

Polyaniline (PANI) is a promising cathode material for aqueous rechargeable zinc batteries (ARZBs), mainly benefitting from its good electrical conductivity. The high conductivity of PANI requires high doping level, yet the ...

An aqueous zinc-polyaniline secondary battery was constituted by the polyaniline synthesized in a mixed solution containing  $0.60 \text{ mol dm}^{-3}$  aniline,  $1.20 \text{ mol dm}^{-3}$  1-ethyl-3-methylimidazolium-ethyl sulfate (EMIES) and  $2.0 \text{ mol dm}^{-3}$   $\text{H}_2\text{SO}_4$ , Zn foil and an electrolytic solution containing  $2.0 \text{ mol dm}^{-3}$   $\text{ZnCl}_2$  and  $3.0 \text{ mol dm}^{-3}$   $\text{NH}_4\text{Cl}$  with pH 6.0.

Rechargeable aqueous zinc-ion batteries (RAZIBs) are emerging as a significant alternative to lithium-ion batteries (LIBs) in large-scale energy storage systems due to the merits of high theoretical capacity ( $820 \text{ mAh/g}$  or  $5851 \text{ mAh cm}^{-3}$ ), low equilibrium potential ( $-0.763 \text{ V}$  vs. standard hydrogen electrode), and low price, as well as the superiority of aqueous electrolytes ...

Self-charging power systems that integrate energy harvesting devices and batteries are attracting much attention in energy technologies. Herein, we designed  $\text{H}_2\text{O}_2$ -charging aqueous Zn/polyaniline (PANI) batteries by utilizing the redox potential difference between  $\text{H}_2\text{O}_2$  and the discharged PANI, realizing the chemical charging of the batteries without an external power ...

Introduction As the most widely used electrochemical energy storage systems at present, the inherent safety and environment issues of lithium-ion batteries are the primary concerns in their ...

The charge/discharge performance of a Zn-polyaniline battery electrodeposited with polyaniline on a carbon substrate is carried out in the aqueous electrolyte. the results show that the initial ...

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(FPC: fullerene-induced plasma carbon cluster, PANI: polyaniline, SZPB: solar chargeable zinc-polyaniline battery, SCE: saturated calomel electrode). As shown in Fig. S9(b), PANI had a capacity of  $148 \text{ mAh g}^{-1}$ , which dropped to  $40 \text{ mAh g}^{-1}$  as the current varied from  $0.1$  to  $2 \text{ A g}^{-1}$ , with no improvement in the specific capacity of the PANI under illumination.

1.. Introduction Zinc-polyaniline (PANI) secondary cells has a lot of advantages, in comparison with classical battery types ( $\text{Cd}|\text{NiOOH}$ ,  $\text{Pb}|\text{PbO}_2$ ,  $\text{Zn}|\text{Ag}_2\text{O}$ ,  $\text{MH}|\text{NiOOH}$ ) and aprotic cells ( $\text{Li}|\text{C}$  and  $\text{Li}|\text{polymer}$ ). First advantage is ecological acceptability comparing with  $\text{Cd}|\text{NiOOH}$  or  $\text{Pb}|\text{PbO}_2$ , second is relatively low price ( $\text{Zn}|\text{Ag}_2\text{O}$  and  $\text{MH}|\text{NiOOH}$ ), and third ...

In recent years, aqueous zinc-ion batteries have received extensive attention because of their safety, environmental friendliness, and low cost. However, their poor rate performance due to the slow diffusion kinetics ...

Nanomaterials 2022, 12, 1438 2 of 12 changes [10]. Similar conclusions were demonstrated by Y. Sun in pulverized V<sub>2</sub>O<sub>5</sub> powder [11]. To overcome the capacity fade originating from irreversible ...

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