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Time-resolved SANS studies on block copolymer micelles with varying core-solvent interactions TYLER COOKSEY, AVANTIKA SINGH, MARIA MARQUEZ, MEGAN ROBERTSON, University of Houston — The self-assembly of block copolymer micelles occurs through a relaxation process dominated by the exchange of individual polymer chains. The objective of this work is to probe the single chain exchange of block copolymer micelles with varying core-solvent interactions, utilizing time-resolved neutron scattering (TR-SANS). The interactions between the core-forming polymer and the solvent has many implications for the micelle structure, including the aggregation number, micelle size, and interfacial tension. However, few studies have investigated the effect of the core polymer-solvent interactions on the dynamics of micelle formation. We will focus our study on poly(epsilon-caprolactone-block-ethylene oxide) block copolymers forming micelle structures in mixtures of water and tetrahydrofuran (THF). It was observed that changing the THF concentration, which varies the degree of repulsion between the core and solvent, greatly influences the single chain exchange rate in this system.

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