

# (19) United States

### (12) Patent Application Publication (10) Pub. No.: US 2023/0231127 A1 WANG

# Jul. 20, 2023 (43) **Pub. Date:**

### (54) SECONDARY BATTERY AND DEVICE **CONTAINING SAME**

(71) Applicant: Contemporary Amperex Technology Co., Limited, Ningde City (CN)

Inventor: Guangjun WANG, Ningde City (CN)

Assignee: Contemporary Amperex Technology Co., Limited, Ningde City (CN)

Appl. No.: 18/115,004 (21)

(22) Filed: Feb. 28, 2023

### Related U.S. Application Data

Continuation of application No. 17/565,438, filed on Dec. 29, 2021, now Pat. No. 11,626,589.

#### (30)Foreign Application Priority Data

Nov. 29, 2019 (CN) ...... 201911205359.1

#### **Publication Classification**

(51)	Int. Cl.	
	H01M 4/525	(2010.01)
	H01M 4/505	(2010.01)
	H01M 4/36	(2006.01)
	H01M 4/48	(2010.01)
	H01M 50/489	(2021.01)
	H01M 4/587	(2010.01)
	H01M 50/491	(2021.01)

H01M 4/583	(2010.01)
H01M 50/449	(2021.01)
H01M 4/02	(2006.01)

(52) U.S. Cl. CPC ...... H01M 4/525 (2013.01); H01M 4/505 (2013.01); H01M 4/364 (2013.01); H01M 4/48 (2013.01); H01M 50/489 (2021.01); H01M 4/587 (2013.01); H01M 50/491 (2021.01); H01M 4/583 (2013.01); H01M 50/449 (2021.01); H01M 2004/028 (2013.01);

H01M 2004/027 (2013.01)

#### (57)ABSTRACT

This application discloses a secondary battery and a device containing the secondary battery. A positive active material of the secondary battery includes one or more of lithium nickel cobalt manganese oxide, lithium nickel cobalt aluminum oxide, and a modified material thereof. A negative active material of the secondary battery includes a siliconoxygen compound and graphite. A separator of the secondary battery includes a substrate and a coating layer. The secondary battery satisfies:

$$7.5 \le \frac{3460}{ED} - \left( D50 - D_C 50 \times 0.75 - \frac{T}{18} \right) \le 11.5,$$

where ED≥270 Wh/Kg, 11 μm≤D50≤18.5 μm, 11  $\mu$ m $\leq$ D<sub>C</sub>50 $\leq$ 20  $\mu$ m. The secondary battery according to this application achieves relatively high cycle performance while achieving a relatively high energy density concurrently.

