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Modeling of Interactions Between Spherical Micelles for Diblock Copolymers in Selective Solvents RAGHURAM THIAGARAJAN, DAVID MORSE, Department of Chemical Engineering and Materials Science, University of Minnesota — The self-assembly of spherical micelles formed in systems with a diblock copolymer AB, consisting of a solvent-philic block (B) and a solvent-phobic block (A), in selective solvents (S) is studied here. Effective interactions between spherical micelles for a model system are quantified using self-consistent field modeling in real space, for the dilute regime $\phi_{\mathrm{AB}} < 0.2$, as well as using a pseudo-spectral implementation of SCFT, for the concentrated regime $\phi_{\mathrm{AB}} > 0.2$. We show that the free energy of BCC, and FCC phases can be described in terms of a single effective pair potential that depends on micelle aggregation number, but the aggregation number changes significantly with concentration as well as temperature.

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