

Development of Organic Thin Film Transistors

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The anticipated advantages of organic field-effect transistors (OFETs) are low-cost processing and functionality not easily obtained from silicon devices. Currents through these devices are influenced by local fields at the semiconductor interfaces as well as voltages applied from gate electrodes. While the gate electrodes enable the function of the OFETs as traditional switching elements, local field effects can be utilized to radically tune the input-output relationships in OFETs and to transmit information about chemical vapor adsorbance to a circuit. While we have participated in the development of new organic semiconductors with high charge carrier mobilities, we are now focused on obtaining the most useful activities from these materials. This presentation will cover organic semiconductor design, recent trends and discoveries in the organic electronics field, and our latest results on the creation, stability, and utilization of internal fields to enable new architectures and applications.