



International Conference on Micro Nano Fluidics (ICOM 2025)



October 31 – November 2, 2025, IIT Guwahati

Speaker/affiliation: Prof. Ambarish Ghosh, IISc Bangalore, India

Tentative topic of the invited talk

Magnetic nanobots as local vehicles and sensors

Abstract of the invited talk

Helical nanobots driven by magnetic fields can provide physical information about their local surroundings with sub-micron spatial resolution, probe complex, heterogenous biological environments, such as the intracellular spaces, as well as the extracellular matrix; and provide a rich and powerful platform towards futuristic drug delivery. I will describe the magnetic material and geometry considerations toward making this system of nanobots, discuss methodologies and examples of intra and extra-cellular rheological measurements. I will touch upon our recent work on using them as futuristic therapeutic vehicles, and our efforts toward integrating quantum sensing to this powerful platform.