Large OLED displays ready for commercial production

SAMSUNG MOBILE DISPLAY

Samsung Mobile Display, which claims to be the world's largest manufacturer of organic light-emitting diode (OLED) displays, now has 14.1-inch and 31-inch OLED television panels ready for commercial production. The company claims that the 31-inch device features full high-definition resolution (1,920 × 1,080 pixels), a contrast ratio of 1,000,000:1, a colour gamut of over 100% NTSC and an ultra-slim design of only 8.9 mm. The OLED television panels can be mass-produced using fine metal mask technology.

The start date for commercial production has still to be decided. "We have not determined when the 14.1-inch and 31-inch OLEDs will be readied for production as that depends upon a number of factors, including our assessment of various market conditions and our readiness to invest," said John Lucas, public relations manager at Samsung Semiconductor.

The company has also developed a 'flapping' OLED panel — a panel that can flutter in a breeze. The panel is super-thin at only 0.05 mm, about one tenth the thickness of OLED panels with a normal glass substrate. It features a high contrast ratio, is polarizer-free and has a resolution of 480 × 272 pixels.

www.samsungsmd.com

Inkjet technology suitable for big-screen OLED televisions

The mass production of large-screen OLED televisions has been hindered by the lack of technology capable of depositing uniform organic layers on large substrates. However, Japan-based Seiko Epson Corporation has announced that its proprietary Micro Piezo inkjet technology can provide a solution to this problem.

Using the same drop-on-demand approach as an inkjet printer, Epson's technology is capable of depositing droplets of liquid organic materials accurately on a large substrate in the precise locations and amounts required. The technology resolves the uneven layering that had been an issue with previous inkjet methods, allowing formation of uniform layers with extremely low volume error (<1%) to be achieved. As it does not require a mask and uses materials extremely efficiently, the approach improves not only the quality but also the throughput of the deposition process. The company said that this represents a step forwards in realizing 37-inch-and-larger full high-definition OLED televisions.

www.epson.jp

Solar cells suit indoor use with artificial lighting

New Energy Technologies, a developer of alternative and renewable energy schemes based in Maryland, USA, has announced that its ultra-small solar cells are an effective solution for generating electricity from artificial light. At less than a quarter of the size of a grain of rice, they are said to be the smallest reported organic solar cells of their kind. The company is now working on combining the cells with transparent glass to fabricate a solar window that can generate electricity when illuminated with direct sunlight or artificial lighting, such as fluorescent tubes.

"One of the biggest issues with today's solar products is their dependency on direct sunlight, which our cells have demonstrated the potential capacity to overcome," explained Meetesh Patel, President and CEO of New Energy Technologies.

www.newenergytechnologiesinc.com

Integrated photovoltaic module exploits laser scribing

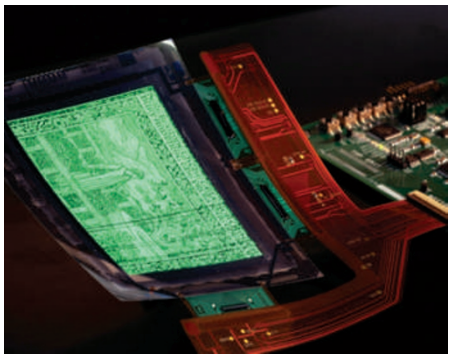
A highly integrated organic photovoltaics (OPV) module is the latest product of a collaboration between the Mitsubishi Corporation, the National Institute of Advanced Industrial Science and Technology (AIST) and the Tokki Corporation, all based in Japan.

OPVs can be used effectively in a wide variety of situations — windows, walls, cloths, textiles, outdoor equipment and toys — applications that have proven difficult for current bulkier silicon-type photovoltaic modules. OPVs are, however, inefficient in converting sunlight to energy. Now, the highly integrated technology developed by the Mitsubishi Corporation, AIST and the Tokki Corporation looks set to solve this problem.

The OPV module is based on technology developed by AIST in January 2005 that has an efficiency of 4%. It uses laser-scribing technology on a glass substrate, in which organic semiconductor materials are deposited and then divided into several cells. The technology eliminates the need for deposition mask patterning that is used in conventional methods. Being highly integrated, the new module is able to improve sunlight-conversion efficiency.

www.mitsubishicorp.com

A thin and flexible answer to active-matrix displays



FLEXIBLE DISPLAY CENTER

The Flexible Display Center (FDC) at Arizona State University and Universal Display Corporation (UDC) have worked together to develop an active-matrix flexible OLED display. The display is manufactured directly on DuPont Teijin's polyethylene naphthalate substrate and uses amorphous-silicon drive circuitry.

Implementing UDC's phosphorescent OLED (PHOLED) technology and the FDC's proprietary bond-debond manufacturing technology, the 4.1-inch monochrome quarter video graphics array display represents a significant milestone towards achieving a flexible OLED that suits mass production.

The flexible backplane display was manufactured at the FDC utilizing a 180-°C thin-film transistor process. The PHOLED materials allow the OLED to convert up to 100% of the electrical energy into light, as opposed to traditional fluorescent OLEDs which convert only 25%, providing up to four times more energy efficiency.

http://flexdisplay.asu.edu