Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad - 500107

Colloquium

History Dependent Behavior of Polymers

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Polymers are an important class of materials with an ever-growing market. For most purposes, polymers are processed at rates much higher than the inverse of their equilibration time. As a consequence, polymers often fail to equilibrate within the typical processing timescales, causing the macromolecules to adopt non-equilibrium conformations, which, in turn, give rise to novel structural and dynamical properties. However, despite the exciting possibility to control properties, concepts relating processing protocols to non-equilibrium conformations and to resultant properties are still lacking. In this talk, I will discuss our recent experiments yielding quantitative relations relating the processing history and the resultant properties of polymer films. Using such relations, we show that the viscoelastic properties and crystallization kinetics of polymer films of same thickness can be tailored by orders of magnitude, thus offering a practical means to extend the range of available material properties significantly.

Wednesday, Jan 2nd 2019

4:00 PM (Tea/Coffee at 3:30 PM)

Auditorium, TIFR-H