



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



31 December 2020, 11:00 a.m., Virtual

**Miniaturized interfaces for efficient biosensing and high-throughput bioanalysis**

**Dr. Shailabh Kumar,**  
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**About the speaker:**

Shailabh is currently a postdoctoral scholar at Stanford Bioengineering developing miniaturized interfaces for vector-borne disease surveillance, working with Prof. Manu Prakash. Shailabh completed his PhD in Biomedical engineering with Prof. Sang-Hyun Oh at the University of Minnesota, Twin Cities. His doctoral work focused on overcoming diffusion-limited transport of molecules on nanostructured surfaces for improved biosensing and bioanalysis. He also trained as a postdoctoral scholar at Caltech with Dr. Hyuck Choo towards nanosensors-driven multiplexed detection of clinical biomarkers. Shailabh received his undergraduate education in Biotechnology and Biochemical engineering from the Indian Institute of Technology Kharagpur.

**Abstract:**

Miniaturized material interfaces can couple with biology at several different scales, from molecules to organisms, revealing information at improved resolution and throughput. I will discuss platforms enabling a) rapid biomolecule concentration and uniform signal enhancement for improved detection, b) arrayed assembly of individual biological particles for high-throughput analysis, and c) automated collection of salivary samples from biting mosquitoes for vector-pathogen diagnostics. Scalable nanosensors and biointerfaces can play a leading role towards improving our understanding of biological systems, as well as solving human health and environmental challenges in the coming decades.