

Abstract Submitted
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Structure build-up and evolution in the drying of sessile blood droplets¹ RICHARD CRASTER, ARAN UPPAL, OMAR MATAR, Imperial College London — Experimental observations have recorded blood undergoing a sol-gel transition during the evaporation process. Consequently, the rheology becomes non-uniform throughout the droplet and exhibits transitional complex phenomena that we must capture if we wish to accurately model the evaporative/cracking process. We propose a model where thixotropy is introduced to capture the evolving rheology as evaporation occurs. Thixotropy is often used to describe fluids which exhibit a decrease in viscosity due to flow and subsequent slow recovery of viscosity after the cessation of the flow. We introduce an additional parameter to describe the internal structure of the fluid at each point and consider a droplet in the limit of the lubrication approximation. We present a discussion of our results that demonstrates the dependence of structure build-up, which accompanies the spatio-temporal evolution of the drop, on system parameters.

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