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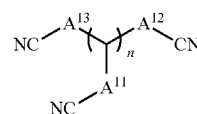
(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2023/0231196 A1**
(43) **Pub. Date:** **Jul. 20, 2023**(54) **ELECTROLYTIC SOLUTION,
ELECTROCHEMICAL DEVICE, AND
ELECTRONIC DEVICE**(71) Applicant: **Ningde Amperex Technology Limited,**
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Ningde City (CN)(21) Appl. No.: **18/098,604**(22) Filed: **Jan. 18, 2023**(30) **Foreign Application Priority Data**

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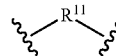
Publication Classification(51) **Int. Cl.****H01M 10/0567** (2006.01)**H01M 10/0568** (2006.01)**H01M 10/0525** (2006.01)(52) **U.S. Cl.**CPC ... **H01M 10/0567** (2013.01); **H01M 10/0568**
(2013.01); **H01M 10/0525** (2013.01)(57) **ABSTRACT**

An electrolytic solution includes a compound represented by Formula I-A and a compound represented by Formula II-A. In Formula I-A, A¹¹, A¹², and A¹³ are each independently selected from Formula (I-A1) and Formula (I-A2). In Formula I-A, n is a positive integer from 1 to 8. When n>1, the

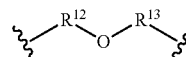
plurality of A¹¹ structures are identical or different. At least two of the A¹¹, A¹², or A¹³ are selected from I-A2. In Formula II-A, Q is independently selected from Formula (II-A1) and Formula (II-A2). In Formula II-A, m is 1 or 2. R¹¹, R¹², R¹³, R²¹, R²², and R²³ are each independently selected from a covalent single bond, a substituted or unsubstituted C₁ to C₁₀ alkylidene and heterocyclyl, a substituted or unsubstituted C₂ to C₁₀ alkenyl and alkynyl, a substituted or unsubstituted C₆ to C₁₀ aryl, a substituted or unsubstituted C₃ to C₁₀ alicyclic hydrocarbyl, and a substituted or unsubstituted heteroatom-containing functional group, in which a substituent for substitution is halogen.



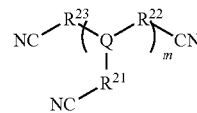
Formula I-A



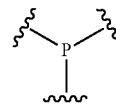
Formula (I-A1)



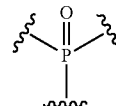
Formula (I-A2)



Formula II-A



Formula (II-A1)



Formula (II-A2)