



## Postdoctoral Position

### Drops, threads, coils or piles of viscoplastic fluids

A postdoctoral researcher position is open in the Coussot's group at the University Gustave Eiffel (East Paris) (<http://philippecoussot.com>)

Complex flows of simple liquids, even with interfaces, are now relatively well known, but the flows of strongly non-linear materials such as yield stress fluids are still full of surprises. For example, a lot remains to be discovered concerning jets, drops, threads, coils or piles of viscoplastic fluids, which play a considerable role in various everyday life situations (dressings, toothpastes, creams, muds, inks, etc) and in particular in 3D printing of mineral pastes (clays, cement, concrete) for construction. It is expected from the post-doc to develop original experiments in that field, with the help of existing devices in our group (extrusion, MRI, rheometry, high-speed camera, PIV, etc) or original set-ups to be built (financial and technical supports are available).

The three main scientific orientations of our group in that field are: (i) the exploration of the constitutive equation of viscoplastic fluids, in particular in the solid regime (i.e. before yielding) and under flow conditions differing from simple shear (e.g. elongation); (ii) the development of new rheometrical techniques for yield stress fluids (e.g. can some of the above flows (jets, drops, etc) be used to directly determine some rheological fluid characteristics?); (iii) the description of complex or remarkable flow characteristics with simple analytical tools that can be used for engineering predictions.

Some references in that field: *Physical Review E*, 72, 031409 (2005); *Soft Matter*, 9, 5898 (2013); *Physical Review Letters*, 120, 048001 (2018)

The candidate is expected to have a PhD, a solid background in physics and/or fluid mechanics, and be strongly motivated by research.

The initial contract is for 12 months, possibly extendable depending on achievements.

Gross salary: 2700 euros per month.

The start date for this position is flexible, and may be immediately or as late as the beginning of the next calendar year. The selection process will start immediately and go on until the position is filled. To apply or inquire further, please contact Prof. Coussot at [philippe.coussot@univ-eiffel.fr](mailto:philippe.coussot@univ-eiffel.fr)

For applications, please include a current C.V. and a letter of motivation, along with the name of two references.