



The Australian Society of Rheology is presenting a national series of lectures, which is open to anyone interested in the flow and deformation of matter. The next event in the series will be held online.

Calendar details

Date:	Thursday, May 4, 2023
Time:	14:00 to 15:30 (Melbourne, Australia)
Event Registration Link:	https://www.eventbrite.com.au/e/australian-society-of-rheology-seminar-04-may-2023-registration-620432950657

Invited lecture

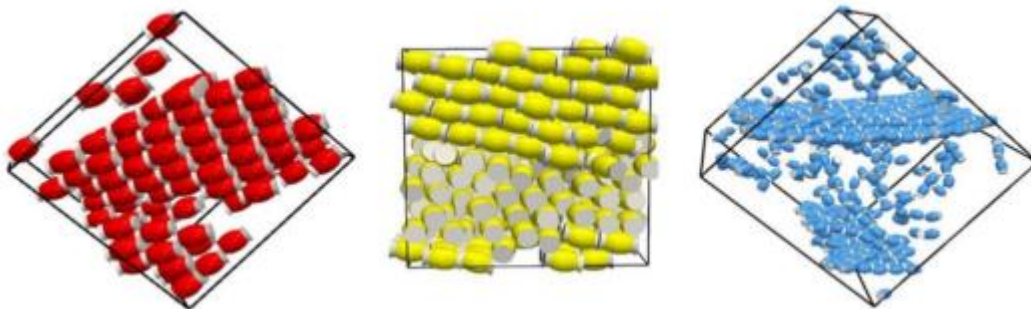
Associate Professor Sujin B. Babu

(Department of Physics, Indian Institute of Technology Delhi, India)

Presentation Title: Designing colloidal self-assembly. A patchy story

Abstract:

Patchy colloidal particles are considered to be a model system for proteins. To simulate this kind of system, we have used a relatively new simulation method called the Brownian Cluster Dynamics (BCD), the simplicity of the method will be briefly explained. The static and dynamic properties of the hard ellipsoidal particle using BCD will be discussed. Then studying the aggregation of ellipsoidal systems containing directional patches using BCD, we were able to predict the existence of a novel thermodynamic state, the free-standing monolayers, along with other crystal phases. By changing the shape of the patches into an annular configuration, we will show that we can form nanocages and nanocontainers configurations which are also thermodynamically stable.



Reference

1. Varma, V. A., Malhotra, I. and Babu, S. B. "Enhancement in the diffusivity of Brownian spheroids in the presence of spheres" *Phys. Rev. E* 106 014602 (2022).
2. Varma, V. A., Krithika, Singh. J and Babu, S. B. "Self-Assembly of Patchy Anisotropic Particle Forming Free Standing Monolayer Film" *Adv. Theory Simul.* 2200666 (2023).



Speaker's biography

Associate Professor Sujin B. Babu has been at the Department of Physics Indian Institute of Technology Delhi India since 2014. After completing his PhD thesis, A numerical simulation study on the Static and Dynamic properties of attractive spheres at the Polymers Colloids and Interface Laboratory, University du Maine, Le Mans, France. His research interests include Soft Condensed matter, specifically computer simulation of aggregation of spherical colloids, dynamical arrest in colloids, phase separation, tracer diffusion in colloidal gels, dynamics of polymer membrane in a viscous fluid (Low Reynolds number hydrodynamics) and patchy particle aggregation. He is also interested in Socio-physics through the modelling of food distribution in Refugee camps and Biophysics, particularly three-dimensional simulation of swimming of micro-organisms in blood and swimming in a confined environment (microchannels or veins). He has been awarded a Marie Curie early-stage researcher fellowship from Marie Curie Research and Training Network on Dynamical Arrest 2005 - 2008 and a Postdoctoral fellowship from German Research Foundation (DFG) Priority Program (Nature Inspired Fluid Mechanics) 2009 - 2012.

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