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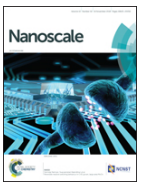

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A double-helix-structured triboelectric nanogenerator enhanced with positive charge traps for self-powered temperature sensing and smart-home control systems†

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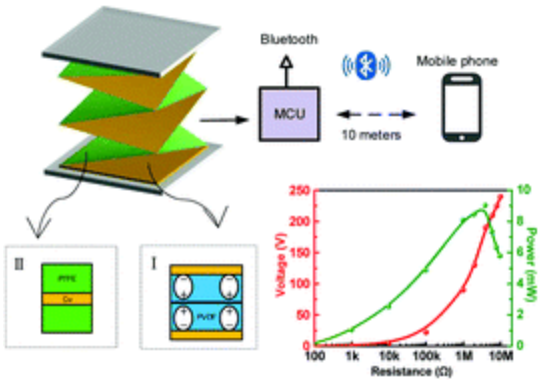
Abstract

Triboelectric nanogenerators (TENGs) have been in spotlight for their excellent capability to drive miniature electronics. Herein, we report a sophisticated double-helix-structured triboelectric nanogenerator (DHS-TENG) enhanced with positive charge traps for self-powered temperature sensing and smart-home control system. The DHS-TENG increases the charge density on the contact surfaces by taking advantage of the ferroelectric characteristics of polyvinylidene fluoride (PVDF). In addition, the flexible double-helix-structure endows DHS-TENG with excellent elastic property as it has no external supporting materials. The reported DHS-TENG, with the dimensions of 3 cm × 3 cm × 5 cm and a light weight of 10 g, can deliver a peak output power of 9.03 mW under a



Supplementary files

Supplementary information

AVI (4962K)

Supplementary movie

AVI (6610K)

Supplementary movie

AVI (5964K)

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