

Abstract Submitted  
for the DFD17 Meeting of  
The American Physical Society

**Takeoff, flight and landing of self-jumping microdroplets** PIERRE LECOINTRE, TIMOTHEE MOUTERDE, CHRISTOPHE CLANET, DAVID QUERE, Ecole Polytechnique ESPCI — Drops on highly repellent materials jump after they coalesce. The jumping velocity was shown for millimetric drops to arise from a balance between capillarity and inertia and we first extend this result down to 5 micrometers, that is, in the range of dew. Such micrometric droplets are expelled at velocity as high as 80 cm/s. In contrast, smaller drops are slower, which we describe by taking into account viscous dissipation. Our model also explains why asymmetric coalescences lead to slower jumps. We finally investigate the flight, jumping height and trajectory of these microdroplets until they fall back on the substrate. Although these drops were strongly expelled upwards, it is found that they never bounce when they come back, which is shown to result from a lack of kinetic energy for retaking off.

Pierre Lecointre  
Ecole Polytechnique  
ESPCI

Date submitted: 30 Jul 2017

Electronic form version 1.4