

5506068**NON-AQUEOUS SAFE SECONDARY CELL**

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A non-aqueous safe secondary cell is provided. The cell can be repeatedly charged and discharged retaining the excellent safety features. This cell comprises as main components a negative electrode which is Lithium or Lithium alloy, a positive cathode which includes MnO₂ and an electrolyte which is 1,3-Dioxolane with Lithium hexafluoroarsenate (LiAsF₆) and a polymerization inhibitor.

5506073**LITHIUM ION CONDUCTING ELECTROLYTES**

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A liquid, predominantly lithium-conducting, ionic electrolyte having exceptionally high conductivity at temperatures of 100 degrees C or lower, including room temperature, and comprising the lithium salts selected from the group consisting of the thiocyanate, iodide, bromide, chloride, perchlorate, acetate, tetrafluoroborate, perfluoromethane sulfonate, perfluoromethane sulfonamide, tetrahaloaluminate, and heptahaloaluminate salts of lithium, with or without a magnesium-salt selected from the group consisting of the perchlorate and acetate salts of magnesium. Certain of the latter embodiments may also contain molecular additives from the group of acetonitrile (CH₃CN) succinonitrile (CH₂CN)₂, and tetraglyme (CH₃-O-CH₂-CH₂-O-)₂ (or like solvents) solvated to a Mg⁺² cation to lower the freezing point of the electrolyte below room temperature. Other particularly useful embodiments contain up to about 40, but preferably not more than about 25, mol percent of a long chain polyether polymer dissolved in the lithium salts to provide an elastic or rubbery solid electrolyte of

high ambient temperature conductivity and exceptional 100 degrees C conductivity. Another embodiment contains up to about but not more than 10 mol percent of a molecular solvent such as acetone.

5506075**NON-AQUEOUS ELECTROLYTE SECONDARY BATTERY AND METHOD OF PRODUCING THE SAME**

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A non-aqueous electrolyte secondary battery has a negative electrode, a positive electrode and a non-aqueous electrolyte with lithium ion conductivity. A composite oxide containing lithium represented by composition formula $\text{Li}_x\text{Si}_{1-y}\text{M}_y\text{O}_z$ (where M is one or more kinds of elements selected from metals other than alkaline metals, and metalloids other than silicon, and x, y and z satisfy $0 < x$, $0 < y < 1$, and $0 < z < 2$) is used as an active material for the negative electrode. The battery exhibits a negative active material with a lower and baser potential and a large charging/discharging capacity to produce a long cycle service life secondary battery which facilitates a large current charging and discharging and reduces deterioration due to excess charging and excess discharging.

5506077**MANGANESE OXIDE CATHODE ACTIVE MATERIAL**

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A lithium battery has a positive electrode with an active material comprising a manganese oxide compound represented by at least one of the nominal general formulas $\text{A}_x\text{Z}_y\text{Mn}_a\text{O}_b$ and $\text{A}_x\text{Mn}_a\text{O}_b$, where A and Z are each metals or semi-metals, A has a valance of +2, Z has a valance of +1, and where x, y, a and b are each greater than or equal to 1.