



RESEARCHERS RECHARGE CELL PHONES VIA MICRO-WINDMILLS



Mobile & tablets
by CBR Staff Writer | 13 January 2014

Taiwanese fabrication foundry WinMEMS Technologies owns exclusive rights to commercialise the new concept.

Researchers at University of Texas Arlington (UTA) have developed a new minute 'micro-windmill' that generates wind energy, which could be used to charge cell phone batteries.

The new 1.8 mm wide windmill, which is one-tenth of a single grain of rice, features flexible nickel alloy components that are capable of taking on strong winds without breaking.

Taiwanese fabrication foundry WinMEMS Technologies owns exclusive rights to commercialise the new concept, and has already started work on potential applications of the new technology.

UT Arlington Research Associate Smitha Rao said that the company was quite surprised with the micro-windmill idea, when it was shown the demo video of working devices.

"It was something completely out of the blue for them and their investors," Rao said.

Designs of micro-windmills combine origami concepts into conventional wafer-scale semiconductor device layouts, which allow complex 3-D moveable mechanical structures to be self-assembled from 2-D metal pieces using planar multilayer electroplating techniques.

University of Texas Electrical Engineering professor J.C. Chiao said: "The micro-windmills work well because the metal alloy is flexible and Smitha's design follows minimalism for functionality."

"Imagine that they can be cheaply made on the surfaces of portable electronics, so you can place them on a sleeve for your smart phone," Chiao said.

"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."

In addition to micro-windmills, researchers have also developed gears, inductors, pop-up switches and grippers, which are as small as a fraction of the diameter of a human hair.

UTA said: "These inventions are essential to build micro-robots that can be used as surgical tools, sensing machines to explore disaster zones or manufacturing tools to assemble micro-machines."

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