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Polymer-Protein interaction at air/liquid interfaces: X-ray reflectivity and surface spectroscopy studies WENJIE WANG, NATHANIEL ANDERSON, Ames laboratory, Iowa State University, SANJEEVA MURTHY, New Jersey Center for Biomaterials, Rutgers University, DAVID VAKNIN, Ames laboratory, Iowa State University — Adsorption of proteins onto a substrate is the first and a critical step that determines the cellular response of substrates. To understand the adsorption and distribution of proteins on surfaces, we employ surface sensitive X-ray scattering and spectroscopic techniques to monitor the adsorption of plasma proteins (fibrinogen) onto surfaces of polymers, poly(DTE carbonate), on aqueous surfaces. Our X-ray measurements provide the density profiles of the polymers-proteins systems on aqueous surfaces, with details on the interactions between the polymers and the protein, and distribution of the protein within and on the polymer surface. The hydrophobic and hydrophilic behaviors of these polymers are modified by incorporating poly(ethylene glycol) (PEG) and by iodinating the tyrosine rings. Our results confirm the inhibition of the adsorption of fibrinogen onto polymer surfaces by PEG, and the counteraction of this influence when the polymers are iodinated.

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