

Abstract Submitted  
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**Transient formation of bcc crystal in suspensions of pNIPAM-based microgels** URS GASSER, Lab. for Neutron Scattering, Paul Scherrer Inst., 5232 Villigen, Switzerland, JUAN-JOSE LIETOR-SANTOS, School of Physics, Georgia Institute of Technology, Atlanta GA, 30332-0430, USA, ANDREA SCOTTI, Lab. for Neutron Scattering, Paul Scherrer Inst., 5232 Villigen, Switzerland, OLIVER BUNK, ANDREAS MENZEL, Swiss Light Source, Paul Scherrer Inst., 5232 Villigen, Switzerland, ALBERTO FERNANDEZ-NIEVES, School of Physics, Georgia Institute of Technology, Atlanta GA, 30332-0430, USA — In suspensions of soft and deformable microgel particles, both the colloidal and the polymeric degrees of freedom are relevant for phase behavior at high concentrations. Crystal structures different from those formed by hard spheres (HS) are expected to form at high concentrations. However, our and other group's experimental work have shown that the crystal structure is comparable to that found in HS. Here, we present a small-angle X-ray scattering study of crystal growth in a system of slightly charged and swollen microgels of poly(N-isopropylacrylamide) co-polymerized with acrylic acid. As in HS, we find that random hexagonal close packed crystal grows in all samples and slowly transforms towards the face centered cubic lattice, which appears to be the equilibrium structure, as in HS. However, at intermediate volume fractions, a body centered cubic crystal phase appears, which is not stable and disappears as the samples age. This behavior is expected for fuzzy particles with a steric repulsion [P. Ziherl and R.D. Kamien, Phys. Rev. Lett. 85, 3528 (2000)]. This suggests that our observations could be related to the predictions of this model for fuzzy particles.

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