

## Self-Healable and Stretchable Polymer Thermoelectric Composites

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Organic thermoelectric (TE) materials that can generate electricity from low-grade thermal energy have been actively investigated owing to their apparent advantages of light weight, natural abundance, facile processability, and mechanical flexibility. Herein, we report on the development of self-healing and stretchable TE composites using a thermoplastic elastomer to provide mechanical flexibility and a polymer semiconductor to enhance TE performances, respectively. Engineering the polymer semiconductor to induce nanowire networks in the thermoplastic elastomer matrix and doping the semiconductor nanowires with proper organic molecules enable to fabricate ternary blended composites. The ternary blended TE composites retain good mechanical endurance against external damages, and the optimal TE composite with the thermoplastic elastomer has the capability to regenerate TE performances after self-healing with applying mild pressure and/or mild heat.