A separator for a battery using an organic electrolytic solution, which comprises a microporous film comprising a matrix comprised of a polyethylene and a propylene polymer having a weight average molecular weight of from 10,000 to 1,000,000, the propylene polymer being present in a proportion of from 5 to 45% by weight, based on the total weight of the polyethylene and the propylene polymer, the polyethylene containing a fraction having a molecular weight of not smaller than 1,000,000 in a proportion of at least 10% by weight and a fraction having a molecular weight of not greater than 100,000 in a proportion of at least 5% by weight, and wherein the microporous film has a thickness of from 10 to 500 mum, a porosity of from 40 to 85% and a maximum pore diameter of from 0.05 to 5 mum.

5645956

RESILIENT BATTERY SEPARATOR

Degen Peter John; Lee Joseph Yuen; Sipsas Ioannis P Huntington, NY, UNITED STATES assigned to Pall Corporation

The present invention provides a battery separator comprising a nonwoven web of first and second fibers having a mean diameter of about 15 mum or less, wherein the first fibers comprise at least about 60 wt. % of a first polyolefin having a first melting temperature and no more than about 40 wt. % of a second polyolefin having a second melting temperature which is lower than the first melting temperature, the second fibers comprise a third polyolefin having a third melting temperature which is higher than the second melting temperature, the nonwoven web has two sides, one of which sides has been contacted with a heated surface such that the nonwoven web has been subjected to a temperature higher than the second melting temperature and lower than the first and third melting temperatures so as to render the contacted side more smooth than the other side, the battery separator is spontaneously wettable by an electrolyte, the battery separator has a thickness of at least about 50 mum, and the battery separator has a percent rebound thickness of at least about 92% after the application of pressure up to 80 kPa. The present inventive battery separator preferably comprises two such nonwoven webs mated to each other nonsmooth side-to-nonsmooth side. The present invention also provides a method of preparing such a battery separator, as well as a battery incorporating such a battery separator.

5645958

SUPERABSORBENT POLYMER ELECTROLYTES FOR ELECTROCHEMICAL CELLS AND ELECTROCHEMICAL CELLS USING SAME

Zhang Jinshan; Venugopal Ganesh Coral Springs, FL, UNITED STATES assigned to Motorola Inc

An electrolyte system 40 for use in connection with an electrochemical cell. The cell includes a positive and a negative electrode, and the electrolyte system disposed there between. The electrolyte system includes a liquid electrolyte adapted to provide ion transport between the positive and negative electrodes and a polymeric support structure for engaging the liquid electrolyte.

5647963

ELECTRODE MATERIALS FOR ELECTROCHEMICAL CELLS AND METHOD OF MAKING SAME

Zhang Jinshan; Anani Anaba A Duluth, GA, UNITED STATES assigned to Motorola Inc

A method for preparing a carbon material for use as an electrode, such as the anode of an electrochemical cell. The carbon is fabricated in a heating process from a plurality multifunctional organic monomers selected from first and second groups of monomers. Electrodes so fabricated may be incorporated into electrochemical cells as the anode thereof.

5648011

STRUCTURALLY STABLE GELLED ELECTROLYTES

Blonsky Peter Miller Meridian, ID, UNITED STATES assigned to Micron Communications Inc

The structurally stable gelled electrolyte of the present invention includes a base electrolyte, a three-dimensional polymer precursor that is radiation curable and an electrically non-conducting solvent

gelling agent. The base electrolytes of this invention are comprised of an aprotic liquid and a dissolved ionizable alkaline metal salt. The preferred radiation curable polymer pre-cursors of this invention include trimethylol propane ethoxy triacrylate (TMPEOTA) and poly(ethylene glycol) diacrylate (PEGDA). The solvent gelling agent should be a solid powder or polymer with high surface area to adsorb the liquid electrolyte. Solid powders that can be used in the gelling agent include inorganic oxygen compounds such as silica (SiO2), titania (TiO2),alumina (Al2O3), magnesium oxide (MgO), barium oxide (B2O3) and the like. Other compounds that can be used in the gelling agent include super absorbent polymers, clays, zeolite and such. The structurally stable gelled electrolyte of this invention is coated onto a suitable substrate, for example a glass plate, metal foil, a battery electrode web and cured, either in place, or can be used as a free standing film for cell assembly.

5648185

ALLYL SILANE MONOMERS AND SOLID ELECTROLYTES DERIVED BY POLYMERIZATION THEREOF

Chaloner-Gill Benjamin; Golovin Nea Santa Clara, CA, UNITED STATES assigned to Valence Technology Inc

This invention is directed to novel allyl silane monomers and to solid electrolytes containing a solid polymeric matrix having incorporated therein allyl silane monomers. The solid electrolytes are used in electrolytic cells.

5648186

POLYMER ELECTROLYTES HAVING A DENDRIMER STRUCTURE

Daroux Mark L; Kurz David W; Litt Morto; Melissaris Anastasios; Pucci Donald G Cleveland Heights, OH, UNITED STATES assigned to Gould Electronics Inc

Polymers, oligomers or copolymers, having a dendrimer structure and containing electronegative heteroatoms, such as etheric oxygens, capable of complexing with cationic species, for use in ionically-conductive polymeric electrolytes, Relatively high ambient conductivity is a feature of such electrolytes.

LITHIUM BATTERIES

5632784

METHOD OF MANUFACTURING A LITHIUM BATTERY

Yoon Jae-G Seoul, KOREA assigned to Daewoo Electronics Co Ltd

A method of predischarging a novel battery wherein a stable lithiated film is formed at an anode by a small amount of the discharged capacity in order to rapidly recover the open circuit voltage of the battery, is disclosed. The battery includes a cathode using lithium metal as an active material, an anode using manganese dioxide as a main component of an active material, and an electrolyte including an inorganic electrolyte dissolved in a nonaqueous solvent containing at least propylene carbonate. The battery is predischarged by using a pulse current. The amount of discharge is not more than about 2% of the total discharge capacity. A lithiated film which is formed at the anode portion while being partially oxidized to lithium ions, is uniformed. By a small amount of the discharged capacity, a high potential portion can be removed and the gas generation reaction can be suppressed. In addition, the life of the battery is lengthened and the flatness of the battery's voltage is improved.

5635151

CARBON ELECTRODE MATERIALS FOR LITHIUM BATTERY CELLS AND METHOD OF MAKING SAME

Zhang Jinshan; Anani Anaba Duluth, GA, UNITED STATES assigned to Motorola Inc

A method for preparing an amorphous carbon material for use as an electrode, such as the anode of an electrochemical cell. The amorphous carbon is