



Solid Polysiloxane Electrolyte for Use in Lithium Batteries

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a solid, polysiloxane-containing polymer composition for lithium batteries.

Overview

Lithium batteries, such as those found in wristwatches, cell phones and computers, are typically filled with a viscous, liquid polymer electrolyte. These batteries are often preferred over conventional batteries because they provide high levels of power per unit weight; however, due to the danger of liquid leakage, for safety reasons they can't be used for certain applications, such as implantable medical devices.

The Invention

UW-Madison researchers have now developed a solid, polysiloxane-containing polymer composition for lithium batteries. In addition to polysiloxanes, the polymer mixture contains a cross-linking molecule, a catalyst and an inhibitor. The mixture exists initially as a liquid that can be poured into batteries. When heated to 50 to 75°C, the polymer gradually solidifies into a soft, flexible gel.

Applications

- Implantable pumps
- Devices for delivering electrical stimulation to treat disorders such as epilepsy, chronic pain and incontinence

Key Benefits

- Provides a solid electrolyte for lithium batteries with virtually the same conductivity as conventional liquid electrolytes
- Possesses good mechanical strength and excellent thermal and electrochemical stability
- Polymer is easily and efficiently synthesized from known, readily-obtained materials.

Tech Fields

- [Clean Technology : Energy storage, delivery & resource efficiencies](#)
- [Materials & Chemicals : Polymers](#)

For current licensing status, please contact Mark Staudt at mstaudt@warf.org or 608-960-9845