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Adsorption of Biodegradable Diblock Copolymers PEO-PLA and PEO-PCL to Colloidal Polystyrene KAREN A. MURPHY, JESSICA M. MENDES, DANIEL A. SAVIN, University of Vermont — A series of amphiphilic block copolymers composed of poly (ethylene oxide) and either poly(lactide) or poly(ϵ - caprolactone) (PEO-PLA, PEO-PCL respectively) were synthesized and their solution properties studied using dynamic light scattering. The synthesis was performed using the same PEO macroinitiator while varying the fraction of the hydrophobic block. These materials were found to self-assemble in aqueous media with the hydrodynamic radius increasing with increasing hydrophobic fraction. In order to ascertain the potential for use of these materials as degradable coatings in delivery applications, block copolymers were adsorbed to colloidal polystyrene and the thickness of the adsorbed layer determined from changes in the hydrodynamic size. The adsorbed thickness ranged from 4 - 10 nm with varying block ratio, polymer concentration and colloid concentration. In general, the adsorption of PEO-PCL to colloidal polystyrene resulted in larger adsorbed thickness compared with PEO-PLA.

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