

Internal Seminar

Biophysical characterization of aggregation and disaggregation of protein amyloids

Timir Baran Sil

TIFR, Hyderabad

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 ($A\beta$) we have characterized the disaggregation kinetics of its amyloid aggregates. Denaturant dependent disaggregation kinetics of these aggregates has been used to characterize its metastability and heterogeneity. Currently, we are investigating solvent dependent characteristics of $A\beta$ monomers and its amyloids. Using cuvette based fluorescence correlation spectroscopy we find that $A\beta_{42}$ monomers undergo chain collapse in poor solvents and expansion in good solvents. Furthermore, disaggregation of the amyloids are correlated with the solvent quality. Taken together these experiments will help in evaluating the role of dispersive forces, dipolar interactions and hydrogen bonding in stabilizing these heterogeneous protein amyloids.

Friday, Sep 7th 2018

9:30 AM (Tea/Coffee at 9:00 AM)

Seminar Hall, TIFR-H