

Abstract Submitted
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Spontaneous Movement of Water Droplets on Copper and Aluminum Surfaces Using Surface Tension Gradients MUIDH ALHESHIBRI, Miami University, Department of Physics, NATHANIEL ROGERS, Miami University, Department of Mechanical and Manufacturing Engineering, KHALID EID, Miami University, Department of Physics, ANDREW SOMMERS, Miami University, Department of Mechanical and Manufacturing Engineering — We report a simple technique to move water droplets on hydrophobic Cu surfaces containing a hydrophilic Al background. A surface tension gradient due to a wedge shape creates a significant net driving force which moves the droplets towards the end of the wedge that contains more Al surface area. Droplet motion has been observed on both horizontal surfaces and surfaces oriented vertically against gravity. It was found that the speed depends on the head angle of the triangle and the contact angles of the droplet on the Al and Cu regions. Furthermore, the effect of the surface patterning and oxidation of the metal on water droplet behavior has also been studied.

Reference:

M.H. Alheshibri et al. *Appl. Phys. Lett.* **102**, 174103 (2013)

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