

# Intact printing of solid phase materials using femtosecond laser-induced forward transfer technique

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Laser-Induced Forward Transfer (LIFT) is an important direct-write technique for printing of materials and devices with micron and sub-micron resolution [1, 2]. In the conventional LIFT technique the material to be printed (the *donor*) is coated onto a laser-transparent substrate (the *carrier*). A laser pulse is then focussed at the carrier-donor interface which melts or ablates the donor and transfers it onto a nearby placed substrate (the *receiver*) as shown in Fig. 1. The inherent disadvantage of the conventional LIFT technique is that the donor acts as its own propellant and hence gets damaged during the transfer. Many complementary LIFT techniques have been developed in recent years to avoid this damage and to achieve an intact transfer of donors in the solid phase such as Dynamic Release Layer (DRL)-LIFT [3], Ballistic Laser-Assisted Solid Transfer (BLAST) [4] and Laser Induced Thermal Imaging (LITI) [5]. A brief overview of these techniques, the successes achieved by them to date, their current challenges and the ongoing work in this field will be presented.

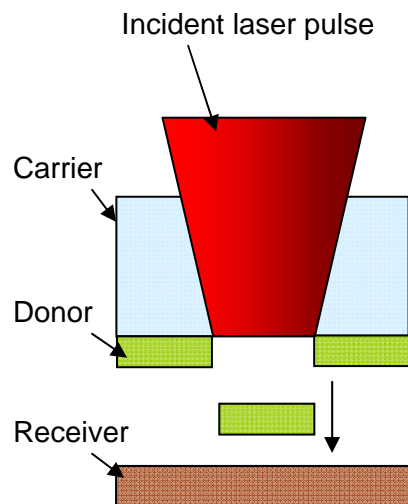


Figure 1: Schematic of the conventional LIFT technique

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- [5] G. B. Blanchet, et al. *Applied Physics Letters* **82**(3), 463-465 (2003).