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**Dynamics of surfactant-laden evaporating droplets** GEORGE KARAPETSAS, National Technical University of Athens, KIRTI CHANDRA SAHU, Indian Institute of Technology Hyderabad, OMAR K. MATAR, Imperial College London — We consider the flow dynamics of a thin evaporating droplet in the presence of an insoluble surfactant and small particles in the bulk. Evolution equations for the film height, the interfacial surfactant and bulk particle concentration are derived using a lubrication model coupled by a constitutive relation for the dependence of the viscosity on local particle concentration. An important ingredient of our model is that it takes into account the fact that the surfactant adsorbed at the surface hinders the evaporation. Time-dependent simulations are performed to determine how the presence of surfactants affects the evaporation and flow dynamics with and without the presence of particles in the bulk. We discuss the various mechanisms that affect the shape of the droplet as it evaporates as well as the resulting pattern of particle deposition.

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