

Abstract Submitted
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Energy transport during sessile-water-droplet evaporation¹ HADI GHASEMI, University of Toronto, CHARLES WARD, University of Toronto — Energy transport mechanisms for a steadily evaporating water droplet maintained on Cu or Au(111) surfaces are compared. In the absence of buoyancy-driven convection, thermal conduction and thermocapillary convection are the active modes of energy transport. The dominant mode varies along the liquid-vapor interface. Although thermal conduction is the dominant mode in regions far from the contact line, thermocapillary convection is by far the larger mode of energy transport near the three-phase contact line. The latter region is where most of the droplet evaporation occurs. Evaporation experiments on both Cu and Au(111) suggest that the thermocapillary convection provides more than 92% of the total energy required for the evaporation.

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