Collective dynamics in particle laden lamellae

Fact Sheet

Project Information

PARLAE

Grant agreement ID: 236391

Project closed

Start date
15 May 2009

End date
14 May 2010

Funded under
Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Total cost
No data

EU contribution
€ 87 267,88

Coordinated by
UNIVERSITE DE MARNE LA VALLEE
France

Objective

Particle laden fluids are of fundamental and contemporary interest due to the recent perspectives of understanding their flows. This research project endeavors to understand the collective behavior of solid particles suspended in fluid lamellae at multiple scales with relevance to aqueous foam. We aim to delineate the concurrence of distinct influences that have thus far been primarily studied in either bulk or single interface studies. These aspects include recent perspectives such as particle

jamming in granular media, shear banding/localization in colloidal systems, aggregation dynamics, transitions from thermal to athermal dynamics and the influence of surfactant physical-chemistry. While these phenomena have been studied in 2-dimensional and 3-dimensional spaces, the influence of curved spatial manifolds is expected to exhibit novel and rich phenomenology. Fluid lamellae in are ideal candidates to study many of these phenomenon as a function of spatial curvature. Particle laden foam is also recently being used as precursors to building solid materials. The control of many aspects of the fabrication process relies on an understanding of particle dynamics at the lamellar scale. The proposal outlined here will understand fundamental mechanisms involved in these processes. In the return phase(India), we propose to further the understanding of foam in along with particle inclusions in the regime of impacts. This is expected to be a productive avenue of research as foam and particle inclusions can have multiple relaxation times. At low velocities (impact time >> material relaxation time), impacts are expected to distribute energy over a wider area of the target, however at high velocities (impact time << material relaxation time) the energy is strongly focused at the point of impact. Thus impact dynamics can act as a probe of the time and length scales within a material.

Fields of science (EuroSciVoc)

natural sciences > physical sciences > condensed matter physics > **soft matter physics**

Keywords

Physical sciences | foam | granular matter | jamming in curved spaces | particle laden lamellae

Programme(s)

FP7-PEOPLE - Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Topic(s)

FP7-PEOPLE-IIF-2008 - Marie Curie Action: "International Incoming Fellowships"

Call for proposal

FP7-PEOPLE-IIF-2008
See other projects for this call

Funding Scheme

MC-IIF - International Incoming Fellowships (IIF)

Coordinator

UNIVERSITE DE MARNE LA VALLEE

EU contribution

€ 87 267,88

Total cost

No data

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Activity type

Higher or Secondary Education Establishments

Links

Contact the organisation Website
Participation in EU R&I programmes
HORIZON collaboration network

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Permalink: https://cordis.europa.eu/project/id/236391