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An elastic meniscus ARNAUD ANTKOWIAK, MARCO RIVETTI, Institut d'Alembert, Université Pierre et Marie Curie and CNRS, Paris, France — A liquid surface touching a solid usually deforms in a near-wall "meniscus" region. In this study, we replace the free surface with a soft polymer and examine the deformation of this "elastic meniscus," result of the interplay between elasticity and hydrostatic pressure. In particular we demonstrate both experimentally and theoretically the existence of a limit height of liquid tenable before collapse of this structure. As a side result, we show that the effort needed to pull an object deposited on a fluid surface is increased with its elasticity, as is common in adhesion phenomena. Finally we discuss the consequences of our results in terms of metrology and optimal tailoring of "elasto-pipettes."

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