

Abstract Submitted  
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**Effect of Selective Solvent on the Morphological Phase Behavior of PS-b-PEO** PRACHUR BHARGAVA, XIAOLIANG ZHENG , YINGFENG TU, STEPHEN Z.D. CHENG, MAURICE MORTON INSTITUTE OF POLYMER SCIENCE, THE UNIVERSITY OF AKRON TEAM — Amphiphilic block copolymers with glassy cores can be self -assembled in solution to form various nanoscale morphologies by using a two solvent process. In the first step the block copolymer is dissolved in a common solvent and then a selective solvent for one of the blocks is added to induce micellization. We have used this method to obtain nanoscale morphologies for PS-b-PEO. We have used DMF as the common solvent and have investigated two selective solvents for PEO, water and acetonitrile. The morphologies obtained by using both these selective solvents are similar. Spheres, rods/worm and vesicles can be obtained by varying only the solvent composition in both the systems. However a ‘worm network’ can be obtained only by using water as a selective solvent. Also in case of water all the morphologies can be obtained in a very narrow range of water content while in case of acetonitrile the morphologies can be obtained only in a broad range of acetonitrile content. The difference in the behavior with water and acetonitrile can be attributed to their solubility parameters which affects the polymer solvent interaction parameter  $\chi$ .

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