



ESPCI
Laboratoire PMMH
10 rue Vauquelin, 75231 Paris Cedex 05



Séminaire PMMH

Salle de réunion du PMMH, Campus Jussieu, Bâtiment Cassan A, 1^{er} étage

Vendredi 5 juillet 2019, 11h00-12h00

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Dynamics and stability of a liquid-gas interface in the presence of micro-particles

This French-Japan-US collaborative study examines the influence of the micro-particles on the stability of the liquid-air interface. We will first revisit the effect of these particles on the dynamics of the interface in a confined "1D" geometry [1] with the formation of armored bubbles (fig. 1(a)) and will show that they can lead to the fingering pattern formation on a "2D" configuration (fig. 1(b)) [2]. We will then present the dynamics of a contact line impacting a single microparticle (fig. 2) or an array of micropillars [3,4].

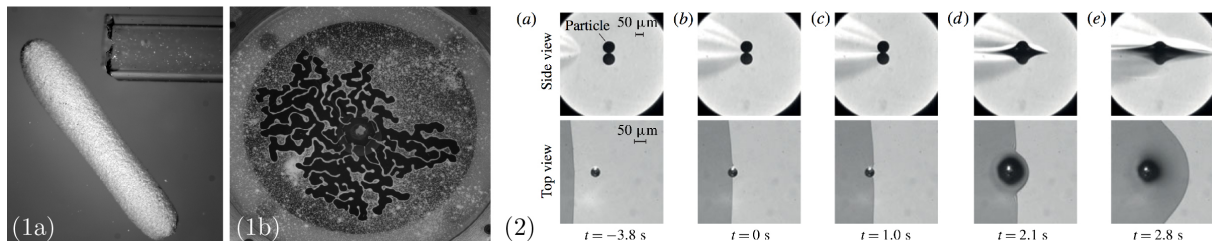


FIG. 1 : (a) An armored bubble (b) Fingering patterns in a Hele-Shaw cell. FIG. 2 : Behaviour of an advancing liquid wedge being incident on a spherical particle of diameter 50 μm .

- [1] Farzam Zoueshtiagh, Michael Baudoin, David Guérin, (2014) Capillary tube wetting induced by particles : towards armoured bubbles tailoring, *Soft Matter*, 2014,10, pp. 9403-9412.
- [2] I. Bihi, M. Baudoin, J.E. Butler, C. Faille, F. Zoueshtiagh, (2016) Inverse Saffman-Taylor Experiments with Particles Lead to Capillarity Driven Fingering Instabilities, *Phys. Rev. Lett.* 117, 034501
- [3] L. Mu, D. Kondo, M. Inoue, T. Kaneko, H. Yoshikawa, F. Zoueshtiagh, I. Ueno (2017) Sharp acceleration of a macroscopic contact line induced by a particle, *Journal of Fluid Mechanics - Rapid Communications*, Vol. 830, pp. 830-R1-R12.
- [4] Lizhong Mu, Harunori N. Yoshikawa, Farzam Zoueshtiagh, Tetsuya Ogawa, Masahiro Motosuke, Ichiro Ueno (2019) Quick Liquid Propagation on a Linear Array of Micropillars, *Langmuir*, in press.

Attention : pas de séminaire les semaines à venir : bonnes vacances

Prochain séminaire : vendredi 13 septembre 2019, Patrick Bot (Ecole Navale)

Programme des séminaires : www.pmmh.espci.fr, onglet *Séminaires PMMH*

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