

# **CECAM Workshop: Addressing metastability in interfacial phenomena across multiple time and length scales**

**August 29, 2017 to September 1, 2017**

**Location : CECAM-HQ-EPFL, Lausanne, Switzerland**

**<https://www.cecam.org/workshop-1-1398.html>**

This workshop aims at bringing together scientists developing methods, experimentalists, and simulators with the aim of discussing the emerging challenges posed by interfacial systems which are intrinsically multiscale in time and space. An emblematic problem is that of superhydrophobicity, which at the same time is strongly metastable, encompassing multiple timescales, and is characterized by length scales going from the thickness of the liquid-vapor interface up to the macroscopic fluid body under consideration. The very surface properties for which superhydrophobicity is technologically relevant crucially depend on this wealth of scales, which become in many cases inextricable. Atomistic simulations reveal the nanoscale details which determine the properties of these interfacial systems, but this approach is limited to extremely small length scales. In turn, the fluid flow is best described in terms of continuum approaches that can reach the scales relevant for technological applications.

The multiscale nature of interfacial phenomena is a challenge both for theoretician and experimentalists which, at present, hinders the development of quantitatively reliable theories. In this context, experiments are central both to reveal new phenomena and to develop the benchmarks which are needed to validate theories, e.g., in heterogeneous nucleation and its applications.

Workgroups and poster sessions are designed to allow participants to exchange ideas for the future developments of the field. Technical aspects will be discussed concerning the need of developing multiscale tools for simulating interfacial and fluid systems across diverse time and length scales. This paradigm opens the door to quantitative and physically sound predictions targeting emerging technological applications in interfacial system, which include microfluidics, engineered surface properties, biological systems, drug delivery, etc.

Submission of abstracts for posters and contributed talks is now open with a deadline of July 1, 2017. We look forward to seeing you in Lausanne!

## The Organizers

Alberto Giacomello (Sapienza University of Rome, Italy)

Halim Kusumaatmaja (Durham University, UK)

Simone Meloni (Sapienza University of Rome, Italy)