

Hierarchical Surface Inspired by Lotus-Leaf for Electrical Generators from Waterdrop

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Abstract : In order to solve global warming and climate change issues, increased efforts have been devoted towards clean and sustainable energy sources as well as new energy generating devices. Nanogenerator is a device that converts mechanical/thermal energy as produced by small-scale physical change into electricity. Here we propose that nature-leaf surface could be used for preparation of a triboelectric nanogenerator. The nature-leaf surface consists of polydimethylsiloxane microscale pillars and polytetrafluoroethylene nanoparticles. Interaction between the nature-leaf surface and water was studied and the electrical outputs from the motion of single water drop were measured. A 40- μ L water drop can generate a peak voltage of 1 V and a peak current of 0.7 μ A. This nanogenerator might be used to drive electric devices in the outdoor environments in a sustainable manner.

Keywords : hierarchical surface, lotus-leaf, electrical generator, waterdrop

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