TECHNOLOGY

World’s Highest Energy Density Thin Film Battery

OVERVIEW

The market for thin film batteries is projected for explosive growth in the coming years. Thin film batteries are enabling the proliferation of electronic devices in ubiquitous applications not possible before, including wireless sensor networks, active RFID, wearable electronics, and medical devices. Conventional battery technologies have previously limited the scope of electronic applications because of their weight, bulk, inflexibility, high-voltage recharging requirements, short life cycles, and toxic materials.

Researchers at the University of Maryland have developed an improved thin film battery prototype to respond to the need for more power-efficient electronic devices in a variety of applications. Among thin film batteries, it has the world’s highest energy storage density. Its materials are environmentally friendly and safe for disposal as well as in the event of damage. The batteries have an extremely low recharging threshold enabling a multiplicity of energy scavenging techniques that can indefinitely recharge the battery wirelessly, including radio frequency, vibration, and solar sources. Finally, because of its specific electrochemistry, the battery has an extremely long life cycle. These innovations set the battery apart from other available thin film batteries. A patent application is pending.

Advantages
- Thin film and flexible packaging that can be conformed to many form factors
- High energy storage density
- Safe, environmentally friendly, and non-toxic materials
- Ultra low power recharging threshold
- No additional power conditioning equipment required for most electronics
- Wirelessly rechargeable through radio frequency, solar, vibrations
- Extremely long life cycle

Applications
This battery can be used in many applications requiring a thin, lightweight, and flexible power source, including:
- Wireless sensor networks (military, consumer, environmental)
- Active RFID
- Wearable electronics
- Implantable medical devices

For additional information, please contact the Office of Technology Commercialization, University of Maryland College Park, via e-mail at otc@umd.edu or phone at 301-405-3947.

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Additional Information

INSTITUTION

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PATENT STATUS

Patent(s) pending

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Power Electronics
- Materials
- Engineering

EXTERNAL RESOURCES

- US Patent 9,484,155

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