

Abstract Submitted  
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**The kinetics of the reaction of telechelics at a soft interface by neutron reflectivity** J. KEVIN RICE, HELEN JI, MARK DADMUN, JIMMY MAYS, University of Tennessee — The aim of this study is to gain a fundamental understanding of the kinetics of the in-situ formation of blocky copolymer molecules at a soft, immiscible polymer interface by the reaction of telechelic polymers across that interface. The resultant interfacial morphology that is formed from this reaction is also studied. Specular neutron reflectivity measurements were made after various annealing times on bilayer PS/PMMA samples, each of which contains dPS telechelics in one layer and monochelic PMMA in the other. Three reactive chain-end pairs were studied: epoxy-amine, epoxy-carboxylic acid, and amine-anhydride. After sufficient annealing of each system, an interfacial layer forms between the PS and PMMA that contains triblock copolymer formed by the reaction of the telechelics and the reactive PMMA chains. The thickness of this interfacial modifier layer, as well as the roughness between the matrix layers, increases with annealing time. Several molecular weights of the telechelics were studied and results relating the time evolution of the blocky copolymer volume fraction at the interface to interfacial excess, as well as interfacial coverage and reaction rate constants will be discussed.

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