

Abstract Submitted
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Synthesis, Solution Phase Behavior, and Properties of Ionic/Nonionic Block Copolymers MEHUL VORA, FRANK BATES, Department of Chemical Engineering and Materials Science, University of Minnesota — The study of amphiphilic block copolymers in aqueous solutions has shown rich phase behavior and interesting solution properties. The aim of the current work is to develop an amphiphilic diblock copolymer system containing an ionic block in order to better understand how ionicity affects the phase behavior and solution properties. Relatively monodisperse PEP-*b*-PMAA (poly(ethylene propylene)-*b*-methacrylic acid) copolymer was prepared from anionically synthesized poly(isoprene-*b*-*tert*-butyl methacrylate). The rheological behavior of aqueous solutions of PEP-*b*-PMAA in the presence of different counterions was studied. The choice of counterion has a strong influence on the final solution properties. Cryo-TEM and SAXS experiments are used to determine the morphology of the copolymers in these solutions, while rheological experiments revealed the role of diblock composition, counterion type and concentration, and overall polymer loading on the viscometric properties.

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