

Really! A Bendable TV?

Jan 13, 2013 By Deepa Gopal

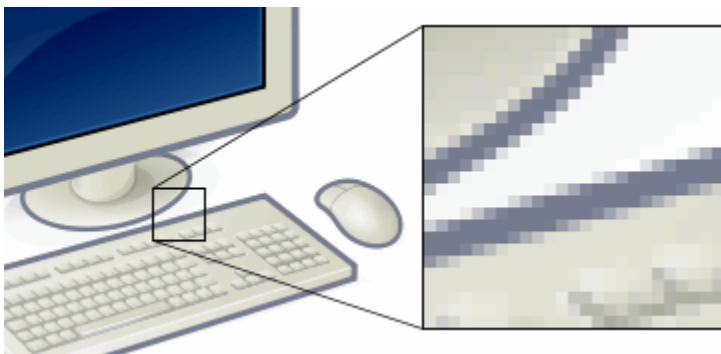


Gone are the days when television sets had a large rear-end and computers occupied half the living room! Sleek and slim are the buzzwords of today.

At the recent Consumer Electronics Show (CES) in Vegas, ultra-thin computer notebooks and superphones -- with cutting-edge displays were unveiled. The gaming world saw the debut of the Razer-Edge gaming tablet which may turn out to be the next rage. There were the fun, health-centered products. A vibrating fork that warns you if you chow down food too fast. A device that fits on your wrist and monitors your fitness habits and sleep patterns.

However, the biggest innovation is in the world of television. Who would have thought they could get any thinner! OLED TV's will hit the U.S market in March this year.

Lets step back..



What are pixels? Courtesy Wikipedia

How does color work with RGB pixels?

If a pixel needs to be white, each transistor that controls the three color cells in the pixel would remain off, thus allowing red, green and blue to pass through. Your eye sees the combination of the three primary colors, so close in proximity to each other, as white light.

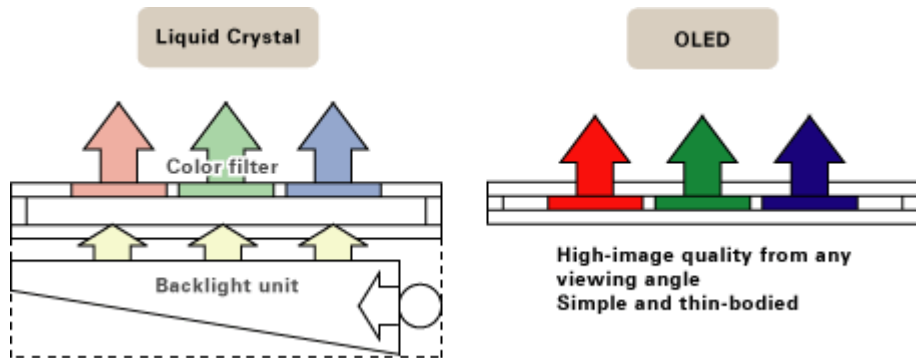
If the pixel needed to be blue for an area of an image that was going to be sky, the two controllers for the red and green cells would turn on, and the controller for the blue cell would remain off, thus allowing only blue light to pass through in that pixel.

To better understand the new OLED TV, let's first understand how displays work. When you look closely at the television, you might see small rectangular boxes (or dots) that form an image. These are *pixels*, the smallest unit of display.

Now each pixel consists of three color elements -- Red, Blue, Green which are mixed together to create the myriad colors we see on television [see *Side Notes*]. Television sets until the late 1990s used Cathode Ray Tubes or CRT technology. Here the screen was coated with three differently colored phosphors, a chemical. When the light from a source behind the screen (called backlight) hit the screen, it produced the desired colors.

The more recent LCD or Liquid Crystal Display televisions contain a semi-solid crystal. Here again, each pixel has three colors. By sending an electric charge, the angle of the crystal molecule is changed. This in turn will send the backlight through or block it, producing the desired colors. While LCD televisions are thinner, they still need a light source.

OLED: As Black As.. Black!



LCd vs OLED

Organic Light Emitting Diode (OLED) displays use organic compounds that emit light on their own, when electricity is passed through it. This means -- no need for a backlight, and hence a thinner TV that is simpler to make and consumes less power.

The most attractive feature of the OLED TV is the sharp picture contrast. Since traditional TVs and LCDs have a light source, black is never truly black -- it is a dark shade of gray. With no backlight in an OLED TV, simply turning off electric current to the specific pixel will make it dark, creating a much sharper contrast.

Secondly, the pictures on an OLED screen appear just fine even when the screen is bent. Samsung displayed a curved OLED TV at CES, while SONY has shown the same in smaller screen sizes. What could be possible applications of these bendable screens?

Written response: (1-2 paragraphs)

What is your opinion of the OLED screens? How could OLED screens be used?