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Polymer/Carbon Nanotube Composite Materials for Flexible Thermoelectric Power Generator

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Abstract Flexible and lightweight thermoelectric (TE) generators have attracted increasing interest for powering wearable electronics using the temperature difference between human body and ambient air. Conducting polymers or their based composite materials are suitable for such applications; however, most conducting polymers show p-type conduction, hence, until now almost all reported flexible TE generators, which use conducting polymers or their based composite materials, are single-carrier-type (p-type) leg devices, connecting alternatively p-type legs electrically in series with silver or other metals. In this paper, both p- and n-type flexible TE materials have been developed using polymers and single-walled carbon nanotubes (SWCNTs). The p-type TE films are prepared by integrating SWCNTs into a high conductive poly(3,4-ethylenedioxythiophene): poly(styrenesulfonate) (PEDOT:PSS) matrix, using a

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