

Carbon Dioxide Flow Battery

Tech ID: 32500 / UC Case 2019-911-0

BRIEF DESCRIPTION

Inventors at UCI have developed a novel electrocatalyst that reversibly converts carbon dioxide to its reduced form for the power source of a flow battery. The incorporation of this novel electrocatalyst allows a common chemical, such as carbon dioxide to be included in the flow battery providing more affordable alternative than what is currently used. Furthermore, this technology has increased solubility, improving the energy density of the battery.

SUGGESTED USES

Long term energy storage and discharge

FEATURES/BENEFITS

- Novel electrocatalyst reversibly converts carbon dioxide to formate to store or release energy
- Incorporation of common chemicals decreases cost
- Flow battery system allows energy capacity to only be limited by size of containers used to store reactants
- Long discharge time allows for longer life of battery
- Improved energy density means a more efficient battery

TECHNOLOGY DESCRIPTION

Large capacity energy storage has the potential to change how large companies and cities manage and use electricity. If this way to store energy had a large discharge time to accommodate large groups of people and was also more affordable than what was currently on the market, it would be an instant success. The market for large scale electronic storage is expected to exceed \$4 billion by 2025 according to BCC Research. Current options for large capacity energy storage are limited to the use of hydropower and dams which can be environmentally and geographically challenging.

Inventors at UCI have developed a carbon dioxide-formate flow battery for long term energy storage using a novel electrocatalyst. This has the potential to be more cost effective, efficient and environmentally friendly than what is currently on the market for large capacity energy storage.

STATE OF DEVELOPMENT

This technology is currently in development. The electrocatalyst has been developed and is being tested to determine if it works with other similar organic compounds.

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

- » **Energy**
 - » Storage/Battery
- » **Materials & Chemicals**
 - » Chemicals

RELATED CASES

2019-911-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,990,658	05/21/2024	2019-911

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

► [Additives For Improved Electrochemical Co2 Capture](#)

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