

## **Advances in Materials Development for Printed Electronics**

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Additive mass printing of functional electronic materials is considered to provide a powerful path to low-cost manufacturing of integrated transistor circuits. Such a high-speed approach requires successive in-line capable solution deposition of each layer on flexible substrates. Typical strategies reported include printing techniques such as screen and pad printing or ink jet. However, to be useful in mass production the final process must allow high throughput rates and high resolution. Therefore, offset and gravure printing represent attractive deposition techniques since they are commonly used for the production of newspapers and packaging with printing speeds of several m/s. Meeting printing requirements (formulation and rheology of inks, adhesion) and device performance is a key challenge for an efficient production process.

We develop different materials classes for CMOS circuits ranging from p- and n-type semiconductors to appropriate dielectrics which can be formulated into printable inks. For example, different P3HT grades are already available in commercial quantities.