

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Droplets on bent fibers** FLORIANE WEYER, GRASP, University of Liege, ZHAO PAN, Splash Lab, Utah State University, WILLIAM PITT, Brigham Young University, TADD TRUSCOTT, Splash Lab, Utah State University, NICOLAS VANDEWALLE, GRASP, University of Liege — Droplets on fibers are part of our everyday lives. Many phenomena involve drops and fibers such as the formation of dew droplets on a spiderweb, the trapping of water droplets on cactus spines or the motion of droplets on wetted moss hairs. These topics have been widely studied. In particular, Lorenceau *et al.*<sup>1</sup> determined the critical volume of a water droplet hanging on a horizontal fiber. Here, we address a similar question : we try to find out the maximum droplet size on bent fibers, which are able to hold significantly more water than horizontal fibers. Indeed, we noticed that, in nature, some specific plants can hold large rain droplets thanks to their Y-shaped leaves. We try to mimic these structures with nylon fibers, of different diameters, bent with various angles. For each set-up, the critical water volume is determined. Finally, we propose models of the physics involved in determining droplet size that could be implemented in future fiber-based microfluidic devices.

<sup>1</sup>Lorenceau É, Clanet C, Quéré D (2004) Capturing drops with a thin fiber. *Journal of colloid and interface science* 279(1):192197

Floriane Weyer  
University of Liege

Date submitted: 10 Nov 2016

Electronic form version 1.4