

Abstract Submitted  
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**Propelling a water drop with the vapor-mediated Marangoni effect**<sup>1</sup> SEUNGHOO KIM, HO-YOUNG KIM, Seoul National University — We show that a water drop on solid surfaces can be propelled just by placing a volatile alcohol drop nearby. It is found to be because the water-air interface near the alcohol drop mixes with alcohol vapor, thereby locally lowering the surface tension. The surface-tension-gradient induces the motion of the water drop, enabling the trajectory control of water drops through the motion of remote alcohol drops. This vapor-mediated Marangoni effect also gives rise to other interesting interfacial flow phenomena, such as nucleation of holes on a water film and ballooning of a water drop hanging from a syringe needle with the approach of an alcohol drop. We visualize such interfacial dynamics with a high-speed camera and rationalize their salient features by scaling analysis.

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