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(54) Title: ELECTROLYTIC COMPOSITIONS BASE ON MIXED ALKYL QUARTENARY AMMONIUM OR PHOSPHONIUM SALTS FOR ELECTRIC ENERGY STORAGE AND GENERATION DEVICES

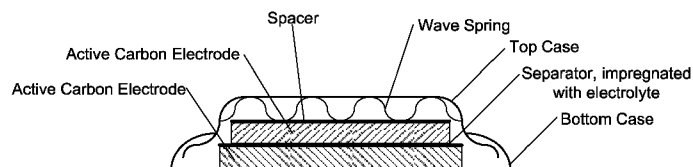


Fig. 1

(57) Abstract: The present invention relates to an electric device, comprising an electrolyte comprising a solvent; a first quaternary ammonium or phosphonium salt; and a second quaternary ammonium or phosphonium salt, containing an ammonium group having a general formula $[NR^1R^2R^3R^4]^+$, or a phosphonium group having a general formula $[PR^1R^2R^3R^4]^+$, wherein $R^1 = R^2, R^3 = R^4$, $R^2 \neq R^3$, and each R^1 , R^2 , R^3 and R^4 independently is a branched or unbranched alkyl group containing from 1 to about 20 carbon atoms, and in which each salt comprises an anion, and wherein the first and second ammonium or phosphonium are not the same. Further, the first quaternary ammonium salt is methyltriethyl ammonium BF₄ (MTEABF₄) and the second quaternary ammonium salt is dimethyldipropyl ammonium BF₄ (DMDPABF₄). The electric device of the invention is a capacitor, a supercapacitor, an electrochemical capacitor, an electrolytic capacitor, a battery, a fuel cell, sensor, an electrochromic device, a photoelectrochemical solar cell, a light-emitting electrochemical cell, a polymer light emitting diode (PLED), an electrophoretic display, a polymer light-emitting electrochemical cell (PLEC), a magnesium-ion battery, a lithium-ion battery, an electrolytic capacitor, or an electric double-layer capacitor (ELDC).

