

Abstract Submitted
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Effects of Coulomb Repulsion on the Phase Diagram of the Asakura-Oosawa Model¹ JASON HAAGA, Lehigh University, ELIZABETH PEMBERTON, Drew University, JAMES GUNTON, JEFFREY RICKMAN, Lehigh University — We investigate the effect of adding a screened Coulomb charge to a model colloidal system interacting via the Asakura-Oosawa depletion potential. This model has previously been used to study the early stages of amelogenin self-assembly, a crucial process in the formation of dental enamel, by Li et al (Biophysical Journal 101, 2502 (2011)). By employing Monte Carlo simulations, we explore the role of interaction strengths and ranges on phase behavior. We find that charge strength and range have a strong influence on the stable, in the case of long range depletion potential, or metastable, in the case of short range depletion, fluid-fluid phase separation. Coulomb repulsion narrows and flattens the coexistence curve with increasing charge. This talk will also discuss solid-solid transitions present for certain interaction ranges.

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