The Office of Technology Management

UNIVERSITY OF TEXAS ARLINGTON

Liquid Thermoelectric Devices

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TECHNOLOGY NEED

Thermoelectric devices are currently used in various applications, and new semiconductors with high thermoelectric efficiency are being actively sought. The thermoelectric performance depends on the efficiency value, thus lower efficiency means more power loss. Current thermoelectric devices suffer from mediocre efficiency and do not match the rate of other developed technologies. To reach the full potential of various possible applications for thermoelectric devices, a cost-effective and scalable technology needs to be developed, and the performance needs to be optimized.

INVENTION DESCRIPTION/SOLUTION

We provide a novel thermoelectric device where ionic liquid is used as thermoelectric material instead of solid materials. The invented thermoelectric devices contain electrochemical cells used as thermo capacitive cell for converting heat and storing it. These electrochemical cells utilize ionic liquid as a thermoelectric material and exhibit increased thermoelectric efficiency at all temperatures as compared to conventional thermoelectric devices.

APPLICATIONS

- Waste heat recovery of Li-Ion batteries
- Radioisotope thermoelectric generator
- Automotive thermoelectric generator
- Energy harvesting
- Solar thermoelectric generator

KEY BENEFITS

- Environmental-friendly
- Significantly reduced weight
- Power generation in remote areas
- Availability of raw materials
- Scalable technology

STAGE OF DEVELOPMENT

Prototype

Extensive tests done

INTELLECTUAL PROPERTY STATUS

Provisional

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