

Abstract Submitted
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Rheological Singularity near the Phase Transition of Hairy Nanoparticles in Polymer Melts XIAORONG WANG, Bridgestone Americas, Center for Research and Technology, 1200 Firestone Parkway, Akron, OH 44317, VICTOR FOLTZ, MINDAUGAS RACKAITIS, GEORG BOHM — The dynamics of hairy nanoparticles in polymer melts of chemically identical chains has been investigated as function of both molecular weight and volume fraction. This work demonstrates that there is a strong connection between the rheological dynamics of the system and the thermodynamics of the phase separation behavior. The shear-induced nonlinearity in the system appears to display features of a surprising singularity near the phase transition point. Our theoretical calculation also agrees qualitatively well with that observed experimentally.

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