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## Laser-induced forward transfer (LIFT) of micro-LED devices

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### Abstract

We explore the application of laser-induced forward transfer (LIFT) techniques for laser printing of micro-LED devices. LIFT enables printing of functional materials ranging from silver nano-inks to working devices such as bare-die semiconductor components over a wide range of surfaces in an additive fashion achieving high transfer throughputs. LIFT is a non-mechanical, non-contact device transfer process operating beyond the size limits of pick-and-place methods. That is, LIFT offers a 'lase-and-place' approach for transferring the building blocks required for the fabrication of a wide range of functional circuits. LIFT techniques are being investigated by the U.S. Naval Research Laboratory to print micro-LED devices for applications in hybrid electronics. Examples of structures and circuits made by LIFT and their role in the development of next generation laser micro processing techniques will be presented.

Keywords: Laser-induced forward transfer; Additive manufacturing; Micro-LED

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