

2009 CCMS Summer Lecture Series

Freezing of Liquids into Crystalline and Amorphous States*

Prof. Shankar Das (JNU, India)

- July 6** Introduction: freezing transition. supercooled liquids, glass transition, density functional approach
- July 7** Nucleation of solids from the melt: classical nucleation theory, computer simulation methods for studying the nucleation process
- July 8** Study of liquid state dynamics: fluctuating hydrodynamics and slow modes, slow dynamics in supercooled liquids, features of glassy dynamics
- July 9** Fluctuating nonlinear hydrodynamics and formulation of the mode coupling theory (MCT): ergodic-nonergodic transition of MCT
- July 13** The two step relaxation process of MCT: evidence from experiments and simulations, absence of the sharp transition
- July 14** Non-equilibrium dynamics and violation of Fluctuation-dissipation theorem in glassy dynamics: modified Kohlrausch-Williams-Watts relaxation and aging behavior, Effective temperatures in non equilibrium systems
- July 15** Dynamic heterogeneities and four point correlation functions, non Gaussian parameters, cooperative dynamics and string like motion in simulated systems, growing length scales in glassy systems

*All lectures will start at 4 pm in #2165. Happy hour to follow each lecture.