Electrolyte Formulations for Non-Aqueous Flow Batteries

Tech ID: 33971 / UC Case 2024-9B8-0

ABSTRACT

Researchers at the University of California, Davis have developed a technology that introduces new electrolyte compositions that significantly enhance the stability and efficiency of non-aqueous flow batteries.

FULL DESCRIPTION

The technology comprises innovative liquid electrolyte solutions for redox flow batteries (RFBs), featuring a mix of specifically chosen cations and anions that improve conductivity, reduce overpotential, and enhance the overall energy efficiency and cycling stability of RFBs. This breakthrough addresses the critical challenges of low energy efficiency and cycling stability in non-aqueous redox flow batteries.

APPLICATIONS

- Energy storage systems for intermittent renewable energy sources.
- High-performance batteries for industrial and commercial applications.
- Advanced energy solutions for grid stabilization and peak shaving.

FEATURES/BENEFITS

- Increases energy density and efficiency of RFBs.
- Improves cycling stability.
- Reduces ohmic drop and excess energy requirements.
- Enhances conductivity and lower overpotential.
- Compatibility with a wide range of redox active materials.
- Improves energy efficiency in non-aqueous redox flow batteries.
- Enhances chemical stability and solubility of redox active organic molecules.
- Reduces operational and maintenance costs by increasing cycling stability.

PATENT STATUS

Patent Pending

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OTHER INFORMATION

KEYWORDS

electrolyte solutions, energy efficiency, cycling stability, redox flow batteries, electrochemical stability, renewable energy storage, high-performance batteries, conductivity improvement, overpotential reduction, non-aqueous flow batteries

CATEGORIZED AS

- **Energy**
  - Storage/Battery
- **Engineering**
  - Engineering
- **Materials & Chemicals**
  - Chemicals
  - Composites

RELATED CASES

2024-9B8-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Aluminum-mediated Base-free Catalysis for Transfer Hydrogenation
- Group 13 Metals as Anolytes in Non-Aqueous, Redox Flow Batteries

▶ Organoaluminum Flow Battery Analytes

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