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

Seminar

Ion Transport Mechanisms in Electrolytes and Modeling Advanced Strategic Materials

Santosh Mogurampelly

Temple University, Philadelphia

Electrolytes are ionic solutions containing positively and negatively charged species. Understanding the ion transport mechanisms in electrolytes is critical to their optimal usage in numerous applications including batteries, fuel cells and supercapacitors. By utilizing multiscale modeling approaches involving the development of appropriate interaction potential models and molecular dynamics simulations, we address some of the outstanding issues related to the transport of ions in different classes of electrolytes such as polymer nanocomposites, ternary blends and polymerized ionic liquids. We found that ion transport is dictated by the polymer dynamics in polymer nanocomposites and ion-pair structural relaxations in blend electrolytes. In contrast, the polymerized ionic liquids exhibit distinct transport behavior. Finally, we will present some of the latest results on the self-assembly of para-aramid polymers and implications on the development of advanced body armor.

Friday, Oct 5th 2018

4:00 PM (Tea/Coffee at 03:30 PM)

Auditorium, TIFR-H