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Flow structure of Marangoni contracted sessile drops STEFAN KARPITSCHKA, OLINKA RAMIREZ, Max Planck Institute for Dynamics and Self Organization, Göttingen, Germany, MICHEL A. HACK, Physics of Fluids Group, University of Twente, Enschede, The Netherlands, WOJCIECH KWIECINSKI, E. STEFAN KOOLIJ, Physics of Interfaces Group, University of Twente, Enschede, The Netherlands, TIM J. SEGERS, JACCO H. SNOEIJER, Physics of Fluids Group, University of Twente, Enschede, The Netherlands — A droplet of two miscible liquids should spread over a high-energy surface until complete wetting. However, if one component is more volatile and has a higher surface tension, a quasi-stationary non-vanishing apparent contact angle can be observed. This is caused by the enrichment of the residual component near the contact line and the associated surface tension gradient. A hydrodynamic-evaporative model, using a long-wave approximation for the droplet coupled to diffusion limited evaporation predicts a balance between Marangoni and capillary flows and a power law between the apparent contact angle and the ambient humidity [Karpitschka et al., *Langmuir* (2017)]. This explanation differs from a recent model, where the low surface tension of a precursor around the droplet is held responsible [Benusiglio et al., *Soft Matter* (2018)]. A discrimination between possible mechanisms requires experimental resolution of the flow in the drop. We present uPIV measurements and relate them to the apparent shape of the drop, for aqueous solutions of various short chain carbon diols. Depending on the surface activity of the diol, its concentration, and the ambient humidity, we observe different regimes, indicating that multiple mechanisms lead to the observed angles.

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