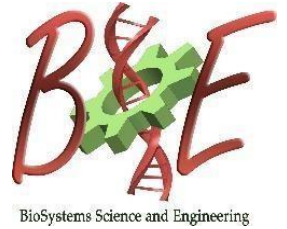




**Indian Institute of Science**  
**Centre for BioSystems Science and Engineering**  
**BSSE Seminar**



18 January 2021, 4:00 p.m., Virtual

## **Microfluidic devices for blood analysis**

**Prof. Debjani Paul,**  
**IIT Bombay**

### **About the speaker:**

Debjani Paul is an associate professor at the Department of Biosciences and Bioengineering in Indian Institute of Technology Bombay. She obtained a Ph.D. in Physics from the Indian Institute of Science in 2005. She did her postdoctoral research in Curie Institute and University of Cambridge prior to joining IIT Bombay in 2012. Her research group in IIT Bombay uses microfluidic technology to develop affordable diagnostic platforms and to explore biophysical phenomena under microfluidic confinement. Some of the ongoing projects in her lab are tuberculosis screening using a paperfluidic platform, detection of sickle cell disease, microfluidic cell sorting, measurement of deformability of single RBCs, etc. More details about her lab can be found at <http://www.bio.iitb.ac.in/~dpaul/>.

### **Abstract:**

Physical properties of cells, such as, size, shape and deformability have recently generated a lot of interest as potential biomarkers for different diseases. For example, infection by the malarial parasites makes the infected red blood cells (RBCs) stiffer. Normally biconcave and deformable RBCs change their shapes and become stiffer in sickle cell anaemia, thereby leading to blockage of blood flow. My research group uses microfluidic technology to probe physical properties of cells to diagnose different blood-related disorders. In this talk I will briefly discuss two of our ongoing projects. The first project describes a radial pillar-based platform (RAPID) to handle whole blood for several hours in a microfluidic device. The second project describes a microfluidics and mobile microscopy platform to detect sickle cell disease. The final goal of both these projects is to develop portable and affordable microfluidic devices to bring disease diagnostics from the hospitals to the patient's bedside.