

Needs and Solutions of Future Flat Panel Display for IT Industry

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Displays are critical interfaces for IT devices to connect to the users. The Flat Panel Display (FPD) replacing bulky CRT based traditional displays plays an important role to reveal the advancement of modern IT devices.

In 2003 the market size of FPD finally exceeds that of CRT displays. The current FPD market has been dominated by Amorphous Silicon based Active Matrix Liquid Crystal Display (AMLCD). The AMLCD is asked for further enhancement to fulfill the needs of a future interface for IT devices.

The mega trend of FPD technology includes moving toward Low Temperature Polycrystal Silicon (LTPS) based display devices, where the displays become more smart/active devices than the traditional passive ones. The active LTPS displays where advanced circuits are integrated on the panel may continuously adapt liquid crystal. The mega trend further includes the potential adapting Organic Light Emitting Device (OLED) as a display component replacing the current liquid crystal with fluorescent backlight system. The OLED display may exhibit ideal FPD properties; thin and light, brighter, wide viewing angle, fast response to view moving picture and potentially low cost, etc. The third technical challenge of FPD industry is to bring a flexible plastic substrate for the TFT (Thin Film Transistor) base plate. The plastics instead of glass plates may open up new applications and opportunities for the industry by introducing a concept of flexible display. Along with plastic substrate organic semiconductors are being developed for a TFT system to move away from the silicon based transistor system.

In this talk the current research activities along with the mega trend mentioned above are discussed.

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