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(54) Title: LITHIUM ION CELLS WITH HIGH PERFORMANCE ELECTROLYTE AND SILICON OXIDE ACTIVE MATERIALS ACHIEVING LONG CYCLE LIFE, FAST CHARGE AND HIGH THERMAL STABILITY

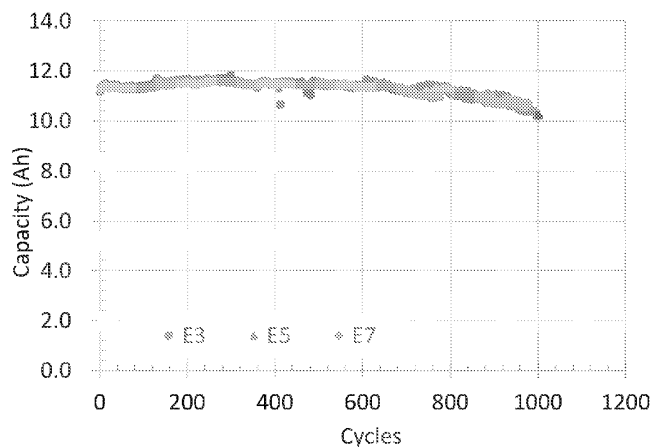


FIG. 20B

(57) Abstract: Improved electrolytes for lithium-based cells can include a dual salt combination of lithium hexafluorophosphate and lithium bis(fluorosulfonyl)imide or lithium bis(trifluoro-methanesulfonyl)imide, and a solvent that includes dimethyl carbonate, ethylmethyl carbonate and 5 to 25 volume percent of fluoroethylene carbonate. The improved electrolytes can include additives triethyl phosphate, ethoxy(pentafluoro)cyclotriphosphazene, 1,3-propane sultone, or mixtures thereof, and have small limited amounts of additional cosolvents and/or lithium-free organic additives. The improved electrolytes can be used to prepare lithium-based cells with silicon-based active materials as negative electrodes and nickel rich lithium metal oxides as positive electrodes. The lithium-based cells can achieve high energy, high power, fast charge and long cycle life along with good thermal stability.

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