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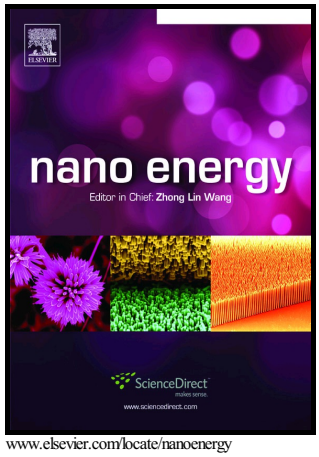

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Stretchable Helical Architecture Inorganic-Organic Hetero Thermoelectric Generator

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Abstract

To achieve higher power output from a thermoelectric generator (TEG), one needs to maintain a larger temperature difference between hot and cold end. In that regard, a stretchable TEG can be interesting to adaptively control the temperature difference. Here we show, the development of simple yet versatile and highly stretchable thermoelectric generators (TEGs), by combining well-known inorganic thermoelectric materials Bismuth Telluride and Antimony Telluride (Bi_2Te_3 and Sb_2Te_3) with organic substrates (Off-Stoichiometry Thiol-Enes polymer platform – OSTE, polyimide or paper) and novel helical architecture (double-arm spirals) to achieve over 100% stretchability. First, an OSTE-based TEG design demonstrates higher open circuit voltage generation at 100% strain than at rest,

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