

Internal Seminar

Reentrant freezing of colloids in a random potential

N. Shankaraiah

TCIS Hyderabad

We present Monte Carlo simulations of model Hamiltonians: (i) inverse-twelfth power potential [1]; and (ii) inverse-twelfth power potential with added random potential [2], to study the dynamics of colloids. The random potential energy landscape [3,4] has a Gaussian distribution with zero mean and exponentially decaying correlations [2]. After a quench, we monitor the time-averaged local particle density and its Fourier transform, structure factor to characterize and obtain a phase diagram. We find, interestingly, a reentrant phase behavior of colloids in the presence of random potential energy landscape.

References:

- [1] J.Q. Broughton, G. H. Gilmer, and J.D. Weeks, Phys. Rev. B. 25, 4651 (1982).
- [2] A. Sengupta, S. Sengupta, and G.I. Menon, Europhys. Lett., 70, 635 (2005).
- [3] J. Bewerunge, A. Sengupta, R. F. Capellmann, F. Platten, S. Sengupta, S. U. Egelhaaf, J. Chem. Phys. 145, 044905 (2016).
- [4] J.D. Bryngelson and P.G. Wolynes, J. Phys. Chem. 93 6902 (1989).

Wednesday, Aug 9th 2017

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

Auditorium, TIFR (FReT-B)