

lithium, magnesium and sodium and which is formed by complexing an alkaline metal triflate salt, polyethylene oxide and fillers, with at least one ester, and an ether, or plurality of ethers or esters of different boiling points as co-solvents to form an electrolyte.

5529859

ELECTROLYTE FOR A SECONDARY CELL

Shu Zhi X; McMillan Roderick; Murray John J Nepean, CANADA assigned to National Research Council of Canada

A conventional electrolyte for a secondary cell having a carbonaceous anode is comprised of an alkali metal salt dissolved in an organic electrolyte solvent. Intercalation and de-intercalation during repeated discharge/charge cycles of the secondary cell using a conventional electrolyte solvent causes continual exposure of bare surfaces of the carbonaceous material to the electrolyte, resulting in continual consumption of electrolyte in the formation of new passivation films on the bared or partially covered surfaces, adversely affecting the performance and capacity of the cell. In accordance with the present invention, at least a portion of the organic electrolyte solvent is replaced with a chloroethylene carbonate solvent capable of forming a very stable passivation film. The performance and capacity of the secondary cell is improved substantially by the addition of the halogenated organic solvent to propylene carbonate.

5529860

ELECTROACTIVE HIGH STORAGE CAPACITY POLYACETYLENE-CO-POLYSULFUR MATERIALS AND ELECTROLYTIC CELLS CONTAINING SAME

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The present invention relates to novel electroactive energy storing polyacetylene-copolysulfur (PAS)

materials of general formula $(C_2S_x)_n$ wherein x is greater than 1 to about 100, and n is equal to or greater than 2. This invention also relates to novel rechargeable electrochemical cells containing positive electrode materials comprised of said polyacetylene-co-polysulfur materials with improved storage capacity and cycle life at ambient and sub-ambient temperatures.

5531871

MOLECULAR COMPLEXES FOR USE AS ELECTROLYTE COMPONENTS

Fauteux Denis; van Buren Marti; Powell John Acton, MA, UNITED STATES assigned to Arthur D Little Inc

An molecular complex is provided which includes a linear polymer associated with a cyclic molecule to form a rotaxane of the general formula, (*See Patent for Chemical Structure*) where R_1 and R_2 are blocking end groups of size and character sufficient to prevent dethreading of the rotaxane and said R_1 and R_2 the same or different; where the cyclic molecule comprises a cyclic skeleton and at least one A functional group, said functional group attached to the cyclic skeleton; where A is selected from the group consisting of polymerizable functional groups, cation complexing groups, anion complexing groups and ionic species; and wherein at least one of R_1 , R_2 and A are selected from the group consisting of cation complexing groups, anion complexing groups and ionic species. The molecular complex may used in an electrolyte.

5531920

METHOD OF SYNTHESIZING ALKALINE METAL INTERCALATION MATERIALS FOR ELECTROCHEMICAL CELLS

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A method for preparing an alkaline metal transition metal oxide charge storage material for electrochemical cells. The material may be used in a lithium rechargeable electrochemical cell along with a conventional lithium intercalation electrode. The material may be prepared by providing a transition metal hydroxide and reacting it

with a alkaline metal containing oxidizing agent. The ratio of the transition metal to the alkaline metal should be approximately 0.5:1 to 1.2:1.

5532082

**SOLID ELECTROLYTES CONTAINING
TETRABUTYL AMMONIUM
THIOCYANATE AND
ELECTROCHEMICAL CELLS PRODUCED
THEREFROM**

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Solid electrolytes containing a source of lithium cations and a source of thiocyanate anions and methods for preparing electrolytic cells from such solid electrolytes are provided. Preferably the solid electrolyte includes LiPF₆ and (CH₃(CH₂)₃)₄ NSCN. The tetrabutyl ammonium cation also acts as a surfactant which improves the coatibility of the electrolyte mixture prior to being cured. The thiocyanate anion improves the lithium plating process by adsorbing onto and modifying the lithium anode surface.

5532083

**FLEXIBLE CARBON FIBER ELECTRODE
WITH LOW MODULUS AND HIGH
ELECTRICAL CONDUCTIVITY,
BATTERY EMPLOYING THE CARBON
FIBER ELECTRODE, AND METHOD OF
MANUFACTURE**

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A novel flexible carbon article for an electrode is disclosed for use in an electrical storage device in which the flexible carbon article, such as a planar sheet of a plurality of substantially parallel fibers or ribbons, and in which the fibers or ribbons have a Young's modulus of less than 1 MM psi (6.89 Gpa). The invention also resides in an electrical energy storage device, such as a secondary battery, comprising a water impermeable housing having at least one and preferably more than two cells in series, wherein a battery containing at least two cells also contains at least one shared bipolar

electrode made of the flexible carbon article. Each cell has a foraminous separator between each pair of electrodes and contains an electrolyte comprising an ionizable salt in a non-aqueous fluid. Also disclosed are methods of making the electrode from an unfiltered precursor polymer and from a sub-acrylic polymer.

5532084

MANGANESE DIOXIDE PRODUCT

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The invention relates to the manufacture of manganese dioxide by a chemical process. The resulting product takes the form of gamma manganese dioxide particles characterized by filament-like protrusions of ramsdellite manganese dioxide jutting out from the surface of the particles. The manganese dioxide particles having such features can be manufactured by reacting manganese sulfate with sodium peroxodisulfate in an aqueous solution. The process can be controlled to yield high density manganese dioxide. The manganese dioxide formed in the process can be deposited directly onto the surface of electrolytic manganese dioxide (EMD). The manganese dioxide product is particularly suitable for use as a cathode active material in electrochemical cells.

5534576

**SEALANT FOR ELECTROCHEMICAL
CELLS**

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A sealant composition comprises a dispersion of a fluorocarbon polymer with particles no larger than 25 micrometers in a low volatility liquid and up to 50% of a higher volatility liquid. Also covered is an applicator for applying the sealant to the gasket of an electrochemical cell.