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Advanced Research of Oxide Thin Film Transistors

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Message from the Guest Editors

Oxide TFTs have found application in the display industry and are now candidates not only for the next generation of displays but also for new electronic paradigms expected to improve welfare (and revenue). These include flexible large-area systems, wearable electronics, and the device integration of a large number of “smart objects” for the Internet of Things and industrial and environmental monitoring.

However, meeting these ambitious goals requires a continuous push in the field of oxide TFTs to address limiting factors such as instability under thermal, illumination, and bias stress and limited charge mobility. Furthermore, there is an increasing focus on sustainable approaches, such as using In-free materials and solution processing techniques to lower costs and enable compatibility with roll-to-roll and printing processes. The investigation of material properties is of particular relevance in these cases, as more defective materials are expected. Regarding the device architecture, channel length scaling (< 1 μm) and improved architectures are required to meet operational frequencies for data communication (13.56 MHz in RFID/NFC tags).

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Message from the Editor-in-Chief

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