NICKEL METAL HYDRIDE BATTERIES

5523182

ENHANCED NICKEL HYDROXIDE POSITIVE ELECTRODE MATERIALS FOR ALKALINE RECHARGEABLE ELECTROCHEMICAL CELLS

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A positive electrode material for use in electrochemical cells. This material comprises particles of positive electrode material including at least one electrochemically active hydroxide and a substantially continuous, uniform, encapsulant layer surrounding the particles of positive electrode material. The encapsulant layer is formed from a material which, upon oxidation during processing or during charging of the electrode, is convertible to a highly conductive form, and which, upon subsequent discharge of the electrode, does not revert to its previous form. Preferably, the electrochemically active hydroxide includes at least nickel hydroxide. The encapsulant layer is preferably formed from at least cobalt hydroxide or cobalt oxyhydroxide. This layer is formed on the particles of positive electrode material by precipitation from a cobalt salt solution, which can be a cobalt sulfate solution. Also disclosed are positive electrodes including the material and a precipitation method of forming the material.

5527638

HYDROGEN STORAGE ALLOY ELECTRODE AND SEALED-TYPE NICKEL-METAL HYDRIDE STORAGE BATTERY USING THE SAME

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A hydrogen storage alloy electrode comprising, an electrically conductive support made of a punched or perforated metal sheet, a mixture supported on said conductive support and a water-repellent agent for giving a water-repellent property on the surface of the electrode, said mixture including; a hydrogen storage alloy powder, a styrene-butadiene copolymer having a styrene to butadiene weight ratio in a range of 100:30 to 100:100 as a binder, a polymeric material for giving a hydrophilic property inside the electrode, and carbon black for giving a hydrophobic property inside the electrode.

5529875

CAGE COMPLEXES FOR CHARGE DIRECTION IN LIQUID TONERS

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Disclosed are negatively and positively charged liquid toners for eleotrophotography (EP). The charge on the toner particle is obtained by adding cage complex molecules, or clathrates/cryptates, to the liquid toner. The cage complex molecules have at least three chains, with a least one electron pair donor atom in each chain, for a total of at least three electron pair donor atoms (EPD's). Or, the cage complex molecules have at least two connected rings, with a total of at least three EPD's in the molecule including at least one EPD in each of the connected rings. For negatively charged toner particles, the clathrates/cryptates are distributed in the liquid dispersion, and metal cations are weakly associated with anionic functional groups on the toner particle. This way, the clathrates/cryptates in dispersion complex selectively with the cations and strip them from the toner particle, leaving a negatively charged particle. For positively charged toner parities, the clathrates/cryptates are covalently bound to the toner particles, and weakly associated metal cations are added with corresponding anionic species to the liquid dispersion. This way, the clathrates/cryptaes on the toner particles complex selectively with the cations, and strip them from the dispersion, creating a positively charged particle.

5532074

SEGMENTED HYDRIDE BATTERY

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