

Abstract Submitted  
for the DFD19 Meeting of  
The American Physical Society

**Redwood-inspired fog harps**<sup>1</sup> WEIWEI SHI, THOMAS VAN DER SLOOT, BRANDON HART, BROOK KENNEDY, JONATHAN BOREYKO, Virginia Tech — In California, coastal redwoods (*Sequoia sempervirens*) obtain 34% of their annual hydrologic input from fog drip, as fog droplets are able to effectively slide along the parallel needle arrays to fall onto the soil. Inspired by the redwoods, we recently developed anti-clogging “fog harps” comprised of an array of vertically oriented wires that harvested 2-3X more water compared to traditional meshes during experiments with scale-model in lab. Here, we conduct outdoor field tests for a full-scale fog harp placed side-by-side with a mesh harvester. The harp harvested anywhere from 5X to 70X more water compared to the mesh, depending upon the weather conditions. This enhancement is attributed to the harp’s minimal contact angle hysteresis along the drainage pathway, which completely prevents clogging and even allows for water collection in subpar fog conditions. On the harp, droplets tended to slide along a single wire at a critical volume of only about 0.1 mm<sup>3</sup>. In contrast, most of the fog collected by the mesh remained pinned, resulting in its gradual evaporation. We expect that the fog harp’s unprecedented collection efficiency will expand the regions where fog harvesting is a viable means of water harvesting.

<sup>1</sup>We gratefully acknowledge GreenShift Corporation for providing financial support.

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Date submitted: 26 Jul 2019

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