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Electret-Material Enhanced Triboelectric Energy Harvesting from Air Flow for Self-Powered Wireless Temperature Sensor Network

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Highlights:

- Electret based triboelectric generator (E-TriG) with both electrostatic and triboelectric effects are investigated with various electret materials;
- The performance of the triboelectric generator can be improved by negatively charged electrets, while with positively charged electrets, the power output is weakened;
- The E-TriG has been successfully applied for wireless temperature sensing.

Abstract: Energy from wind flow is very common in ambient environment which can be harvested by triboelectric generator effectively. Herein, electret based triboelectric generator (E-TriG) with both electrostatic and triboelectric effects are investigated with enhanced performance comparing with the traditional triboelectric generator based on only contact electrification. Electret materials like PTFE, CYTOP, TOPAS, and COC are prepared with different methods and charged under positive or negative conditions to optimize the material property. It is proved

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