

What We Learned at the University of Texas at Austin's 12th International Thin-Film Transistor Conference



More than thirty papers were presented on a wide range of topics covering thin-film transistors (TFTs) from organic to metal oxide to solid-state based active layers. Applications were shown from standard back panel drivers to sensors used in medical and environmental applications. The majority of the papers came from academic institutions or were co-operations between academic institutes and industry. Only one presentation came straight from a display manufacturer - LG.

KEY TAKEAWAYS

- For low temperature substrates (flexible polymers), polysilicon is a viable and frequently used material. The main issue is annealing - the main method currently used is Excimer Laser Anneal (ELA), which is rather expensive. A new promising approach is Blue Laser Diode Annealing, which is less energy intensive and more cost effective.
- Organics are still in development, there seems to be a never-ending number of different semi-conducting organics coming forth. Some show decent behavior with electron mobility approaching 10s of cm²/Vs. However, long-term stability is still an issue.
- There is a push for using TFTs as basis for sensors. For example: the gate dielectric can be replaced with a material that changes its dielectric behavior based on exposure to its environment. These can be, for example, organics that react with certain proteins, or absorb moisture or certain gases, etc.
- Several applications showed TFTs being used for medical sensing, particularly applied to the skin or body of humans.

Almost everyone uses lithography for making TFT, so the required number of process steps that are required are staggering... Shadow mask technology allows for a solid place within making TFTs.

Wolfgang Decker, Director Thin Films/Embedded Electronics