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STRETCHABLE SOLAR CELL CAN EVEN BE WASHED



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29 November 2017

We have seen **flexible solar cells**, but the main thing preventing us from incorporating them into our clothes is that they couldn't be stretched or washed. Researchers from Japanese research centre **RIKEN** and the **University of Tokyo** have now developed a new type of ultra-thin solar cell that is coated on both sides with a stretchable and waterproof film. Thanks to these coatings, the device can generate electricity from sunlight even after being soaked in water or stretched.

The members of the research group developed

extremely thin and flexible organic photovoltaic cells, based on a material called PNTz₄T. The ultra-thin device was then placed onto acrylic-based elastomer and the top side of the device was coated with an identical elastomer, giving it a coating on both sides to prevent water infiltration.. The elastomer, while allowing light to enter, prevented water and air from leaking into the cells.

The solar cell first had an energy efficiency of 7.9 per cent, producing a current of 7.86 milliwatts per square centimetre.



After soaking the material in water for 2 hours, the efficiency had decreased by only 5.4 per cent. In a next test, the researchers subjected the material to compression combined with water, and after 20 cycles, it still had 80 per cent of its original efficiency.

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The washable solar cell makes it possible to integrate solar cells into our clothes and other textiles, which could power devices that are worn on the body, such as medical devices and sensors.

Photos: RIKEN

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