

ICTS Fluid Seminar (HYBRID)

Title : Steady state flow in dense colloidal suspensions

Speaker : Alan Ranjit Jacob (IIT Hyderabad)

Date : Friday, 23rd June 2023

Time : 04:00 PM (IST)

Abstract : Dense or overcrowded suspensions are ubiquitous in our daily life, the examples vary from food, pharmaceuticals, beauty products to biological cells. In order to mimic these highly concentrated dispersions, large quantities of model spherical colloidal particles, with hard sphere-like repulsive interparticle potential, are suspended in a Newtonian liquid. Concentrated hard sphere suspensions ($\phi > 0.58$) exhibit a glass transition, wherein the suspension is thermodynamically out of equilibrium, due to caging of colloidal particles by its own neighbors. In this state, the dense suspension can only partly relax through short time in cage diffusion while long time dynamics is largely suppressed due to overcrowding. Orthogonal superposition rheometry, a novel rheological technique is used to investigate steady state flow dynamics of colloidal glasses by applying linear mechanical perturbations, orthogonal to the applied shear field. This unique technique will also bring out very interesting nuances in flow dynamics when the interparticle potential is changed from hard to soft repulsive potential. This talk will also emphasize on the microstructure of the colloidal glasses under start up shear and the effect aging will introduce to this kind of flow.

Venue : **Offline:** Feynman Lecture Hall (ICTS)

Online: Please click the below link to join the seminar.

<https://icts-res-in.zoom.us/j/83204994298?pwd=L1pvOXNkL1hNRVVUdlpVWHkwbDlhdz09>

Meeting ID: 832 0499 4298

Passcode: 232322