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Scientists Create 'Micro-Windmills' That Could Power Cellphone

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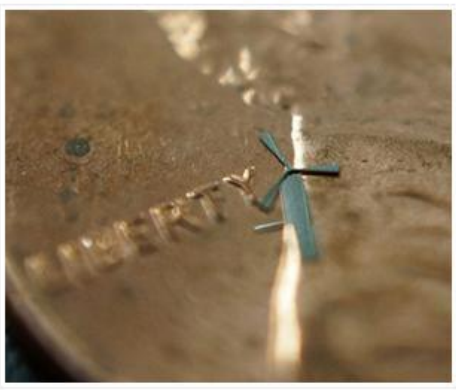

Researchers at University of Texas Arlington (UTA) have developed a new minute 'micro-windmill' that generates wind energy, which could be used to charge cell phone batteries.

Smitha Rao and J.-C. Chiao designed and built 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.Hundreds of the windmills could be embedded in a sleeve for a cell phone. Wind, created by waving the cell phone in air or holding it up to an open window on a windy day, would generate the electricity that could be collected by the cell phone's battery.

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

"The company was quite surprised with the micro-windmill idea when we showed the demo video of working devices," Rao said. "It was something completely out of the blue for them and their investors."

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."

Chiao said because of the small sizes, flat panels with thousand of windmills could be made and mounted on the walls of houses or building to harvest energy for lighting, security or environmental sensing and wireless communication.

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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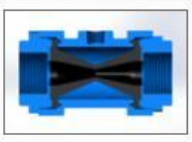

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