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**Pattern formation of drops in thermocapillary migration.** (English) Zbl 1189.76128  
[Int. J. Heat Mass Transfer](#) 49, No. 13-14, 2265-2276 (2006).

Summary: The behavior of a drop cloud in thermocapillary motion in zero gravity is examined for both mono-dispersed and poly-dispersed cases. Numerical simulations of the thermocapillary motion of two- and three-dimensional fully deformable light drops are presented. The Navier-Stokes equations coupled with the energy conservation equation are solved by a front-tracking/finite-difference method. The material properties of the drop fluid and the ambient fluid are different, and the interfacial tension depends on the temperature. At moderate Reynolds ( $Re$ ) and Marangoni ( $Ma$ ) numbers, the results show that drops form layers nearly perpendicular to the temperature gradient.

**MSC:**

[76D05](#) Navier-Stokes equations for incompressible viscous fluids  
[76D45](#) Capillarity (surface tension) for incompressible viscous fluids  
[80A20](#) Heat and mass transfer, heat flow (MSC2010)

Cited in 11 Documents

**Keywords:**

[thermocapillary migration](#); [zero gravity](#); [pattern formation](#); [front-tracking method](#)

**Full Text:** [DOI](#)