

LadHyX Seminar – October 1st, 10:45 am

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Marine foams : Transport of a motile protist in a foam, and in a microchannel under flow.

On certain coastlines, large-scale formations of stable sea foam are regularly observed. These naturally occurring foams are associated with a decline in phytoplankton biomass and biodiversity in seawater. We are seeking to determine whether the phytoplankton dragged into the foam during its formation remains trapped within the foam's complex network of internal channels. I will present laboratory experiments designed to study the transport within liquid foam of a model phytoplankton organism: the unicellular alga *Chlamydomonas reinhardtii* (CR), which is biflagellate and therefore motile. We measured the escape dynamics of CR cells from the foam and showed that CR cells tend to be retained within the foam. In this talk, I will focus on the microscopic mechanisms that lead to this trapping, which raises the question of the transport of microswimmers in confined, flow-subjected environments. I will present the results of recent experiments in which an individual micro-swimmer was tracked in three dimensions within a single microchannel. These experiments have, in particular, enabled us to describe the gravitational response of microalgae in confinement, as well as different transport regimes under the influence of flow.