
Seminar

Soft particles at ultrahigh densities

P.S. Mohanty

Lund University, Sweden

We use Poly (N-isopropylacrylamide) (PNIPAM) microgel particles as convenient model systems for the soft repulsive colloids to look into their density dependent structural ordering and phase behaviour at effective volume fractions Φ_{eff} , below and above close packing, Φ_{cp} , combining real space (by confocal microscopy, CLSM) and scattering methods (by small angle neutron scattering, SANS). PNIPAM microgel particles are very interesting as they show a thermoresponsive size, where the particles swell at low and collapse at high temperatures. The size and thus the effective volume fraction of the particles can therefore be tuned through a variation of the temperature. We look at the influence of the intrinsic softness of these particles on dynamical arrest, and investigate the nature of the dense phases that exist at ultra-high densities far beyond close packing. Moreover due to their soft repulsive interaction potential, microgels can interpenetrate or compress to a certain degree at high densities far above close packing. So, we use in particular a special variant of small angle neutron scattering (SANS) experiments under so-called zero average contrast conditions, in order to extract the size and shape of the microgel particles at all densities which allows us to completely decouple interactions and particle size and shape experimentally for the first time.

Thursday, Feb 26th 2015

11:30 AM (Tea/Coffee at 11:15 AM)

Seminar Hall, TCIS