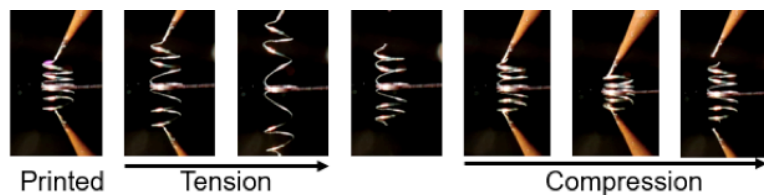
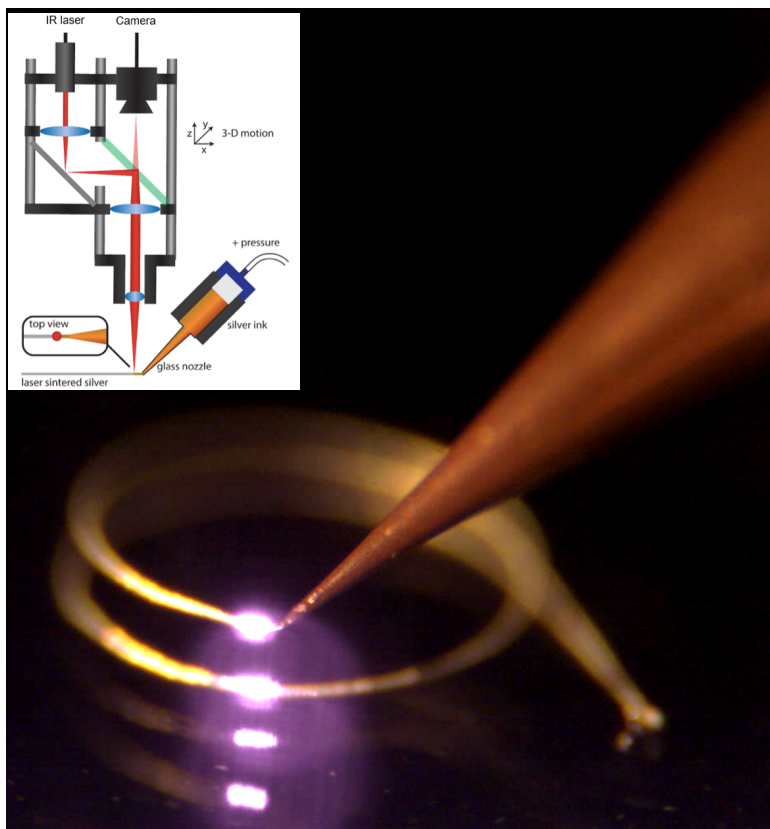


Laser-Assisted Direct Ink Writing of Metallic Architectures



Work was performed at Harvard University

Scientific Achievement

Laser-assisted direct ink writing (L-DIW) is used to pattern highly conductive, ductile metallic interconnects, springs, and free-standing spiral architectures on flexible and rigid substrates.

Significance and Impact

A new printing method is introduced for one-step fabrication of conductive and ductile metal features in planar and complex 3D shapes that combines direct ink writing with “on-the-fly” laser annealing.

Research Details

- A new printhead was designed that integrates an 808 nm laser alongside an ink deposition nozzle
- Heat transfer along printed silver wires is modeled as a function of printing speed, laser intensity and pulse duration to optimize the printing process
- Our L-DIW approach enables patterning of concentrated silver inks in myriad form factors

M. Skylar-Scott, S. Gunasekaran and J.A. Lewis, “Laser-Assisted Direct Ink Writing of Planar and 3D Metallic Architectures”, *PNAS* (2016). [in press]



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