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

Students' Annual Seminar

Understanding aggregation and disaggregation of protein amyloids

Timir Baran Sil

Amyloids are fibrillar aggregates of protein involved in several diseases like Alzheimer's disease, Parkinson's disease, type 2 Diabetes Mellitus etc. Our goal is to understand the forces and the energies associated with the aggregation and the disaggregation of these proteins. Using fluorescently labelled amyloid-beta peptide (Aβ) we have studied the disaggregation kinetics of the amyloid aggregates. Our results indicate that amyloids are metastable and highly heterogeneous. Currently, we are investigating solvent dependent characteristics of Aβ monomers and the amyloids. We have used an array of solvents with varying solubility parameters. Using fluorescence correlation spectroscopy we find that Aβ42 monomers undergo chain collapse in poor solvents and expansion in good solvents. Furthermore, disaggregation of the amyloids is correlated with the solvent quality. Taken together these experiments will help evaluating the role of dispersive forces, dipolar interaction energies and hydrogen bonds in stabilization of the heterogeneous protein amyloids.

Monday, Apr 09th 2018

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

Seminar Hall, TIFR-H