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A New Family Of Li-Ion-Conducting Polymer Electrolytes For Solid State Batteries

Tech ID: 33766 / UC Case 2022-972-0

BRIEF DESCRIPTION

This technology introduces a solid polymer electrolyte (SPE) that enhances the performance and safety of lithium-ion and lithium-metal-anode batteries.

FULL DESCRIPTION

Researchers at UCI have developed novel technology for solid state batteries utilizing a solid polymer electrolyte (SPE) as a replacement for traditional liquid electrolytes. This SPE is a polymerization product incorporating a polymer backbone, a lithium salt, a plasticizer, and specific electrolyte additives designed to overcome anode/electrolyte interfacial corrosive reactions and prevent short-circuiting. The technology addresses the need for safer, longer-lasting lithium-ion and lithium-metal-anode batteries by offering improved interfacial properties, mechanical strength, and ion conductivity.

SUGGESTED USES

- » Electric vehicles (EVs) requiring safe, high-energy-density batteries.
- » Portable electronics, including smartphones, laptops, and wearable devices, benefiting from longer battery life and improved safety.
- » Energy storage systems for renewable energy sources, enabling more reliable and efficient storage solutions.
- » Aerospace and defense applications where battery performance and safety are critical.

ADVANTAGES

- » Enhanced safety by preventing electrolyte leakage and reducing flammability risks.
- » Improved battery life and performance through effective inhibition of dendritic growth on the lithium-metal anode.
- » Increased energy density compared to batteries with liquid electrolytes.
- » Operational stability over a wide range of temperatures with good lithium ion conductivity at room temperature.
- » Compatibility with a broad range of cathode and anode materials, allowing for versatile battery design options.

PATENT STATUS

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OTHER INFORMATION

CATEGORIZED AS

- » **Energy**
- » Storage/Battery

RELATED CASES

2022-972-0

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Additional Patent Pending

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