

## Dr. Nirod Kumar Sarangi



**PhD Institution and Year :** IIT Madras, 2014

**Date of Joining IISc :** 13-01-2015

**Area(s) of Research :** Soft mater, biophysics, membrane science, Spectroscopy

**Name of the Post-doctoral Fellowship :** DSKPDF, UGC, Govt. of INDIA

**Laboratory where currently working :** Soft-nanomaterial Laboratory

**Department :** Physical Science

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**Topic(s) of Research :** Nanoscale lipid dynamical heterogeneities induced by pore-forming proteins: Insights from super-resolution microscopy and STED-FCS

**Research Publications in IISc :**

- a) **N. K. Sarangi**, Ilanila, I. P, K. Ganapathy Ayappa, S. S. Visweswariah and J. K. Basu, Super-resolution stimulated emission depletion-fluorescence correlation spectroscopy reveals nanoscale membrane reorganization induced by pore-forming Proteins. *Langmuir*, **2016**, 32 (37), 9649--9657.
- b) **N. K. Sarangi**, K. G. Ayappa, S. S. Visweswariah and J. K. Basu, Nanoscale dynamics of phospholipids reveals an optimal assembly mechanism of pore-forming proteins in bilayer membranes. *Phys. Chem. Chem. Phys.*, **2016**, 18 (43), 29935--29945.

**Other accomplishments and recognition while in IISc :** None

**What information will be useful to post-docs if it is available on the post-doc page on the IISc Website ? List the items.**

**A tweet about your post-doctoral experience in IISc :**

In our laboratory, we focus in understanding the structure-function relationship between the membrane molecular properties and the essential functions of the cell membranes. Using supported phospholipid bilayers as in-vitro biomimetic platform for membranes and super resolution STED microscopy coupled with fluorescence correlation spectroscopy (STED-FCS), we are studying the nanoscale lipid dynamical heterogeneities induced upon

exposure pore-forming proteins. Our present work shed lights on lipid-protein interactions and understanding the underlying diffusion mechanism so called “diffusion law” below the diffraction limit ( $\sim 200$  nm). The major thrust of our work lies on the distribution of cholesterol in membranes and the role of proteins in sequestering cholesterol-rich domains directed by the host cell membrane.

The campus life at IISc is exciting with excellent facilities. The collaboration minds in this institute among inter as well as intra-department is very good to discuss science.