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New Sulfone Electrolytes for Rechargeable Lithium Batteries

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Patent Pending

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Background

The United States' demand for battery and fuel cell materials is projected to grow 5.9 percent annually through 2009 rising to $3.4 billion in sales. Healthy gains in U.S. battery production, due to the growing popularity of high-drain electronic products such as digital cameras and wireless phones, will result in the increased use of high-value materials needed to boost battery performance. Existing technologies in the market use LiPF6 in carbonate solvents. The major problems associated with existing technologies are the high melting point (35^0 C) and low window of electrochemical stability (~ 4.7 V).

Invention Description

To overcome these problems, researchers at ASU have developed a new chemical compound that can be used as an electrolyte for rechargeable lithium batteries. This newly developed compound has a lower melting point (< 2^0 C) and also provides a higher window of electrochemical stability (~ 5.7-5.9 V). Furthermore, this newly developed electrolyte is naturally fire retardant.

Potential Applications

The present invention is ideally suited for use in Secondary Cells as an improvement over existing technologies, specifically, by improving the following applications:

- Portable power generation
- High density electronic output
- "Micro-power" generation

Benefits and Advantages

- Lower melting point (< 2^0 C)
- Wide electrochemical stability window (~ 5.7-5.9 V)
- Developed electrolyte is naturally fire retardant