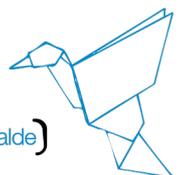


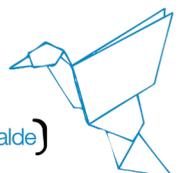
Postdoctoral Fellowship in CFD Modelling and Simulation

Job Offer	
Topics:	<p>Mesoscopic Fluid Dynamics Modelling and Simulation of Espresso Coffee Extraction</p> <p>Applications are invited for a postdoctoral position in mesoscopic modelling of espresso coffee extraction at the CFD group (BCAM) in collaboration with the Illycaffè. The percolation of hot water through ground coffee represents a complex thermo-fluid dynamics process where particulates and aromatics migrate from the grains into the brew. From a coffee cup quality point of view it is necessary to model accurately the mass transfer occurring during the process, focusing on the solubilization of key odorant and taste-wise compounds from the roasted coffee phase. In fact, distinct compound kinetics generally lead to an altered balance in the final cup depending on extraction times, ground coffee granulometry, applied pressures and temperatures resulting, finally, in a highly variable sensorial experience.</p> <p>The goal of this project is to use and further develop an existing simulation framework (based on Smoothed Particle Hydrodynamics and Dissipative Particle Dynamics techniques) to control and engineer coffee flavors by 'virtually' monitoring the balance of specific key-odorant or taste-actives compounds in the beverage under unexplored flow processing conditions.</p> <p>The postdoctoral candidate will work under the supervision of Ikerbasque Prof. Marco Ellero (CFD group, BCAM) on the developments and use of mesoscopic particle-simulation methods to better understand the mesoscopic extraction kinetics. He/she will also interact closely, both with the Illycaffè R&D Department in Trieste, Italy (Dr. Luciano Navarini), and with experimental groups at the College of Engineering (Swansea University UK) where X-ray micro-CT techniques will be used to morphologically characterize the ground coffee microstructure.</p>
PI in charge:	Prof. Marco Ellero (Ikerbasque Research Professor)
Salary and conditions:	The gross annual salary of the Postdoctoral Fellowship will be 28,000 – 32,000€.



	<p>It will then be on your own responsibility to make your yearly income declaration at the Bizkaia Treasury Agency.</p> <p>There is a moving allowance for those researchers that come from a research institution outside the Basque Country from EUR 1.000 to EUR 2.000 gross.</p> <p><i>Free access to the Public Health System in Spain is provided to all employees.</i></p>
No Positions offered:	#1
Contract and offer:	2-year contract
Deadline:	22th January 2020, 14:00 CET (UTC+1)
How to apply:	Applications must be submitted on-line at: http://www.bcamath.org/en/research/job

Scientific Profile Requested	
Requirements:	<ul style="list-style-type: none"> • Promising young researchers. • Applicants must have their PhD completed before the contract starts. • PhD degree preferable in Physics, Applied Mathematics, Chemical/Mechanical Engineering
Skills and track-record:	<ul style="list-style-type: none"> • Good communication and interpersonal skills. • Ability to effectively communicate and present research ideas to researchers with different background (e.g., mathematicians and engineers). • Ability to clearly present and publish research outcomes in spoken (talks) and written (papers) form. • Good command of spoken and written English.
Scientific Profile:	<p>The preferred candidate will have:</p> <ul style="list-style-type: none"> • Background in fluid mechanics, rheology, soft matter, particulate systems or complex fluids. • Experience in modelling and simulation using particle methods such as smoothed particle hydrodynamics (SPH), dissipative particle dynamics (DPD) or molecular dynamics (MD) is required. • Knowledge of C/C++ or Fortran programming languages is required. • Experience in parallel programming for HPC is desirable.



Application and Selection Process	
Formal Requirements:	The selected candidate must have applied before the application deadline online at the webpage http://www.bcamath.org/en/research/job The candidates that do not fulfil the mandatory requirements will not be evaluated with respect to their scientific profile.
Application:	Required documents: <ul style="list-style-type: none"> ▪ CV ▪ Letter of interest ▪ 2 recommendation letters ▪ statement of past and proposed future research (2-3 pages)
Evaluation:	Based on the provided application documents of each candidate, the evaluation committee will evaluate qualitatively: the adaption of the previous training and career to the profile offered, the recommendation letters, the main results achieved (papers, proceedings, etc.), the statement of past and proposed future research and other merits; taking in account the alignment of these items to the topic offered.
Incorporation:	Spring 2020 or as soon as possible thereafter. <i>The BCAM postdoctoral contract will start when the selected candidate has finished the PhD, i.e. after dissertation defence.</i>

