

Abstract Submitted
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Gelation in Semiflexible Polymers¹ VENKAT PADMANABHAN, SANAT K. KUMAR, Columbia University — Discrete Molecular Dynamics/Collision Dynamics has been employed to study the formation of a physical gel by semi-flexible polymer chains. The formation of a geometrically connected network of bundles of chains is investigated as a function of temperature. As the temperature is lowered, a percolated homogeneous solution phase separates to form a non-percolated nematic fluid and upon further decrease in the temperature, it goes back to a percolated gel state. The gelation, at lower temperatures, is due to the dynamic arrest of chains, preventing them from completing the phase separation process. The cooling rate also plays an important role in deciding the final outcome. Quenching the system, to the final temperature, at a faster rate yields gelation while slower quenches result in phase separation.

¹DOE

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