

These Ultra-Cute Micro Windmills May Soon Charge Your Devices

By Meera Dolasia on January 19, 2014

CCSS

NAS-2

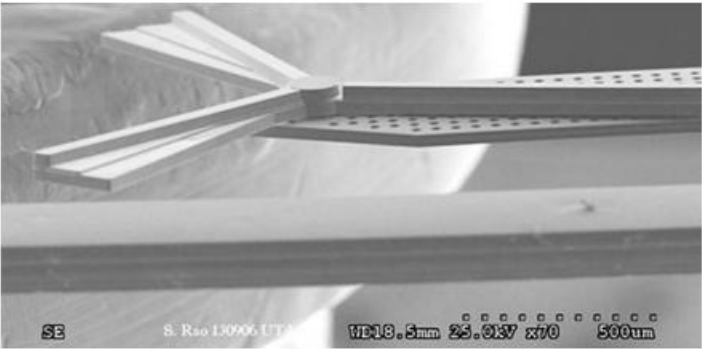
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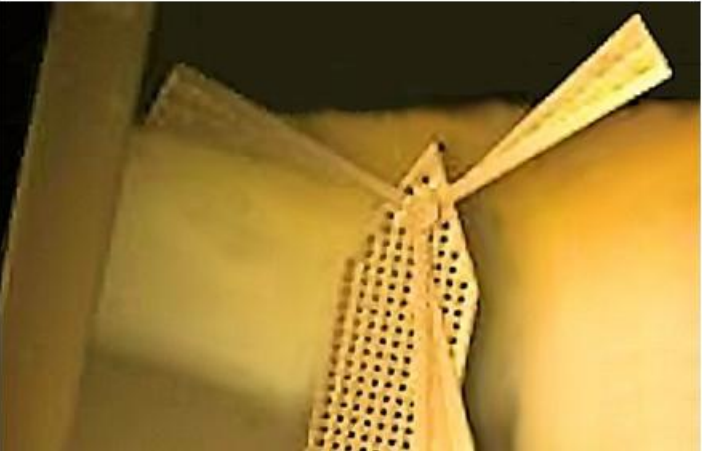
While powering personal devices with solar energy has become commonplace, **harnessing** wind energy to do the same has never been **contemplated**, because it would involve the **arduous** task of carrying around windmills. But what if the windmills could be reduced to a size so small that up to a thousand could fit comfortably inside the sleeve of a cell phone case?

That is exactly what Jung-Chih Chiao the electrical engineering professor at the University of Texas at **Arlington**, had in mind when he set out to create these cute micro windmills. Measuring 1.8 millimeters at their widest point, they are so small that ten of them could be fitted on a single grain of rice. Chiao who built the **prototype** with his associate Smitha Rao, came up with this idea whilst contemplating how best to capture the energy of the large gusts of wind that blew through his backyard, to power his sensors or night lights, without installing a giant wind **turbine**.



Each micro-windmill or *horizontal axis wind turbine* as it is officially called, comprises of a three-bladed 1.8 mm diameter **rotor** that is mounted on 2mm tall tower. Despite its small size and the fact that it is a mere 100 **microns** thick, the tiny windmill is able to **withstand** strong winds. That's because it is manufactured using an extremely **durable** and flexible nickel **alloy**.

In order to keep the costs low, the researchers have devised a production process similar to the one used to manufacture micro **semiconductors** that are utilized in everyday electronic circuits. Chiao estimates that because so many can be made from a single **wafer** (*thin slice of nickel alloy*), the cost of manufacturing one is the same as one thousand - In other words, the tiny windmills can be produced cheaply enough to be commercially viable.



Because he is in the process of obtaining a **patent** for his invention, Chiao will not disclose details about how much power each windmill is capable of generating. He does however **assert** that a few thousand would be enough to power the security or the communication and lighting system of a single family home. The researcher also envisions selling them in packs of 100 for use as emergency cell phone chargers. For while the sun may set, wind continues to power on and though the energy generated by these tiny windmills will not be enough for an hour-long chat with a friend, it will be, to send an emergency message which could prove to be a life savior in many cases.

The best part is that Chiao and Rao who are still fine-tuning the windmill are already **brainstorming** with **Taiwanese** manufacturer WinMems Technologies Co., about bringing these micro energy producers to market! This means that the day when we will all be proud owners of windmill chargers is not far away!

Resources: gizmag.com, ccccs.com



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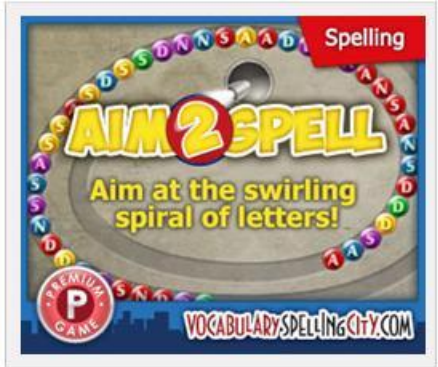
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