



BOSE COLLOQUIUM

27 January 2017

4:00 p.m.

Silver Jubilee Hall

Speaker:

Prof. Kankan Bhattacharyya

Indian Institute of Science Education and Research, Bhopal

Title:

Physical Chemistry in a Single Live Cell: Confocal Microscopy

Abstract:

Single Molecule spectroscopy has revolutionized many branches of science. In this talk, we discuss how one selectively study different regions/organelles in a single live cell using confocal microscopy. We demonstrate that there are substantial differences between a cancer cell and a normal cell. We first discuss several examples of biological oscillations [1-2]. We then outline use of gold nano-clusters for cell imaging and intracellular delivery of drug and cytochrome C [3]. We will describe imaged and dynamics is monitored at different regions 3D multi-cellular tumor spheroid may [4]. Significant differences are observed from 2D cells. We will finally describe dynamics of DNA quadruplex [5].

References

1. S Chattoraj, K Bhattacharyya, "Biological Oscillations," Invited Frontier Article, Chem Phys Lett 660 (2016) 1.
2. S. Ghosh, S. Nandi, C. Ghosh, K. Bhattacharyya, "Fluorescence Dynamics in Endoplasmic Reticulum of a Live Cell: Time Resolved Confocal Microscopy," ChemPhysChem 18 (2016) 2818.
3. S Chattoraj, Md. A Amin, K Bhattacharyya "Cytochrome C Capped Fluorescent Gold Nanoclusters: Imaging of a Live Cell and Delivery of Cytochrome C" ChemPhysChem 17 (2016) 2088-95.
4. S Mohapatra, S Nandi, R Chowdhury, G Das, S Ghosh, K Bhattacharyya, "Spectral Mapping of 3D Multi-cellular Tumor Spheroid: Time Resolved Confocal Microscopy," PCCP 18 (2016) 18381.
5. M. Debnath, S. Ghosh, D. Panda, I. Bessy, H. Schawalbe, K. Bhattacharyya, J. Dash, "Small Molecule Regulated Dynamic Structural changes of Human G-quadruplexes," Chemical Science 7 (2016) 3279.