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Controlling foam drainage in a 2D microchamber using thermocapillary stress VINCENT MIRALLES, ESPCI, ISABELLE CANTAT, IPR, MARIE-CAROLINE JULLIEN, ESPCI, MMN TEAM, IPR TEAM — We investigate the drainage of a 2D microfoam in a vertical Hele-Shaw cell, and show that the Marangoni stress at the air-water interface generated by a constant temperature gradient applied *in situ* can be tuned to control the drainage. The temperature gradient is applied in such a way that thermocapillarity and gravity have an antagonist effect. We characterize the drainage over time by measuring the liquid volume fraction in the cell and find that thermocapillarity can overcome the effect of gravity, effectively draining the foam towards the top of the cell, or exactly compensate it, maintaining the liquid fraction at its initial value over at least 60 s. We quantify these results by solving the mass balance in the cell, and provide insight on the interplay between gravity, thermocapillarity and capillary pressure governing the drainage dynamics. Finally we use this model system to provide insight in the drainage dynamics for a more complex interfacial rheology, using insoluble surfactants inducing a solutocapillary effect.

Vincent Miralles
ESPCI

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