

Direct Write Opportunities in Printed Electronics

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Abstract

Printed Electronics is moving from R&D to Manufacturing in a wide range of Commercial Markets. It is certainly not living up to the original hype but like many successful new technologies it is finding more and more novel applications. Many of these applications utilize more than one printing technologies and one of these is ink jet printing. Color OLED display panels, antennae, solar cells, fuel cells, organic transistors, conductors & passive components, sensors, board games, smart surfaces and microelectronic packaging are some of the emerging applications that indicate that ink jet technology is a key enabler for printable electronic manufacturing. Most of these applications require the printing of polymers or polymer solutions: both

conductive and semiconductive polymers; conductor inks; dielectrics; light emitting polymers; color filters and specialty bio-materials. Many of these applications are enabled by developments of nano-particle and micro-size particle inks.

In this paper we will:

- *Present a brief status of Printed Electronics*
- *Briefly introduce ink jet technology for printed electronics;*
- *Review specific technical applications carried out at MicroFab for the past 20 years;*
- *Discuss the key technology developments required for an ink jet printing production platforms; and*
- *Review the key infrastructure issues and gaps in the technology that have to be resolved.*