Title: Probing mechanical properties of circulating tumor cells

Offered by Ramray Bhat and Prosenjit Sen

Brief description: The study of how cancer spreads in the body, takes over new organs and kills the individual eventually (a collective process called metastasis) requires combined approaches from experimental cell biology and mechanical engineering. Metastasizing cancer cells take several decisions en route this process: whether or not to deadhere from their site of origin, survive within circulatory flows, and adhere and colonize new environments. Such biological decisions are guided by mechanical behaviors of circulating tumor cells. This also leads to the proposition that studying mechanical behaviors may provide cues to aggressiveness of cancer, impacting in turn diagnosis and management. The project therefore seeks to mechanically characterize circulating tumor cells through a long standing collaboration between the morphogenesis group led by Ramray Bhat (https://morphogenesisiisc.wixsite.com/home) and the microfluidic devices and heterogeneous systems laboratory led by Prosenjit Sen (https://sites.google.com/iisc.ac.in/mdhslab/home).