VAPOUR POINT-SOURCE CONTROL AND MANIPULATION OF EVAPORATING DROPLETS

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The manipulation and control of evaporating droplets are important for phenomena as diverse as printing, thin-film deposition and self-assembly. Typical approaches to perform such tasks rely on controlling the intrinsic physical, chemical and/or geometrical properties of the droplet and its environment at the onset of the evaporation process. Here, I will show a novel experimental technique to generate recirculating Marangoni flows within the droplet during evaporation. In particular, the deterministic emergence and real-time control of these flows can be achieved within the evaporating droplet by relying on an external point source of vapour positioned near the droplet's surface. Depending on the droplet's initial composition, these flows can be either used to control in-situ deposition of materials when the droplet is sessile [1] or, alternatively, they can be used to induce controllable 2D manipulation of a moving droplet for applications in printing, materials deposition and for controllable reactions [2].

REFERENCES:

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