

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Structural analysis of liquid crystalline order in polymer melts and blends KIRAN KHANAL, JUTTA LUETTNER-STRATHMANN, The University of Akron — Blends of liquid crystalline and flexible polymers have interesting physical behaviors and important applications in organic electronics. We investigate the liquid crystalline transition in melts and blends of semiflexible polymers with Monte Carlo simulations of a bond fluctuation lattice model. For polymer melts we study the influence of attractive interactions on the isotropic to nematic phase transition for different polymer concentrations. We observe that the structure of the ordered phase is different for melts with and without attractive interactions. We construct the phase diagram and find the transition temperature increases with increasing strength of the attractive interaction. To analyze the structure of ordered and disordered regions in polymer melts and blends, we calculate a set of pair distribution functions. We also investigate the effect of an ordering field on the liquid crystalline order in polymer melts and blends.

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Date submitted: 12 Nov 2014

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