

Ink-jet printed indium zinc tin oxide thin film transistors

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Thin film transistor(TFT) having indium zinc tin oxide(IZTO) active layer is fabricated and characterized using spin coating or inkjet printing. The inkjet printing technique for TFT fabrication can provide a potential cost advantage over amorphous and polycrystalline silicon-based technologies. So far, direct patterning of inorganic materials for the formation of device has been relatively rare compared to researches done with organic materials. In this study, metal halide precursors is used for ink, which was dissolved in an aprotic organic solvent. The precursor solution is capable of forming a uniform and continuous metal oxide film over a large area through spin coating or ink-jet printing. For TFT device, heavily doped Si is used as a common gate electrode and PECVD silicon nitride (SiNx) is used as a gate dielectric. Source and drain electrodes are deposited on the SiNx layer or IZTO layer, depending on inkjet printing of IZTO precursor or spin coating.