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(19) **United States**(12) **Patent Application Publication****Qian et al.**(10) **Pub. No.: US 2023/0231126 A1**(43) **Pub. Date: Jul. 20, 2023**(54) **LITHIUM ION BATTERY**(71) Applicant: **SHENZHEN CAPCHEM TECHNOLOGY CO., LTD.**,
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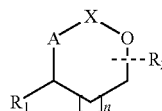
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ABSTRACT

Provided is a lithium ion battery, comprising a positive electrode containing a positive electrode material layer, a negative electrode and a non-aqueous electrolyte, the layer comprises a positive electrode active material, the material comprises $\text{Li}_x\text{Ni}_y\text{Co}_z\text{M}_{1-y-z}\text{O}_2$, M is at least one element selected from Mn and Al, the material is doped or coated with an element E, which is selected from one or more of Ba, Zn, Ti, Mg, Zr, W, Y, Si, Sn, B, Co, and P, a potential range of the positive electrode active material with respect to lithium metal is $\geq 4.25\text{V}$;

the non-aqueous electrolyte comprises a solvent, an electrolyte salt and an additive, the additive comprises a compound represented by structural formula 1:

Structure formula 1



the lithium ion battery meets the following requirements:

$$0.1 \leq (H/T) \times M / 1000 \leq 10; \text{ and}$$

$$80 \leq H \leq 150, 0.005 \leq T \leq 0.8, 0.05 \leq M \leq 3.$$

The lithium ion battery provided by the application has a lower battery impedance and excellent high-temperature cycle performance.