Researchers invent bendable silicon

Silicon implants bring wearable computers a step closer

Emil Larsen, Personal Computer World 08 Dec 2006

Researchers in the US have created new techniques to bend, stretch and compress silicon, bringing wearable computers and flexible screens a step closer.

Using the new technique, the researchers were able to double the length of silicon by stretching it, compressing it to a quarter of its original size. They were also able to bend it with curvature radius down to 5mm.

Silicon is the basis for all modern computer chips and applications include stretchable displays where active-matrices could exhibit extreme flexibility. This could be used for wearable computers or digital scrol an LCD type screen can be rolled away when not in use.

In addition to smart sensor skins the researchers are working on ele imagers, where arrays of photodiodes are stretched over the surface sphere.

John Rogers, from the University of Illinois at Urbana-Champai...
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Combining "simple optics and designs that exploit principles of the eyeball" the technique would create a very wide-field-of-view camera.

He also commented on the quest to cure blindness, since a spherical electronic eye is much closer to the real thing. He concluded: "Implanting other forms of electronics that can be integrated into the body is a vision."

The ribbons are fully three dimensional. They currently have a thick few microns (a micron is one millionth of a metre), widths of 100 nm and lengths of 1 cm. It potentially paves the way for large scale product integration of silicon wafers.

The researchers hope to release two papers within the year outlining applications of their work.

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