

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**X-ray Intensity Fluctuation Spectroscopy Studies of Dynamics of Block Copolymers in Selective Solvents**<sup>1</sup> YONGSHENG LIU, JULIAN SPRING, KARL LUDWIG, RAMA BANSIL, Boston University — We investigated the dynamics of a block copolymer SEBS (triblock of styrene (S) and ethylene-butylene, EB) in selective solvents using X-ray Intensity Fluctuation Spectroscopy (XIFS). We examined the temperature dependence of dynamics in cylindrical, spherical and lamellar phases as well as in coexisting phases through the transitions. We were able to observe dynamics in hexagonally-packed-cylinders (HEX) and body-centered-cubic (BCC) phases in 45% SEBS in mineral oil as well as HEX and lamellar (LAM) phases in 40% SEBS in dibutyl phthalate (selective to S). We observed two exponentially decaying dynamic modes in coexisting HEX and BCC phases, and in coexisting LAM and HEX phases. While the slower mode has a  $q$ -independent decay rate, the faster mode's decay rate decreases with increasing  $q$ , consistent with the well-known deGennes narrowing as  $q$  varies through a structural peak

<sup>1</sup>This research was supported by NSF-DMR grant no. 0804784.

Yongsheng Liu  
Boston University

Date submitted: 28 Nov 2009

Electronic form version 1.4