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BATTERY MATERIALS

5916708
FLUORINE-CONTAINING SOLVENTS FOR LITHIUM BATTERIES HAVING INCREASED SAFETY

Besenhard Jurgen Otto; Von Werner Konrad; Winter Martin; Graz, Garching, Neuseiersberg, AUSTRIA assigned to Hoechst Aktiengesellschaft

The safety of secondary lithium cells is remarkably enhanced when partially fluorinated ethers of the formulae and/or are being used, wherein R is a straight-chain alkyl group containing 1–10 carbon atoms or a branched alkyl group containing 3–10 carbon atoms, X is fluorine, chlorine or a perfluoroalkyl group containing one to six carbon atoms, which may also contain ethereal oxygen, *m* is an integer from 2 to 6 and *n* is an integer from 1 to 8. Preferred are compounds of the formula (I), wherein R is a methyl group, X is fluorine, *m* is 2 and *n* is an integer from 1 to 3 and also compounds of the formula (II), wherein *m* is 2 and *n* is an integer from 1 to 3.

5922146
HYDROGEN-ABSORBING ALLOY OF ULTRA-HIGH CAPACITY FOR ELECTRODE OF SECONDARY BATTERY

Lee Jai-Young; Lee Han-Ho; Lee Ki-Young; Jung Jae-Han; Kim Dong-Myung; Yu Ji-Sang; Taejon, Seoul, Taejon, Taejon, Kwangmyung, Seoul, SOUTH KOREA assigned to Korea Advanced Institute of Science and Technology

The present invention provides a hydrogen-absorbing alloy system of ultra-high capacity for electrode of secondary battery. In accordance with the present invention, the hydrogen-absorbing Ti alloy system is represented as a general formula as follows: wherein, M represents at least one metal which is selected from the group consisting of Cr, Co, Fe, Cu, Al, Si, Hf, Nb, Mo and R.E., where R.E. represents at least one metal which is selected from the group of rare-earth elements consisting of La, Ce, Pr, Nd and Sm; and, *A*, *B*, *C*, *D*, *E* and *F* have atomic ratios ranging $0.2 \leq A \leq 0.35$, $0.03 \leq B \leq 0.15$, $0.15 \leq C \leq 0.4$, $0.8 \leq D \leq 0.2$, $0.13 \leq E \leq 0.35$ and $0 \leq F \leq 0.1$, respectively, with the provision that $A + B + C + D + E + F = 1$ and $A + B \leq 0.45$. The hydrogen-absorbing Ti alloy system of the invention, has molar molecular weight of 50 to 65 g/mol, C14-hexagonal crystalline structure of single phase, lattice constant of $a = 4.902–5.004$ Å and $c = 7.972–8.168$ Å, ultra-high discharge capacity of 400 mA h/g or more, which can be employed as an anode material of a Ni-MH secondary battery.

5922487
ANODE ELECTROCATALYST FOR FUEL CELL AND PROCESS OF PREPARING SAME

Watanabe Masahiro; Yamamoto Yumi; Yamanashi Kanagawa; JAPAN assigned to Tanaka Kikinzoku Kogyo K.K., Masahiro Watanabe, Stonehart Associates

Disclosed is an anode electrocatalyst for a fuel cell comprising an alloy essentially consisting of at least one of tin, germanium and molybdenum, and one or more noble metals selected from platinum, palladium and ruthenium. Tin, germanium and/or molybdenum have the ability of depressing the poisoning of the noble metal with carbon monoxide so that fuel containing a relatively high content of the carbon monoxide may be supplied to a fuel cell equipped with anode in accordance with the present invention, which is otherwise liable to be poisoned.

5923044
LITHIUM DIALKYLAMIDE AND LITHIUM ALKYLENECYCLOIMIDE FORMULATIONS AND METHODS OF PREPARATION

Hall Randy W.; Schwindeman James A.; Kamienski Conrad W.; Engel John F.; Kings Mountain, Lincolnton, Gastonia, Belmont, NC UNITED STATES assigned to FMC

A process for normally producing liquid hydrocarbon solutions of lithium dialkylamides and lithium alkylenecycloimides, essentially free of ethers and by-product gaseous alkanes derived from C1–C4 alkyllithium compounds, comprising reacting lithium metal with a C_5 to C_{12} secondary amine and an electron carrier compound containing at least five carbon atoms in a normally liquid hydrocarbon solvent.

5925283
IONICALLY CONDUCTIVE POLYMERIC GEL ELECTROLYTE AND SOLID BATTERY CONTAINING THE SAME

Taniuchi Masahiro; Inoue Tomohiro; Ohsawa Toshiyuki; Yokoyama Keiichi; Hiwara Akio; Toriida Masahiro; Tokyo, Sodegaura, JAPAN assigned to Mitsui Chemicals, Ricoh

The present invention relates to an ionically conductive polymeric gel electrolyte for batteries having high ionic conductivity and sufficiently high solid strength. The invention has an object to provide a solid battery, which prevents internal short-circuiting even if no diaphragm is used, and which has high reliability, by using the ionically conductive polymeric gel electrolyte. Disclosed is an ionically conductive polymeric gel electrolyte, containing at least a polymer matrix, a non-aqueous electrolytic solution and an electrolytic salt, wherein at least one kind of a halogen-substituted carbonic ester is contained as a solvent of the non-aqueous electrolytic solution. Also disclosed is

a solid battery having the ionically conductive polymeric gel electrolyte as a constituent.

5925483
MULTI-LAYER POLYMERIC ELECTROLYTES FOR ELECTROCHEMICAL DEVICES

Kejha Joseph B.; Kogis Charles T.; Plymouth Meeting, PA UNITED STATES

Composite layered solid or semi-solid state polymeric electrolytes that contain at least a first layer, which is a tough, mechanically strong adhesive layer that is non-reactive with alkali metal and preferably polyalkylene oxide based such as PEO, which is applied to an anode, and a second layer applied to a cathode, which is a moist, adhesive layer that may be reactive with alkali metal, are loaded with aprotic liquids and alkali metal salts, which activate the first layer and maintains the cell integrity.