



THE CHINESE UNIVERSITY OF HONG KONG

Department of Physics

COLLOQUIUM

Melting and Geometrical Frustration in Colloidal Crystals

by

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Date: November 14, 2008 (Friday)

Time: 4:00 - 5:00 p.m.

Place: L2, Science Centre, CUHK

(Light refreshments will be served 20 minutes prior to the colloquium.)

ALL INTERESTED ARE WELCOME

Abstract

I will discuss experiments which study melting of colloidal crystals. These experiments are facilitated by novel micrometer sized NIPA (N-isopropyl acrylamide) spheres whose diameter can be temperature-tuned. By tuning temperature, we change sample volume fraction and drive the phase transitions. Particle motions are measured with digital video microscopy. In 3D we created superheated crystals and studied their melting. In weak quasi-2D confinement we create a self-organized colloidal system that exhibits geometrical frustration similar to that of antiferromagnetic Ising spins on a triangular lattice. We investigated the static structure, dynamics and the degenerated ground state. This experiment builds a connection between frustration magnetism and soft matter, and opens the door for the study of single-particle dynamics in geometrical frustrated systems.

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