US 20230231198A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2023/0231198 A1**

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

MATSUMOTO et al.

(54) **SECONDARY BATTERY**

(71) Applicant: **MURATA MANUFACTURING CO., LTD.**, Kyoto (JP)

(72) Inventors: **Ryuhei MATSUMOTO**, Kyoto (JP); **Hideaki KUWAJIMA**, Kyoto (JP); **Toshikazu YASUDA**, Kyoto (JP); **Yuri NAKAYAMA**, Kyoto (JP)

(21) Appl. No.: **18/124,170**

(22) Filed: **Mar. 21, 2023**

Related U.S. Application Data

(63) Continuation of application No. PCT/JP2021/033033, filed on Sep. 8, 2021.

(30) **Foreign Application Priority Data**

Oct. 8, 2020 (JP) 2020-170718

Publication Classification

(51) **Int. Cl.**

H01M 10/0568	(2006.01)
H01M 10/0525	(2006.01)
H01M 10/0569	(2006.01)
H01M 4/38	(2006.01)
H01M 10/0567	(2006.01)

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

CPC ... ***H01M 10/0568*** (2013.01); ***H01M 10/0525*** (2013.01); ***H01M 10/0569*** (2013.01); ***H01M 4/382*** (2013.01); ***H01M 10/0567*** (2013.01); *H01M 2004/027* (2013.01)

(57) **ABSTRACT**

A secondary battery is provided and including a positive electrode, a negative electrode, and an electrolytic solution, where the negative electrode is metal lithium, and the electrolytic solution contains a sulfonyl group-containing lithium salt; a glyme-based solvent; and a specific additive.