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Title:

Patterning via EHD and inkjet printers

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Abstract:

Inkjet is widely known to consumers as a standard technology for home-office printers. However, there is a large range of applications in industry and research where inkjet is used in coating, dispensing, or patterning of materials.

One of the founding ideas of Notion Systems has been to replace the standard subtractive process chains in current fabrication processes with additive process steps in electronics manufacturing. The n.jet inkjet platform is used to produce electronic displays, printed circuit boards, semiconductor components, as well as high precision optical 3D parts, covering the full range of solutions from lab to fab.

Since inkjet is a digital printing process with drop on demand functionalities, which does not require masters or photomasks, the process of dispersing or patterning materials is straight forward. Depending on the used print head and physical properties of the material, resolutions down to 20 μm are possible. While this resolution limit makes ink-jet interesting for a large range of applications, it can be limiting for certain advanced technologies as for example display and semiconductor applications. For this reason, Notion Systems has entered into a collaboration with Scrona AG of Switzerland, which has developed a novel EHD printing technology.

Electrohydrodynamic (EHD) printing is a new high-resolution printing technology that enables maskless, direct-write, non-contact, conformal and additive patterning at the micron scale with a variety of ink systems and materials.

We will present a new research and development tool, the njet-EHD platform, which utilizes Scona's proprietary MEMS-based multi-nozzle EHD printheads, enabling print resolutions below 1 μm . This exceeds that of conventional inkjet printing by two to three orders of magnitude.

This paves the way for additive printing in applications dominated by photolithographic microfabrication and enables entirely new devices made from micro-scale building blocks.

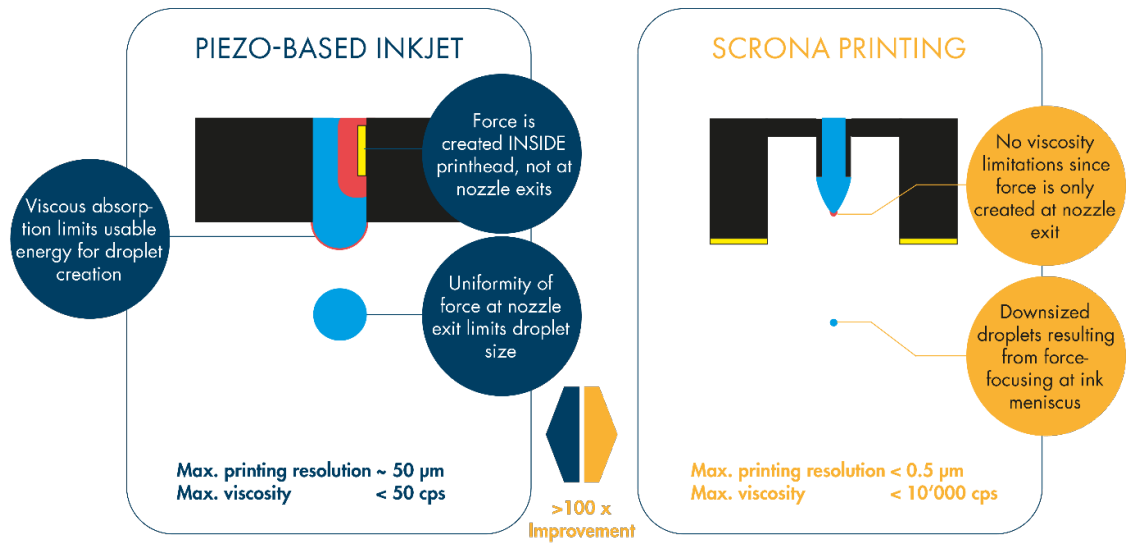


Figure 1: Comparison Between Inkjet & EHD Printing