

MailOnline

The ultra-thin solar cells that could generate power through windows

By [Claire Bates](#)

Last updated at 11:11 AM on 06th October 2008

Solar cells that are transparent enough to be used to tint windows on buildings or cars, have been developed by U.S researchers.

Conventional solar cells are bulky and rigid but lightweight cells are usually far less efficient. However, a new method of making the silicon-based devices could create thin, flexible cells without any trade-offs.

Brittle wafers of silicon are sliced into ultra-thin pieces and carefully 'printed' onto a malleable surface. The cells are so flexible they can be rolled around a pencil.



Cars may one day incorporate ultra-thin solar cells into tinted windows

'You can make (the solar cells) in the form of a gray film that could be added to architectural glass,' said lead researcher John Rogers of the University of Illinois.

'It opens up spaces on the fronts of buildings as opportunities for solar energy.'

The new technology could be used on car windows, generating enough electricity to power the GPS or air conditioning.

Solar cells, which convert solar energy into electricity, are in high demand because of higher oil prices and concerns over climate change.

Many international companies are making thin-film solar cells, but they are typically less efficient at converting solar energy into electricity than conventional cells.

Rogers said his technology uses conventional single crystal silicon. 'It's robust. It's highly efficient. But in its current form, it's rigid and fragile,' he said in the journal *Nature Materials*.

Rogers' team uses a special etching method that slices chips off the surface of a bulk silicon wafer. The sliced chips are 10 to 100 times thinner than the wafer, and the size can be adapted to the application.

Once sliced, a device picks up the bits of silicon chips 'like a rubber stamp' and transfers them to a new surface material, Rogers said.

'These silicon solar cells become like a solid ink pad for that rubber stamp. The surface of the wafers after we've done this slicing become almost like an inking pad,' he said.

'We just print them down onto a target surface.'

The final step is to electrically connect these cells to get power out of them, he said.

Adding flexibility to the material would make the cells far easier to transport. Rogers envisions the material being 'rolled up like a carpet and thrown on the truck.'

The technology has been licensed to a startup company called Semprius Inc in the U.S.

Comments (1)

there are a couple of companies nearly ready with this technology already. Nanosolar in the US and Xerocoat in Australia. They use a 'paint on' method though.

- Anon, London UK, 06/10/2008 15:53

Science

[Britain faces spring floods and summer droughts as climate change accelerates, warns report](#)
[Britain faces a growing number of devastating spring floods followed by droughts, climate experts have warned.](#)

[Pictured: The amazing natural wonders captured by the world's best photographers](#)
[We reveal the extraordinary images entered in the Wildlife Photographer of the Year 2008 competition.](#)

[The 'thinking cap' that could unlock your inner genius](#)
[A device capable of unlocking the genius in all of us is being developed by scientists. Tiny magnetic pulses change the way the brain works with remarkable results.](#)

[Big bird: Experts unveil skull of giant duck with teeth and the wingspan of a family car](#)
[They are ducks, but not as we know them. Boasting teeth and a 16ft wingspan, the birds' fossil skulls have been discovered on the Isle of Sheppey.](#)

[Water waste! Could reusable bottles finally convince us to swap mineral water for tap?](#)
[Millions of us choose to drink bottled mineral water rather than tap, despite 99.96 per cent of all tap water tests passing strict quality sampling.](#)



Advertising Feature

QVC your shopping expert

Bag some wonderful gifts
for all the family [CLICK HERE >>](#)

[CLICK HERE](#)

JACOB'S CREEK™



WIN A HOLIDAY TO AUSTRALIA

DRINK AWARE.CO.UK • ENJOY JACOB'S CREEK RESPONSIBLY

Associated Northcliffe Digital

Part of the Daily Mail, The Mail on Sunday, Evening Standard & Metro Media Group
© 2008 [Associated Newspapers Ltd](#)