Postdoctoral Position

Particle Accumulation in Periodic Vortex Flows

starting May/June 2018

duration: 1 year

in the framework of the
Japanese–European Research Experiment on Marangoni Instability
(JEREMI)

An international (ESA/JAXA) scientific team is carrying out a joint space station experiment in the Japanese Module KIBO of the International Space Station (ISS). The experiment is concerned with surface-tension-driven flow in a liquid bridge. The objectives are (a) the control of the convective flow instability by variation of the thermal and mechanical boundary conditions at the liquid–gas interface and (b) the investigation of dynamic particle accumulation structures (PAS) in the liquid bridge.

The postdoc shall be concerned with numerical simulations of the particle accumulation phenomenon. To that end, three-dimensional thermocapillary flows are computed, analyzed with respect to their streamline topology (chaotic versus regular streamlines), and seeded with finite-size particles. Particle accumulation structures will be computed taking into account the particle–boundary interaction, which is of key importance. Existing models for the particle–boundary interaction are to be improved to arrive at a reliable prediction of the accumulation structures and their time scales of evolution.

We solicit applicants with a strong background in Computational Fluid Dynamics, programming experience in C++, and interest in this challenging research field. Please email your CV with detailed information including names and contact details of three people familiar with your work. Applicants for the postdoc position should also email up to three representative publications.

Contact:

Prof. Dr. Hendrik C. Kuhlmann
Institute of Fluid Mechanics and Heat Transfer
TU Wien
Getreidemarkt 9
1060 Vienna, Austria
Phone: +43 1 58801 32212
email: hendrik.kuhlmann@tuwien.ac.at