US 20240213491A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0213491 A1**

**Wang et al.** (43) **Pub. Date: Jun. 27, 2024**

(54) **POROUS MATERIAL AND PREPARATION METHOD THEREOF, CURRENT COLLECTOR, SECONDARY BATTERY, AND APPARATUS**

(71) Applicant: **CONTEMPORARY AMPEREX TECHNOLOGY CO., LIMITED**, Ningde (CN)

(72) Inventors: **Manman Wang**, Ningde (CN); **Xiaoming Ge**, Ningde (CN)

(21) Appl. No.: **18/430,630**

(22) Filed: **Feb. 1, 2024**

**Related U.S. Application Data**

(63) Continuation of application No. PCT/CN2022/088398, filed on Apr. 22, 2022.

**Publication Classification**

(51) **Int. Cl.**

| | |
|---|---|
| ***H01M 4/66*** | (2006.01) |
| ***H01M 4/02*** | (2006.01) |
| ***H01M 4/80*** | (2006.01) |

(52) **U.S. Cl.**

CPC ..... ***H01M 4/661*** (2013.01); ***H01M 4/80*** (2013.01); *H01M 2004/021* (2013.01); *H01M 2220/20* (2013.01)

(57) **ABSTRACT**

This application provides a porous material and a preparation method thereof, a current collector, a secondary battery, and an apparatus. The porous material has pores of a first pore size and pores of a second pore size. The second pore size is m nanometers, and $10<m<400$; and the first pore size is n micrometers, and $0.5\leq n\leq 20$. An apparent volume of the porous material is V, a total pore volume of the pores of the second pore size is $V_2$, a total pore volume of the pores of the first pore size is $V_1$, and the porous material satisfies the following relationships: $(V_1+V_2)/V=20\%-90\%$, $V_2/V=15\%-70\%$, and $V_1/V=5\%-70\%$.