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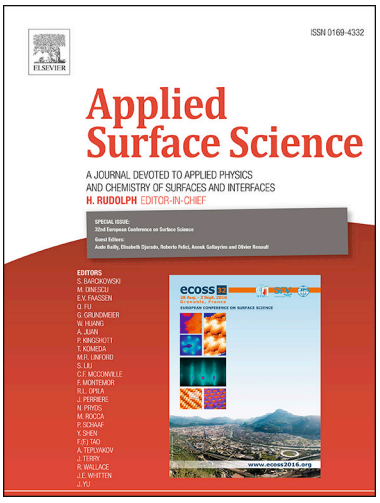

Full Length Article

Low Temperature Solution-Processed IGZO Thin-Film Transistors

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Low Temperature Solution-Processed IGZO Thin-Film Transistors

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Abstract:

We reported the low-temperature high performance IGZO TFTs by solution processing. The influence of IGZO composition over broad range on thin films and devices properties were investigated by a wide range of characterization techniques. The schematic of TFT solution-processed IGZO TFTs mobility with different compositions has been obtained. In order to achieve decent TFT performance, the In content should be much high for solution-processed IGZO TFTs. The optimal solution-processed IGZO TFTs with In:Ga:Zn=5:1:1 composition exhibited a large mobility of 9.1 $cm^2 V^{-1} s^{-1}$, low subthreshold swing of 0.22 V/decade, and high on/off ratio of 10^6 at 300 ^oC processing temperature.

Keywords: Solution-processed; Low-temperature; IGZO; Thin-film transistors

1. Introduction

Oxide thin-film transistors (TFTs) have attracted worldwide attention in the last decade owning to their high carrier mobilities, good transparency, smooth surfaces, and excellent uniformities.[1-6] A large number of oxide semiconductors have been