

Abstract Submitted
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Drying of a coffee drop: differences between dry and wet tables?¹

FRANÇOIS BOULOGNE, FRANÇOIS INGREMEAU, HOWARD STONE, Princeton University — We have all experienced that a coffee drop drying on a table leaves a ring stain. The radial flow in the drop coupled with a larger drying flux at its edge are the reasons for the particle accumulation in the liquid wedge. However, if the substrate is wet, the liquid surrounding the drop modifies the vapor distribution, and thus the drop evaporation dynamics. Our experimental observations show that the drying kinetics and the particle motion are affected by the ambient conditions. We rationalize our experimental findings with a model that describes the spatially varying evaporation as well as the temporal evolution of the particles forming the ring. We believe that these results are of practical interest for printing applications involving multiple drop systems or drying surfaces.

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