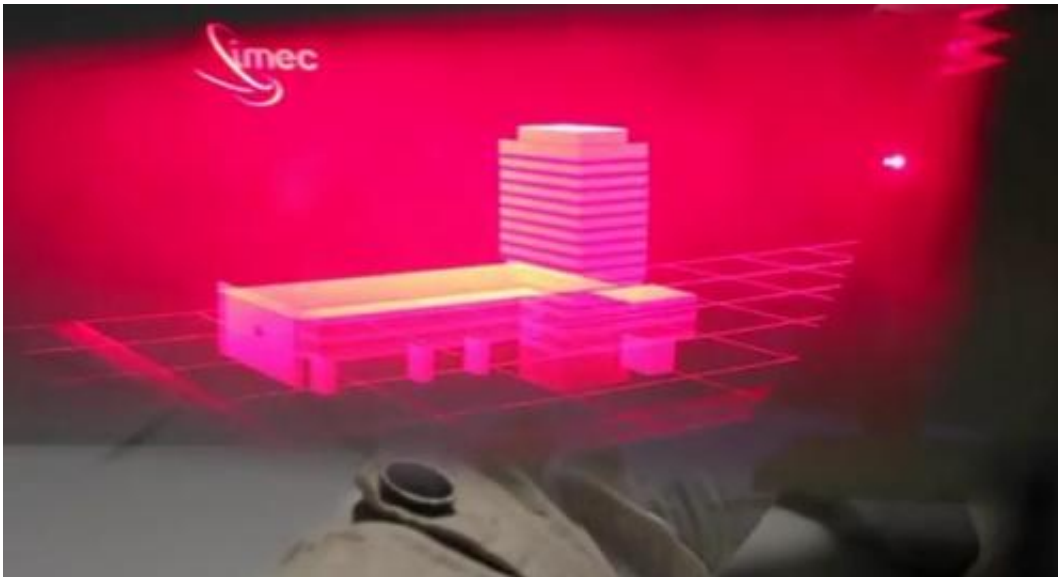


# Holographic 3-D looks tantalizingly closer in 2012

December 28 2011, by Nancy Owano

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(PhysOrg.com) -- Applications like holographic TV have long been relegated as the next big thing in the distant future but a Leuven, Belgium-based R&D lab for nanoelectronics has come up with a process that might bring holographic images closer to realtime.

Scientists at Imec believe, as do other researchers, that holographic images are the answer toward resolving the eye strain and headaches that go along with present-day 3-D viewing.

At Imec, their work involves creating moving pixels. They are constructing holographic displays by shining lasers on microelectromechanical systems (MEMS) platforms that can move up and down like small, reflective pistons.

“Holographic visualization promises to offer a natural 3-D experience for multiple viewers, without the undesirable side-effects of current 3D stereoscopic visualization (uncomfortable glasses, strained eyes, fatiguing experience),” the company states.

In their nanoscale system, they work with chips made by growing a layer of silicon oxide on to silicon wafer. They etch square patches of the silicon oxide. The result is a checkerboard-like pattern where etched-away pixels are nanometers lower than their neighbors. A reflective aluminum coating tops the chip. When laser light shines on the chip, it bounces off of the boundary between adjacent pixels at an angle. Diffracted light interferes constructively and destructively to create a 3-D picture where small mirrored platforms are moving up and down, many times a second, to create a moving projection. The process can also be described as the pixels closer to the light interfering with it one way and those further off, in another. The small distances between them generate the image that the eye sees.

Imec hopes to construct the first, proof-of-concept moving structures by mid-2012. “Imec's vision is to design the ultimate 3D display: a holographic display with a 60° diffraction angle and a high-definition visual experience,” they state.

As such, Imec will have lots of company elsewhere in the race to iron out complexities of holographic imaging. According to reports throughout 2011, research teams aim to make the technology more of a reality than a wish-list item for consumers.

The [BBC's R&D department has identified](#) the work that broadcasters are doing across Europe, for example, in holographic TV. Engineers are also focused on research into 3-D holoscopy for the Internet and other 3-D applications.

Researchers at MIT [this year said they were closing in on holographic TV](#) by building a system with a refresh rate of 15 frames per second. Also earlier this year, the Defense Advanced Research Projects Agency (DARPA) completed a five-year project called “[Urban Photonic Sandtable Display](#)” that creates realtime, color, 360-degree 3-D holographic displays.

**More information:**

via [IEEE](#)

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