TECHNOLOGY

Micro-turbines could revolutionize small-scale energy production

January 16, 2014 | by Lisa Winter

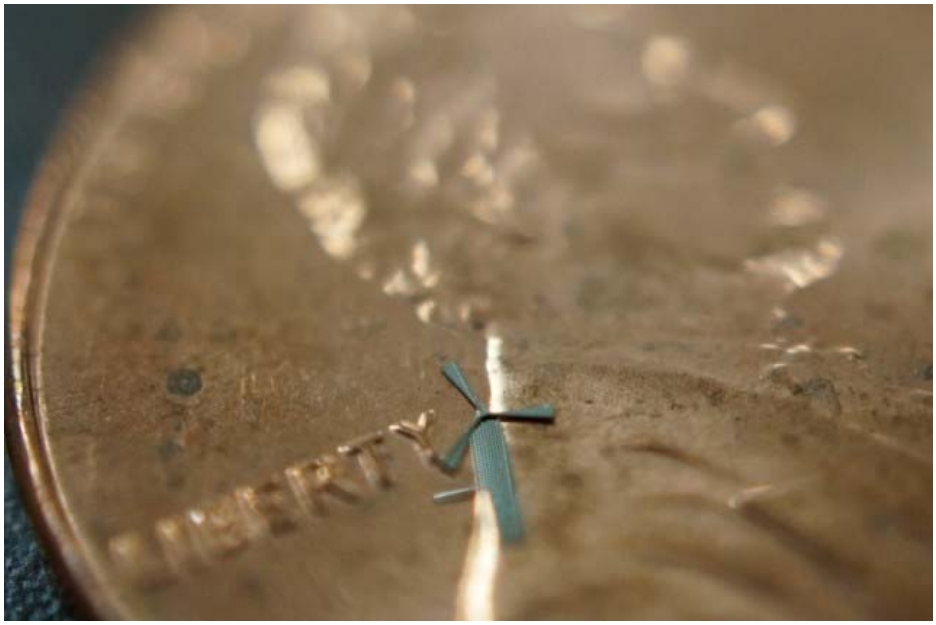

photo credit: Image courtesy of University of Texas at Arlington

A chief complaint about wind energy is that nobody wants to look at the turbines. A lab out of University of Texas - Arlington is revolutionizing the concept by creating windmills so tiny, ten can fit on a single grain of rice. When hundreds of these are put together, they generate enough electricity to charge a cell phone.

Electrical engineering professor J.C. Chiao and his research associate Smitha Rao have demonstrated their invention for WinMEMS, a Taiwanese manufacturing company, who showed immediate interest in its potential. Mass production will be the key to affordability, and Rao's ingenious minimalistic approach uses semiconductors that can self-assemble into their 3 dimensional conformation, due to principles of origami. The windmills themselves are made of a flexible nickel alloy, and the fans are a mere 1.8 mm wide. Using this alloy has produced fans that are incredibly durable and do not become brittle and break after prolonged exposure to wind.

The potential for this technology is huge, which led UT Arlington to file for a patent. However, WinMEMS has a vested interest will proceed with developing the windmill commercially, though the intellectual rights lie solely with the university.

In the short term, the team believes that these windmills can be assembled into a cell phone case to charge the phone without the need for an outlet. If a phone is needed in an emergency but it has a dead battery, the phone can be placed into the case so the wind

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(either from outside or generated by waving it or blowing on it) can recharge the battery.

On a larger scale, panels covered with the fans can be placed on exterior walls or rooftops for a dedicated power source for larger applications in the home. The potential doesn't end in the realm of generating electricity. In the future, the components of these windmills could also be used to guide micro-robots through surgical procedures, or a wide variety of other micro-tools and machines.

tags *wind energy*

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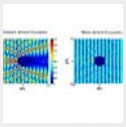

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