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Time resolved deformation of a thin polyimide film absorbing layer for laser-induced forward transfer printing[1] MATTHEW BROWN, NICHOLAS T. KATTAMIS, CRAIG B. ARNOLD, Princeton University — Laser-induced forward transfer (LIFT) is a versatile direct write technique capable of printing high resolution patterns from a variety of functional materials. In LIFT, the material to be printed is coated as a thin liquid or solid donor film onto the bottom surface of a glass substrate and held in close proximity above a receiver substrate. A pulsed laser is focused through the glass, into the donor film, initiating the transfer of a small amount of material onto the receiver. In order to shield sensitive donor materials from direct laser irradiation, sacrificial absorbing layers are often deposited before the donor is coated. Recently, we demonstrated the use of a thin polyimide film absorbing layer to provide damage free transfers of sensitive rheological donor materials. Transfer is initiated by the laser-induced formation of a rapidly expanding, sealed blister on the polyimide film which mechanically ejects the adjacent donor material without significant heating or contamination. In this talk, we present time resolved images of the blister deformation as well as the dynamics of an ejected liquid donor material.

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