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

Seminar

Characterization and Modeling of Relaxational Behavior in Various Composite Systems

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Evolution of dielectric, mechanical or calorimetric relaxation times during the course of heating (glass to liquid transitions), polymerization induced phase separation/sol-gel (liquid to solid transitions or biological phenomena such as gelatinization and denaturation and the corresponding relaxational processes and degree of dynamic heterogeneity is of significance in determining the dynamics and microstructure for encapsulation, advanced composites and energy storage applications. The idea is to develop and characterize material systems that can exhibit high thermal, mechanical and electrical capacity.

In this talk, I will provide a brief introduction to molecular relaxation and the various molecular relaxation processes, characterization of the same and its correlation with dynamics and structure. Further, I will discuss about the modeling of relaxational processes in dielectric, heat capacity and mechanical spectroscopy context in terms of Kohlrausch-Williams-Watts function and the parameters obtained from the same. The parameters obtained would be relaxational times, dc conductivity, degree of dynamic heterogeneity and the equilibrium or relaxed static permittivity/heat capacity/modulus. The modeling is applicable for both single frequency-temperature scans (time domain) and isothermal-frequency scans (frequency domain). I will conclude the talk with some offshoots of this work (DSC studies to study interfaces and defects and configurational entropy at interfaces) in addition to my other research areas that I am pursuing.

Tuesday, Oct 17th 2017

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

Auditorium, TIFR-H (FReT-B)