

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Morphology and Dynamic Mechanical Properties of Styrene Containing Tri-Block Copolymers for Electromagnetic Wave Interaction Applications¹

S. PEDDINI, K. MAURITZ, School of Polymers and High Performance Materials, University of Southern Mississippi, Hattiesburg, MS, 39406 USA, D. NIKLES, J. WESTON, Center for Materials for Information Technology, University of Alabama, Tuscaloosa, AL, 35487 USA — Styrene containing triblock copolymers, namely poly(styrene-ethylene/butylene-styrene) (SEBS) and poly(styrene-butadiene-styrene) (SBS), were selectively modified by attaching polar groups to facilitate the in-growth of an inorganic component. In case of SEBS, the styrene block was sulfonated, and in SBS, the butadiene block was hydroxylated. The extent of modification was determined by analytical and spectroscopic methods. This presentation shows the morphology and dynamical mechanical properties of both block copolymers before and after modification. Nanocomposites of these block copolymers were prepared by inclusion of magnetic metal oxides *via* an *in-situ* precipitation and self assembly processes and their morphology and dynamical mechanical properties were studied. Magnetic properties of these polymers filled with iron oxide nanoparticles were measured using an alternating gradient magnetometer (AGM) at room temperature to observe the magnetic hysteresis.

¹The authors thank Kraton LLC and Dexco for copolymer samples. Major support for these studies from the National Science Foundation Materials Research Science & Engineering Center (DMR 0213883 - USM) and NSF MRSEC DMR 0213985 (UA) is acknowledged.

Sateesh Peddini
School of Polymers and High Performance Materials,
University of Southern Mississippi, Hattiesburg, MS, 39406

Date submitted: 04 Jan 2008

Electronic form version 1.4