

Seminar

Quantitative characterization of the soluble oligomers and insoluble fibrils of amyloid proteins using novel fluorescence spectroscopy methods

Timir Baran Sil

TCIS, Hyderabad

Amyloids are fibrillar assembly of proteins implicated in the pathogenesis of several neurodegenerative disorder e.g., Alzheimer's disease, Parkinson's disease etc. In test tubes monomeric amyloid proteins aggregate to form soluble oligomeric intermediates followed by insoluble fibrils. However, quantitative evaluation of the rate constants of the various processes leading to formation of the amyloids remains challenging due to heterogeneous and transient nature of these species. In this talk, I will discuss how the use of single-molecule fluorescence spectroscopy-based methods can improve the characterization of the processes involved in the pathway of aggregation. We have built a novel cuvette based fluorescence correlation spectroscopy set up to detect and quantify these aggregates. Time dependent measurement of evolution of these aggregates enable the calculation of rate constants of the microscopic processes underlying protein aggregation. The technique and the approaches used here are general in nature, therefore, these are applicable to characterization of the aggregation pathways of other amyloid systems as well.

Wednesday, Mar 4th 2020

11:30 AM (Tea/Coffee at 11:00 AM)

Auditorium, TIFR-H