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How surfactants influence evaporation-driven flows ROBERT LIEPELT, ALVARO MARIN, MASSIMILIANO ROSSI, CHRISTIAN J. KÄHLER, Bundeswehr University Munich — Capillary flows appear spontaneously in sessile evaporating drops and give rise to particle accumulation around the contact lines, commonly known as *coffee-stain effect* (Deegan *et al.*, Nature, 1997). On the other hand, out-of-equilibrium thermal effects may induce Marangoni flows in the droplet's surface that play an important role in the flow patterns and in the deposits left on the substrate. Some authors have argued that contamination or the presence of surfactants might reduce or eventually totally annul the Marangoni flow (Hu & Larson, J. Phys. Chem. B, 2006). On the contrary, others have shown an enhancement of the reverse surface flow (Sempels *et al.*, Nat. Commun., 2012). In this work, we employ Astigmatic Particle Tracking Velocimetry (APTV) to obtain the 3D3C evaporation-driven flow in both bulk and droplet's surface, using surfactants of different ionic characters and solubility. Our conclusions lead to a complex scenario in which different surfactants and concentrations yield very different surface-flow patterns, which eventually might influence the colloidal deposition patterns.

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