

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Crystals and liquids of ionic microgel particles: Osmotic pressure and phase coexistence MIGUEL PELAEZ-FERNANDEZ, ANTON SOUSLOV, School of Physics, Georgia Institute of Technology, L. ANDREW LYON, School of Chemistry and Biochemistry, Georgia Institute of Technology, PAUL M. GOLDBART, ALBERTO FERNANDEZ-NIEVES, School of Physics, Georgia Institute of Technology, SCHOOL OF PHYSICS TEAM, SCHOOL OF CHEMISTRY AND BIOCHEMISTRY COLLABORATION — We quantify the phase behavior of suspensions comprised of swollen, ionic microgels while measuring the system osmotic pressure. Surprisingly, the osmotic pressure of dilute suspensions is much larger than that expected for an ideal gas. Furthermore, we find that the width of the liquid-crystal phase coexistence region increases as the microgels are made softer; this is true in terms of a generalized volume fraction, $\zeta = nV_0$, with n the particle density and V_0 the dilute microgel volume. We will discuss the role played by the ions in our observations and compare with expectations based on computer simulations.

Miguel Pelaez-Fernandez
School of Physics, Georgia Institute of Technology

Date submitted: 15 Nov 2013

Electronic form version 1.4