

## ICTS Seminar

- Title** : Characterising fluid transport and chemical kinetics under nano-confinement
- Speaker** : Jayesh Bhatt, University College London, United Kingdom
- Date** : Friday, September 16, 2016
- Time** : 11:30 am
- Venue** : Emmy Noether Seminar Room, ICTS Campus, Bangalore
- Abstract** : Systems exhibiting molecular or fluid confinement can be found throughout nature and are of critical importance in a host of applications. Examples include heterogeneous astrochemistry, catalysis, aquifers, oil in rocks, cements, carbon capture technology and energy storage materials. Experiments on such systems need to be complemented with theoretical models in order to be able to guide the design of future technologies. At the nanoscale, the extent of surface effects on the fluid structure and dynamics must be evaluated through a combination of theory and simulations. This talk will discuss a novel theoretical framework developed recently to accurately infer nuclear magnetic resonance (NMR) results in confined geometries, with hydrated cements used as a case in point. Nano-confinement can also render the classical approach to chemical kinetics to be erroneous. A stochastic model for heterogeneous chemical kinetics and nucleation, which replaces the classical deterministic approach, will be reviewed.