

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Surface Dynamics in Polymer Nanocomposite Films**<sup>1</sup> KYLE JOHNSON, EMMANOUIL GLYNOS, Univ of Michigan - Ann Arbor, SURESH NARAYANAN, Advanced Photon Source-Argonne National Laboratory, GEORGIOS SAKELLARIOU, University of Athens, PETER GREEN, University of Michigan — The dynamics of supported polymer nanocomposite thin films were studied using x-ray photon correlation spectroscopy. Measurements were performed on 50 and 200 nm films of unentangled poly(2-vinyl pyridine) (P2VP) grafted gold nanoparticles in an unentangled P2VP host of smaller molecular weight at temperatures above the glass transition. The grafted and host chain degree of polymerization were  $N = 96$  and  $P = 44$  respectively. The presence of the nanoparticles and their interactions with the polymer host are shown to slow down the dynamics of the film at large thicknesses. As the film thickness  $h$  approaches the interparticle spacing  $l_D$ , the dynamics become much slower due to confinement of the nanoparticles.

<sup>1</sup>This research was supported by the National Science Foundation (NSF), Division of Materials Research (DMR-1305749). Beam time at APS-ANL was granted under proposal GUP 37714.

Kyle Johnson  
Univ of Michigan - Ann Arbor

Date submitted: 11 Nov 2016

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