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Marangoni flow influences apparent contact angle of single component volatile liquids on completely wetting surfaces[1] SHAYANDEV SINHA, Rowland Institute at Harvard, Harvard University, DIETER BAUMGARTNER, ETH Zurich, SAMIRA SHIRI, Rowland Institute at Harvard, Harvard University, XINGKUN MAN, MASAO DOI, Beihang University, NATE CIRA, Rowland Institute at Harvard, Harvard University — Volatile single-component liquids can exhibit apparent contact angles, even on completely wetting surfaces. Numerous reports have established that evaporation, capillarity, and viscous dissipation contribute to establishing this angle. A largely separate body of work has explored thermal Marangoni flows in evaporating droplets on partially wetting surfaces. Recent work has considered the role of both evaporation-driven stabilization and Marangoni flow, and found that both are important for droplet shape when evaporation is fast (Tsoumpas, *et al*, 2015). Here we show how manipulating the substrate alone can alter Marangoni flow and impact the apparent contact angle. We present data on scenarios where faster evaporation leads to a lower apparent contact angle, opposing the prediction from evaporation-driven stabilization alone. Paired data from visualizing internal flows for various liquids and substrates shows that these effects on angle are consistent with observed Marangoni flows. These results underscore the importance of considering Marangoni flow in understanding the shape of evaporating highly volatile droplets on fully wetting surfaces.

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