TIFR Centre for Interdisciplinary Sciences
21 Brundavan Colony, Narsingi, Hyderabad 500075

Seminar

Electrohydrodynamics in an oil in oil emulsion: from turbulence to active motion in an oil droplet

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Droplets of a dielectric liquid in an immiscible leaky dielectric liquid offer a rich model system for studies of collective behaviours in the presence of electric-field-driven, frequency-tunable hydrodynamic interactions.

Focusing on the regime of strong hydrodynamics, we find a field-driven transition to turbulent dynamical structures and motions in dc fields, and establish the scale invariance that is characteristic of the turbulent regime. These dynamical structures in a low-Reynolds number medium likely emerge from an electrical analog of Rayleigh-Benard convection. A thin-cell, quasi-two-dimensional version of this experiment, currently under way, suppresses this turbulence, but here one sees a field-induced transition to active motion.

Wednesday, July 16th 2014

11:30 AM (Tea/Coffee at 11:15 AM)

Seminar Hall, TCIS