

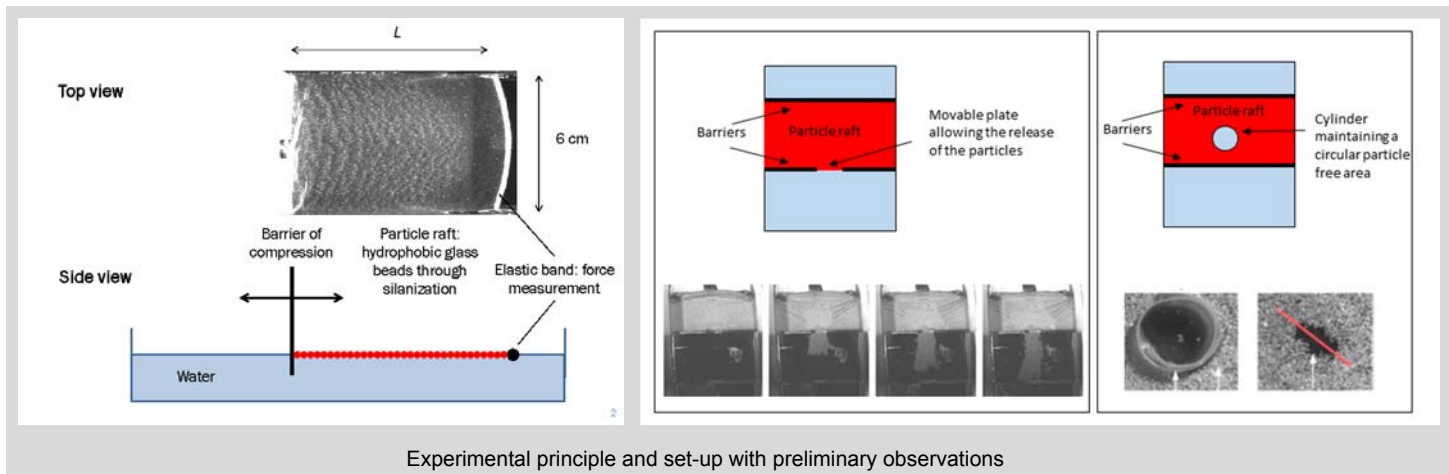


## Bachelorarbeit / Bachelor Thesis

# Avalanches in bi-dimensional granular media

The interest for microparticles at fluid interfaces has considerably been increasing in the last decades since they allow for their stabilization. Complex multiphase assemblies can be built which open routes to fabricate new materials (foams, emulsions, bijels) with better controlled properties. It has also been proposed to use such particles to coat droplets which could be used as innovative capsules, sensors or microreactors.

Despite the great applicability of particles at interfaces, the knowledge of their mechanical properties remains very poor. So far, studies have mainly been limited to the mechanical response of these interfaces while being quasi-statically compressed. A few studies from our group also probed their dynamical answer especially their bending modulus [1-2] and their resistance to drop coalescence or rupture [3-4]. The purpose of this project is to test how these interfaces release internal stresses by imposing a gradient of particle coverage. Especially, under which conditions bi-dimensional avalanches which were observed during preliminary studies, can take place.



Experimental principle and set-up with preliminary observations

### Tasks

- Reproducing and completing the preliminary observations using the experimental set-up already existing. If needed, improving the set-up.
- Recording the relaxation of the particle rafts with a high speed camera
- Data treatment (image analysis) to obtain the velocity of the particles (front + local components)
- Writing the corresponding scientific documentation.

### We offer

- A scientific supervision of high quality
- An international and dynamic work atmosphere
- Access to all the required facilities of the Institute

The bachelor project will be accomplished at the Institute of Fluid Mechanics and Heat Transfer (Institut für Strömungslehre und Wärmeübertragung). The project can start any time. If interested, please contact Dr. Carole Planchette, Tel. 0316 873-7357, Email [carole.planchette@tugraz.at](mailto:carole.planchette@tugraz.at)