T18-089

Tohoku University's Invention

Ultracapacitor materials and ultracapacitors

Able to store more electricity by using amorphous titanium

Summary

In recent years, with the rapid development of high-performance IT products and electric vehicle batteries, the demand for small capacitors with high capacity having high function such as memory is increasing. Solid, non-toxic and inexpensive materials are required for such capacitors. However, solid-state electric double layer capacitors are not yet in use. In addition, amorphous titania and amorphous fluorine polymers with nano sized irregularities on their surfaces have been developed to create quantum size effect-based energy storage materials. However, amorphous titania-based energy storage materials have low electricity storage capacity.

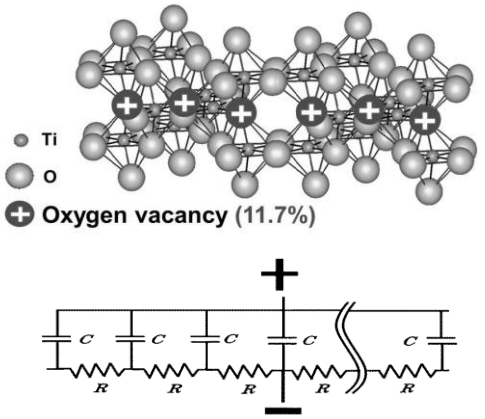
This invention is able to provide ultracapacitor materials and ultracapacitors capable to store a larger quantity of electricity using amorphous titania. This invention includes Ti and a valve metal and has a plurality of irregularities on its surface comprising an amorphous ultracapacitor material composed mainly of TiO_6.

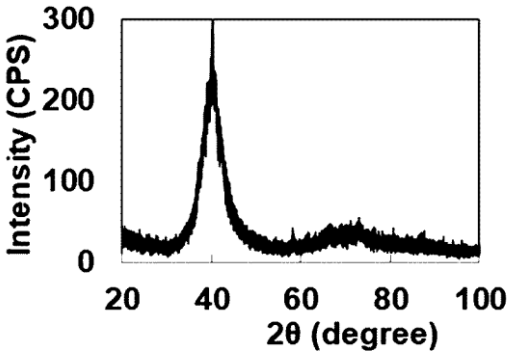
Effect

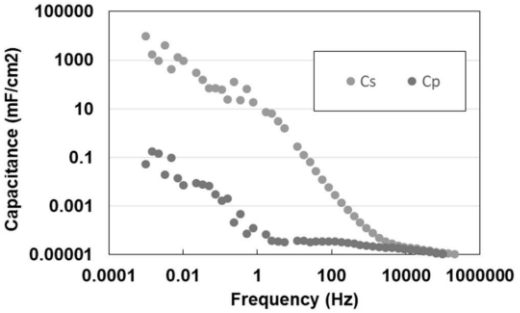
Solid energy storage material with amorphous titania with higher electricity energy storage capacity.

Application

- Mobile electronic devices such as PCs and mobile phones
- Electric vehicle batteries







【Up left】Diagram showing the molecular structure of ultracapacitor material and the electric distribution constant circuit
【Up right】X-ray diffraction patterns on the surface of ultracapacitor material
【Down left】Frequency response of storage capacitance Cs in a series junction and Cp in a parallel junction for ultracapacitor material

Patent Data Sheet

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