

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Cubic crystals from cubic colloids LAURA ROSSI, Van't Hoff Laboratory, Utrecht University, STEFANO SACANNA, WILLIAM IRVINE, PAUL CHAIKIN, DAVID PINE, Center for Soft Matter Research, New York University, ALBERT PHILIPSE, Van't Hoff Laboratory, Utrecht University — We have studied the crystallization behavior of colloidal cubes by means of tunable depletion interactions. The colloidal system consists of novel micron-sized cubic particles prepared by silica deposition on hematite templates and various non-adsorbing water-soluble polymers as depletion agents. We show that under certain conditions the cubes can self-organize into crystals with a simple cubic symmetry, which is set by the size of the depletant. The dynamic of crystal nucleation and growth is investigated monitoring the samples in time by optical microscopy. Furthermore, by using temperature sensitive microgel particles as depletant it is possible to fine tune depletion interactions as to induce crystal melting. Assisting crystallization with an alternating electric field improves the uniformity of the cubic pattern allowing the preparation of macroscopic (almost defect-free) crystals that show visible Bragg colors.

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Date submitted: 12 Oct 2010

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