

Abstract Submitted
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Optically-Controlled Thermocapillary Actuation of Microdroplets at a Fluid Interface DANIEL BORRERO, EDWIN F. GRECO, JOHN E. WIDLOSKI, DMITRI L. VAINCHTEIN, ROMAN O. GRIGORIEV, MICHAEL F. SCHATZ, Center for Nonlinear Science and School of Physics, Georgia Institute of Technology, Atlanta, GA 30332 — Laser actuation can be used to perform microfluidic operations on droplets floating at a liquid-air interface by exploiting the thermocapillary effect. A model has been developed to describe the velocity field in the interior of such droplets. Measurements of the temperature field in the substrate, which are crucial for accurate numerical simulations of the system, are presented. Fluorescent tracers are used to visualize the three-dimensional mixing properties of the flow in the interior of the droplet using dual microscopes.

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