LEAD ACID

5474863

SEALED LEAD ACID BATTERIES WITH POROUS POLYMER PARTICLES

Yamamoto Osamu Hirakata, JAPAN assigned to Matsushita Electric Industrial Co Ltd

The sealed lead acid battery comprises a positive and/or negative electrode made of an active material added with porous polymer particles having an average pore diameter of 0.05 to 10μ and a particle size of 0.1 to 0.8mm. The additive amount of the porous polymer particles ranges from 0.2 to 3 wt. %. The active material may be incorporated with porous particles of 0.3 to 5 wt. % previously impregnated therein with sulfric acid. The resultant sealed lead acid battery has a high energy density and is superior in a high efficient discharge characteristic, a cycle life characteristic and a low temperature characteristic.

FUEL CELL

5474800

METHOD FOR PREPARING ANODE FOR SOLID OXIDE FUEL CELLS

Matsuzaki Yoshi Tokyo, JAPAN assigned to Tokyo Gas Company Ltd

A method of manufacturing an anode for solid oxide fuel cells is disclosed whereby the dispersion of nickel particles which form the anode for the solid oxide fuel cell is ensured, coherence of the Ni or NiO particles when being annealed or when generating electricity is prevented, the adhesion of the anode to the solid electrolyte layer is good, the contact resistance is reduced, and the electrode performance is improved. To form an anode on one surface of the central solid electrolyte layer, first, Ni or NiO, and a solution of an organometallic complex salt in an organic solvent, from which is obtained thin- films or minute particles of a solid electrolyte by thermal decomposition, are blended, and the solvent is evaporated until a suitable viscosity is obtained. The slurry obtained in this manner is coated onto the central solid electrolyte layer and this coated film is then dried, annealed, and thermally decomposed to obtain an NiO-solid-electrolyte or an Ni-solid-electrolyte cermet.

5474857

SOLID POLYMER TYPE FUEL CELL AND METHOD FOR MANUFACTURING THE SAME

Uchida Makoto; Aoyama Yuko; Eda Nobuo; Ogawa Masahiko Hirakata, JAPAN assigned to Matsushita Electric Industrial Co Ltd

The invention provides a solid polymer electrolyte having high performances in which the reaction area of electrode is increased by uniformly dispersing and bonding a solid polymer electrolyte and a catalyst and the ability of gas feeding to the reaction site is improved by adding a fluoropolymer so that the catalyst is not excessively coated. A method for making the fuel cell is also provided. The electrode provided on at least one side of a solid polymer electrolyte membrane is formed by coating on one side of a gas-diffusible layer a mixed dispersion of a noble metal catalyst, a carbon fine powder and a colloidal dispersion of a solid polymer electrolyte, the colloidal dispersion being prepared using an organic solvent having a polar group other than hydroxyl group in the molecule and having a carbon chain of 1-8 carbon atoms which bonds to the polar group or having a dielectric constant of 3-10.

5474859

ELECTROCHEMICAL CELL DESIGN FOR USE UNDER HIGH SHOCK AND VIBRATION CONDITIONS

Takeuchi Esther S; Pyszczek Michael F East Amherst, NY, UNITED STATES assigned to Wilson Greatbatch Ltd

A structure for stabilizing of an electrochemical cell stack against high shock and vibration forces through the use of a plurality of electrode connections at both the top and bottom of the stack is described.

Constructing the cell casing having a tubular shape rather than the typical deep drawn can shape, allows access to the lower portion of the stack. There, additional leads are welded to the cell case, which significantly adds to the stability of the stack within the case. The lower portion of the case is then within the case. The lower portion of the case is then hermetically sealed by fitting and welding a disc in place.

5478662

METHOD AND APPARATUS FOR DISPOSING OF WATER AND/OR INERT GAS FROM A FUEL CELL BLOCK

Strasser Karl Erlangen, GERMANY assigned to Siemens Aktiengesellschaft

A method for cathode-side water and inert gas disposal and/or anode-side inert gas disposal from a fuel cell block having a number of fuel cells, includes increasingly concentrating a water and an inert gas component in a cathode-side gas mixture and an inert gas component in an anode-side gas mixture, in flow direction of the gas mixtures. The water and inert gas components are at least partially discharged from the fuel cell block. In an apparatus for performing the method, the fuel cells are subdivided into cell groups through which a flow of gas mixtures can be conducted in parallel. The cell groups include a cell group disposed last as seen in gas mixture flow direction. Lines connect the cell groups for conducting at least a fraction of the gas mixtures successively through the cell groups, and for discharging another fraction of the gas mixtures, being dependent on an electric current, from the fuel cell block after flowing through the last cell group.

5478663

EDGE SEALS FOR MOLTEN CARBONATE FUEL CELL STACKS

Cipollini Ned; Bregoli Lawrence; Maricle Donald L Enfield, CT, UNITED STATES assigned to International Fuel Cells Corporation

The reactant manifolds and corners of a molten carbonate fuel cell stack are sealed with particulate lithium aluminate members which are sufficiently porous so as to resist significant electrolyte migration therethrough. The seal members which are disposed in vertical planes of the stack are preferentially formed from lithium aluminate grains which are bonded together by a silica-free glass binder. The seal members which are disposed in horizontal planes in the stack are preferably formed from lithium aluminate grains which are bonded together by surface hydrolysis. Alumina-clad stainless steel labyrinth seal members are associated with each of the horizontal seal members to inhibit electrolyte migration from the cell electrolyte matrices to the vertical seal members.

5480735

HIGH CURRENT ALKALINE FUEL CELL ELECTRODES

Landsman Douglas A; Plasse Paul A Hartford, CT, UNITED STATES assigned to International Fuel Cells Corporation

Electrodes for an alkaline fuel cell are disclosed. The electrodes include a porous substrate and a catalyst layer supported on the substrate. The catalyst layer includes catalyst particles for catalyzing the electrochemical reaction occurring at the electrode, a hydrophobic binder for providing a network of hydrophobic gas passages communicating with the catalyst particles and hydrophilic catalytically inactive particles for providing a network of liquid transport pathways through the catalyst layer. The liquid transport pathways improve liquid transport through the catalyst layer and electrodes of the present invention provide improved resistance to electrode flooding and electrolyte pumping.

5480736

FUEL CELL GENERATION APPARATUS AND A METHOD FOR STARTING THE SAME

Ujiie Takashi; Ito Makoto Kawasaki, JAPAN assigned to Fuji Electric Co Ltd

A fuel cell generation apparatus including a plurality of fuel cells to be connected in parallel. Each of the fuel cells is connected in parallel with a serial circuit of a starting load and a switch. Each of the parallel circuit