LITHIUM BATTERIES

5518832

APPARATUS FOR SIMULATING HIGH BATTERY TEMPERATURE USED IN RECHARGING LITHIUM ION CELLS

Fernandez Jose M; Houghton Michael W; Nakanishi Matthew M Lawrenceville, GA, UNITED STATES assigned to Motorola Inc

A battery includes a device used for simulating a high temperature condition of a thermistor located in battery. The battery includes a charging node, temperature node and ground node. A control circuit is used with lithium ion cell to measure voltage of lithium ion cell. Control circuit produces a control signal when a desired voltage is reached during recharging. The control signal works with a high voltage switch, thermistor, diode and resister to control the voltage on temperature node. Any change in voltage on temperature node may then be detected by an attached charging system to allow it to change its mode of operation.

5518837

LITHIUM/METAL SULFIDE CELL POSITIVE TERMINAL FEEDTHRU ASSEMBLIES

Pulley Christopher J; Specht Steven J; Barlow Geoffrey Shaker Hts, OH, UNITED STATEE assigned to Westinghouse Electric Corporation

An improved positive terminal feedthru for a lithium/metal sulfide battery cell is provided which permits electrical access to the positive terminal of the battery cell from outside the case. The positive terminal feedthru assembly includes a first annular compressible seal which is provided about the positive feedthru and abuts the positive terminal. A first bushing is provided around the positive feedthru adjacent to the first compressible seal. A second annular compressible seal is provided about the positive feedthru between the first bushing and the battery case. A second annular bushing is provided about the positive feedthru adjacent the opposite side of the case from the second compressible seal. An annular washer is provided around the positive feedthru adjacent the second annular bushing. This washer maintains a compressive load on the first and second compressible seals to account for expansion and contraction due to temperature cycling.

5518840

ELECTRODE PLATE FOR AN ELECTROCHEMICAL CELL AND HAVING A METAL FOAM TYPE SUPPORT, AND A METHOD OF OBTAINING SUCH AN ELECTRODE

Verhoog Roelof; Precigout Claude; Stewart Donald Bordeaux, FRANCE assigned to Saft

The electrode plate includes an active portion that is pasted with active material, and a plate head that is made up of three layers of compressed metal foam comprising: a non-pasted portion of height G of the support of the electrode plate; and two strips of non-pasted metal foam of height R on either side of the non-pasted portion of height G of the support and also extending for an overlap height h2 over the pasted portion of the support. The plate head includes a zone of reduced thickness including a portion that is maximally compressed, and a transitional portion between said maximally compressed portion and the remainder of the electrode which is of thickness e2. A portion of said plate head forms a connection tab. The method of obtaining the electrode consists in simultaneously rolling all three layers of metal foam in the plate head, and then in cutting matter away from the plates so as to obtain respective connection tabs.

5518842

INVERSE SPINEL COMPOUNDS AS CATHODES FOR LITHIUM BATTERIES

Fey George T; Dahn Jeffrey R Tao Yuan, CHINA (TAIWAN) assigned to Moli Energy (1990) Limited

High voltage lithium batteries can be made using lithium transition metal oxides having an inverse spinel structure as a cathode material wherein lithium atoms occupy up to half of the 16d sites, oxygen atoms occupy the 32e

sites, and transition metal atoms occupy the 8a sites and about half of the 16d sites in said inverse spinel structure. In particular, these inverse spinel compounds can be suitable for use in lithium ion batteries. Along with high operating voltage, such batteries can exhibit reasonable capacity, great capability and reversibility.

5520794

ELECTROWINNING OF LEAD

Gernon Michael D Upper Providence, PA, UNITED STATES assigned to Elf Atochem North America Inc

An electrowinning process for lead incorporating a variety of alkanesulfonic acid-based electrolytes in the absence of a redox couple, is disclosed; an inert anode and a lead accepting cathode are utilized.

5520903

METHOD OF MAKING LITHIUM METAL OXIDE CATHODE ACTIVE MATERIAL

Chang On K; Lundquist Joseph San Jose, CA, UNITED STATES

A method of making a composition having lithium, transition metal and oxygen elements and preferably having vanadium as the transition metal with a unit structure of the nominal general formula LiV3O8, such structure being able to accept lithium ions. The method as exemplified by the formation of Li1+xV3O8 (0< or =x< or =0.2) comprises forming a mixture of intermingled particles of vanadium pentoxide (V2O5) and lithium carbonate (Li2CO3) each in an amount sufficient to provide a stoichiometric ratio of approximately 1:3 of lithium to vanadium respectively; compacting the particles by applying a compressive force to the intermingled particles; and heating the intermingled particles to an elevated temperature which is below the melting point of the LiV3O8 product of the invention. The compacting and heating steps consolidate the particles into a densified body and cause diffusion of at least a portion of the elements across particle boundaries with release of carbon dioxide, thereby providing a lithium-vanadium-oxygen composition having a unit structure of Li1+xV3O8.

5521024

LEAD ACID STORAGE BATTERY

Sasaki Masaaki; Arakawa Masahiro; Horii Tohru; Murata Kazuo Takatsuki, JAPAN assigned to Yuasa Corporation

A lead acid storage battery has a cell composed of a positive plate comprising a positive active material layer and a positive current collector plate, a negative plate comprising a negative active material layer and a negative current collector plate, a separator and a frame-shaped gasket. In the cell, the positive plate and the negative plate are laminated with the gasket put between them. The gasket is in contact with peripheral edges of the positive current collector plate and the negative current collector plate. The positive active material layer and the negative active material layer are located in a cell space surrounded by both of the plates and the gasket with the separator put between them.

5521026

PROCESS FOR PREPARING SOLUTIONS OF A POSITIVE ELECTRODE FOR POLYMER ELECTROLYTE BATTERY BY PRE-DISPERSION OF SOLID POWDERS

Brochu Fernand; Duval Michel Longueuil, CANADA assigned to Hydro-Quebec

To prepare polymer dispersions containing large quantities of solid particles, with at least some of these consisting of materials with a high specific area (>50 m2/g) or oil absorption capacity, the mixture of particles is first co-ground in a non polar solvent. The co-ground mixture is dried until obtaining a dry powder of reagglomerated particles, which is dispersed in a solution containing a polymer and possibly a salt. Large quantities of solid particles can thus be dispersed while maintaining adequate rheological properties for the dispersion, and low porosities and few surface defects in the films obtained by coating the dispersion. This process can be used to prepare thin films of positive electrode for lithium polymer batteries, as well as in the paint, coatings and magnetic tape industry.