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Self-Assembly of Droplets in a Nematic Liquid Crystal CHUN-FENG ZHOU, PENGTAO YUE, JAMES J. FENG, University of British Columbia — In recent experiments, micro-particles and droplets were observed to self-assemble into specific patterns when they were dispersed in a nematic liquid crystal. We use a diffuse-interface method to simulate one such system. Five types of pairwise interactions are found in this study: dipolar attraction, dipolar repulsion, anti-dipolar repulsion, parallel dipolar repulsion and anti-parallel dipolar attraction. These results are consistent with prior results in the literature. In particular, the dipolar attraction force obeys the -4^{th} power law reported earlier. Furthermore, multiple droplets self-assemble into a long chain similar to experimental observations.

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