

Abstract Submitted
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Neutron Scattering Function for Branched Worm-Like Micelles

GREGORY BEAUCAGE, KARSTEN VOGTT, University of Cincinnati — Micellar solutions can display a wide range of phase structure as a function of counter ion content, surfactant concentration, and the presence of ternary components. Under some conditions extended cylindrical structures are produced that display chain persistence and a scaling regime reminiscent of polymers coils. These worm-like micelles (WLMs) can form branched, chain structures, for instance at relatively high salt concentrations. The rheology of these branched WLMs is strongly dependent on migration of the branch points, and the dynamics of branch formation and removal. A scattering model that can quantify the branching density, branch length, branch functionality and the hyperbranch (branch-on-branch) content of these polymer-like structures will be presented. Data from several WLM systems will be explore using this new model.

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