SYMMETRIC, AIR-TOLERANT AND MEMBRANELESS ALL ORGANIC FLOW BATTERIES

Tech ID: 34141 / UC Case 2025-180-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

An electrolyte containing a compound with a unique molecular structure is disclosed for use in symmetric, air-tolerant and membraneless all-organic flow batteries. The innovation addresses challenges in large-scale energy storage, offering a safer and more efficient alternative to conventional batteries that rely on metal-based active materials, which can be toxic or have limited availability. The novel technology, developed by researchers at UC Berkeley, features a single active compound in the electrolyte that functions as both the anolyte and catholyte, eliminating the need for a costly and failure-prone membrane. This design simplifies the battery's architecture, improves its resilience to air exposure, and enhances its overall efficiency and longevity.

SUGGESTED USES

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The technology is ideal for grid-scale energy storage, where it can be used to stabilize power grids and integrate renewable energy sources like solar and wind.

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The batteries can be used in electric vehicle charging stations to store energy and provide rapid, high-power charging for vehicles.

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This technology provides reliable backup power for commercial and industrial facilities and helps manage peak energy demands, which can reduce electricity costs.

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The invention is suitable for off-grid power systems in remote locations or for applications where grid connectivity is unreliable or unavailable.

ADVANTAGES

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Enhanced safety: The use of all-organic, non-toxic materials eliminates the risks associated with hazardous or scarce metals, making the battery safer for manufacturing, use, and disposal.

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Simplified design: The symmetric, membraneless architecture reduces complexity and manufacturing costs while increasing durability and long-term stability.

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Improved efficiency: The single-compound electrolyte and lack of a membrane lead to reduced internal resistance and improved energy efficiency.

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

» **Energy**

» Storage/Battery

» **Materials & Chemicals**

» Chemicals

RELATED CASES

2025-180-0

Air tolerance: The battery's design is robust against air exposure, making it more reliable and easier to handle and operate in various environments.

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Sustainability: The reliance on organic compounds, which can be sourced from abundant materials, positions this technology as a sustainable solution for future energy storage needs.

RELATED MATERIALS

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Redox-Based Reagents For Methionine Bioconjugation
- Asymetric Electrophilic Fluorination Using An Anionic Chiral Phasee-Transfer Catalyst

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