully exit when the membrane integrity is restored. The confirmational change of poloxamer in solution induced by lipid bilayer are observed with neutron reflectivity (supported bilayer) and small angle neutron scattering (unilamellar vesicles).

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