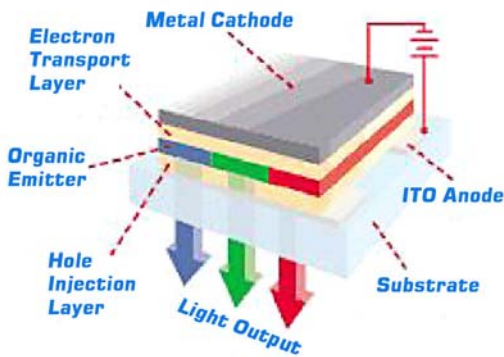


Polymer Light-Emitting Diodes (PLED) on Flexible Substrates

Display Research Lab / Dept. of Electrical and Computer Engineering

OLED Structure

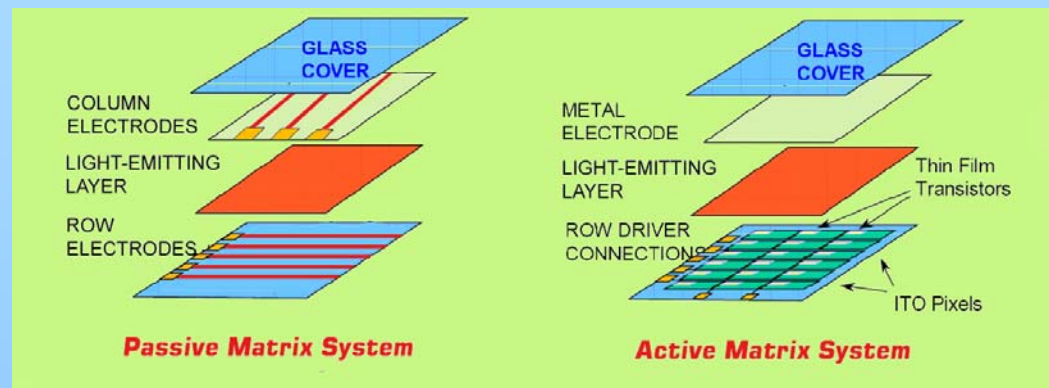


Types of Flat Panel display for portable electronics

Liquid Crystal Displays: The prevalent technology for portable, small footprint display applications today. Thin, long lifetime and low power consumption, but restricted as to response time, color fidelity and viewing angle.

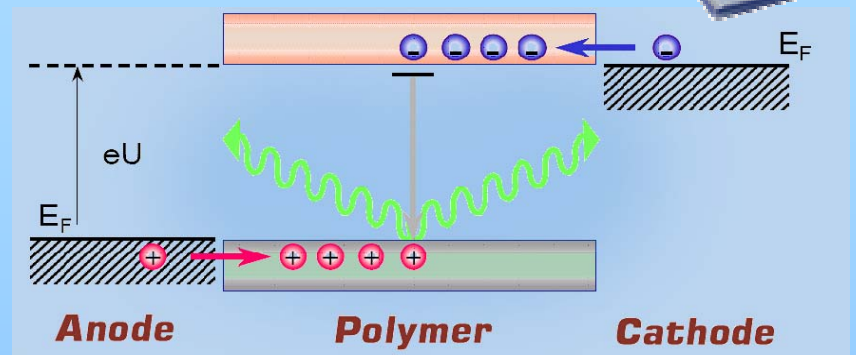
OLED (small organic molecule) and PLED (large polymer molecule) LED displays: Much simpler in their fabrication than LCDs, they don't require a backlight and polarizer filters, offer superior contrast, color reproduction, viewing angles and response time. OLED displays are slowly becoming commercially available (past 2 years)

**Samsung G3 Cell
Phone w/ flexible
2.2" PHOLED UDC
display.**



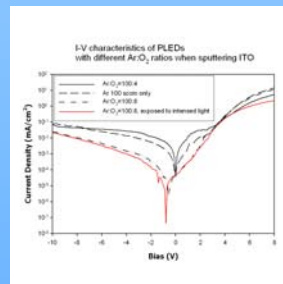
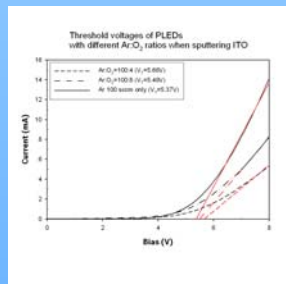
Passive Matrix Displays are easier to fabricate, but they are confined to low resolution systems.

Active Matrix Displays incorporate one or more transistors in each pixel, eliminating crosstalk and other passive-matrix shortcomings.

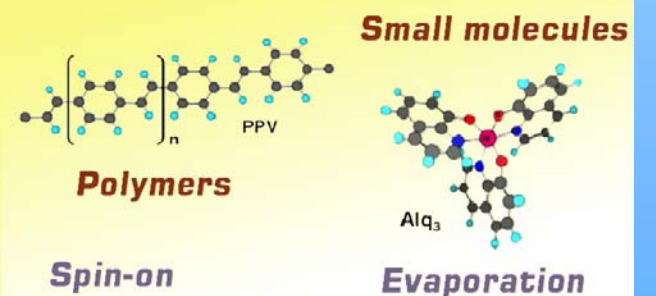


OLED Operation: Holes Injected from the anode & electrons injected from the cathode recombine producing photons

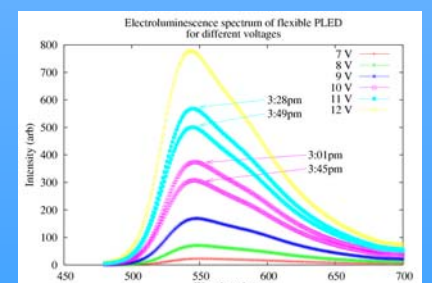
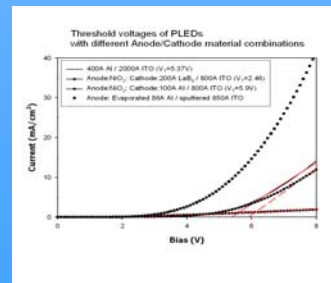
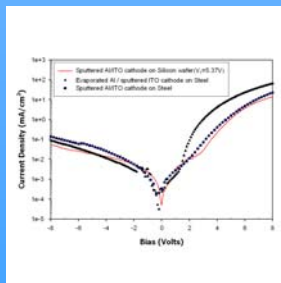
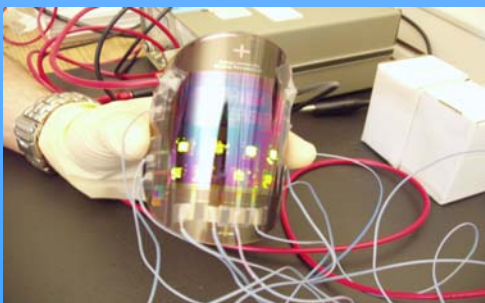
PLED on Silicon Wafer



Organic Semiconductor Molecules



PLED on Flexible Steel Foil



Flexible Passive Matrix Displays have been fabricated completely in-house, on thin stainless steel foils.

Recently fabricated a seven-segment display

**on flexible steel foil
(first display of
its kind)**



**Photos of 3cmx2cm
seven-segment display
in operation**

