HINTERGRUND

The present invention belongs to the technical field of rechargeable batteries and supercapacitors. Particularly, it relates to an electrode material for rechargeable batteries and electrochemical capacitors, a method for preparing the same, and rechargeable batteries as well as electrochemical capacitors.

LÖSUNG

Throughout the present invention a new three-dimensional (3D) TiO2/C architecture can be provided. In this architecture, the primary TiO2 nanoparticles are wrapped with Carbon, forming spherical secondary particles, and the spherical TiO2/C secondary particles further agglomerates with each other into a plate-like morphology.

Common strategies of the carbon coating always lead to serious phase separation or agglomeration of the TiO2 nanoparticles, and a rather inhomogeneous distribution of the carbon coating, which results in relatively poor electronic conductivity and poor electrochemical performance. In addition to that, the construction of a three-dimensional TiO2 nanostructure, and a more homogeneous carbon coating lead to an improved performance.

With the present invention, the energy density of rechargeable batteries (both lithium ion batteries and sodium ion batteries) and the power density of supercapacitors can be improved by the design of this architecture.

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ENTWICKLUNGSSTAND

Funktionsnachweis

PATENTSITUATION

DE erteilt

CATEGORIES

//Energie- und Energiespeichertechnik //Chemie
VORTEILE

- Improved electrochemical performance
- Improved electronic conductivity
- Homogeneous carbon coating
- Higher energy density of super capacitors

SERVICE

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