

Abstract Submitted
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Time-Resolved imaging Studies of Laser-Induced Jet Formation in Non-Newtonian Liquid Films EMRE TURKOZ, CRAIG ARNOLD, Princeton University — Blister-actuated laser-induced forward transfer (BA-LIFT) is a nozzle-less printing technique that offers an alternative to inkjet printing. The lack of a nozzle allows for a wider range of inks since clogging is not a concern. In this work, a focused laser pulse is absorbed within a polymer layer coated with a thin liquid film. The pulse causes a rapidly expanding blister to be formed that induces a liquid jet. Various well-studied non-Newtonian solutions are tested to examine how the shear-thinning and shear-thickening characteristics affect jet formation. The time delay between pulses is varied along with the energy, and different regimes of transfer are identified. We explore how Ohnesorge number, Weber number and spot size affect the jet formation and evaluate parameters that lead to breakup of jets into droplets.

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