

Printed Electronics Using Magnetohydrodynamic Droplet Jetting of Molten Aluminum and Copper

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Abstract

Magnetohydrodynamic (MHD) droplet jetting is a new printing technology capable of producing solid copper or aluminum conductive electronic traces. The process uses extremely inexpensive metal wire as the incoming feedstock material rather than metal powders or nanoparticle inks. Each jetted molten metal droplet partially overlaps with previously deposited material and solidifies to produce fully dense conductive metal traces whose electrical conductivities are extremely close to those of the bulk material. The process is therefore particularly well suited for high current applications.

This talk will first present an overview of how the MHD process works. Next, practical considerations with respect to electrical conductivity, substrate compatibility, adhesion, flexural performance, and other metrics will be discussed. Lastly, the talk will look forward to applications involving fabrication of highly conductive printed electronics on non-planar surfaces and structural electronics.

Short Bio: