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Measuring the force of drag on air sheared sessile drops ANDREW J.B. MILNE, BRIAN FLECK, ALIDAD AMIRFAZLI, University of Alberta — To blow a drop along or off of a surface (i.e. to shed the drop), the drag force on the drop (based on flow conditions, drop shape, and fluid properties) must overcome the adhesion force between the drop and the surface (based on surface tension, drop shape, and contact angle). While the shedding of sessile drops by shear flow has been studied [Milne, A. J. B. & Amirfazli, A. *Langmuir* 25, 14155 (2009).], no independent measurements of the drag or adhesion forces have been made. Likewise, analytic predictions are limited to hemispherical drops and low air velocities. We present, therefore, measurements of the drag force on sessile drops at air velocities up to the point of incipient motion. Measurements were made using a modified floating element shear sensor in a laminar low speed wind tunnel to record drag force over the surface with the drop absent, and over the combined system of the surface and drop partially immersed in the boundary layer. Surfaces of different wettabilities were used to study the effects of drop shape and contact angles, with drop volume ranged between approximately 10 and 100 microlitres. The drag force for incipient motion (which by definition equals the maximum of the adhesion force) is compared to simplified models for drop adhesion such as that of Furmidge [Furmidge, C. G. L., *J. Colloid Sci.* 17, 309 (1962).]

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