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Microfluidic separation of particles and cells in ferrofluids

Xiangchun Xuan
Clemson University, USA

Precise and effective manipulation (e.g., focusing, trapping, enrichment, separation and sorting) of particles and cells is critical in many chemical, biomedical and environmental applications. This can be achieved in microfluidic devices by an externally imposed force field that ranges from the ubiquitous gravity to electric, acoustic, optic and magnetic forces etc. Microfluidic particle and cell manipulation can also be implemented

by the use of an internally induced force field such as the flow and wall induced lift force. In this talk, I will present the recent and ongoing studies in my group on magnetic field-driven particle and cell manipulations in ferrofluid-based microfluidic devices. Specifically I will talk about our research on various approaches to continuous separation of diamagnetic particles and cells in ferrofluid flows.

xcxuan@clemson.edu