Organic light-emitting diode screens ready to go mainstream

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It's not yet lights-out for LCD and plasma, but OLED displays are finally ready to begin pushing those technologies out of the limelight.

OLED (organic light-emitting diode) screens and televisions have been perpetually around the corner for years now, and Sony's introduction last year of an 11-inch OLED television for $2,500 seemed more like a bad joke than a real product.

But OLED -- with its larger color range, ability to show true black and high refresh rate compared with LCD; and low power consumption and physical thinness compared with plasma -- is finally ready to go mainstream.

Janice Mahon, vice president of technology commercialization at New Jersey-based Universal Display Corp., which specializes in researching OLED technology, said affordable OLED displays are almost here.

"We're not that far from TVs being in the marketplace," she said.

Indeed, OLED televisions probably would be trickling out onto Best Buy and Wal-Mart shelves already if the recession hadn't discouraged so many electronics companies from ramping up their planned investments in OLED manufacturing, Mahon said.

"Sony, Samsung and LG all have efforts in this area," she said. "I would think that within the next year or two, the next technical hurdles that

need to be addressed will be addressed."

Samsung has already said that its 14.1-inch and 31-inch OLED sets are "production ready."

And LG recently confirmed that its 15-inch OLED television will start shipping in either December 2009 or January 2010.

On a smaller scale, Microsoft Corp.'s new Zune HD portable media player will ship this fall with a 3.3-inch OLED touch screen, expanding the existing market of mobile devices with OLED displays.

While Apple Inc. opted to use traditional LCD screens on its new iPhone 3G S, it's possible that OLED could find its way into the company's iPod Touch media player devices before the end of the year.

On the TV side, the really good news is that, despite what Sony is charging for its 11-incher, prices for OLED TVs are expected to ultimately be lower than what we're paying for LCD televisions.

Mahon said OLEDs are built with far fewer components than LCD sets.

"OLEDs will be less expensive than LCDs are today," Mahon said, noting that it takes about 100 steps in a manufacturing plant to build an LCD television, compared with 86 for an OLED.

A few years farther down the road, some really wild stuff is coming in the form of "flexible OLED." Flexible OLED displays are just what they sound like: paper-thin video displays made out of tough plastic that can be bent and rolled.

The application that has received the most attention so far is for the military, in a sort of wrist band communicator/display for troops in the

field.

"I think the military is a wonderful early adopter and is, through funding, helping us with some of these (technical) problems," Mahon said. "But I think consumer applications are going to dwarf those of the military."

One of the neatest devices that Mahon envisions is a smart phone that rolls up into a pen.

When you need the screen, just unfurl it like a digital scroll.

But flexible OLED will also be able to scale up and be transparent, so imagine everything from OLED wallpaper to OLED window shades, all of which can transform instantaneously from interactive digital decoration to full-scale televisions or computer displays.

"It really creates all kinds of potential applications that I don't think we've had the ability to really imagine," Mahon said.

While flexible OLED displays only exist in smaller sizes, Mahon said there's no reason the more dramatic products shouldn't be feasible and on the market in a few years.

"It really should be possible," she said.

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