



Centre for Biosystems Science and Engineering

S E M I N A R

at 04:00 PM on March 27, 2017
MRDG Seminar Hall

Electrohydrodynamics of Fluid Interfaces and Cells

Dr. Priya Gambhire

Postdoctoral Associate, Chemical Engineering, IISc

Electrohydrodynamics refers to the fluid flow caused by electric fields. Soft matter being deformable also readily responds to an applied field. Electric fields are therefore used to manipulate soft matter in a variety of ways. To exemplify, electric fields can be used to create ordered micropatterns on polymeric liquids or to destabilize planar lipid bilayers to form giant vesicles. In this talk I will discuss the electrohydrodynamic behavior of fluid-fluid interfaces, how we model the system and why is it useful to do so. I will further discuss how the electrohydrodynamic model of a simple fluid-fluid interface can be extended to a biological cell. This model is used to calculate the frequency dependent impedance of the cell with the aim of developing a disease detection, point-of-care device.

About the speaker:

Dr. Priya Gambhire did her PhD from the Indian Institute of Technology Bombay where her research dealt with instabilities in fluids due to applied electric fields. Following this, she did her industrial research at Samsung R&D Bangalore on developing an electrochemical model for a lithium ion cell. She carried out postdoctoral research at CNRS Marseille (France) on developing a microfluidic, biomimetic spleen to distinguish healthy and sickle erythrocytes. She is currently a postdoctoral research associate at the Department of Chemical Engineering, IISc, working on developing an on-chip device and model for detecting disease affected biological cells using electric fields.