Super Iron Battery

What is a super-iron battery?

We report a new class of batteries,referred to as super-iron batteries,which contain a cathode that uses a common material (Fe) but in an unusual (greater than 3) valence state. Although they contain the same Zn anode and electrolyte as conventional alkaline batteries,the super-iron batteries provide >50% more energy capacity.

Are super-iron batteries better than conventional alkaline batteries?

Super-iron batteries have a 50 percent energy advantagecompared to conventional alkaline batteries. A cell with an iron (VI) cathode and a metal hydride anode is significantly (75 percent) rechargeable. Higher capacity batteries based on an unusual stabilized iron (VI) chemistry are presented.

What is a super iron cathode?

Iron (VI/III) cathodes can use low-solubility K 2 FeO 4 and BaFeO 4 salts with respective capacities of 406 and 313 milliampere-hours per gram. Super-iron batteries have a 50 percent energy advantage compared to conventional alkaline batteries. A cell with an iron (VI) cathode and a metal hydride anode is significantly (75 percent) rechargeable.

Do insoluble Fe (VI) salts prevent super-iron battery self-discharge?

Insoluble Fe (VI) salts have the duel benefits of preventing Fe (VI) solution-phase (i) decomposition and (ii) diffusion to the anode; thereby preventing super-iron battery self-discharge. BaFeO 4 -4 M in 5 M KOH containing Ba (OH). A BaFeO 1. Introduction

Are alkaline and metal hydride batteries a high capacity battery?

Higher capacity batteries based on an unusual stabilized iron (VI) chemistry are presented. The storage capacities of alkaline and metal hydride batteries are largely cathode limited,and both use a potassium hydroxide electrolyte.

How are super-iron cells prepared?

Super-iron cells were prepared by opening alkaline button cellsand replacing the cathode with 31 mA·hours of either (i) 90% (76.3 mg) K 2 FeO 4,10% (9 mg) graphite,and 12 mg concentrated KOH,or (ii) 90% (106 mg) BaFeO 4,10% (12 mg) graphite,and 30 mg concentrated KOH.

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Higher capacity batteries based on an unusual stabilized iron(VI) chemistry are presented, which are compatible with the alkaline and metal hydride battery anodes but have higher cathode ...

Super-iron batteries have a 50 percent energy advantage compared to conventional alkaline batteries. A cell with an iron(VI) cathode ...

In the paper, the isomorphous S O 4 2 - doped K 2 FeO 4, aimed at the remediation of the discharge and stability of the super-iron battery, was first synthesized for doping and reforming ...

A new battery type, super-iron battery based on the high Fe(VI) cathodic charge storage was reported in 1999 [3]. Followed the primary alkaline super-iron battery, recently, ...

The Technion team has produced batteries with super-iron cathodes that have capacities up to 47% greater than standard manganese dioxide batteries of the same size. ...

Although Fe(VI) species have been known for more than a century, its chemistry remains relatively unexplored evidently due to a misperception that the Fe(VI) ...

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Le Super iron battery sono batterie ad alta capacità basate su una chimica insolita di ferro stabilizzato (VI). Le capacità di accumulo di batterie alcaline e idruro metallico sono in gran ...

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The most recent development in super-iron cathode chemistry is that it is reversible, which has led to the demonstration of rechargeable super-iron batteries. In accord ...

(a) Capacity (anode + cathode) of the super-iron boride alkaline battery to the conventional (MnO 2 /Zn) alkaline battery. The super-iron boride cell contains either a TiB 2, or ...

Super iron battery In 1999, researchers in Israel reported a new type of alkaline battery, called a "super-iron" battery.This battery uses the same anode reaction as an ordinary alkaline battery ...

Recently we presented the chemical preparation of high purity Fe(VI) salts for electrochemical storage. Synthetic pathways yielding 80-100 g of 96.5-99.5% pure K 2 FeO 4 ...

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