New type of negative electrode material for lithium batteries

During last decades, many researchers work on the problem of polymer binder material for application in batteries [8], most of their works devoted to polyvinylidene fluoride PVDF [9], polytetrafluoroethylene PTFE or theirs mixtures [10], [11], [12], and to carboxymethyl cellulose [13], [14], [15].Some authors try to find new types of binders, for example, R. Zhang ...

The aqueous solution battery uses Na 2 [Mn 3 Vac 0.1 Ti 0.4]O 7 as the negative electrode and Na 0.44 MnO 2 as the positive electrode. The positive and negative electrodes were fabricated by mixing 70 wt% active materials with 20 wt% carbon nanotubes (CNT) and 10 wt% polytetrafluoroethylene (PTFE). Stainless steel mesh was used as the ...

Swagelok-type cells 10 were ... Chloride ion batteries-excellent candidates for new energy storage batteries following lithium-ion batteries ... Nano-sized transition-metal oxides as negative ...

In this thesis, two electrode materials for a new generation of post lithium-ion batteries were investigated by means of operando X-ray absorption near-edge structure (XANES) spectroscopy probing ...

Abstract Among high-capacity materials for the negative electrode of a lithium-ion battery, Sn stands out due to a high theoretical specific capacity of 994 mA h/g and the presence of a low-potential discharge plateau. However, a significant increase in volume during the intercalation of lithium into tin leads to degradation and a serious decrease in capacity. An ...

Organic electrode materials can be classified as being n-type, p-type or bipolar-type materials according to specific criteria (Box 1), not least their redox chemistry 53.For n-type (p-type ...

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Electrochemical properties of various TiO 2 polymorphs, anatase (A-TiO 2), rutile (R-TiO 2), and columbite (C-TiO 2), were examined as a negative electrode material for lithium-ion batteries, to clarify the relation between the crystal structures and electrochemical activities of TiO 2 polymorphs. Here, the C-TiO 2 sample was synthesized by a high-pressure ...

A new type of nano-sized cobalt oxide compounded with mesoporous carbon spheres (MCS) as negative electrode material for lithium-ion batteries was synthesized. The composite containing about 20 wt.% cobalt oxide exhibits a reversible capacity of 703 mAh/g at a constant current density of 70 mA/g between 0.01 and 3.0 V (vs. Li + /Li), and remains a ...

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1. Introduction. The continuously rising importance of lithium-ion batteries for a wide range of applications, including portable electronics, power tools, (hybrid) electric vehicles, and stationary storage, is triggering increasing needs for new electrode active materials capable of hosting more lithium ions per unit weight and volume than conventional insertion-based ...

The negative electrode material of lithium-ion batteries is one of the most important components in batteries, and its physical and chemical properties directly affect the performance of lithium ...

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