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Understanding the phase behavior and equilibration kinetics of PDMS-containing block copolymers CHARLOTTE STEWART-SLOAN, EDWIN THOMAS, Massachusetts Institute of Technology — Block copolymers containing both PDMS and an olefin are of interest because they combine high χ parameters which allow for strong segregation on small length scales with a differential etch resistance to oxygen plasma. In order to understand the phase behavior and how it is affected by thermal treatments, low molecular weight diblocks of PS-PDMS and PI-PDMS were examined at different temperatures using synchrotron radiation. The movement and changes in intensity of the peaks present in the SAXS patterns at different temperatures after long equilibration times provides information about the equilibrium structures present in these materials and the evolution of these patterns over time allows insight into structural kinetics. The ODT was determined for three different compositions and the structure equilibration on heating and cooling were investigated. Of particular interest is the evolution of structure at room temperature after high temperature treatment.

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