THERMOELECTRIC ENERGY HARVESTER

MATERIALS
A new oxide-based thermoelectric material that is stable in air, non-toxic, and heat-tolerant up to 800° K.

TECHNOLOGY TYPE
Thermoelectric
Power
Energy & Environment

STAGE OF DEVELOPMENT
- Proof of concept demonstrated through small scale testing.
- Scaling fabrication in progress.

IP PROTECTION
U.S. Utility Patent and Continuation-in-Part Pending
High Performance Terbium-Based Thermoelectric Materials

TECHNOLOGY SUMMARY
Thermoelectric power generators harvest energy from waste or natural heat without producing any direct emissions of greenhouse gases. As one of the most promising clean energy conversion technologies, thermoelectric materials transform temperature gradients into electrical power without any moving parts. Existing thermoelectric materials are limited by toxicity at high temperatures and low conversion efficiency.

This new thermoelectric energy harvester is a novel oxide-based thermoelectric material that exhibits high electrical and thermal conductivity for increased performance. The material has a “cool” side and a “heated” side that uses the temperature differential to generate electrical power. Possible uses in automobiles, power plants, generators, or anything with heat.

FEATURES AND BENEFITS
- Converts heat to electrical power without moving parts.
- Demonstrated stability at high temperatures (up to 800° K), preventing degradation and evaporation.
- Shows improved efficiency (ZT of 1.02 compared to ZT of much less than 1 for most materials).
- Non-toxic.

RECENT PUBLICATIONS

INVENTOR PROFILE
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