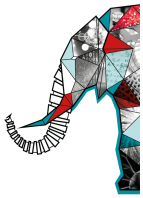
25e Congrès Général de la Société Française de Physique



ID de Contribution: **224** Type: **Poster**

Solid spherical nanoparticles dynamics in a shear flow near a liuid-liquid interface

This work is mainly devoted to development of a model and computational study for the dynamics of solid nanoparticles under shear in the vicinity of the liquid-liquid interface. The interface between the two liquids is modeled using using Phase Field Method (PFM), and the dyamics and the nbehavior of the spherical nanoparticles under shear is similuted using The Molecular Dynamics (MD) method. This technique examine the interaction of the NP's between each other as well as their interaction with the surrounding liquids. We introduce a new idea through which we superimpose the discrete model of nanoparti-cles on the continuum model of the fluids. Our model is capable to quantitatively study different physical aspects regarding the behavior of the nanoparticles at the interface. In particular, different cases and situations are studied in order to incorporate a variety of physical conditions that may appear in natural, industrial, or biomedical applications. It is found that spherical nanoparticles greater than the interfacial thickness oscillates in the inter-facial region under the effect of the same force. In addition, in this work the effect of shear on the migration of the nanoparticles to the liquid-liquid interface is investigated, and we find that the state of the two fluids when we introduce the nanoparticles into the medium has a crucial effect on the results.

Choix de session parallèle

4.2 Physique des polymères: de la molécule au matériau

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Classification de Session: Séance Poster