

Metal Oxide Thin-Film Transistor Markets

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Abstracts

Summary

Display backplanes fabricated with silicon TFTs are the industry standard for displays of all kinds. However, in the past decade various attempts have been made to move beyond silicon either on cost or performance grounds. A decade ago, the big promise seemed to come from organic transistors, but their promise has faded as their electron mobilities have proven to be woefully inadequate.

This report analyzes the market for the next wave of non-silicon TFTs to be pitched towards backplane and other applications. This wave uses metallic oxides and TFTs made from these materials promise electron mobilities of more or less the same level as amorphous silicon, but with lower costs. Interest in these materials is at a high point with some of the biggest names in displays – Sony, Sharp, Samsung, LG and Toshiba – making serious efforts to commercialize TFTs.

This report also examines the potential of these developments for new business revenues for materials firms that produce complex metallic oxide semiconductors. Until very recently, the addressable markets for such materials have been entirely in the R&D space. This report examines the key markets for oxide TFTs in the LCD, OLED and e-paper space. In addition, it also takes look at their role in other more speculative markets such as flexible displays, transparent electronics, sensors, RFID and even power electronics.

This report also presents an analysis and roadmap for the development of oxide OTFT technology both in terms of materials and manufacturing technology. In terms of the former, it takes a look at the difference that the arrival of p-type oxide semiconductors may have on the commercialization of oxide TFT technology. In addition, this report analyzes the market strategies for companies developing this technology and also

includes an eight-year forecast made by application and material type.

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ACRONYMS AND ABBREVIATIONS USED IN THIS REPORT

ABOUT THE AUTHOR

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