Abstract Submitted
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Temperature Dependence of Polymer Diffusion in MWCNT/PS Nanocomposites[1] WEI-SHAO TUNG, University of Pennsylvania, NIGEL CLARKE, University of Sheffield, RUSSELL J. COMPOSTO, KAREN I. WINEY, University of Pennsylvania — Temperature dependence of homopolymer diffusion can be explained by the WLF equation. Here, we explore whether the WLF equation applies to polymer diffusion in nanocomposites. Previously, we found the diffusion coefficient shows a minimum with increasing MWCNT concentration. By studying the temperature dependence of polymer diffusion in this system, we will investigate the relative importance of entropic barriers or enthalpy interactions between polymer chain and fillers. Our composites contain MWCNT and polystyrene and are fabricated by a coagulation method. Using forward recoil elastic scattering (FRES), we probe the depth profile of tracer polymer (dPS) and obtain the diffusion coefficients by fitting the profile with Fick's second law.

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