

Abstract Submitted  
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**The elasto-pipette: grabbing water with thin elastic sheets**

PEDRO REIS, SUNGHWAN JUNG, Department of Mathematics, MIT, CHRISTOPHE CLANET, LadHyX, Ecole Polytechnique, JOHN BUSH, Department of Mathematics, MIT — Py *et. al.* [1] have recently shown that the coupling between surface tension and elasticity of thin sheets can be used to induce self-assembly of flat elastic objects into three dimensional structures: *capillary origami* at play. We here present the results of a combined experimental and theoretical investigation of a related system in which a thin elastic petal-shaped plate is withdrawn from the flat interface of a liquid bath. As the plate is drawn upwards, it deforms due to interfacial and hydrostatic forces, up to a point where it completely detaches from the interface. If the bending stiffness of the plate is sufficiently low, upon detachment a regime can be attained where the petal-shaped plate can fully enclose and therefore *grab* a drop from the liquid bath. We propose this mechanism as a robust means by which to manipulate and transport small fluid droplets. [1] C. Py, P. Reverly, L. Doppler, J. Bico, B. Roman and C. Baroud, *Phys. Rev. Lett.* **98**, 156103 (2007).

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