Spinodal-Based Co-Continuous Composites For High Performance Battery Electrodes

Tech ID: 25648 / UC Case 2015-784-2

BRIEF DESCRIPTION

This is a method for creating a high performance battery electrode that provides better performance, is highly tunable for different electrochemical applications, and has the capacity for greater total energy storage than the current state of the art.

FULL DESCRIPTION

While batteries excel at delivering high energy densities, they require extended charge and discharge times. In contrast, supercapacitors excel in situations requiring rapid charge and discharge, but cannot easily deliver a high energy density. Researchers at UCI have begun to bridge that gap by creating a 3-dimensional composite electrode whose unique microstructure enables unprecedented tunability of these characteristics, and simultaneous delivery of both high energy and power. UCI researchers have developed a new 3-D composite porous electrode that allows for independent tuning of key microstructural parameters that govern electrochemical performance. The unique ability to tune these parameters enhances the electrochemical performance of the resulting battery and enables it to be tuned to a wide variety of electrochemical performance levels as well as the capacity for greater total energy storage.

SUGGESTED USES

Electrochemical storage devices that deliver high energy and power densities

ADVANTAGES

• Enhanced overall electrochemical performance, due to uniform pore geometry and pore distribution within the porous electrode • Tunable electrochemical performance • Greater total energy storage • Technique can be applied to a wide variety of electrode materials • Scalable

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,714,758	07/14/2020	2015-784

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OTHER INFORMATION

CATEGORIZED AS

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

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