**Postdoctoral position**

**in Computer Modelling of Viscoelastic Core-Shell Droplets**

**Université de Grenoble-Alpes, Labex Tec21**

**Grenoble, France**

* Opportunity to contribute to a research program with strong international growing interest creating numerical models of viscoelastic interfacial mechanics governing the behavior of complex droplets and core-shell soft particles in flow. Results are expected to provide a deep understanding of the stability, the dynamics and the breakup of such microfluidic systems involved in many fields as food science, medecine, cosmetics and so on. Comparisons with own experiments will be performed.
* Located at Grenoble, an exciting scientific city in french Alpes mountains
* Full-time, 1 year contract.

The physics of soft core-shell particles in flow concerns many applied and fundamental scientific fields. The shape of soft particles results from fluid-structure interactions between the interface and the flow. The numerical complexity is that the searched solution is the shape of the particle. There are different methods to track the interface, each one has its benefits and drawbacks. We have developed a BEM-FEM code for which only the interfacial mechanical properties are necessary to know. It is valid in the limit of Stokes flow. Various kinds of surface rheology are developed well adapted to vesicles, capsules, polymersomes and clean droplets.

The program is dual: i) numerical investigations of some physical configurations and ii) numerical developments to include new algorithms (Fast Multipole Method, new method for the fluid solver, lubrication, GPU optimisation...).

The candidates are expected to have skills in numerical computing and in fluid mechanics and multiphasic systems. A good knowledge of these physical systems (droplets, soft matter, interface, elasticity...) will be an advantage.

Intending applicants are welcome to seek further information by emailing marc.leonetti@univ-grenoble-alpes.fr and giovanni.ghigliotti@univ-grenoble-alpes.fr