

Abstract Submitted
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On Polydimethylsiloxane-Polyethylene Oxide Blends ALAN PEREZ, University of Texas Rio Grande Valley, ALIN CRISTIAN CHIPARA, PULICKEL AJAYAN, Rice University, DORINA CHIPARA, University of Texas Rio Grande Valley, CHANDRA SEKHAR TIWARY, ROBERT VAJTAI, Rice University, MIRCEA CHIPARA, University of Texas Rio Grande Valley — Polyethylene oxide (PEO) is a unique polymer, being soluble both in water and in organic solvents. Some authors, consider PEO as an amphiphilic polymer that contains both hydrophilic and hydrophobic entities. Polydimethylsiloxane (PDMS) is the polymer with the most flexible polymeric chain. The contact angle water-PDMS ranges between 90 to 150° with a tendency to decrease slowly in time. The polymeric mixture PDMS-PEO is expected to show unique properties due to the entanglement of the PDMS macromolecular chain around the PEO chain, with surface contributions derived from the interactions between the hydrophobic PDMS and hydrophilic groups of PEO. PEO-PDMS mixtures have been obtained by using 2 paths: The first one consisted in the direct mixing of PEO powder with PDMS and the other the dissolution of PEO in water, followed by the addition of PDMS, mixing by stirring and sonication followed by solvent removal. Raman spectroscopy was used to assess molecular motions. Microscopy investigations are aiming at the morphology of these mixtures. DSC studies focused on glass, melting, and crystallization phase transitions in the PEO component are reported.

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