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(19) **United States**(12) **Patent Application Publication**  
**SHIMIZU**(10) **Pub. No.: US 2024/0213548 A1**(43) **Pub. Date: Jun. 27, 2024**(54) **NON-AQUEOUS ELECTROLYTE SOLUTION,  
ELECTROCHEMICAL DEVICE  
PRECURSOR, ELECTROCHEMICAL  
DEVICE, AND METHOD OF PRODUCING  
ELECTROCHEMICAL DEVICE****H01M 10/0567** (2013.01); **H01M 10/446**  
(2013.01); **C01P 2006/40** (2013.01)(71) Applicant: **MITSUI CHEMICALS, INC.**, Tokyo  
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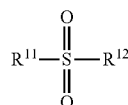
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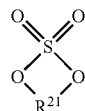
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**ABSTRACT**

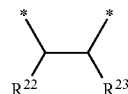
A non-aqueous electrolyte solution contains a chain sulfone compound (I) represented by Formula (I) and a cyclic sulfone compound (II) represented by Formula (II). The content of the chain sulfone compound (I) is from 0.01% by mass to 10% by mass with respect to the total amount of the non-aqueous electrolyte solution. In Formula (I), each of R<sup>11</sup> and R<sup>12</sup> independently represents an alkyl group, or a fluorinated alkyl group. In Formula (II), R<sup>21</sup> represents an alkylene group, an alkenylene group, or a group represented by Formula (ii-1); and \* represents a binding site; in which in Formula (ii-1), R<sup>22</sup> represents a hydrogen atom, an alkyl group, or a group represented by Formula (ii-2); and R<sup>23</sup> represents an alkyl group, or a group represented by Formula (ii-2).



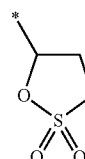
(I)



(II)



(ii-1)



(ii-2)

