

Abstract Submitted
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Effects of Humidity on the Dynamics of Hydrophilic and Hydrophobic Polymers DANIEL HALLINAN, ONYEKACHI OPARAJI, Florida State University — Poly(styrene)-block-poly(ethylene oxide) (PS-*b*-PEO) is a semicrystalline block copolymer (BCP) with interesting properties. It is mechanically tough, amphiphilic, and has a polar phase. The mechanical toughness is due to the crystallinity of PEO and the high glass transition temperature of PS, as well as the morphological structure of the BCP. Due to our interest in membranes for energy-efficient water purification, we have examined the effect of water on polymer properties. We report the effect of water activity on thermal and mechanical properties of the BCP, PEO, and PS. Using a variety of experimental techniques we have found that water sorption induces isothermal dissolution of PEO crystals and it decreases the apparent glass transition temperature of PS.

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