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Refreshing Music: Fog Harvesting with Harps. WEIWEI SHI, MARK ANDERSON, BROOK KENNEDY, JONATHAN BOREYKO, Virginia Tech — Fog harvesting is a useful technique for obtaining fresh water in arid climates. The wire meshes currently utilized for fog harvesting suffer from dual constraints: coarse meshes cannot efficiently capture fog, while fine meshes suffer from clogging issues. Here, we design a new type of fog harvester comprised of an array of vertical wires, which we call "fog harps." To investigate the water collection efficiency, three fog harps were designed with different diameters (254 μm, 508 μm and 1.30 mm) but the same pitch-to-diameter ratio of 2. For comparison, three different size meshes were purchased with equivalent dimensions. As expected for the mesh structures, the mid-sized wires performed the best, with a drop-off in performance for the fine or coarse meshes. In contrast, the fog harvesting rate continually increased with decreasing wire diameter for the fog harps, due to its low hysteresis that prevented droplet clogging. This resulted in a 3-fold enhancement in the fog harvesting rate for the harp form factor compared to the mesh. The lack of a performance ceiling for the harps suggest that even greater enhancements could be achieved by scaling down to yet smaller sizes.

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