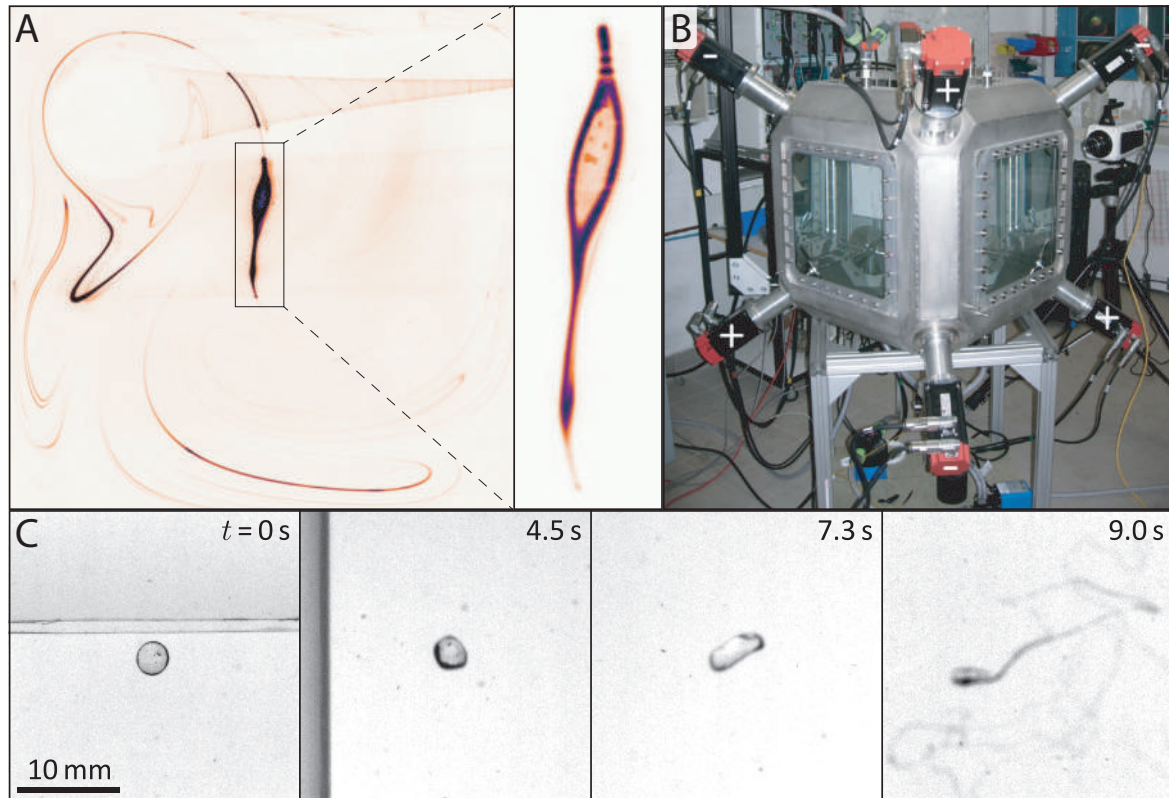


Post doctoral researcher position available on *Non-isoviscous Turbulent Flows*



(A) Mixing of a viscous blob in a *non-inertial* chaotic flow. (B) The 'washing-machine' facility. (C) Preliminary experiment in a turbulent flow with a high viscosity contrast. Adapted from ^{1,2}.

Turbulent flows are efficient at dispersing and mixing substances (e.g., heat, nutrients, pollutants), which has important consequences for many geophysical and industrial contexts. While the underlying physics is understood for uniform fluid properties, it is not known in the case when the substances to be mixed have a contrast in viscosity: **How and how much does an heterogeneity in viscosity change the flow? Delay stretching? Affect mixing?**

To answer these fundamental questions, we open a 14-month post-doctoral research position (with possibilities of extending duration). The research will build on experiments on isotropic turbulent flows. It will also benefit from recent progresses in the description of soft bodies deformation in turbulent flows² and of non-isoviscous chaotic flows³.

This collaborative project between **IUSTI** and **IRPHÉ** (both labs belonging to Aix-Marseille Univ.) is funded by the ANR. Candidates with a background in Physics, Fluid Mechanics or Soft Matter and a strong taste for experiments and open problems are invited to apply (CV+letter of support).

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¹ Castaldi 'Mixing liquids of unequal viscosity', *PhD Thesis* (2024)

² Bounoua, Bouchet & Verhille, *PRL* **121** (2018) — Verhille, *JFM* **933** (2022)

³ Castaldi, Metzger & Lhuissier, *PRL* **133** (2024)