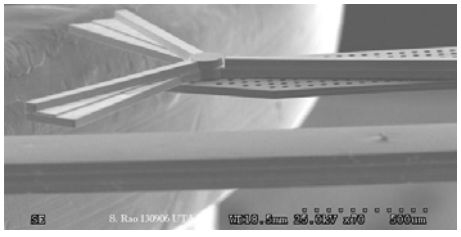
Micro-Windmills Could Help Charge the Electronics of the Future

Kyle Maxey posted on January 15, 2014 | 1 Comment | 2606 views

Everyone's been there. You're in the middle of an important call and all of a sudden your cellphone urgently chimes in your ear, alerting you that its battery is about to kick the bucket. Although battery life has long been the bane of mobile existence, a new microelectromechanical systems (MEMS) technology could solve the ever-present problem of recharging your mobile device.

Measuring in at only 1.8 mm at its widest point, the key to possibly endless energy is a micro-scale windmill so small a single grain of rice could support ten of the tiny devices. Created by research associate Smitha Rao and professor J.-C. Chiao, the Lilliputian windmill was designed by blending origami folding with conventional semi-conductor layout technique. By uniting the two processes, the University of Texas at Arlington (UTA) team was able to create complex, self-assembling, 3-dimensional mechanical structures from 2-dimensional metal plates.

Constructed using a nickel-alloy, Rao and Chiao's windmill has eschewed the main problem facing MEMS machines—their fragility. After successful structural tests of their micro-windmills last September, the UTA team is confident that their choice of material will make their devices strong enough to handle any industry use.



For the time being, however, the team is focused on integrating the windmill with portable electronics. "Imagine that they can be cheaply made on the surfaces of portable electronics," Chiao said, "*[S]*o 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."

Aside from recharging our cellphones and tablets, Chiao also sees a future where MEMS windmills could be embedded into flat panels that line the exterior of houses, generating power for interior lighting or security systems.

Given that Roa and Chaio's windmills are already piquing the interest of industry, it might not be long before we see similar devices showing up in our electronics. For with these new systems in place, prematurely ended calls and the constant search for an outlet might be a thing of the past for good.

Images and Video Courtesy of UT Arlington

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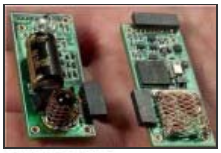

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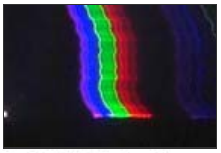

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