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

Country	Type	Number	Dated	Case

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OTHER INFORMATION

CATEGORIZED AS

- Energy
  - Storage/Battery

RELATED CASES

2022-972-0

Patent Pending

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