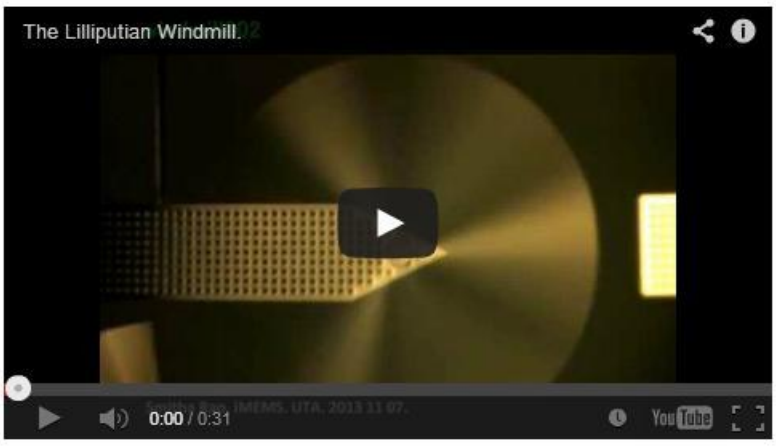
Will Tiny Windmills Power Your Future Smartphone?

January 14th, 2014 | by Michael Keller

In the world of wind power generation, there are mills that tower 360 feet above the landscape pumping out 2.5 megawatts of clean electricity. And then there are these.

University of Texas at Arlington engineers have built and tested teeny microwindmills measuring just 1.8 millimeters at their widest point. That's small enough to fit 2,040 on an iPhone 4, says co-creator J.C. Chiao, an electrical engineering professor at the university. They hope the embedded devices will one day supply electricity to consumer electronics and buildings.

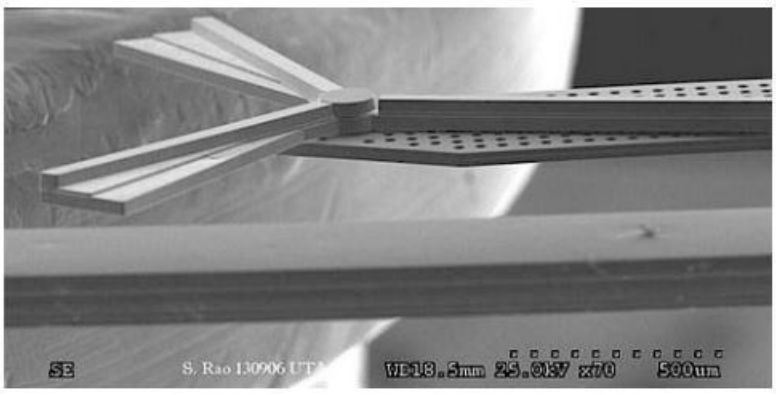


University research associate Smitha Rao, who designed the device, envisions a time when the windmills are embedded in electronic devices, like on the sleeve of a smartphone. When electronics run out of power, she says, an owner could wave them in the air for a few minutes or put them beside an open window to bring them back to life.

Rao used ideas taken from Japanese paperfolding origami art to create working three-dimensional microelectromechanical systems (MEMs) out of flat nickel alloy pieces, according to a university release.

During September 2013 tests in Chiao's lab, the flexible alloys did not crack while enduring brisk winds.

"The problem most MEMS designers have is that materials are too brittle," Rao said. "With the nickel alloy, we don't have that same issue. They're very, very durable."



(A detail view of the side of the microwindmill created with an electron microscope. Courtesy WinMEMS Technologies.)

There was no word on whether they've been able to generate electricity from the device yet. Still, the developers have been working with Taiwanese company WinMEMS Technologies to build the windmills and they're already dreaming of big things for it.

"Imagine that they can be cheaply made on the surfaces of portable electronics," Chiao said, "so you can place them on a sleeve for your smart phone. When the phone is out of battery power, all you need to do is to put on the sleeve, wave the phone in the air for a few minutes and you can use the phone again."

The microwindmill is another example of incredibly small MEMs technologies now being developed for a number of uses.

Top Image: One of Rao's windmills is shown on a penny for size comparison. Courtesy UTArlington.

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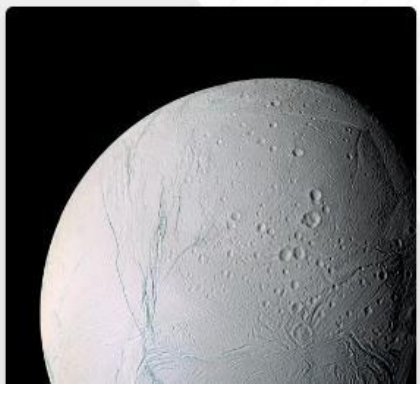

Txch This Week: April Fools' Day and New Candidate For Extraterrestrial Life

April 4th, 2014 | by Norman Rozenberg

This week on Txchnologist, we looked at the newest innovations changing the world around us. First, Dutch architects are using 3-D printing technology to build an iconic canal house. They hope their work will offer a sustainable and quick way of providing housing for the world's growing population.

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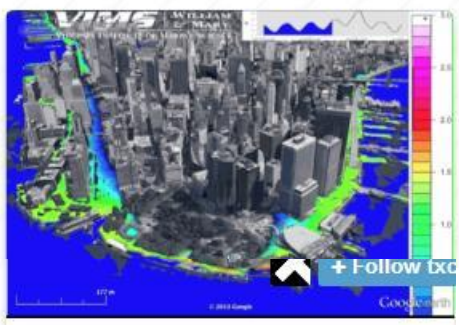

Predicting Where Water Will Go In A Hurricane

April 4th, 2014 | by Joel N. Shurkin, Inside Science

In most hurricanes the greatest damage is done not by the wind but from the storm surge, the mountain of water pushed by raging winds from the ocean to deluge the land.

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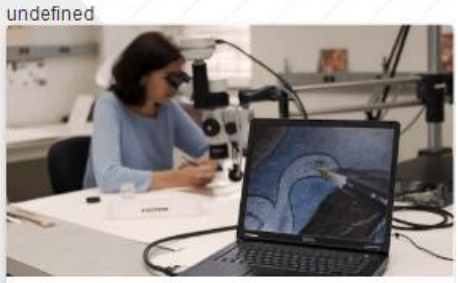

Cutting-Edge Science Helping Art Conservation

April 4th, 2014 | by Michael Keller

New York City's streets were [illegible] a recent cold and overcast March day. Their pallor—and that of the cars, trucks and people occupying them—mimicked that depicted by Childe Hassam in his Winter in Union Square, an oil painting on display at the Metropolitan Museum of Art.

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