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Thinner silicon chips for making flexible thin film transistors

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Scientists at the University of Illinois have demonstrated how specks of single crystal silicon can be carved from a bulk wafer and cast onto sheets of plastic, to make ultra high performance, mechanically flexible thin- film transistors.

The process could enable new applications in consumer electronics such as inexpensive wall-to-wall displays and disposable radio frequency identification tags and could even be used in applications that require significant computing power.

"Conventional silicon devices are limited by the size of the silicon wafer, which is typically less than 12 inches in diameter," said John Rogers, a professor of materials science and engineering and co-author of a paper to appear in the June 28 issue of the journal Applied Physics Letters.

"Instead of making the wafer bigger and costlier, we want to slice up the wafer and disperse it in such a way that we need them on large, low-cost substrates such as flexible plastics."

Not only could huge, wall-sized displays be built at far less cost, components could be printed on the insides of windshields and other non-flat surfaces. While current fabrication techniques favor flat chips, printing-based methods remove that constraint.

"Another aspect of low-cost electronic printing is embedding information technology into places where it didn't exist before," a scientist at the university was quoted as saying.

"By inserting electronic intelligence into everyday items, we could exchange information and communicate in exciting new ways," he added. (ANI)

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