

Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it displays a valid OMB control number.

UTILITY PATENT APPLICATION TRANSMITTAL (Only for new nonprovisional applications under 37 CFR 1.53(b))	Attorney Docket No.	14850042COA
	First Named Inventor	Chaowang Lin
	Title	ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE
	Priority Mail Express® Label No.	

APPLICATION ELEMENTS <i>See MPEP chapter 600 concerning utility patent application contents.</i>	Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450
1. ☐ Fee Transmittal Form (PTO/SB/17 or equivalent)	ACCOMPANYING APPLICATION PAPERS 10. ☐ Assignment Papers (cover sheet & document(s)) Name of Assignee _____ 11. ☐ 37 CFR 3.73(c) Statement (when there is an assignee) ☒ Power of Attorney 12. ☐ English Translation Document (if applicable) 13. ☒ Information Disclosure Statement (PTO/SB/08 or PTO-1449) ☐ Copies of citations attached 14. ☐ Preliminary Amendment 15. ☐ Return Receipt Postcard (MPEP § 503) (Should be specifically itemized) 16. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed) 17. ☐ Nonpublication Request Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent. 18. ☒ Other: IDS Statement _____ _____ _____ _____
2. ☐ Applicant asserts small entity status. See 37 CFR 1.27	
3. ☐ Applicant certifies micro entity status. See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent.	
4. ☒ Specification [Total Pages <u>33</u>] Both the claims and abstract must start on a new page. (See MPEP § 608.01(a) for information on the preferred arrangement)	
5. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets <u>1</u>]	
6. Inventor's Oath or Declaration [Total Pages <u>6</u>] (including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e)) a. ☐ Newly executed (original or copy) b. ☒ A copy from a prior application (37 CFR 1.63(d))	
7. ☒ Application Data Sheet * See note below. See 37 CFR 1.76 (PTO/AIA/14 or equivalent)	
8. CD-ROM or CD-R in duplicate, large table, or Computer Program (Appendix) ☐ Landscape Table on CD	
9. Nucleotide and/or Amino Acid Sequence Submission (if applicable, items a. – c. are required) a. ☐ Computer Readable Form (CRF) b. ☐ Specification Sequence Listing on: i. ☐ CD-ROM or CD-R (2 copies); or ii. ☐ Paper c. ☐ Statements verifying identity of above copies	

***Note:** (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).
(2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

19. CORRESPONDENCE ADDRESS				
☒ The address associated with Customer Number: <u>62008</u> OR ☐ Correspondence address below				
Name				
Address				
City	State	Zip Code		
Country	Telephone	Email		
Signature	/Timothy J. Maier/		Date	2022-03-29
Name (Print/Type)	Timothy J. Maier		Registration No. (Attorney/Agent)	51,986

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	14850042COA
		Application Number	
Title of Invention	ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2:

☐	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--------------------------	---

Inventor Information:

Inventor	1				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Chaowang		LIN			
Residence Information (Select One) US Residency ☒ Non US Residency Active US Military Service						
City	Ningde, Fujian		Country of Residence ⁱ		CN	
Mailing Address of Inventor:						
Address 1		No. 1 Xingang Road, Zhangwan Town				
Address 2		Jiaocheng District				
City	Ningde, Fujian		State/Province			
Postal Code		352100	Country ⁱ	CN		
Inventor	2				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Fan		YANG			
Residence Information (Select One) US Residency ☒ Non US Residency Active US Military Service						
City	Ningde, Fujian		Country of Residence ⁱ		CN	
Mailing Address of Inventor:						
Address 1		No. 1 Xingang Road, Zhangwan Town				
Address 2		Jiaocheng District				
City	Ningde, Fujian		State/Province			
Postal Code		352100	Country ⁱ	CN		
Inventor	3				Remove	
Legal Name						

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	14850042COA
		Application Number	
Title of Invention	ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE		

Prefix	Given Name	Middle Name	Family Name	Suffix
	Yisong		SU	
Residence Information (Select One) US Residency ☒ Non US Residency Active US Military Service				
City	Ningde, Fujian	Country of Residence ⁱ		CN

Mailing Address of Inventor:

Address 1	No. 1 Xingang Road, Zhangwan Town			
Address 2	Jiaocheng District			
City	Ningde, Fujian	State/Province		
Postal Code	352100	Country ⁱ	CN	
Inventor	4			Remove
Legal Name				

Prefix	Given Name	Middle Name	Family Name	Suffix
	Huawei		ZHONG	
Residence Information (Select One) US Residency ☒ Non US Residency Active US Military Service				
City	Ningde, Fujian	Country of Residence ⁱ		CN

Mailing Address of Inventor:

Address 1	No. 1 Xingang Road, Zhangwan Town			
Address 2	Jiaocheng District			
City	Ningde, Fujian	State/Province		
Postal Code	352100	Country ⁱ	CN	
Inventor	5			Remove
Legal Name				

Prefix	Given Name	Middle Name	Family Name	Suffix
	Changming		QU	
Residence Information (Select One) US Residency ☒ Non US Residency Active US Military Service				
City	Ningde, Fujian	Country of Residence ⁱ		CN

Mailing Address of Inventor:

Address 1	No. 1 Xingang Road, Zhangwan Town			
Address 2	Jiaocheng District			
City	Ningde, Fujian	State/Province		
Postal Code	352100	Country ⁱ	CN	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	14850042COA
		Application Number	
Title of Invention	ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE		

Inventor	6 Remove			
Legal Name				
Prefix	Given Name	Middle Name	Family Name	Suffix
	Xiaozhen		ZHANG	
Residence Information (Select One) US Residency ☒ Non US Residency Active US Military Service				
City	Ningde, Fujian		Country of Residence ⁱ	CN
Mailing Address of Inventor:				
Address 1	No. 1 Xingang Road, Zhangwan Town			
Address 2	Jiaocheng District			
City	Ningde, Fujian		State/Province	
Postal Code	352100	Country ⁱ	CN	
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. Add				

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence Information of this application.			
Customer Number	62008		
Email Address	patent@maierandmaier.com	Add Email	Remove Email

Application Information:

Title of the Invention	ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE		
Attorney Docket Number	14850042COA	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	1	Suggested Figure for Publication (if any)	1

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	14850042COA
		Application Number	
Title of Invention	ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE		

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not be** the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	62008		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	16/868966	2020-05-07

Application Data Sheet 37 CFR 1.76		Attorney Docket Number		14850042COA	
		Application Number			
Title of Invention		ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE			
Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16/868966	Division of	16/000597	2018-06-05	10693181	2020-06-23
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.					Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)
201810162494.1	CN	2018-02-26	
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

- ☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
- NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	14850042COA
		Application Number	
Title of Invention	ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE		

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	14850042COA
		Application Number	
Title of Invention	ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE		

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant	1	Remove
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section. Clear		
☒ Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:		
Name of the Deceased or Legally Incapacitated Inventor:		
If the Applicant is an Organization check here. ☒		
Organization Name	Ningde Amperex Technology Limited	
Mailing Address Information For Applicant:		
Address 1	No. 1 Xingang Road, Zhangwan Town	
Address 2	Jiaocheng District	
City	Ningde, Fujian	State/Province
Country	CN	Postal Code
Phone Number		Fax Number
Email Address		
Additional Applicant Data may be generated within this form by selecting the Add button. Add		

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	14850042COA
		Application Number	
Title of Invention	ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE		

Assignee	1		
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.			
Remove			
If the Assignee or Non-Applicant Assignee is an Organization check here. ☒			
Organization Name	Ningde Amperex Technology Limited		
Mailing Address Information For Assignee including Non-Applicant Assignee:			
Address 1	No. 1 Xingang Road, Zhangwan Town		
Address 2	Jiaocheng District		
City	Ningde, Fujian	State/Province	
Country ⁱ	CN	Postal Code	352100
Phone Number		Fax Number	
Email Address			
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.		Add	

Signature:[Remove](#)

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). However, if this Application Data Sheet is submitted with the **INITIAL** filing of the application and either box A or B is **not** checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Timothy J. Maier/		Date (YYYY-MM-DD)	2022-03-29	
First Name	Timothy	Last Name	Maier	Registration Number	51,986
Additional Signature may be generated within this form by selecting the Add button.				Add	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	14850042COA
		Application Number	
Title of Invention	ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE		

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

5 This is a continuation application of Patent Application No. 16/868966,
filed on May 07, 2020, which is a divisional application of Patent Application
No. 16/000,597, filed on June 05, 2018, issued as U.S. Patent No. 10,693,181,
assigned to the same assignee, which is based on and claims priority to China
Patent Application No. 201810162494.1 filed on February 26, 2018, the contents
10 of which are incorporated by reference herein.

TECHNICAL FIELD

The present application relates to battery, and more particularly to an
electrode, an electrochemical device, and an electronic device.

15

BACKGROUND

Lithium-ion batteries have entered the daily life with the advancement of
science and technology and the improvement of environmental protection
requirements. With the rapid popularization of lithium-ion batteries, safety
20 problems caused by external forces puncturing lithium-ion batteries occasionally
occur on the user's side, and their safety performance has been increasingly
received attention by people, especially the continued fermentation of some cell
phone explosions, causing users, sales backends, and lithium-ion battery
manufacturers all place new demands on the safety performance of lithium-ion
25 batteries.

Current methods for improving the safety of lithium-ion batteries are at the
expense of the energy density of lithium-ion batteries. Therefore, there is an
urgent need to provide a technology that can significantly improve the safety
performance of lithium-ion batteries under conditions of higher energy density.

SUMMARY

In the examples of the present application, a double layer design used for the active material layer in the electrode can avoid the internal short circuit of the lithium-ion battery caused by the external force and will not cause the battery to fail.

Some examples of the present application provide an electrode comprising: a current collector; a first active material layer, comprising a first active material; and a second active material layer, comprising a second active material; wherein the first active material layer is arranged between the current collector and the second active material layer, the first active material layer is formed on at least one surface of the current collector, and a ratio of an average particle size of the second active material to an average particle size of the first active material is from 1:1 to 40:1.

In above electrode, the first active material has an average particle size in a range of 0.2 μm to 15 μm . The average particle size (Dv50) refers to a particle size that reaches a volume accumulation of 50% from the small particle size side in a volume-based granularity distribution.

In above electrode, a particle size of 90% accumulative volume of the first active material is less than 40 μm . A particle size of 90% accumulative volume (Dv90) refers to a particle size that reaches a volume accumulation of 90% from the small particle size side in a volume-based granularity distribution.

In above electrode, the first active material layer has a thickness in a range of 2 μm to 30 μm .

In above electrode, the second active material layer has a thickness equal to or more than 30 μm .

In above electrode, the first active material comprises one of lithium cobaltate, lithium manganate, lithium nickelate, lithium nickel cobalt manganese oxide, lithium iron phosphate, lithium iron manganese phosphate, lithium

vanadium phosphate, lithium vanadyl phosphate, lithium-rich manganese-based materials, lithium nickel cobalt aluminate and lithium titanate, and combinations thereof.

5 In above electrode, the second active material comprises one of lithium cobaltate, lithium nickel cobalt manganese oxide, lithium nickel cobalt aluminum oxide, lithium-rich manganese-based material, lithium iron phosphate, and combinations thereof.

10 In above electrode, the first active material comprises one of artificial graphite, natural graphite, mesocarbon microbeads, soft carbon, hard carbon, silicon, silicon carbide, lithium titanate, and combinations thereof.

In above electrode, each of the first active material layer and the second active material layer further comprises a binder, and the binder comprises one selected from polyvinylidene fluoride, vinylidene fluoride-hexafluoropropylene copolymer, polyamide, polyacrylonitrile, polyacrylates, polyacrylic acids, 15 polyacrylic acid salt, carboxymethylcellulose sodium, polyethylene pyrrolidone, polyvinyl ether, polymethyl methacrylate, polytetrafluoroethylene, polyhexafluoropropylene and styrene butadiene rubber, and combinations thereof.

20 Some examples of the present application further provide a lithium-ion battery comprising above electrode s.

The double-layered active material layer is used for the active material layer in the electrode of the present application to ensure that the lithium-ion battery does not generate a short circuit when pressed by an external force, thereby ensuring the mechanical safety performance of the lithium-ion battery.

25

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 shows a schematic view of the structure of a positive electrode.

Fig. 2 shows a schematic view of the structure of a positive electrode according to some examples of the present application.

DETAILED DESCRIPTION

The following examples may enable those skilled in the art to more fully understand the present application, but do not limit the present application in any way.

The double-layered active material layer is used for the active material layer in the electrode in the examples of the present application to ensure that the lithium-ion battery does not generate a short circuit when pressed by an external force (the corresponding test method being a nail test), thereby ensuring the mechanical safety performance of the lithium-ion battery (50% pass the nail test). The technical means of the present application can be applied to a lithium-ion battery and play a great safety role in a lithium-ion battery application terminal. It should be noted that the present application takes the positive electrode as an example, and the negative electrode can also realize the technical solution.

In the process of nail penetration for lithium-ion battery, four short circuits usually occur: positive electrode active material layer-negative electrode active material layer, positive electrode active material layer-negative electrode current collector (usually copper foil), positive electrode current collector (usually aluminum foil)-negative electrode current collector, positive electrode current collector-negative electrode active material layer. In these four short-circuit modes, the short circuit mode of the positive electrode current collector-negative electrode active material layer is the most dangerous among the four short circuit modes because the short circuit power at the time of a short circuit is very large. Therefore, preferentially avoiding such a short circuit mode of the positive electrode current collector-negative electrode active material layer is the most direct means for improving the safety of the lithium-ion battery penetrating through nails.

In the present application, the short circuit of the positive current collector-

negative electrode active material layer is avoided. That is to say, a coating with a higher resistivity is provided on the surface of the negative electrode active material layer, or a coating with a higher resistivity is provided on the surface of the positive electrode current collector to avoid direct contact between the negative electrode active material layer and the positive electrode current collector so as to prevent the most dangerous short circuit mode from occurring. The coating provided on the surface of the negative electrode active material layer or the surface of the separator is usually a ceramic layer. By increasing the thickness of the ceramic layer, a short circuit between the negative electrode active material layer and the positive electrode current collector can be avoided. In order to avoid this short-circuit pattern between the negative electrode active material layer and the positive electrode current collector, the thickness of these coatings should not be too thin (generally at least greater than the surface roughness of the negative electrode active material layer surface), which will bring about the loss of energy density of the lithium-ion battery. In addition, these coatings increase the transmission distance of lithium ions from the positive electrode to the negative electrode, increase the transmission impedance of the lithium-ion battery, and greatly deteriorate the dynamic performance of the lithium-ion battery. And due to the large damage to the lithium-ion battery during the nail process, part of the coating will fall off during the nail process, thus affecting the stability of the nail protection effect.

One technical means is to allow the surface of the positive electrode current collector to adhere to a material with a higher resistivity to avoid direct contact between the positive electrode current collector and the negative electrode active material layer during the nail process. It is a common practice to reduce the particle size of the positive electrode active material and increase the binder content of the positive electrode active material layer. The decrease of the particle size of the positive electrode active material will reduce the cycle performance of the lithium-ion battery, and increasing the binder content in the

positive electrode active material layer will make the positive electrode become brittle, resulting in a greater effects on the production process and the energy density of the lithium-ion battery.

As shown in Fig. 1, a schematic view of a positive electrode is shown. The positive electrode current collector 1 is located between two active material layers 2. Fig. 2 shows a double-layered active material layer structure of the present application, i.e., an additional active material layer 3 is formed between the active material layer 2 and the positive electrode collector 1. The material and formulation of the active material layer 3 are optimized so that the adhesive force between the active material layer 3 and the positive electrode current collector 1 is increased, thereby protecting the positive electrode current collector 1, and the active material layer 3 will not come off during the nail process. Also, the short-circuit mode of the positive electrode current collector-negative electrode active material layer does not occur during the nail process, thereby ensuring the safety performance of the lithium-ion battery. For better differentiation, the active material layer 3 is hereinafter referred to as a first active material layer, and the active material layer 2 is referred to as a second active material layer. This is merely for better description and does not limit the present application.

The second active material layer 2 and the first active material layer 3 of the present application each contain a positive active material when compared with coating a non-conductive or poorly-conductive material layer between the positive electrode current collector and the active material layer, so that both the first and second active material layers can provide energy, and their energy density is high. The design of the present application has no effect on the conductive properties of the active material layer, while using a non-conductive or poorly conductive coating for lithium-ion batteries may exert greater influence on the electronic conductance capability of lithium-ion batteries, so that the normal charge and discharge of the lithium-ion battery will be affected.

The positive electrode active material of the first active material layer in the examples of the present application comprises one of lithium cobaltate, lithium manganate, lithium nickelate, lithium nickel cobalt manganese oxide, lithium iron phosphate, lithium iron manganese phosphate, lithium vanadium phosphate, lithium vanadyl phosphate, lithium-rich manganese-based materials, lithium nickel cobalt aluminate and lithium titanate, and combinations thereof. The positive electrode active material of the second active material layer comprises the combination of one or more selected from the group consisting of lithium cobaltate, lithium nickel cobalt manganese oxide, lithium nickel cobalt aluminum oxide, lithium-rich manganese-based material, lithium iron phosphate. The positive electrode active material layer is a two-layer structure, and there are two positive electrode active material layers on the surface of the positive electrode current collector. Although the positive electrode active material of the two active material layers shown in Fig. 2 has a clear interface, the interfaces of the two active material layers are bonded to each other without obvious interface by the embedding of the upper and lower layer particles and the binder between the two active material layers.

The active material layer of the double-layer structure protects the positive electrode current collector and the first active material layer plays a leading role. In order to achieve the protection of the positive electrode current collector, the positive electrode active material of the first active material layer is required to have a small particle size so as to achieve higher coverage and adhesion on the positive electrode current collector (aluminum foil). In order to ensure the covering and bonding of the positive electrode current collector while reducing the influence of the first active material layer on the whole active material layer (the first active material layer has a lower compaction density than the second active material layer, so it is necessary to reduce the volume proportion of the first active material layer in the whole active material layer as much as possible). In the granularity distribution of the positive electrode active material of the first

active material layer on a volume basis, a particle size that reaches volume accumulation of 50% from a small particle size (Dv50) ranges from 0.2 μm to 15 μm . And in the granularity distribution of the positive electrode active material of the first active material layer on a volume basis, a particle size that reaches volume accumulation of 90% from a small particle size (Dv90) ranges below 40 μm . In order to ensure the protective effect on the positive electrode current collector, the first active material layer needs to completely cover the positive electrode current collector. The smaller the particles of the positive electrode active material, the thinner the coating can be made while the compaction density of the positive electrode active material of small particles will be lower, leading a certain impact on the energy density of the lithium-ion battery.

In addition, considering that the first active material layer and the second active material layer also have some interactions, comprising the effects of adhesion and electron conduction, and considering that the first active material layer cannot be crushed due to the force transfer of the second active material layer particles during the cold pressing, so the particle size ratio of the second active material layer and the first active material layer is another important factor that affects the performance of the lithium-ion battery.

In order to prevent the first active material layer from being damaged by the positive active material in the second active material layer during the cold pressing and to ensure the maximum adhesion between the first active material layer and the second active material layer, the ratio of Dv50 between the positive electrode active materials of the first active material layer and the second active material layer is in a certain range, i.e., Dv50 (of the second active material layer): Dv50 (of the first active material layer) = 1: 1 to 40:1. The particles of the positive active material of the second active material layer are too large, and thus the destructive effect on the first active material layer after the cold press increases, thereby resulting in the weakening of the protective effect of the first

active material layer on the positive electrode current collector. In addition to the binding effect of the binder between the first active material layer and the second active material layer, the mutual riveting action of the positive electrode active material particles can also provide a certain binding effect. This bonding effect requires that the particle size difference between the particles is not too large. When the particles of the second active material layer are too large, this riveting effect is weakened, so that the interface between the layers becomes distinct or even separate.

In addition, the first active material layer needs a certain thickness in order to achieve full coverage of the positive electrode current collector. In order to achieve this goal, the particle size of the active material of the first active material layer has an upper limit. Since the particle size of the positive electrode active material in the first active material layer is small and the binder contained in the first active material layer is larger than the binder in the second active material layer, the thickness of the first active material layer cannot be too large, otherwise it will reduce the energy density of lithium-ion batteries. Also, since the first active material layer needs to cover the positive electrode current collector, the thickness of the first active material layer needs to be controlled to 3 μm -40 μm , and the thickness after cold pressing is 2 μm -30 μm . In particular, the thickness of the first active material layer is not less than Dv90 of the positive electrode active material in the first active material layer, which is to ensure the coverage of the first active material layer, thereby achieving complete protection of the positive electrode current collector. Since the positive electrode active material of the first active material layer has a small particle size, the compaction density thereof will be relatively low. Therefore, in order to achieve a high energy density of the lithium-ion battery, the thickness of the second active material layer needs to be increased, and the thickness of the second active material layer is increased, e.g., to 30 μm or more. The thicker the second active material layer, the higher the energy density of the lithium-ion battery.

The positive electrode is cold-pressed under a certain pressure, and the active material layer is pressed into an electrode having a certain thickness. Since the active material layer of the present application has a double-layer structure, the compaction density of the positive electrode can be divided into the compaction density of the second active material layer, the compaction density of the first active material layer, and the overall compaction density. To ensure the energy density of a lithium-ion battery, it is required that the positive electrode has a higher compaction density, the compaction density of the first active material layer is greater than 2.8 g/cc, the compaction density of the second active material layer is greater than 3.3 g/cc and the compaction density of the all active material layers is greater than 3.2 g/cc.

In addition, in order to achieve higher bonding for the first active material layer, it is required that the first active material layer contains a certain amount of binder, and the binder comprises, but is not limited to, one polyvinylidene fluoride, vinylidene fluoride-hexafluoropropylene copolymer, polyamide, polyacrylonitrile, polyacrylates, polyacrylic acids, polyacrylates, carboxymethylcellulose sodium, polyethylene pyrrolidone, polyvinyl ether, polymethyl methacrylate, polytetrafluoroethylene, polyhexafluoropropylene and styrene butadiene rubber, and combinations thereof. On the one hand, the binder allows the active material layer and the positive electrode current collector to have a better adhesion, on the other hand, when the binder content increases, the first active material layer will have a lower compaction density. The mass content of the binder in the first active material layer is selected in the range of 1.5% to 6%, and the mass content of the binder in the second active material layer is selected in the range of 0.5% to 4%.

Since the positive electrode active material in the positive electrode generally has a relatively common conductivity, the active material layer also contains a certain amount of a conductive agent, such as carbon black (SP), carbon nanotubes (CNT), graphene, and the like. The conductive agent

increases its electrical conductivity, and the mass content of the conductive agent is selected in the range from 0.5% to 5%.

In addition, some other treatments may be performed on the first active material layer or the second active material layer, or some treatments may be performed on the positive electrode current collector, such as a roughness treatment, a heat treatment, etc.. The working principle or effect comprises enhancing the adhesion of the current collector. Although such principle or effect is not described in detail in this application, it is comprised in the scope of the present application.

The examples of the present application further provide a lithium-ion battery comprising above positive electrode. The lithium-ion battery comprises a positive electrode, a negative electrode, an separator, an electrolyte, and the like. The negative electrode comprises a negative electrode current collector and a negative electrode active material layer coated on the negative electrode current collector, and the negative electrode active material layer comprises a negative electrode active material, a conductive agent and a binder. The negative electrode current collector may be a Cu foil, however, other negative electrode current collectors commonly used in the art may be used. The conductive agent and the binder of the negative electrode active material layer are similar to the conductive agent and the binder of the positive electrode active material layer described above, and will not be described herein. The negative electrode active material comprises, but is not limited to, one of soft carbon, hard carbon, mesocarbon microbeads (MCMB), silicon, silicon-carbon composites, lithium titanate, alloys, artificial graphite, and natural graphite, and combinations thereof. Above negative electrode active material comprises a negative electrode active material that has been doped and/or coated in the prior art.

The separator comprises a polyethylene (PE) separator, a polypropylene (PP) separator, and the like. In addition, the separator comprises one of a bare separation film, an inorganic particle-coated separation film, a polymer-coated

separator, or a combination thereof, depending on whether or not the surface of the separator comprises a coating and on the type of the coating. The electrolyte comprises at least two of dimethyl carbonate (DMC), ethyl methyl carbonate (EMC), diethyl carbonate (DEC), ethylene carbonate (EC), propylene carbonate (PC), propyl propionate (PP). Further, the electrolyte may additionally comprise
5 at least one of vinylene carbonate (VC), fluoroethylene carbonate (FEC), and dinitrile compounds as an electrolyte additive, wherein the dinitrile compound comprises succinonitrile (SN).

The positive electrode, the separator, and the negative electrode are
10 sequentially wound or stacked into a bare cell, and then filled into, for example, an aluminum plastic film, and then the electrolyte is injected, followed by chemical conversion and package. Then, the prepared lithium-ion battery is subjected to performance test and cycle test.

It will be understood by those skilled in the art that above-described method
15 for producing a lithium-ion battery is only an example. Other methods commonly used in the art can be used without departing from the disclosure of the present application.

The electrode of the present application can be used in lithium-ion batteries of different structures. In the examples, a wound lithium-ion battery is taken as
20 an example, but the positive electrode of the present application can be applied to lithium ions of laminated structures, multi-electrode tab structures, and the like, all of which are comprised in the scope of the present application.

The electrode of the present application may be other types of electrode. In the examples, a positive electrode is taken as an example, but the electrode of the
25 present application may be a negative electrode, all of which are comprised in the scope of the present application.

The electrode of the present application can be used in lithium-ion batteries of different types. In the examples, a soft package lithium-ion battery is taken as an example, but the electrode of the present application can be applied to other

lithium-ion batteries such as square aluminum shell batteries, cylindrical batteries, and the like, all of which are comprised in the scope of the present application.

Some specific examples and comparative examples are listed below to better illustrate this application.

Comparative Example 1

An aluminum foil is used as the positive electrode collector, and a layer of lithium cobaltate slurry composed of 97.8wt% LiCoO_2 (LCO), 0.8wt% polyvinylidene fluoride (PVDF) and 1.4wt% conductive carbon black is evenly coated on the surface of aluminum foil. Then drying was performed at 85 °C, followed by cold pressing, cutting, slitting, and drying under a vacuum condition of 85 °C for 4 h to prepare a positive electrode, wherein the thickness of the coating is 63 μm .

A copper foil is used as a negative electrode collector, and a layer of graphite slurry composed of 97.7wt% artificial graphite, 1.3wt% carboxymethyl cellulose sodium (CMC) and 1.0wt% styrene butadiene rubber (SBR) is evenly coated on the surface of copper foil. Then drying was performed at 85 °C, followed by cold pressing, cutting, slitting, and drying under a vacuum condition of 85 °C for 4 h to prepare a negative electrode.

The positive electrode and the negative electrode are wound after being slit, and the positive electrode and the negative electrode are separated by a polyethylene separator to prepare a wound bare cell. After the bare cell is top-side sealed, spray-coded, vacuum-dried, filled with electrolyte, and allowed to stand at high temperatures for chemical conversion and capacity, a finished lithium-ion battery can be obtained.

Example 1

An aluminum foil is used as the positive electrode collector, and a layer of small particle lithium nickel cobalt manganese oxide slurry composed of

95.8wt% lithium nickel cobalt manganese oxide, 2.8wt% polyvinylidene fluoride (PVDF) and 1.4wt% conductive carbon black is evenly coated on the surface of aluminum foil for drying under 85 °C; a layer of lithium cobalt oxide slurry composed of 97.8wt% LiCoO_2 (LCO), 0.8wt% polyvinylidene fluoride (PVDF) and 1.4wt% conductive carbon black is evenly coated as a second active material layer on the first active material layer coated with the lithium nickel cobalt manganese oxide slurry; then drying was performed at 85 °C, followed by cold pressing, cutting, slitting, and drying under a vacuum condition of 85 °C for 4 h to prepare a positive electrode. Wherein, Dv50 of the first active material (lithium nickel cobalt manganese oxide) of the first active material layer is 0.2 μm , and Dv90 of the first active material (lithium nickel cobalt manganese oxide) of the first active material layer is 20 μm . The thickness of the first active material layer is 25 μm , the ratio of Dv50 between the second active material to the first active material is 2:1, and the thickness of the second active material layer is 54 μm .

A copper foil is used as a negative electrode collector, and a layer of graphite slurry composed of 97.7wt% artificial graphite, 1.3wt% carboxymethyl cellulose sodium (CMC) and 1.0wt% styrene butadiene rubber (SBR) is evenly coated on the surface of copper foil. Then drying was performed at 85 °C, followed by cold pressing, cutting, slitting, and drying under a vacuum condition of 85 °C for 4 h to prepare a negative electrode.

The positive electrode and the negative electrode are wound after being slit, and the positive electrode and the negative electrode are separated by a polyethylene separator to prepare a wound bare cell. After the bare cell is top-side sealed, spray-coded, vacuum-dried, filled with electrolyte, and allowed to stand at high temperatures for chemical conversion and capacity, a finished lithium-ion battery can be obtained.

Example 2

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 2 is 0.5 μm .

Example 3

5 It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 3 is 1 μm .

Example 4

10 It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 4 is 3 μm .

Example 5

15 It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 5 is 5 μm .

Example 6

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 6 is 7 μm .

20 Example 7

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 7 is 9 μm .

Example 8

25 It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 8 is 11 μm .

Example 9

It is the same as the preparation method of Example 1, except that Dv50 of

the first active material layer in Example 9 is 15 μm .

Example 10

It is the same as the preparation method of Example 1, except that Dv50 of
5 the first active material layer in Example 10 is 16 μm .

Example 11

It is the same as the preparation method of Example 1, except that Dv50 of
the first active material layer in Example 11 is 7 μm and Dv90 of the first active
10 material layer is 8 μm .

Example 12

It is the same as the preparation method of Example 1, except that Dv50 of
the first active material layer in Example 12 is 7 μm and Dv90 of the first active
15 material layer is 10 μm .

Example 13

It is the same as the preparation method of Example 1, except that Dv50 of
the first active material layer in Example 13 is 7 μm and Dv90 of the first active
20 material layer is 15 μm .

Example 14

It is the same as the preparation method of Example 1, except that Dv50 of
the first active material layer in Example 14 is 7 μm and Dv90 of the first active
25 material layer is 25 μm .

Example 15

It is the same as the preparation method of Example 1, except that Dv50 of
the first active material layer in Example 15 is 7 μm and Dv90 of the first active

material layer is 40 μm .

Example 16

It is the same as the preparation method of Example 1, except that Dv50 of
5 the first active material layer in Example 16 is 1 μm and Dv90 of the first active
material layer is 2 μm .

Example 17

It is the same as the preparation method of Example 1, except that Dv50 of
10 the first active material layer in Example 17 is 1 μm and Dv90 of the first active
material layer is 5 μm .

Example 18

It is the same as the preparation method of Example 1, except that Dv50 of
15 the first active material layer in Example 18 is 1 μm and Dv90 of the first active
material layer is 10 μm .

Example 19

It is the same as the preparation method of Example 1, except that Dv50 of
20 the first active material layer in Example 19 is 1 μm and Dv90 of the first active
material layer is 15 μm .

Example 20

It is the same as the preparation method of Example 1, except that Dv50 of
25 the first active material layer in Example 20 is 1 μm and Dv90 of the first active
material layer is 20 μm .

Example 21

It is the same as the preparation method of Example 1, except that Dv50 of

the first active material layer in Example 21 is 7 μm and Dv90 of the first active material layer is 45 μm .

Example 22

5 It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 22 is 7 μm and the ratio of Dv50 between the second active material layer to the first active material layer is 1:1.

Example 23

10 It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 23 is 7 μm and the ratio of Dv50 between the second active material layer to the first active material layer is 5:1.

Example 24

15 It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 24 is 1 μm and the ratio of Dv50 between the second active material layer to the first active material layer is 1:1.

Example 25

20 It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 25 is 1 μm and the ratio of Dv50 between the second active material layer to the first active material layer is 2:1.

Example 26

25 It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 26 is 1 μm and the ratio of Dv50 between the second active material layer to the first active material layer is 5:1.

Example 27

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 27 is 1 μm and the ratio of Dv50 between the second active material layer to the first active material layer is 10:1.

5 Example 28

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 28 is 1 μm and the ratio of Dv50 between the second active material layer to the first active material layer is 20:1.

10 Example 29

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 29 is 1 μm and the ratio of Dv50 between the second active material layer to the first active material layer is 40:1.

15 Example 30

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 30 is 1 μm and the ratio of Dv50 between the second active material layer to the first active material layer is 45:1.

20 Example 31

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 31 is 1 μm and the thickness of the first active material layer is 2 μm .

25 Example 32

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 32 is 1 μm and the thickness of the first active material layer is 5 μm .

Example 33

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 33 is 1 μm and the thickness of the first active material layer is 7 μm .

5

Example 34

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 34 is 1 μm and the thickness of the first active material layer is 10 μm .

10

Example 35

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 35 is 1 μm and the thickness of the first active material layer is 15 μm .

15

Example 36

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 36 is 1 μm and the thickness of the first active material layer is 20 μm .

20

Example 37

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 37 is 1 μm and the thickness of the first active material layer is 30 μm .

25

Example 38

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 38 is 7 μm and the thickness of the second active material layer is 30 μm .

Example 39

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 39 is 7 μm and the thickness of the
5 second active material layer is 40 μm .

Example 40

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 40 is 7 μm and the thickness of the
10 second active material layer is 50 μm .

Example 41

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 41 is 7 μm and the thickness of the
15 second active material layer is 60 μm .

Example 42

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 42 is 7 μm and the thickness of the
20 second active material layer is 70 μm .

Example 43

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 43 is 7 μm and the thickness of the
25 second active material layer is 80 μm .

Example 44

It is the same as the preparation method of Example 1, except that Dv50 of the first active material layer in Example 44 is 7 μm and the thickness of the

second active material layer is 100 μm .

Example 45

It is the same as the preparation method of Example 1, except that Dv50 of
5 the first active material layer in Example 45 is 7 μm .

Example 46

It is the same as the preparation method of Example 1, except that the
positive electrode active material of the first active material layer in Example 46
10 is lithium cobaltate and Dv50 of the first active material layer is 7 μm .

Example 47

It is the same as the preparation method of Example 1, except that the
positive electrode active material of the first active material layer in Example 47
15 is lithium manganese oxide and Dv50 of the first active material layer is 7 μm .

Example 48

It is the same as the preparation method of Example 1, except that the
positive electrode active material of the first active material layer in Example 48
20 is lithium iron phosphate and Dv50 of the first active material layer is 7 μm .

Example 49

It is the same as the preparation method of Example 1, except that the
positive electrode active material of the first active material layer in Example 49
25 is lithium nickel cobalt aluminate and Dv50 of the first active material layer is 7
 μm .

Example 50

It is the same as the preparation method of Example 1, except that the

positive electrode active material of the first active material layer in Example 50 is lithium titanate and Dv50 of the first active material layer is 7 μm .

Next, the passing rate of nail penetration and energy density of lithium-ion
5 batteries are tested.

1. Method for nail test:

Place the lithium-ion battery in a 25 °C thermostat and allow it to stand for 30 minutes to allow the lithium-ion battery to reach a constant temperature. The thermostated lithium-ion battery is charged at a constant current of 0.5 C to a voltage
10 of 4.4 V, and then charged at a constant voltage of 4.4 V to a current of 0.025 C. The fully-charged lithium-ion battery is transferred to a nailing tester and the test ambient temperature is maintained at 25 °C $\pm$ 2 °C, and then a steel nail with a 4 mm diameter is used to penetrate through the center of the lithium-ion battery at a uniform speed of 30 mm/s and keep the steel nail for 300 s. If the lithium-ion battery does not fire
15 and explode, it is marked as PASS. Ten lithium-ion batteries are tested each time, and the number of lithium-ion batteries passed the nail test is used as an indicator to evaluate the safety performance of the lithium-ion battery.

2. Method for testing energy density:

Place the lithium-ion battery in a 25 °C thermostat and allow it to stand for 30
20 minutes to allow the lithium-ion battery to reach a constant temperature. The thermostated lithium-ion battery is charged at a constant current of 0.5 C to a voltage of 4.4 V, and then charged at a constant voltage of 4.4 V to a current of 0.05C, discharged at 0.5 C to a voltage of 3.0 V, and the discharge energy is recorded.

Energy density = discharge energy / (length * width * thickness of lithium-
25 ion battery).

Experimental parameters and measurement results of the respective examples and comparative examples are shown in Table 1 below.

Table 1

Examp les	The first active material	Dv50/ μm	Dv90/ μm	Dv50 ratio	Thick n-ess	Thickn- ess of	Mas s	Mas -s	nail penetrat	En- ergy
--------------	---------------------------	------------------------	------------------------	---------------	----------------	-------------------	----------	-----------	------------------	-------------

		(the first active material)	(the first active material)	(the second active material : the first active material)	of the first active material (μm)	the second active material/ μm	content of binder of the first active material (wt %)	content of binder of the second active material (wt %)	ion PASS rate	density (Wh/L)
1	lithium nickel cobalt manganese oxide	0.2	20	2: 1	25	54	2.8	0.8	10/10	721
2	lithium nickel cobalt manganese oxide	0.5	20	2: 1	25	54	2.8	0.8	10/10	721
3	lithium nickel cobalt manganese oxide	1	20	2: 1	25	54	2.8	0.8	10/10	721
4	lithium nickel cobalt manganese oxide	3	20	2: 1	25	54	2.8	0.8	10/10	729
5	lithium nickel cobalt manganese oxide	5	20	2: 1	25	54	2.8	0.8	10/10	735
6	lithium nickel cobalt manganese oxide	7	20	2: 1	25	54	2.8	0.8	10/10	738
7	lithium nickel cobalt manganese oxide	9	20	2: 1	25	54	2.8	0.8	10/10	741
8	lithium nickel cobalt manganese oxide	11	20	2: 1	25	54	2.8	0.8	8/10	745
9	lithium nickel cobalt manganese oxide	15	20	2: 1	25	54	2.8	0.8	6/10	750
10	lithium nickel cobalt manganese oxide	16	20	2: 1	25	54	2.8	0.8	5/10	752
11	lithium nickel cobalt manganese oxide	7	8	2: 1	25	54	2.8	0.8	10/10	738
12	lithium nickel cobalt manganese oxide	7	10	2: 1	25	54	2.8	0.8	10/10	738
13	lithium nickel cobalt manganese oxide	7	15	2: 1	25	54	2.8	0.8	10/10	738

6	lithium nickel cobalt manganese oxide	7	20	2: 1	25	54	2.8	0.8	10/10	738
14	lithium nickel cobalt manganese oxide	7	25	2: 1	25	54	2.8	0.8	9/10	738
15	lithium nickel cobalt manganese oxide	7	40	2: 1	25	54	2.8	0.8	9/10	738
16	lithium nickel cobalt manganese oxide	1	2	2: 1	25	54	2.8	0.8	10/10	721
17	lithium nickel cobalt manganese oxide	1	5	2: 1	25	54	2.8	0.8	10/10	721
18	lithium nickel cobalt manganese oxide	1	10	2: 1	25	54	2.8	0.8	10/10	721
19	lithium nickel cobalt manganese oxide	1	15	2: 1	25	54	2.8	0.8	10/10	721
20	lithium nickel cobalt manganese oxide	1	20	2: 1	25	54	2.8	0.8	10/10	721
21	lithium nickel cobalt manganese oxide	7	45	2: 1	25	54	2.8	0.8	3/10	737
22	lithium nickel cobalt manganese oxide	7	20	1: 1	25	54	2.8	0.8	10/10	741
6	lithium nickel cobalt manganese oxide	7	20	2: 1	25	54	2.8	0.8	10/10	738
23	lithium nickel cobalt manganese oxide	7	20	5: 1	25	54	2.8	0.8	9/10	725
24	lithium nickel cobalt manganese oxide	1	20	1: 1	25	54	2.8	0.8	10/10	721
25	lithium nickel cobalt manganese oxide	1	20	2: 1	25	54	2.8	0.8	10/10	721
26	lithium nickel cobalt manganese oxide	1	20	5: 1	25	54	2.8	0.8	10/10	721
27	lithium nickel cobalt manganese oxide	1	20	10: 1	25	54	2.8	0.8	10/10	717
28	lithium nickel cobalt manganese oxide	1	20	20: 1	25	54	2.8	0.8	9/10	713
29	lithium nickel cobalt manganese oxide	1	20	40: 1	25	54	2.8	0.8	7/10	709
30	lithium nickel cobalt manganese oxide	1	20	45: 1	25	54	2.8	0.8	2/10	697
31	lithium nickel cobalt manganese oxide	1	20	2: 1	2	54	2.8	0.8	10/10	721
32	lithium nickel cobalt manganese oxide	1	20	2: 1	5	54	2.8	0.8	10/10	719

33	lithium nickel cobalt manganese oxide	1	20	2: 1	7	54	2.8	0.8	10/10	718
34	lithium nickel cobalt manganese oxide	1	20	2: 1	10	54	2.8	0.8	10/10	715
35	lithium nickel cobalt manganese oxide	1	20	2: 1	15	54	2.8	0.8	10/10	711
36	lithium nickel cobalt manganese oxide	1	20	2: 1	20	54	2.8	0.8	10/10	706
37	lithium nickel cobalt manganese oxide	1	20	2: 1	30	54	2.8	0.8	10/10	698
38	lithium nickel cobalt manganese oxide	7	20	2: 1	25	30	2.8	0.8	10/10	723
39	lithium nickel cobalt manganese oxide	7	20	2: 1	25	40	2.8	0.8	10/10	734
40	lithium nickel cobalt manganese oxide	7	20	2: 1	25	50	2.8	0.8	10/10	735
6	lithium nickel cobalt manganese oxide	7	20	2: 1	25	54	2.8	0.8	10/10	738
41	lithium nickel cobalt manganese oxide	7	20	2: 1	25	60	2.8	0.8	10/10	743
42	lithium nickel cobalt manganese oxide	7	20	2: 1	25	70	2.8	0.8	10/10	751
43	lithium nickel cobalt manganese oxide	7	20	2: 1	25	80	2.8	0.8	10/10	766
44	lithium nickel cobalt manganese oxide	7	20	2: 1	25	100	2.8	0.8	10/10	778
45	lithium nickel cobalt manganese oxide	7	20	2: 1	25	54	2.8	0.8	10/10	738
46	lithium cobaltate	7	20	2: 1	25	54	2.8	0.8	10/10	743
47	lithium manganese oxide	7	20	2: 1	25	54	2.8	0.8	10/10	728
48	lithium iron phosphate	7	20	2: 1	25	54	2.8	0.8	10/10	730
49	lithium nickel cobalt aluminate	7	20	2: 1	25	54	2.8	0.8	10/10	735
50	lithium titanate	7	20	2: 1	25	54	2.8	0.8	10/10	723
Comparative Example										
1	/	/	/	/	/	79	/	0.8	0/10	747

Comparing Comparative Example 1 with Examples 1-50, it can be seen that through the use of the active material layer having a double layer structure, the nail penetration PASS rate of the lithium-ion battery has been improved with a

different extent, and the energy density is not substantially affected.

From Examples 1-9, it can be seen that as the Dv50 of the first active material layer increases, the energy density also increases, but then the nail penetration PASS rate is reduced. By comparing Examples 1-10, it can be seen that when the Dv50 of the first active material layer is greater than 15 μm , the nail penetration PASS rate of the lithium-ion battery is reduced to a low level.

From Examples 11-20 and 6, it can be seen that as the Dv90 of the first active material layer increases, the energy density is almost constant, but then the nail penetration PASS rate of the lithium-ion battery is reduced. By comparing Example 6 with Examples 11-21, it can be seen that when the Dv90 of the first active material layer of the lithium-ion battery is greater than 40 μm , the nail penetration PASS rate of the lithium-ion battery is reduced to a low level.

By comparing Example 6 with Examples 22-30, it can be seen that as the ratio of the positive electrode active material Dv50 of the second active material layer and the first active material layer increases, both the energy density and the nail penetration PASS rate decrease, and the second active material decreases. When the ratio of the positive electrode active material Dv50 between the first and second active material layer exceeds 40, the nail penetration PASS rate of the lithium-ion battery is reduced to a low level.

According to Examples 31-37, it can be seen that when the thickness of the first active material layer is in a range of 2 μm to 30 μm , the nail penetration performance of the lithium-ion battery is maintained well.

By comparing Example 6 with Examples 38-44, it can be seen that as the thickness of the second active material layer increases, the nail penetration performance of the lithium-ion battery remains substantially unchanged, but the energy density increases.

From Examples 45-50, it can be seen that the positive active material of the first active material layer is selected from different materials, all of the lithium-ion batteries have excellent nail penetration performance, and the energy density

varies slightly with different material.

Those skilled in the art should understand that the above examples are merely exemplary examples, and various changes, substitutions, and changes can be made without departing from the spirit and scope of the present application.

What is claimed is

1. An electrode, comprising:
a current collector;
a first layer comprising a first material; and
a second layer comprising a second material;
wherein the first layer is arranged between the current collector and the second layer, the first layer is formed on a surface of the current collector, and a particle size of 90% accumulative volume of the first material is less than 40 μm ;
wherein a total compaction density of the first layer and the second layer is greater than 3.2 g/cc.
2. The electrode according to claim 1, wherein a thickness of the first layer is not less than the particle size of 90% accumulative volume of the first material in the first layer.
3. The electrode according to claim 1, wherein a ratio of the average particle size of the second material to the average particle size of the first material is from 1:1 to 40:1.
4. The electrode according to claim 1, wherein the first material has an average particle size in a range of 0.2 μm to 15 μm .
5. The electrode according to claim 1, wherein a compaction density of the first layer is greater than 2.8 g/cc, and a compaction density of the second layer is greater than 3.3 g/cc.
6. The electrode according to claim 1, wherein the first layer has a lower compaction density than the second layer.
7. The electrode according to claim 1, wherein the first material comprises one selected from the group consisting of lithium cobaltate, lithium manganate, lithium nickelate, lithium nickel cobalt manganese oxide, lithium iron phosphate, lithium iron manganese phosphate, lithium vanadium phosphate, lithium vanadyl phosphate, lithium-rich manganese-based materials, lithium

nickel cobalt aluminate and lithium titanate, and combinations thereof.

8. The electrode according to claim 1, wherein the second material comprises one selected from the group consisting of lithium cobaltate, lithium nickel cobalt manganese oxide, lithium nickel cobalt aluminum oxide, lithium-rich manganese-based material, lithium iron phosphate, and combinations thereof.

9. The electrode according to claim 1, wherein the first material comprises one selected from the group consisting of artificial graphite, natural graphite, mesocarbon microbeads, soft carbon, hard carbon, silicon, silicon carbide, lithium titanate, and combinations thereof.

10. An electrochemical device, comprising an electrode, wherein the electrode comprises:

a current collector;

a first layer comprising a first material; and

a second layer comprising a second material;

wherein the first layer is arranged between the current collector and the second layer, the first layer is formed on a surface of the current collector, and a particle size of 90% accumulative volume of the first material is less than 40 μm ;

wherein a total compaction density of the first layer and the second layer is greater than 3.2 g/cc.

11. The electrochemical device according to claim 10, wherein a thickness of the first layer is not less than the particle size of 90% accumulative volume of the first material in the first layer.

12. The electrochemical device according to claim 10, wherein a ratio of the average particle size of the second material to the average particle size of the first material is from 1:1 to 40:1.

13. The electrochemical device according to claim 10, wherein the first material has an average particle size in a range of 0.2 μm to 15 μm .

14. The electrochemical device according to claim 10, wherein a

compaction density of the first layer is greater than 2.8 g/cc, and a compaction density of the second layer is greater than 3.3 g/cc.

15. The electrochemical device according to claim 10, wherein the first layer has a lower compaction density than the second layer.

16. The electrochemical device according to claim 10, wherein the first material comprises one selected from the group consisting of lithium cobaltate, lithium manganate, lithium nickelate, lithium nickel cobalt manganese oxide, lithium iron phosphate, lithium iron manganese phosphate, lithium vanadium phosphate, lithium vanadyl phosphate, lithium-rich manganese-based materials, lithium nickel cobalt aluminate and lithium titanate, and combinations thereof.

17. The electrochemical device according to claim 10, wherein the second material comprises one selected from the group consisting of lithium cobaltate, lithium nickel cobalt manganese oxide, lithium nickel cobalt aluminum oxide, lithium-rich manganese-based material, lithium iron phosphate, and combinations thereof.

18. The electrochemical device according to claim 10, wherein the first material comprises one selected from the group consisting of artificial graphite, natural graphite, mesocarbon microbeads, soft carbon, hard carbon, silicon, silicon carbide, lithium titanate, and combinations thereof.

19. An electronic device, comprising an electrochemical device, the electrochemical device comprising an electrode, wherein the electrode comprises:

a current collector;

a first layer comprising a first material; and

a second layer comprising a second material;

wherein the first layer is arranged between the current collector and the second layer, the first layer is formed on a surface of the current collector, and a particle size of 90% accumulative volume of the first material is less than 40 μm ;

wherein a total compaction density of the first layer and the second layer is

greater than 3.2 g/cc.

20. The electronic device according to claim 19, wherein the first layer has a lower compaction density than the second layer.

ABSTRACT

An electrode includes a current collector; a first active material layer including a first active material; and a second active material layer including a second active material; wherein the first active material layer is arranged between the current collector and the second active material layer. The first active material layer is formed on a surface of the current collector, and a particle size of 90% accumulative volume of the first active material is less than 40 μm . The active material layer is used to ensure that the electrochemical device and the electronic device do not generate a short circuit when pressed by an external force, thereby ensuring the mechanical safety performance of the electrochemical device and the electronic device.

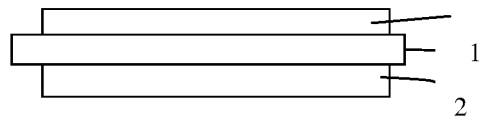


Fig. 1

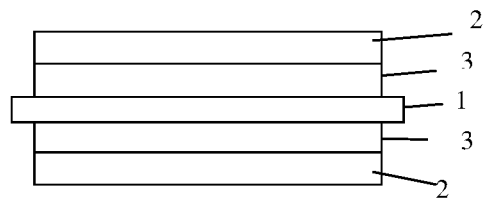


Fig. 2

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	ELECTRODE AND LITHIUM-ION BATTERY
As the below named inventor, I hereby declare that: This declaration is directed to: ☐ The attached application, or ☒ United States application or PCT international application number <u>16/000597</u> Signed on <u>June 5, 2018</u> The above-identified application was made or authorized to be made by me. I believe that I am the original inventor or an original joint inventor of a claimed invention in the application. I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both. WARNING: Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2036 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2036 submitted for payment purposes are not retained in the application file and therefore are not publicly available.	
LEGAL NAME OF INVENTOR	
Inventor: <u>Chaowang Lin</u>	Date (Optional): <u>July 24 2018</u>
Signature: <u>Chaowang Lin</u>	
Note: An application data sheet (PTO/AIA/D1 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/D1 form for each additional inventor.	

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to be derived by the USPTO to process an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-PTV6 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)Title of
Invention**ELECTRODE AND LITHIUM-ION BATTERY**

As the below named inventor, I hereby declare that:

This declaration
is directed to:☐

The attached application, or

☒United States application or PCT International application number 16/000597filed on June 5, 2018

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identify theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTORInventor: Fan YangDate (Optional): July 24 2018Signature: Fan Yang

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 102 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing this form, call 1-800-PTO-0199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN
APPLICATION DATA SHEET (37 CFR 1.76)**

Title of Invention	ELECTRODE AND LITHIUM-ION BATTERY		
As the below named inventor, I hereby declare that:			
This declaration is directed to: ☐ The attached application, or			
☒ United States application or PCT international application number <u>16/000597</u>			
Filed on <u>June 5, 2018</u>			
The above-identified application was made or authorized to be made by me.			
I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.			
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.			
WARNING:			
Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2036 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2036 submitted for payment purposes are not retained in the application file and therefore are not publicly available.			
LEGAL NAME OF INVENTOR			
Inventor: <u>Yisong Su</u>		Date (Optional): <u>July 24, 2018</u>	
Signature: <u>Yisong Su</u>			
Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.			

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to be filed by the USPTO in process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-8799 and select option 2.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of
Invention

ELECTRODE AND LITHIUM-ION BATTERY

As the below named inventor, I hereby declare that:

This declaration
is directed to:



The attached application, or



United States application or PCT international application number 16/000397

filed on June 5, 2018

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Huawei Zhong

Date (Optional): July 24 2018

Signature: Huawei Zhong

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1480, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1480, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	ELECTRODE AND LITHIUM-ION BATTERY		
As the below named inventor, I hereby declare that:			
This declaration is directed to:	☐	The attached application, or	
	☒	United States application or PCT international application number	16/000697
		filed on	June 5, 2018
The above-identified application was made or authorized to be made by me.			
I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.			
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.			
WARNING:			
Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2036 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2036 submitted for payment purposes are not retained in the application file and therefore are not publicly available.			
LEGAL NAME OF INVENTOR			
Inventor:	Changming Qu		Date (Optional): July 24 2018
Signature:	Changming Qu		
Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.			

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9196 and select option 3.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of
Invention

ELECTRODE AND LITHIUM-ION BATTERY

As the below named inventor, I hereby declare that:

This declaration
is directed to:



The attached application, or



United States application or PCT international application number 16/000597

filed on June 5, 2018

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Xiaozhen Zhang

Date (Optional):

July 24 2018

Signature: Xiaozhen Zhang

Note: An application data sheet (PTO/35/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to the favor by the USPTO to process an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-0198 and select option 2.

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	
Filing Date	March 29, 2022
First Named Inventor	Chaowang LIN
Title	ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	14850042COA

SIGNATURE of Applicant or Patent Practitioner

Signature	/Timothy J. Maier/	Date (Optional)	March 29, 2022
Name	Timothy J. Maier	Registration Number	51,986
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.



*Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

62008

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☒ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

Firm or Individual Name				
Address				
City	State	Zip		
Country				
Telephone	Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Ningde Amperex Technology Limited

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature	<i>Liangxin Yang</i>	Date (Optional)	
Name	Liangxin Yang		
Title	IP Senior Manager		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1460.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

U.S. Patent Application No.: TBD	Attorney Docket No.: 14850042COA
U.S. Filing Date: Concurrently Herewith	Confirmation No.: TBD
Applicant(s): Ningde Ampere Technology Limited	Art Unit: TBD
Title: ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE	Examiner: TBD

INFORMATION DISCLOSURE STATEMENT

March 29, 2022

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

It is respectfully requested that the references listed on the attached PTO/SB/08a form be made of record and considered with respect to the above-referenced U.S. patent application. Copies of the listed references were cited and/or filed in prior parent application Serial No. 16/868,966 filed May 7, 2020, and Serial No. 16/000,597 filed June 5, 2018, where required, as were either statements of relevancy or any readily available partial or full English translations of pertinent portions of any non-English language reference(s). Submission of the present Information Disclosure Statement should not be taken as an admission that the cited references are legally available prior art or that the same are pertinent or material.

Respectfully submitted,

/Timothy J. Maier/
Timothy J. Maier
Attorney for Applicant
Registration No. 51,986

Customer Number: 62008
Maier & Maier, PLLC
345 South Patrick Street
Alexandria, VA 22314
703-740-8322

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		2022-03-29
	First Named Inventor	Chaowang Lin	
	Art Unit	TBD	
	Examiner Name	TBD	
	Attorney Docket Number	14850042COA	

U.S.PATENTS						
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button.

U.S.PATENT APPLICATION PUBLICATIONS						
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS								
Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1	105074967	CN	A	2015-11-18	APPLIED MATERIALS	Cited in NPL cite No. 1 (previously cited and considered by Examiner)	☐

If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		2022-03-29
First Named Inventor	Chaowang Lin	
Art Unit	TBD	
Examiner Name	TBD	
Attorney Docket Number	14850042COA	

1	First Office Action issued January 12, 2022, in corresponding to Chinese Application No. 202110531289.X; 5 14 pages (including machine-generated English Translation).	☒
---	--	-------------------------------------

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2022-03-29
First Named Inventor	Chaowang Lin
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	14850042COA

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Timothy J. Maier/	Date (YYYY-MM-DD)	2022-03-29
Name/Print	Timothy J. Maier	Registration Number	51,986

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		2022-03-29
	First Named Inventor	Chaowang LIN	
	Art Unit	TBD	
	Examiner Name	TBD	
	Attorney Docket Number	14850042COA	

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button.

Add

U.S.PATENT APPLICATION PUBLICATIONS						Remove
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20070026316	A1	2007-02-01	SANYO ELECTRIC CO	
	2	20020028380	A1	2002-03-07	TANJO ET AL	
	3	20070026316	A1	2007-02-01	SANYO ELECTRIC CO LTD	
	4	20140295284	A1	2014-10-02	JFE CHEMICAL CORPORATION	
	5	20160013480	A1	2016-01-14	APPLIED MATERIALS INC	

If you wish to add additional U.S. Published Application citation information please click the Add button.

Add

FOREIGN PATENT DOCUMENTS						Remove
--------------------------	--	--	--	--	--	--------

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		2022-03-29
First Named Inventor	Chaowang LIN	
Art Unit		TBD
Examiner Name	TBD	
Attorney Docket Number		14850042COA

Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² i	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1	107293688	CN	A	2017-10-24	CHENGDU ORGANIC CHEM CO LTD CAS ET AL	Cited in NPL Cite No. 1; English Abstract Provided	
	2	1658413	CN	A	2005-08-24	BIYADI CO LTD		
	3	102306777	CN	A	2012-01-04	GUANGZHOU YUNTONG MAGNETOELECTRIC CO LTD		
	4	103187576	CN	A	2013-07-03	UNIV TSINGHUA ET AL		
	5	103258999	CN	A	2013-08-21	HYDRO QUEBEC		
	6	104347842	CN	A	2015-02-11	HUAWEI TECH CO LTD		
	7	105070882	CN	A	2015-11-18	YANCHENG INST TECHNOLOGY		
	8	105074967	CN	A	2015-11-18	APPLIED MATERIALS		
	9	105304859	CN	A	2016-02-03	BYD CO LTD		
	10	103187576	CN	B	2015-07-29	UNIV TSINGHUA ET AL		

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2022-03-29
First Named Inventor	Chaowang LIN
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	14850042COA

11	201153140	CN	Y	2008-11-19	DONGGUAN MCNAIR NEW POWER COL	
----	-----------	----	---	------------	----------------------------------	--

If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1	Office Action issued on January 27, 2022, in connection with corresponding Chinese Application No. 202110531428. (13 pp., including machine-generated English translation)	×
	2	Office Action issued on August 29, 2019, in connection with corresponding Chinese Application No. 201810162494.1; (14 pp., including machine-generated English translation).	☒
	3	Office Action issued on November 21, 2019, in connection with corresponding Chinese Application No. 201810162494.1 (12 pp., including machine-generated English translation).	☒
	4	Office Action issued on March 16, 2020, in connection with corresponding Chinese Application No. 201810162494.1; (17 pp., including machine-generated English translation).	☒
	5	Office Action issued on April 29, 2021, in connection with corresponding Chinese Application No. 201810162494.1; (23 pp., including machine-generated English translation).	☐
	6	Office Action issued on June 2, 2020, in connection with corresponding Chinese Application No. 201810162494.1; (12 pp., including machine-generated English translation).	☒
	7	Office Action issued on January 6, 2021, in connection with corresponding Chinese Application No. 201810162494.1; (11 pp., including machine-generated English translation).	☒
	8	KELONG et al., "Principles and Key Technologies of Lithium Ion Batteries"; Chemical Industry Press, November 2009; (8 pages with Partial English Translation)	☒

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		2022-03-29
First Named Inventor	Chaowang LIN	
Art Unit	TBD	
Examiner Name	TBD	
Attorney Docket Number	14850042COA	

9	SHUILIN et al., "Superfine Grinding Principle, Process Equipment and Application"; China Building Materials Industry Press, May 1993 (18 pages with Partial English translation).	☒
10	Office Action issued on November 1, 2019, in connection with related United States Application No. 16/000,597; 8 Pages.	☐
11	Office Action issued on October 22, 2021, in connection with related United States Application No. 16/868,966; 15 pages	☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2022-03-29
First Named Inventor	Chaowang LIN
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	14850042COA

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Timothy J. Maier/	Date (YYYY-MM-DD)	2022-03-29
Name/Print	Timothy J. Maier	Registration Number	51,986

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:				
Filing Date:				
Title of Invention:	ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE			
First Named Inventor/Applicant Name:	Chaowang LIN			
Filer:	Timothy Joseph Maier/Beatriz Sanchez			
Attorney Docket Number:	14850042COA			
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY APPLICATION FILING	1011	1	320	320
UTILITY SEARCH FEE	1111	1	700	700
UTILITY EXAMINATION FEE	1311	1	800	800
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1820

Electronic Acknowledgement Receipt

EFS ID:	45343234
Application Number:	17707137
International Application Number:	
Confirmation Number:	5194
Title of Invention:	ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE
First Named Inventor/Applicant Name:	Chaowang LIN
Customer Number:	62008
Filer:	Timothy Joseph Maier/Beatriz Sanchez
Filer Authorized By:	Timothy Joseph Maier
Attorney Docket Number:	14850042COA
Receipt Date:	29-MAR-2022
Filing Date:	
Time Stamp:	14:51:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 1820
RAM confirmation Number	E20223SE52183272
Deposit Account	505976
Authorized User	Beatriz Sanchez

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)
37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	Transmittal.pdf	280208	no	2
			f029bb6125229a12c64fc240bfc9b6432bc862c7		
Warnings:					
Information:					
2	Application Data Sheet	ADS.pdf	1256580	no	10
			1af2e7265459c539135a69592fa98922e7853e9d		
Warnings:					
Information:					
3		Specification_.pdf	152841	yes	33
			6c53f9b13b0816053e99238e8df157d2a84c7a3d		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	28	
	Claims		29	32	
	Abstract		33	33	
Warnings:					
Information:					
4	Drawings-only black and white line drawings	Drawings_.pdf	5891	no	1
			3118f84a577cdb5a32f45def118015620098c2ac		
Warnings:					
Information:					
5	Oath or Declaration filed	Declaration_.pdf	1242875	no	6
			d717976f64cd421a2b4cc0c55db82b2b55a12e46		

Warnings:					
Information:					
6	Power of Attorney	POA_.pdf	223948	no	2
			d2b57ffcd385eca638fcc57b47d315779079fd		
Warnings:					
Information:					
7	Transmittal Letter	IDS_Transmittal_Letter_.pdf	17260	no	1
			b0017a5c9fc23456e77538a74be03f5486ed5bab		
Warnings:					
Information:					
8	Information Disclosure Statement (IDS) Form (SB08)	IDS2_.pdf	61931	no	4
			06a704c3c161b587ca90fb27035fd1e8587cd3f21		
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
9	Non Patent Literature	NPL1_First_ChineseOA.pdf	1745340	no	14
			15c96fba44531cc1852e046132b0fc230b3cd3341		
Warnings:					
Information:					
10	Information Disclosure Statement (IDS) Form (SB08)	IDS.pdf	1055462	no	6
			f2a8c2634fb377546fef4399ff76c1c0cb572d72		
Warnings:					
Information:					
11	Fee Worksheet (SB06)	fee-info.pdf	44203	no	2
			3a3b857fc37a16727864bec69a5117bc0d7ee465		
Warnings:					
Information:					
Total Files Size (in bytes):			6086539		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
17/707,137	03/29/2022	1726	1820	14850042COA	20	3

CONFIRMATION NO. 5194

FILING RECEIPT



0000000132984094

62008
MAIER & MAIER, PLLC
345 SOUTH PATRICK STREET
ALEXANDRIA, VA 22314

Date Mailed: 04/06/2022

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Chaowang LIN, Ningde, CHINA;
Fan YANG, Ningde, CHINA;
Yisong SU, Ningde, CHINA;
Huawei ZHONG, Ningde, CHINA;
Changming QU, Ningde, CHINA;
Xiaozhen ZHANG, Ningde, CHINA;

Applicant(s)

Ningde Amperex Technology Limited, Ningde, CHINA;

Assignment For Published Patent Application

Ningde Amperex Technology Limited, Ningde, CHINA

Power of Attorney: The patent practitioners associated with Customer Number 62008

Domestic Priority data as claimed by applicant

This application is a CON of 16/868,966 05/07/2020
which is a DIV of 16/000,597 06/05/2018 PAT 10693181

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.)
CHINA 201810162494.1 02/26/2018 No Access Code Provided

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/05/2022

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/707,137**

Projected Publication Date: 07/14/2022

Non-Publication Request: No

Early Publication Request: No

Title

ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE

Preliminary Class

429

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 17/707,137			
APPLICATION AS FILED - PART I									
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	320		
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A	700		
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	800		
TOTAL CLAIMS (37 CFR 1.16(j))	20	minus 20 = *			OR	x 100 =	0.00		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *				x 480 =	0.00		
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00		
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00		
			TOTAL			TOTAL	1820		
* If the difference in column 1 is less than zero, enter "0" in column 2.									
APPLICATION AS AMENDED - PART II									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OTHER THAN SMALL ENTITY	
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=	OR	x
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=	OR	x
	Application Size Fee (37 CFR 1.16(s))							OR	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR	
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=	OR	x
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=	OR	x
	Application Size Fee (37 CFR 1.16(s))							OR	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR	
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.									



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/707,137	03/29/2022	Chaowang LIN	14850042COA

CONFIRMATION NO. 5194

62008
MAIER & MAIER, PLLC
345 SOUTH PATRICK STREET
ALEXANDRIA, VA 22314

PUBLICATION NOTICE



OC000000135166686

Title:ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE

Publication No.US-2022-0223902-A1

Publication Date:07/14/2022

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <https://portal.uspto.gov/pair/PublicPair>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

<i>Search Notes</i> 	Application/Control No. 17/707,137	Applicant(s)/Patent Under Reexamination LIN et al.
	Examiner JACOB B MARKS	Art Unit 1729

CPC - Searched*		
Symbol	Date	Examiner
H01M4/02	01/28/2023	JBM

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
East Search	01/28/2023	JBM

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
H01M	4/02	01/28/2023	JBM

/JACOB B MARKS/ Primary Examiner, Art Unit 1729	
--	--

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	1	"16000597"	(US-PGPUB; USPAT)	OR	OFF	OFF	2019/10/28 02:05 AM
L2	1528	(bilayer (two adj layer) multilayer (double adj layer\$2)) with active and h01m\$9 and @Py<"2019" and (cobalt nickel manganese)	(US-PGPUB; USPAT)	OR	OFF	OFF	2019/10/28 02:09 AM
L3	1869	(bilayer (two adj layer) multilayer (double adj layer\$2)) with active and h01m\$9 and @Py<"2019" and (cobalt nickel manganese)	(US-PGPUB; USPAT)	OR	ON	ON	2019/10/28 02:10 AM
L4	1103	(bilayer (two adj layer) multilayer) with active and h01m\$9 and @Py<"2019" and (cobalt nickel manganese)	(US-PGPUB; USPAT)	OR	ON	ON	2019/10/28 02:10 AM
L5	1001	(bilayer (two adj layer) multilayer (double adj layer\$2)) with active and h01m\$9 and @Py<"2019" and (cobalt nickel manganese) and particle adj (size diameter)	(US-PGPUB; USPAT)	OR	ON	ON	2019/10/28 02:11 AM
L6	589	(bilayer (two adj layer) multilayer) with active and h01m\$9 and @Py<"2019" and (cobalt nickel manganese) and particle adj (size diameter)	(US-PGPUB; USPAT)	OR	ON	ON	2019/10/28 02:11 AM
L7	25	((bilayer (two adj layer) multilayer) with active).ab. and h01m\$9 and @Py<"2019" and (cobalt nickel manganese) and particle adj (size diameter)	(US-PGPUB; USPAT)	OR	ON	ON	2019/10/28 02:12 AM
L8	0	((bilayer (two adj layer) multilayer) with active).ab. same particle adj (size	(US-PGPUB; USPAT)	OR	ON	ON	2019/10/28 10:51 AM

L9	41	diameter) and h01m\$9 and @Py<"2019"	(US-PGPUB; USPAT)	OR	ON	ON	2019/10/28 10:51 AM
L10	370	((bilayer (two adj layer) multilayer) with active) same particle adj (size diameter) and h01m\$9 and @pY<"2019"	(US-PGPUB; USPAT)	OR	ON	ON	2019/10/28 11:45 AM
L11	329	fibrous adj carbon with graphite and h01m\$9 and @pY<"2018"	(US-PGPUB; USPAT)	OR	ON	ON	2019/10/28 11:46 AM
L12	1	"16000597"	(US-PGPUB; USPAT)	OR	OFF	OFF	2020/02/03 01:50 PM
L13	41	((bilayer (two adj layer) multilayer) with active) same particle adj (size diameter) and h01m\$9 and @Py<"2019"	(US-PGPUB; USPAT)	OR	ON	ON	2020/02/03 02:01 PM
L14	1	"15538292"	(US-PGPUB; USPAT)	OR	ON	ON	2020/02/04 10:59 AM
L15	1	"16005597"	(US-PGPUB; USPAT)	OR	ON	ON	2021/10/19 11:15 PM
L16	6	"1600597"	(US-PGPUB; USPAT)	OR	ON	ON	2021/10/19 11:15 PM
L17	1103	(bilayer (two adj layer) multilayer) with active and h01m\$9 and @Py<"2019" and (cobalt nickel manganese)	(US-PGPUB; USPAT)	OR	ON	ON	2021/10/19 11:57 PM
L18	0	fibrous adj carbon with graphite and h01m\$9 and @pY<"2018" and ningde.as.	(US-PGPUB; USPAT)	OR	ON	ON	2021/12/27 10:50 PM
L19	5	fibrous adj carbon with graphite and h01m\$9 and @pY<"2018" and (lin yang su zhong qu zhang).in.	(US-PGPUB; USPAT)	OR	ON	ON	2021/12/27 10:50 PM
L20	0	(bilayer (two ADJ layer) multilayer) WITH active SAME compaction AND h01m\$9 AND @Py<"2019" AND (cobalt nickel manganese)	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/28 09:50 PM
L21	92	(bilayer (two ADJ layer) multilayer) WITH active SAME density AND h01m\$9 AND @Py<"2019" AND (cobalt nickel	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/28 09:51 PM

L22	0	manganese) (bilayer (two ADJ layer) multilayer) WITH active SAME pack near2 density AND h01m\$9 AND @Py<"2019" AND (cobalt nickel manganese)	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/28 09:51 PM
L23	0	(bilayer (two ADJ layer) multilayer) WITH active AND pack near2 density AND h01m\$9 AND @Py<"2019" AND (cobalt nickel manganese)	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/28 09:51 PM
L24	6	second near2 layer WITH active AND pack near2 density AND h01m\$9 AND @Py<"2019" AND (cobalt nickel manganese)	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/28 09:52 PM
L25	38	second near2 layer WITH active AND tap near2 density AND h01m\$9 AND @Py<"2019" AND (cobalt nickel manganese)	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/28 09:52 PM
L26	0	second near2 layer WITH active SAME tap near2 density AND h01m\$9 AND @Py<"2019" AND (cobalt nickel manganese)	(US-PGPUB; USPAT)	OR	ON	ON	2023/01/28 09:52 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Bibliographic Data

Application No: 17/707,137

Foreign Priority claimed: ☒ Yes ☐ No

35 USC 119 (a-d) conditions met: ☒ Yes ☐ No ☐ Met After Allowance

Verified and Acknowledged: /JACOB B MARKS/

Examiner's Signature

Initials

Title:

ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC
DEVICE

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
03/29/2022	429	1729	14850042COA
RULE			

APPLICANTS

Ningde Amperex Technology Limited, Ningde, CHINA

INVENTORS

Chaowang LIN, Ningde, CHINA

Fan YANG, Ningde, CHINA

Yisong SU, Ningde, CHINA

Huawei ZHONG, Ningde, CHINA

Changming QU, Ningde, CHINA

Xiaozhen ZHANG, Ningde, CHINA

CONTINUING DATA

This application is a CON of 16868966 05/07/2020 PAT 11322774

16868966 is a DIV of 16000597 06/05/2018 PAT 10693181

FOREIGN APPLICATIONS

CHINA CN201810162494.1 02/26/2018

IF REQUIRED, FOREIGN LICENSE GRANTED**

04/05/2022

STATE OR COUNTRY

CHINA

ADDRESS

MAIER & MAIER, PLLC

345 SOUTH PATRICK STREET

ALEXANDRIA, VA 22314

UNITED STATES

FILING FEE RECEIVED

\$1,820

Doc code: IDS

PTO/SB/08a (02-18)

Doc description: Information Disclosure Statement (IDS) Filed

Approved for use through 11/30/2020. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		2022-03-29
	First Named Inventor	Chaowang Lin	
	Art Unit	TBD	
	Examiner Name	TBD	
	Attorney Docket Number	14850042COA	

U.S.PATENTS						
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button.

U.S.PATENT APPLICATION PUBLICATIONS						
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button.

FOREIGN PATENT DOCUMENTS								
Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1	105074967	CN	A	2015-11-18	APPLIED MATERIALS	Cited in NPL cite No. 1 (previously cited and considered by Examiner)	☐

If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		2022-03-29
	First Named Inventor	Chaowang Lin	
	Art Unit	TBD	
	Examiner Name	TBD	
	Attorney Docket Number	14850042COA	

/J.B.M/	1	First Office Action issued January 12, 2022, in corresponding to Chinese Application No. 202110531289.X; 5 14 pages (including machine-generated English Translation).	☒
---------	---	--	-------------------------------------

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/JACOB B MARKS/	Date Considered	01/28/2023
--------------------	-----------------	-----------------	------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		2022-03-29
First Named Inventor	Chaowang Lin	
Art Unit	TBD	
Examiner Name	TBD	
Attorney Docket Number	14850042COA	

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Timothy J. Maier/	Date (YYYY-MM-DD)	2022-03-29
Name/Print	Timothy J. Maier	Registration Number	51,986

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)

Application Number

Filing Date

First Named Inventor

Art Unit

Examiner Name

Attorney Docket Number

2022-03-29

Chaowang LIN

TBD

TBD

14850042COA

U.S.PATENTS

Remove

Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button.

Add

U.S.PATENT APPLICATION PUBLICATIONS

Remove

Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20070026316	A1	2007-02-01	SANYO ELECTRIC CO	
	2	20020028380	A1	2002-03-07	TANJO ET AL	
	3	20070026316	A1	2007-02-01	SANYO ELECTRIC CO LTD	
	4	20140295284	A1	2014-10-02	JFE CHEMICAL CORPORATION	
	5	20160013480	A1	2016-01-14	APPLIED MATERIALS INC	

If you wish to add additional U.S. Published Application citation information please click the Add button.

Add

FOREIGN PATENT DOCUMENTS

Remove

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		2022-03-29
First Named Inventor	Chaowang LIN	
Art Unit		TBD
Examiner Name	TBD	
Attorney Docket Number		14850042COA

Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1	107293688	CN	A	2017-10-24	CHENGDU ORGANIC CHEM CO LTD CAS ET AL	Cited in NPL Cite No. 1; English Abstract Provided	
	2	1658413	CN	A	2005-08-24	BIYADI CO LTD		
	3	102306777	CN	A	2012-01-04	GUANGZHOU YUNTONG MAGNETOELECTRIC CO LTD		
	4	103187576	CN	A	2013-07-03	UNIV TSINGHUA ET AL		
	5	103258999	CN	A	2013-08-21	HYDRO QUEBEC		
	6	104347842	CN	A	2015-02-11	HUAWEI TECH CO LTD		
	7	105070882	CN	A	2015-11-18	YANCHENG INST TECHNOLOGY		
	8	105074967	CN	A	2015-11-18	APPLIED MATERIALS		
	9	105304859	CN	A	2016-02-03	BYD CO LTD		
	10	103187576	CN	B	2015-07-29	UNIV TSINGHUA ET AL		

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2022-03-29
First Named Inventor	Chaowang LIN
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	14850042COA

11	201153140	CN	Y	2008-11-19	DONGGUAN MCNAIR NEW POWER COL	
----	-----------	----	---	------------	----------------------------------	--

If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
/J.B.M/	1	Office Action issued on January 27, 2022, in connection with corresponding Chinese Application No. 202110531428. (13 pp., including machine-generated English translation)	×
/J.B.M/	2	Office Action issued on August 29, 2019, in connection with corresponding Chinese Application No. 201810162494.1; (14 pp., including machine-generated English translation).	☒
/J.B.M/	3	Office Action issued on November 21, 2019, in connection with corresponding Chinese Application No. 201810162494.1 (12 pp., including machine-generated English translation).	☒
/J.B.M/	4	Office Action issued on March 16, 2020, in connection with corresponding Chinese Application No. 201810162494.1; (17 pp., including machine-generated English translation).	☒
/J.B.M/	5	Office Action issued on April 29, 2021, in connection with corresponding Chinese Application No. 201810162494.1; (23 pp., including machine-generated English translation).	☐
/J.B.M/	6	Office Action issued on June 2, 2020, in connection with corresponding Chinese Application No. 201810162494.1; (12 pp., including machine-generated English translation).	☒
/J.B.M/	7	Office Action issued on January 6, 2021, in connection with corresponding Chinese Application No. 201810162494.1; (11 pp., including machine-generated English translation).	☒
/J.B.M/	8	KELONG et al., "Principles and Key Technologies of Lithium Ion Batteries"; Chemical Industry Press, November 2009; (8 pages with Partial English Translation)	☒

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		2022-03-29
First Named Inventor	Chaowang LIN	
Art Unit	TBD	
Examiner Name	TBD	
Attorney Docket Number	14850042COA	

/J.B.M/	9	SHUILIN et al., "Superfine Grinding Principle, Process Equipment and Application"; China Building Materials Industry Press, May 1993 (18 pages with Partial English translation).	☒
/J.B.M/	10	Office Action issued on November 1, 2019, in connection with related United States Application No. 16/000,597; 8 Pages.	☐
/J.B.M/	11	Office Action issued on October 22, 2021, in connection with related United States Application No. 16/868,966; 15 pages	☐

If you wish to add additional non-patent literature document citation information please click the Add button

Add

EXAMINER SIGNATURE

Examiner Signature	/JACOB B MARKS/	Date Considered	01/28/2023
--------------------	-----------------	-----------------	------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2022-03-29
First Named Inventor	Chaowang LIN
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	14850042COA

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Timothy J. Maier/	Date (YYYY-MM-DD)	2022-03-29
Name/Print	Timothy J. Maier	Registration Number	51,986

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/707,137	03/29/2022	Chaowang LIN	14850042COA	5194
62008	7590	03/02/2023	EXAMINER	
MAIER & MAIER, PLLC			MARKS, JACOB B	
345 SOUTH PATRICK STREET				
ALEXANDRIA, VA 22314				
			ART UNIT	PAPER NUMBER
			1729	
			NOTIFICATION DATE	DELIVERY MODE
			03/02/2023	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@maierandmaier.com
maierandmaier_PAIR@firsttofile.com

Office Action Summary	Application No. 17/707,137	Applicant(s) LIN et al.	
	Examiner JACOB B MARKS	Art Unit 1729	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 03-29-2022.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2a) ☐ This action is **FINAL**.

2b) ☒ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☒ Claim(s) 1-20 is/are pending in the application.

5a) Of the above claim(s) ____ is/are withdrawn from consideration.

6) ☐ Claim(s) ____ is/are allowed.

7) ☒ Claim(s) 1-20 is/are rejected.

8) ☐ Claim(s) ____ is/are objected to.

9) ☐ Claim(s) ____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☒ All b) ☐ Some** c) ☐ None of the:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

3) ☐ Interview Summary (PTO-413)

Paper No(s)/Mail Date ____.

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)

4) ☐ Other: ____.

Paper No(s)/Mail Date 03-29-2022; 03-29-2022.

DETAILED ACTION

Claims 1-20 are pending.

Double Patenting

Claims 1-20 of this application is patentably indistinct from claims 1-20 of Application No. 17,707,378. Pursuant to 37 CFR 1.78(f), when two or more applications filed by the same applicant or assignee contain patentably indistinct claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the patentably indistinct claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JACOB B MARKS whose telephone number is (571)270-7873. The examiner can normally be reached Monday through Friday, alternate Fridays off.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula Ruddock can be reached on 571-272-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent-center> for more information about Patent Center and <https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For additional

Art Unit: 1729

questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JACOB B MARKS/

Primary Examiner, Art Unit 1729

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

<i>In re</i> Patent Application of: Ningde Ampere Technology Limited	Confirmation No.: 5194
U.S. Patent Application No.: 17/707,137	Art Unit: 1729
Filed: March 29, 2022	Examiner: JACOB B MARKS
Title: ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE	Attorney Docket No.: 14850042COA

AMENDMENT AND RESPONSE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

May 31, 2023

Dear Sir:

In response to the Office Action mailed March 2, 2023, Applicant respectfully requests reconsideration of the Application in view of the following Amendments and Remarks.

Remarks begin on page 2.

REMARKS

Favorable reconsideration of this Application, in light of the following discussion, is respectfully requested. Claims 1-20 were originally presented. No claims have been amended, added, or canceled. Accordingly, claims 1-20 are pending in the present Application. Applicant submits that upon entry of the present Response, claims 1-20 are in condition for allowance.

Request for Examiner Interview

In the event that the Examiner disagrees with the arguments presented in the present Response, Applicant respectfully requests that the Examiner contact Applicant's undersigned representative during prosecution, prior to taking any further action, to discuss the merits of the present application.

Double Patenting

In the outstanding Office Action, claims 1-20 stand rejected under the judicially created doctrine of non-statutory double patenting as being unpatentable over claims 1-20 of copending Application No. 17,707,378. Specifically, claims 1-20 of this application is patentably indistinct from claims 1-20 of Application No. 17,707,378. Pursuant to 37 CFR 1.78(f), when two or more applications filed by the same applicant or assignee contain patentably indistinct claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the patentably indistinct claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

Addressing now the rejection under the judicially created doctrine of non-statutory double patenting, Applicant traverses the rejection, as claims 1-20 of this application are believed to be patentably distinguishable over claims 1-20 of copending Application No. 17,707,378 for the following reasons.

Applicant respectfully notes that there are significant differences between independent claims 1, 10, and 19 of this application and independent claims 1, 10, and 19 of Application No. 17,707,378 in their last element. Specifically, independent claims 1, 10, and 19 of this application

recite: “*wherein a total compaction density of the first layer and the second layer is greater than 3.2 g/cc*”. In contrast, independent claims 1, 10, and 19 of Application No. 17,707,378 recite: “*wherein a compaction density of the first layer is greater than 2.8 g/cc, and a compaction density of the second layer is greater than 3.3 g/cc*”. It is evident that the presence of a first layer with a compaction density greater than 2.8 g/cc and a second layer with a compaction density greater than 3.3 g/cc does *not* necessarily result in a total compaction density of both layers greater than 3.2 g/cc.

Dependent claims 5 and 14 depend from independent claims 1 and 10, respectively, and further specify: “*wherein a compaction density of the first layer is greater than 2.8 g/cc, and a compaction density of the second layer is greater than 3.3 g/cc*.” However, Applicant respectfully notes that there are significant differences between dependent claims 5 and 14 of this application and independent claims 1 and 10 of Application No. 17,707,378. Specifically, dependent claims 5 and 14 of this application specify the following requirements for the layers:

(1) a total compaction density of the first layer and the second layer is greater than 3.2 g/cc,

AND

(2) a compaction density of the first layer is greater than 2.8 g/cc, and a compaction density of the second layer is greater than 3.3 g/cc.

On the other hand, independent claims 1 and 10 of Application No. 17,707,378 only require the layers to meet the features described in (2) above.

Accordingly, Applicant respectfully requests the withdrawal of this double patenting rejection of claims 1-20.

CONCLUSION

Consequently, in view of the present amendment and in light of the above discussion, the outstanding grounds of rejection are believed to have been overcome. The Application, as amended, is believed to be in condition of allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

Maier & Maier, PLLC
345 South Patrick Street
Alexandria, Virginia 22314
(703) 740-8322
Customer No. 62008

/Timothy J. Maier/
Timothy J. Maier
Attorney of Record
Reg. No. 51986

TJM/mae/LC/bks

May 31, 2023



ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #
17/707,137

RECEIPT DATE / TIME
05/31/2023 09:51:50 AM ET

ATTORNEY DOCKET #
14850042COA

Title of Invention

ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 5194

FILED BY Beatriz Sanchez

PATENT CENTER # 62179514

FILING DATE 03/29/2022

CUSTOMER # 62008

FIRST NAMED INVENTOR Chaowang LIN

CORRESPONDENCE ADDRESS -

AUTHORIZED BY Timothy Maier

Documents

TOTAL DOCUMENTS: 2

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
Response_.pdf		4	-	32 KB
Response_-A....pdf	(1-1)	1	Amendment/Request for Reconsideration-After Non-Final Rejection	19 KB
Response_-REM.pdf	(2-4)	3	Applicant Arguments/Remarks Made in an Amendment	28 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
----------	-------------------------

Response_.pdf	16685D6B1C527D62057B803EE2ED83F2987A21CB293A1B67E 9E9310F540C15C957A180CBC94197239C2B81A9B92EAD81A2 7C3C80241EA19080C6494E20FCFE82
Response_-A....pdf	36CED89D2342A94E8D046595F21E174B69BD10C37CCE59132 4D40FD1849203376F94C694189E76788630AEF28CFAFB0A50D A080D1968F9DDFED614C9D56AD283
Response_-REM.pdf	14A8726D425E124A9BAA3210D52CDFF2B0D5323A5E39EF5DD BAF9B3D0A778D47696CBF928AB377F43D890C28DDA17C0D3 46771A2D8A4231C6275B1EEECB6746F

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

<i>Notice of References Cited</i>	Application/Control No. 17/707,137		Applicant(s)/Patent Under Reexamination LIN et al.	
	Examiner OSEI K AMPONSAH		Art Unit 1729	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20160013480-A1	01-2016	SIKHA; Godfrey	H01M4/043	427/126.6
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<i>Search Notes</i> 	Application/Control No. 17/707,137	Applicant(s)/Patent Under Reexamination LIN et al.
	Examiner OSEI K AMPONSAH	Art Unit 1729

CPC - Searched*		
Symbol	Date	Examiner
H01M4/02	01/28/2023	JBM

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
East Search	01/28/2023	JBM
PE2E Search	10/21/2023	OA
Inventor (Assignee) Search	10/21/2023	OA

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
H01M	4/02	01/28/2023	JBM

/OSEI K AMPONSAH/ Primary Examiner, Art Unit 1729	
--	--

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	1	"17707137"	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:32 PM
L2	2	"17707378"	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:32 PM
L3	362	(compaction adj2 density) AND H01M\$.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:33 PM
L4	266	(compaction adj2 density) AND H01M10/0525.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:33 PM
L5	9	(compaction adj2 density) AND H01M4/50.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:33 PM
L6	8	(compaction adj2 density) AND H01M4/52.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:33 PM
L7	128	(compaction adj2 density) AND H01M4/366.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:33 PM
L8	13	(compaction adj2 density) AND H01M4/382.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:33 PM
L9	35	(compaction adj2 density) AND H01M4/583.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:33 PM
L10	40	(compaction adj2 density) AND H01M4/623.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:34 PM
L11	65	(compaction adj2 density) AND H01M4/661.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:34 PM
L12	109	(compaction adj2 density) AND H01M2004/027.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:34 PM
L13	156	(compaction adj2 density) AND H01M2004/028.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:34 PM
L14	4395	(pack\$7 adj2 density) AND H01M\$.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:34 PM
L15	1863	(pack\$7 adj2 density) AND H01M10/0525.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:34 PM
L16	697	(pack\$7 adj2 density) AND H01M4/366.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:34 PM
L17	148	(pack\$7 adj2 density) AND H01M4/382.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:35 PM
L18	75	(pack\$7 adj2 density)	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21

L19	114	AND H01M4/50.cpc. (pack\$7 adj2 density) AND H01M4/52.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	08:35 PM 2023/10/21 08:35 PM
L20	254	(pack\$7 adj2 density) AND H01M4/583.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:35 PM
L21	141	(pack\$7 adj2 density) AND H01M4/623.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:35 PM
L22	259	(pack\$7 adj2 density) AND H01M4/661.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:35 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/707,137	03/29/2022	Chaowang LIN	14850042COA	5194

62008 7590 10/26/2023
MAIER & MAIER, PLLC
345 SOUTH PATRICK STREET
ALEXANDRIA, VA 22314

EXAMINER

AMPONSAH, OSEI K

ART UNIT	PAPER NUMBER
----------	--------------

1729

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

10/26/2023

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@maierandmaier.com
maierandmaier_PAIR@firsttofile.com

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Response to Arguments

Applicant's arguments filed 05-31-2023 have been fully considered but they are not persuasive. Applicant argues that the claimed subject matter recites "...a compaction density of the first layer is greater 2.8 g/cc..." and "...compaction density of the second layer is greater 3.3 g/cc..." Such recitation differentiates between the Applications [17/707,137 and 17/707,378]. Examiner respectfully disagrees and submits that the total compaction density of the first layer and the second layer in both as claimed is greater than 3.2 g/cc.

Double Patenting

1. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process... may obtain a patent therefor..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the claims that are directed to the same invention so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

2. Claims 1-20 is/are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-20 of prior U.S. Patent No. 11/664,528. This is a statutory double patenting rejection.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OSEI K AMPONSAH whose telephone number is (571)270-3446. The examiner can normally be reached Monday - Friday, 8:00 am - 5:00 pm EST.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula C Ruddock can be reached on (571)272-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent-center> for more information about Patent Center and <https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/OSEI K AMPONSAH/
Primary Examiner, Art Unit 1729

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/707,137	Filing Date 03/29/2022	☐ To be Mailed
---	--	---------------------------	---------------------------------------

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE (\$)	FEE (\$)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	x \$100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	x \$480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)	RATE (\$)	ADDITIONAL FEE (\$)	
AMENDMENT	12/26/2023	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA			
	Total (37 CFR 1.16(i))	* 19	Minus	** 20	= 0	x \$100 =	0	
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0	x \$480 =	0	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
						TOTAL ADD'L FEE	0	
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	*	Minus	**	=	x \$0 =		
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x \$0 =		
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
						TOTAL ADD'L FEE		
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.						LIE		
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".						/STEFANIE A BRYCE/		
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".								
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.								

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #
17/707,137

RECEIPT DATE / TIME
12/26/2023 02:54:20 PM Z ET

ATTORNEY DOCKET #
14850042COA

Title of Invention

ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 5194

FILED BY Yuriko Stankich

PATENT CENTER # 63748173

FILING DATE 03/29/2022

CUSTOMER # 62008

FIRST NAMED INVENTOR Chaowang LIN

CORRESPONDENCE ADDRESS -

AUTHORIZED BY Timothy Maier

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
PAT201710042US3_Response.pdf	6	Response After Final Action	57 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
PAT201710042US3_Response.pdf	8BCCCDD0F16DB480C004228890C10EDD85C5EC1799128823 05918015361CA815708B998E06CD2F77F7D3166F19A1126570 B0A9DDB0CBB34F3BE81A24FBDF0CDA

by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

<i>In re</i> Patent Application of: Ningde Ampere Technology Limited	Confirmation No.: 5194
U.S. Patent Application No.: 17/707,137	Art Unit: 1729
Filed: March 29, 2022	Examiner: OSEI K AMPONSAH
Title: ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE	Attorney Docket No.: 14850042COA

REQUEST FOR RECONSIDERATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

December 26, 2023

Dear Commissioner:

In response to the Office Action mailed October 26, 2023, Applicant respectfully requests reconsideration of the Application in view of the following Amendments and Remarks.

Remarks begin on page 2.

REMARKS

Favorable reconsideration of this Application, in light of the following discussion, is respectfully requested. Claims 1-20 were originally presented, and no amendments have been made to the claims in the present Response. Accordingly, claims 1-20 are pending in the present Application. Applicant submits that upon entry of the present Response, claims 1-20 are in condition for allowance. Moreover, the Applicant submits that no new matter has been introduced by the foregoing amendments.

Examiner Interview

First, Applicant wishes to thank the Examiner for the courtesy of the follow-up discussion granted to Applicant's representative on October 25, 2023, at which time the outstanding issues in this case were discussed. Arguments similar to the ones developed hereinafter were presented and the Examiner indicated that in light of the arguments, he would reconsider the outstanding grounds for rejection upon formal submission of a response.

Double Patenting

In the outstanding Office Action, claims 1-20 stand rejected under 35 U.S.C. § 101 as claiming the same invention as that of claims 1-20 of prior U.S. Patent No. 11/664,528. This is a statutory double patenting rejection.

Addressing now the statutory double patenting rejection, Applicant traverses the rejection, as claims 1-20 of this application do not claim the "same invention" as that of claims 1-20 of prior U.S. Patent No. 11/664,528.

Based on the definition provided by MPEP § 804 II, the term "same invention" in this context means an invention drawn to identical subject matter. Applicant respectfully highlights that MPEP §804, subsection II.A., further clarifies that, a reliable test for double patenting under 35 U.S.C. 101 is whether a claim in the application could be literally infringed without literally infringing a corresponding claim in the patent. *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970). For example, the invention defined by a claim reciting a compound having a "halogen" substituent is not identical to or substantively the same as a claim reciting the same compound

except having a “chlorine” substituent in place of the halogen because “halogen” is broader than “chlorine.” On the other hand, claims may be differently worded and still define the same invention. Thus, a claim reciting a widget having a length of “36 inches” defines the same invention as a claim reciting the same widget having a length of “3 feet.”

Applicant respectfully notes that there are significant differences between claims 1-20 of this application and claims 1-20 of prior U.S. Patent No. 11/664,528, specifically concerning independent claims 1, 10, and 19 of both applications. The key distinction lies in the last element of these claims. Independent claims 1, 10, and 19 of this application recite: “*wherein a total compaction density of the first layer and the second layer is greater than 3.2 g/cc*”, while independent claims 1, 10, and 19 of Application No. 17,707,378 recite: “*wherein a compaction density of the first layer is greater than 2.8 g/cc, and a compaction density of the second layer is greater than 3.3 g/cc*”. Beginning from “the words of the claims themselves”, it is apparent that the wording of the two features is not identical; instead, they define different aspects of the double-layer structure, and the distinctions between them are much more significant than the difference between “36 inches” and “3 feet”. Therefore, claims 1-20 of this application and claims 1-20 of prior U.S. Patent No. 11/664,528 are not literally identical.

Furthermore, a total compaction density of the entire two layers greater than 3.2 g/cc does not inherently imply the presence of a first layer with a compaction density greater than 2.8 g/cc and a second layer with a compaction density greater than 3.3 g/cc. This is apparent in the language of the claims within this application. Independent claims 1 and 10 specify “*wherein a total compaction density of the first layer and the second layer is greater than 3.2 g/cc*”, while their dependent claims 5 and 14 define “*wherein a compaction density of the first layer is greater than 2.8 g/cc, and a compaction density of the second layer is greater than 3.3 g/cc*”. The structure of the claims inherently suggests that a claim reciting a total compaction density of the first layer and the second layer greater than 3.2 g/cc and a claim reciting a first layer with a compaction density greater than 2.8 g/cc and a second layer with a compaction density greater than 3.3 g/cc do not encompass the same claim scope.

Therefore, claims 1-20 of this application and claims 1-20 of prior U.S. Patent No. 11/664,528 do not have the same claim scope.

Moreover, as commonly understood, in the design of lithium-ion batteries, compaction density = mass / volume. From this commonly understood equation, one of ordinary skill in the art would have understood that the total compaction density of the entire two layers greater than 3.2 g/cc does not inherently imply the presence of a first layer with a compaction density greater than 2.8 g/cc and a second layer with a compaction density greater than 3.3 g/cc. This is confirmed by the following illustrative 4 examples:

- Example 1
 - a compaction density of the first layer = **3 g/cc** (>2.8 g/cc recited in claims 5 & 14),
 - a thickness of the first layer = 20 μm (2 μm to 30 μm , disclosed on p.2, lines 23-24 of the specification as filed),
 - a compaction density of the second layer = **3.6 g/cc** (>3.3 g/cc recited in claims 5 & 14),
 - a thickness of the second layer = 80 μm (> 30 μm as disclosed on page 2, lines 25-26 of the specification as filed),
 - a total compaction density of the first layer and the second layer
 $3*20/(20+80)+3.6*80/(20+80)=0.6+2.88=\underline{\underline{3.48 \text{ g/cc}}}$ (i.e., >3.2 g/cc as claimed).
- Example 2
 - a compaction density of the first layer is **3 g/cc** (i.e., >2.8 g/cc as claimed),
 - a thickness of the first layer is 80 μm (**not** 2 μm to 30 μm as disclosed),
 - a compaction density of the second layer is **3.6 g/cc** (>3.3 g/cc as claimed),
 - a thickness of the second layer is 20 μm (**not** > 30 μm as disclosed),
 - a total compaction density of the first layer and the second layer
 $3*80/(80+20)+3.6*20/(80+20)=2.4+0.72=\underline{\underline{3.12 \text{ g/cc}}}$ (i.e., **not** >3.2 g/cc as claimed).
- Example 3
 - a compaction density of the first layer is **2.2 g/cc** (**not** >2.8 g/cc as claimed),
 - a thickness of the first layer is 20 μm (i.e., 2 μm to 30 μm as disclosed),
 - a compaction density of the second layer is **3.6 g/cc** (>3.3 g/cc as claimed),
 - a thickness of the first layer is 80 μm (i.e., > 30 μm as disclosed),
 - a total compaction density of the first layer and the second layer
 $2.2*20/(20+80)+3.6*80/(20+80)=0.44+2.88=\underline{\underline{3.32 \text{ g/cc}}}$ (i.e., >3.2 g/cc as claimed).
- Example 4
 - a compaction density of the first layer is **2.6 g/cc** (**not** >2.8 g/cc as claimed),
 - a thickness of the first layer is 10 μm (i.e., 2 μm to 30 μm as disclosed),
 - a compaction density of the second layer is **3.28 g/cc** (**not** >3.3 g/cc as claimed),
 - a thickness of the first layer is 90 μm (i.e., > 30 μm as disclosed),
 - a total compaction density of the first layer and the second layer
 $2.7*10/(10+90)+3.28*90/(10+90)=0.27+2.952=\underline{\underline{3.222 \text{ g/cc}}}$ (i.e., >3.2 g/cc as claimed).

Thus, as is apparent from the commonly understood formula, it is possible to have compaction densities of the first layer and the second layer that fall within the scope of claims 5 and 14, but the *total* compaction density does not necessarily fall within the recited >3.2 g/cc of claims 1 and 10 (as is apparent from Examples 1 and 2). The opposite is also true (as demonstrated by Examples 3 and 4). That is, it is possible to have a *total* compaction density that falls within the recited >3.2 g/cc of claims 1 and 10, but at least one of the compaction densities of the first layer and the second layer does not necessarily fall within the scope of claims 5 and 14.

Therefore, it is reasonable for an ordinary skilled person in the art to understand that the total compaction density of the two layers is not simply a sum of the compaction density of each layer. Accordingly, an ordinary skilled person would comprehend that a first layer with a compaction density greater than 2.8 g/cc and a second layer with a compaction density greater than 3.3 g/cc do not inherently indicate a total compaction density of the entire two layers greater than 3.2 g/cc.

CONCLUSION

Consequently, in light of the above discussion, the outstanding grounds of rejection are believed to have been overcome. The Application is believed to be in condition of allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

Maier & Maier, PLLC
345 South Patrick Street
Alexandria, Virginia 22314
(703) 740-8322
Customer No. 62008

/Timothy J. Maier/
Timothy J. Maier
Attorney of Record
Reg. No. 51986

TJM/mae/LC/RAM/ys

December 26, 2023

Issue Classification 	Application/Control No. 17/707,137	Applicant(s)/Patent Under Reexamination LIN et al.
	Examiner OSEI K AMPONSAH	Art Unit 1729

CPC						
Symbol					Type	Version
H01M	/	10	/	0525	F	2013-01-01
H01M	/	4	/	366	I	2013-01-01
H01M	/	4	/	382	I	2013-01-01
H01M	/	4	/	50	I	2013-01-01
H01M	/	4	/	52	I	2013-01-01
H01M	/	4	/	583	I	2013-01-01
H01M	/	4	/	623	I	2013-01-01
H01M	/	4	/	661	I	2013-01-01
H01M	/	2004	/	027	A	2013-01-01
H01M	/	2004	/	028	A	2013-01-01

CPC Combination Sets					
Symbol			Type	Set	Ranking
	/				

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 20	
/OSEI K AMPONSAH/ Primary Examiner, Art Unit 1729 (Primary Examiner) _____ (Date) _____		05 February 2024 O.G. Print Claim(s) 1	O.G. Print Figure 1

Issue Classification 	Application/Control No. 17/707,137	Applicant(s)/Patent Under Reexamination LIN et al.
	Examiner OSEI K AMPONSAH	Art Unit 1729

INTERNATIONAL CLASSIFICATION			
CLAIMED			
H01M	/	4	/ 02
H01M	/	10	/ 0525
NON-CLAIMED			
	/		/

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/OSEI K AMPONSAH/ Primary Examiner, Art Unit 1729 (Primary Examiner)	05 February 2024 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

Issue Classification 	Application/Control No. 17/707,137	Applicant(s)/Patent Under Reexamination LIN et al.
	Examiner OSEI K AMPONSAH	Art Unit 1729

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	10	10	19	19										
2	2	11	11	20	20										
3	3	12	12												
4	4	13	13												
5	5	14	14												
6	6	15	15												
7	7	16	16												
8	8	17	17												
9	9	18	18												

NONE	Total Claims Allowed:	
(Assistant Examiner)	(Date)	20
/OSEI K AMPONSAH/ Primary Examiner, Art Unit 1729	05 February 2024	O.G. Print Claim(s) O.G. Print Figure
(Primary Examiner)	(Date)	1 1

<i>Index of Claims</i> 	Application/Control No. 17/707,137	Applicant(s)/Patent Under Reexamination LIN et al.
	Examiner OSEI K AMPONSAH	Art Unit 1729

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS										
☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47										
CLAIM		DATE								
Final	Original	01/28/2023	10/21/2023	02/05/2024						
1	1	✓	✓	=						
2	2	✓	✓	=						
3	3	✓	✓	=						
4	4	✓	✓	=						
5	5	✓	✓	=						
6	6	✓	✓	=						
7	7	✓	✓	=						
8	8	✓	✓	=						
9	9	✓	✓	=						
10	10	✓	✓	=						
11	11	✓	✓	=						
12	12	✓	✓	=						
13	13	✓	✓	=						
14	14	✓	✓	=						
15	15	✓	✓	=						
16	16	✓	✓	=						
17	17	✓	✓	=						
18	18	✓	✓	=						
19	19	✓	✓	=						
20	20	✓	✓	=						

<i>Search Notes</i> 	Application/Control No. 17/707,137	Applicant(s)/Patent Under Reexamination LIN et al.
	Examiner OSEI K AMPONSAH	Art Unit 1729

CPC - Searched*		
Symbol	Date	Examiner
H01M 4/366,382	01/28/2023	JBM
H01M 10/0525	02/05/2024	OA

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
East Search	01/28/2023	JBM
PE2E Search	10/21/2023	OA
Inventor (Assignee) Search	10/21/2023	OA
Interference Search	02/05/2024	OA

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
H01M	4/366,382	02/05/2024	OA
H01M	10/0525	02/05/2024	OA

/OSEI K AMPONSAH/ Primary Examiner, Art Unit 1729	
--	--

02/05/2024

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

<i>In re</i> Patent Application of: Ningde Ampere Technology Limited	Confirmation No.: 5194
U.S. Patent Application No.: 17/707,137	Art Unit: 1729
Filed: March 29, 2022	Examiner: OSEI K AMPONSAH
Title: ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE	Attorney Docket No.: 14850042COA

REQUEST FOR RECONSIDERATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

December 26, 2023

Dear Commissioner:

In response to the Office Action mailed October 26, 2023, Applicant respectfully requests reconsideration of the Application in view of the following Amendments and Remarks.

Remarks begin on page 2.

Bibliographic Data

Application No: 17/707,137

Foreign Priority claimed: ☒ Yes ☐ No

35 USC 119 (a-d) conditions met: ☒ Yes ☐ No ☐ Met After Allowance

Verified and Acknowledged: /OSEI K AMPONSAH/

Examiner's Signature

Initials

Title:

ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC
DEVICE

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
03/29/2022	429	1729	14850042COA
RULE			

APPLICANTS

Ningde Amperex Technology Limited, Ningde, CHINA

INVENTORS

Chaowang LIN, Ningde, CHINA

Fan YANG, Ningde, CHINA

Yisong SU, Ningde, CHINA

Huawei ZHONG, Ningde, CHINA

Changming QU, Ningde, CHINA

Xiaozhen ZHANG, Ningde, CHINA

CONTINUING DATA

This application is a CON of 16868966 05/07/2020 PAT 11322774

16868966 is a DIV of 16000597 06/05/2018 PAT 10693181

FOREIGN APPLICATIONS

CHINA CN201810162494.1 02/26/2018

IF REQUIRED, FOREIGN LICENSE GRANTED**

04/05/2022

STATE OR COUNTRY

CHINA

ADDRESS

MAIER & MAIER, PLLC

345 SOUTH PATRICK STREET

ALEXANDRIA, VA 22314

UNITED STATES

FILING FEE RECEIVED

\$1,820

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	1	"17707137"	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:32 PM
L2	2	"17707378"	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:32 PM
L3	362	(compaction adj2 density) AND H01M\$.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:33 PM
L4	266	(compaction adj2 density) AND H01M10/0525.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:33 PM
L5	9	(compaction adj2 density) AND H01M4/50.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:33 PM
L6	8	(compaction adj2 density) AND H01M4/52.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:33 PM
L7	128	(compaction adj2 density) AND H01M4/366.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:33 PM
L8	13	(compaction adj2 density) AND H01M4/382.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:33 PM
L9	35	(compaction adj2 density) AND H01M4/583.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:33 PM
L10	40	(compaction adj2 density) AND H01M4/623.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:34 PM
L11	65	(compaction adj2 density) AND H01M4/661.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:34 PM
L12	109	(compaction adj2 density) AND H01M2004/027.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:34 PM
L13	156	(compaction adj2 density) AND H01M2004/028.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:34 PM
L14	4395	(pack\$7 adj2 density) AND H01M\$.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:34 PM
L15	1863	(pack\$7 adj2 density) AND H01M10/0525.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:34 PM
L16	697	(pack\$7 adj2 density) AND H01M4/366.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:34 PM
L17	148	(pack\$7 adj2 density) AND H01M4/382.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:35 PM
L18	75	(pack\$7 adj2 density)	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21

L19	114	AND H01M4/50.cpc. (pack\$7 adj2 density) AND H01M4/52.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	08:35 PM 2023/10/21 08:35 PM
L20	254	(pack\$7 adj2 density) AND H01M4/583.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:35 PM
L21	141	(pack\$7 adj2 density) AND H01M4/623.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:35 PM
L22	259	(pack\$7 adj2 density) AND H01M4/661.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2023/10/21 08:35 PM
L23	1833	compaction adj2 density	(US-PGPUB; USPAT)	OR	ON	ON	2024/02/05 10:58 PM
L24	411	compaction adj2 density AND H01m\$.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2024/02/05 10:58 PM
L25	16	compaction adj2 density WITH g/cc AND H01m\$.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2024/02/05 10:59 PM
L26	433	compact\$4 adj2 density	(JPO)	OR	ON	ON	2024/02/05 11:20 PM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	16	compaction adj2 density WITH g/cc AND H01m\$.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2024/02/05 11:19 PM
N2	11	compaction adj2 density WITH g/cc AND H01m\$.cpc.	(US-PGPUB)	OR	ON	ON	2024/02/05 11:19 PM
N3	5	compaction adj2 density WITH g/cc AND H01m\$.cpc.	(USPAT)	OR	ON	ON	2024/02/05 11:19 PM
N4	896	compaction adj2 density	(USPAT)	OR	ON	ON	2024/02/05 11:19 PM



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

62008 7590 02/14/2024
MAIER & MAIER, PLLC
345 SOUTH PATRICK STREET
ALEXANDRIA, VA 22314

EXAMINER	
AMPONSAH, OSEI K	
ART UNIT	PAPER NUMBER
1729	

DATE MAILED: 02/14/2024

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/707,137	03/29/2022	Chaowang LIN	14850042COA	5194

TITLE OF INVENTION: ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	05/14/2024

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via the USPTO patent electronic filing system.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

62008 7590 02/14/2024
MAIER & MAIER, PLLC
345 SOUTH PATRICK STREET
ALEXANDRIA, VA 22314

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via the USPTO patent electronic filing system or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

17/707,137 03/29/2022 Chaowang LIN 14850042COA 5194

TITLE OF INVENTION: ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
-------------	---------------	---------------	---------------------	----------------------	------------------	----------

nonprovisional UNDISCOUNTED \$1200 \$0.00 \$0.00 \$1200 05/14/2024

EXAMINER	ART UNIT	CLASS-SUBCLASS
----------	----------	----------------

AMPONSAH, OSEI K 1729 429-223000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required)

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via the USPTO patent electronic filing system ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/707,137	03/29/2022	Chaowang LIN	14850042COA	5194
62008	7590	02/14/2024	EXAMINER	
MAIER & MAIER, PLLC 345 SOUTH PATRICK STREET ALEXANDRIA, VA 22314			AMPONSAH, OSEI K	
			ART UNIT	PAPER NUMBER
			1729	
DATE MAILED: 02/14/2024				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. The United States Patent and Trademark Office (USPTO) collects the information in this record under authority of 35 U.S.C. 2. The USPTO's system of records is used to manage all applicant and owner information including name, citizenship, residence, post office address, and other information with respect to inventors and their legal representatives pertaining to the applicant's/owner's activities in connection with the invention for which a patent is sought or has been granted. The applicable Privacy Act System of Records Notice for the information collected in this form is COMMERCE/PAT-TM-7 Patent Application Files, available in the Federal Register at 78 FR 19243 (March 29, 2013).

<https://www.govinfo.gov/content/pkg/FR-2013-03-29/pdf/2013-07341.pdf>

Routine uses of the information in this record may include disclosure to:

- 1) law enforcement, in the event that the system of records indicates a violation or potential violation of law;
- 2) a federal, state, local, or international agency, in response to its request;
- 3) a contractor of the USPTO having need for the information in order to perform a contract;
- 4) the Department of Justice for determination of whether the Freedom of Information Act (FOIA) requires disclosure of the record;
- 5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record;
- 6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations;
- 7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals;
- 8) another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c));
- 9) the Office of Personnel Management (OPM) for personnel research purposes; and
- 10) the Office of Management and Budget (OMB) for legislative coordination and clearance.

If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

Notice of Allowability	Application No. 17/707,137	Applicant(s) LIN et al.	
	Examiner OSEI K AMPONSAH	Art Unit 1729	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Response filed 26 December 2023.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 1-20. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☒ All b) ☐ Some* c) ☐ None of the:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)	5. ☐ Examiner's Amendment/Comment
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.	6. ☒ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.	7. ☐ Other _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	

/OSEI K AMPONSAH/ Primary Examiner, Art Unit 1729	
--	--

DETAILED ACTION

Remarks

This communication is in responsive to the Response filed 12-26-2023. Claims 1-20 are currently pending.

Allowable Subject Matter

Claims 1-20 are allowed.

The following is an examiner's statement of reasons for allowance:

Claims 1, 10, and 19 recite an electrode comprising a current collector, a first layer, and a second layer wherein the first layer is between the collector and the second layer and on the surface of the collector. The claim further recites that the total compaction density of the first layer and the second layer is greater than 3.2 g/cc.

Prior art Sikha et al. (US 2016/0013480) teaches a battery with a current collector and two cathode layers wherein the tap densities can vary between 2 and 3 g/cc (par. 67, abstract). Sikha teaches that the first and second layers are the same material but does not specifically teach that the tap density of the cathode material is 3.2 g/cc or more as claimed (see Remarks filed 12-26-2023).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OSEI K AMPONSAH whose telephone number is (571)270-3446.

The examiner can normally be reached Monday - Friday, 8:00 am - 5:00 pm EST.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula C Ruddock can be reached on (571)272-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent-center> for more information about Patent Center and <https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 17/707,137
Art Unit: 1729

Page 4

/OSEI K AMPONSAH/
Primary Examiner, Art Unit 1729

TO: maierandmaier_PAIR@firsttofile.com,docket@maierandmaier.com
FROM: noreply@uspto.gov
CC: patentcenter_eofficeaction@uspto.gov
SUBJECT: USPTO: Patent Electronic System - e-Postcard Notification for Customer Number 62008

Wed Feb 21 05:41:52 EST 2024

Dear Patent Center Customer:

Correspondence Address:

MAIER &MAIER, PLLC
345 SOUTH PATRICK STREET
ALEXANDRIA,VIRGINIA,22314
UNITED STATES

An email notification regarding the correspondence was sent to the following email address(es) associated with customer number 62008:

maierandmaier_PAIR@firsttofile.com
docket@maierandmaier.com

This is a courtesy reminder that new correspondence is available for the application. If you have not done so already, please review the correspondence listed below. The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Application	Document	Mailroom Date	Attorney Docket No.
17707137	NOA	02/14/2024	14850042COA

To view your correspondence online, please sign in to [Patent Center](#) and then select Workbench/View correspondence. Or to update your email addresses, select Manage/Manage customer numbers.

If you have any questions, please contact the [Patent Electronic Business Center](#) (EBC) at ebc@uspto.gov or 866-217-9197 Monday – Friday, 6 a.m. to midnight ET.

Please do not reply to this email as it was sent from an unmonitored mailbox.

Sincerely,

The Patent Center Team



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/707,137	03/29/2022	Chaowang LIN	14850042COA	5194

62008 7590 02/28/2024
MAIER & MAIER, PLLC
345 SOUTH PATRICK STREET
ALEXANDRIA, VA 22314

EXAMINER

AMPONSAH, OSEI K

ART UNIT	PAPER NUMBER
----------	--------------

1729

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

02/28/2024

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@maierandmaier.com
maierandmaier_PAIR@firsttofile.com

Corrected Notice of Allowability	Application No. 17/707,137	Applicant(s) LIN et al.	
	Examiner OSEI K AMPONSAH	Art Unit 1729	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Response filed 26 December 2023.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 1-20. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some* c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)	5. ☐ Examiner's Amendment/Comment
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>03/29/2022</u> .	6. ☐ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.	7. ☐ Other _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.	

/OSEI K AMPONSAH/ Primary Examiner, Art Unit 1729	
--	--

Doc code: IDS

PTO/SB/08a (03-15)

Doc description: Information Disclosure Statement (IDS) Filed

Approved for use through 07/31/2016. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)

Application Number

Filing Date

First Named Inventor

Art Unit

Examiner Name

Attorney Docket Number

2022-03-29

Chaowang LIN

TBD

TBD

14850042COA

U.S.PATENTS

Remove

Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button.

Add

U.S.PATENT APPLICATION PUBLICATIONS

Remove

Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/O.K.A/	1	20070026316	A1	2007-02-01	SANYO ELECTRIC CO Imachi et al.	
/O.K.A/	2	20020028380	A1	2002-03-07	TANJO ET AL	
	~~3~~	~~20070026316~~	~~A1~~	~~2007-02-01~~	~~SANYO ELECTRIC CO LTD~~	
/O.K.A/	4	20140295284	A1	2014-10-02	JFE CHEMICAL CORPORATION Ijiri et al.	
/O.K.A/	5	20160013480	A1	2016-01-14	APPLIED MATERIALS INC Sikha et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button.

Add

FOREIGN PATENT DOCUMENTS

Remove

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		2022-03-29
First Named Inventor	Chaowang LIN	
Art Unit	TBD	
Examiner Name	TBD	
Attorney Docket Number	14850042COA	

Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
/O.K.A/	1	107293688	CN	A	2017-10-24	CHENGDU ORGANIC CHEM CO LTD CAS ET AL	Cited in NPL Cite No. 1; English Abstract Provided	
/O.K.A/	2	1658413	CN	A	2005-08-24	BIYADI CO LTD		
/O.K.A/	3	102306777	CN	A	2012-01-04	GUANGZHOU YUNTONG MAGNETOELECTRIC CO LTD		
/O.K.A/	4	103187576	CN	A	2013-07-03	UNIV TSINGHUA ET AL		
/O.K.A/	5	103258999	CN	A	2013-08-21	HYDRO QUEBEC		
/O.K.A/	6	104347842	CN	A	2015-02-11	HUAWEI TECH CO LTD		
/O.K.A/	7	105070882	CN	A	2015-11-18	YANCHENG INST TECHNOLOGY		
/O.K.A/	8	105074967	CN	A	2015-11-18	APPLIED MATERIALS		
/O.K.A/	9	105304859	CN	A	2016-02-03	BYD CO LTD		
/O.K.A/	10	103187576	CN	B	2015-07-29	UNIV TSINGHUA ET AL		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		2022-03-29
First Named Inventor	Chaowang LIN	
Art Unit	TBD	
Examiner Name	TBD	
Attorney Docket Number	14850042COA	

/O.K.A/	11	201153140	CN	Y	2008-11-19	DONGGUAN MCNAIR NEW POWER COL		
---------	----	-----------	----	---	------------	----------------------------------	--	--

If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1	Office Action issued on January 27, 2022, in connection with corresponding Chinese Application No. 202110531428. (13 pp., including machine-generated English translation)	×
	2	Office Action issued on August 29, 2019, in connection with corresponding Chinese Application No. 201810162494.1; (14 pp., including machine-generated English translation).	☒
	3	Office Action issued on November 21, 2019, in connection with corresponding Chinese Application No. 201810162494.1 (12 pp., including machine-generated English translation).	☒
	4	Office Action issued on March 16, 2020, in connection with corresponding Chinese Application No. 201810162494.1; (17 pp., including machine-generated English translation).	☒
	5	Office Action issued on April 29, 2021, in connection with corresponding Chinese Application No. 201810162494.1; (23 pp., including machine-generated English translation).	☐
	6	Office Action issued on June 2, 2020, in connection with corresponding Chinese Application No. 201810162494.1; (12 pp., including machine-generated English translation).	☒
	7	Office Action issued on January 6, 2021, in connection with corresponding Chinese Application No. 201810162494.1; (11 pp., including machine-generated English translation).	☒
	8	KELONG et al., "Principles and Key Technologies of Lithium Ion Batteries"; Chemical Industry Press, November 2009; (8 pages with Partial English Translation)	☒

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2022-03-29
First Named Inventor	Chaowang LIN
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	14850042COA

9	SHUILIN et al., "Superfine Grinding Principle, Process Equipment and Application"; China Building Materials Industry Press, May 1993 (18 pages with Partial English translation).	☒
10	Office Action issued on November 1, 2019, in connection with related United States Application No. 16/000,597; 8 Pages.	☐
11	Office Action issued on October 22, 2021, in connection with related United States Application No. 16/868,966; 15 pages	☐

If you wish to add additional non-patent literature document citation information please click the Add button

Add**EXAMINER SIGNATURE**

Examiner Signature	/OSEI K AMPONSAH/	Date Considered	02/26/2024
--------------------	-------------------	-----------------	------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		2022-03-29
First Named Inventor	Chaowang LIN	
Art Unit	TBD	
Examiner Name	TBD	
Attorney Docket Number	14850042COA	

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Timothy J. Maier/	Date (YYYY-MM-DD)	2022-03-29
Name/Print	Timothy J. Maier	Registration Number	51,986

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/707,137	03/29/2022	Chaowang LIN	14850042COA	5194

62008 7590 03/07/2024
MAIER & MAIER, PLLC
345 SOUTH PATRICK STREET
ALEXANDRIA, VA 22314

EXAMINER

AMPONSAH, OSEI K

ART UNIT	PAPER NUMBER
----------	--------------

1729

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

03/07/2024

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@maierandmaier.com
maierandmaier_PAIR@firsttofile.com



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Application No. : 17707137
Applicant : Lin
Filing Date : 03/29/2022
Date Mailed : 03/07/2024

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given two (2) months from the mail date of this Notice within which to respond. This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), “all outstanding requirements” will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

See attachment(s).

*A copy of this notice **MUST** be returned with the reply. Please address response to
“Mail Stop Issue Fee, Commissioner for Patents,
P.O. Box 1450, Alexandria, VA 22313-1450”.*

/Joanna Black/
Publication Branch
Office of Data Management
(571) 272-4200

IDENTIFICATION OF DRAWING DEFICIENCIES

- ☐ There is a hole or the image thereof within the illustration. FIG(s)
- ☐ The illustration is penetrated or traversed by a solid or broken line that is not intended to be part of the drawing, such as a dark line caused by a flaw in the copying process. FIG(s)
- ☐ An ink stamp or the image thereof obscures part of the illustration. FIG(s)
- ☐ The drawing is marred by black smudges, obliterations, or fax/copier marks (for example, speckles or dots in a substantial portion of the drawing). FIG(s)
- ☐ Figure numbers are duplicated or missing. FIG(s)
- ☐ Drawing sheet or figure is missing. FIG(s)
- ☐ Numbers, letters, or reference characters in the drawing have been crossed out or are illegibly handwritten. FIG(s)
- ☐ The character of the lines, numbers, and letters is poor. FIG(s)
- ☐ The drawing's background shows that the original drawing was made on graph paper or other paper with a pattern or decoration. FIG(s)
- ☐ The FIG. number label is placed in a location that causes the drawing to be read upside down. FIG(s)
- ☒ Data, a reference number, or part of the drawing is truncated or missing, or a lead line has no reference number. FIG(s) 1 and 2
- ☐ The drawing and/or the FIG. label contain(s) foreign language. FIG(s)
- ☐ This utility application contains a photograph of a view that is capable of being illustrated as a line drawing. FIG(s)
- ☐ A petition under 37 CFR 1.84(a)(2) to accept color drawings has been granted, but the brief description of the drawings in the specification does not contain (or has not been amended to contain) the paragraph required by 37 CFR 1.84(a)(2)(iii).
- ☐ This reissue application contains added and/or amended drawings that are not labeled as "New" or "Amended" or "Canceled" as required by 37 CFR 1.173(b)(3). FIG(s)
- ☐ This Design reissue application contains a drawing that is labeled as "Canceled" but is not surrounded by brackets, or a drawing that is surrounded by brackets but is not labeled as "Canceled." See 37 CFR 1.173(b)(3). FIG(s)
- ☐ OTHER:
- ☐ COMMENTS:

SCORE Placeholder Sheet for IFW Content

Application Number: 17707137

Document Date: 03/13/2024

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

- Drawing

At the time of document entry (noted above):

- USPTO employees may access SCORE content via DAV or via the SCORE web page.
- External customers may access SCORE content via PAIR using the Supplemental Content tab.



UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #
17/707,137

RECEIPT DATE / TIME
03/13/2024 03:04:04 PM Z ET

ATTORNEY DOCKET #
14850042COA

Title of Invention

ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	5194	FILED BY	Beatriz Sanchez
PATENT CENTER #	64669168	FILING DATE	03/29/2022
CUSTOMER #	62008	FIRST NAMED INVENTOR	Chaowang LIN
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Timothy Maier

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
PAT201710042US3_Response_to_NTFCAP_.pdf	4	Applicant Response to Pre-Exam Formalities Notice	138 KB
PAT201710042US3_Replacement_Sheet_.pdf	1	Drawings-other than black and white line drawings	20 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
PAT201710042US3_Response_to_NTFCAP_.pdf	77F4D68A8467DCC87B02D867E6463F8E03154F45900C4138387B0E16B42D6EF78B6DC18D5520781171CF7D78E6A3DD828FCE994C7A395DB95547ABBA5E22BA4A
PAT201710042US3_Replacement_Sheet_.pdf	F2E6C6884185EC46C2ED580B270A8C2CBF9EF5ACAF3CE1D

ent_Sheet_.pdf

E1D5B70CF8D740523372E013B3D431E32AE8FCB7A251BD248
5CDE5801B297486301781A545CA87840

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

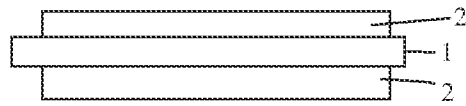


Fig. 1

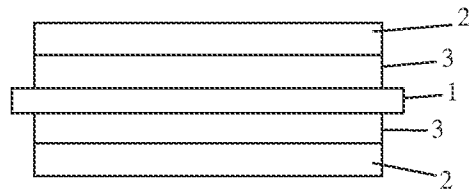


Fig. 2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Ningde Amperex Technology Limited	Confirmation No.: 5194
U. S. Patent Application No: 17/707,137	Art Unit: 1729
Filed: March 29, 2022	Examiner: OSEI K AMPONSAH
Title: ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE	Attorney Docket No.: 14850042COA
NOA mailed: February 14, 2024 Issue Fee Due: May 14, 2024 (Not Yet Paid)	

RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS
(Notice of Allowance Mailed)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

March 13, 2024

Dear Commissioner:

In response to the Notice to File Corrected Application Papers (Notice of Allowance Mailed) dated March 7, 2024 ("Notice"), Applicant hereby submits a Replacement Sheet containing Figs. 1-2 in connection with the above-identified application.

Specifically, Figs. 1-2 have been amended to remove the lead line having no reference number. Applicant submits that the present amendment is in compliance with 37 CFR 1.121.

No new matter has been added to correct the noted deficiencies. Therefore, Applicant believes that the application is now in condition for issuance.

MAIER & MAIER, PLLC
345 South Patrick Street
Alexandria, VA 22314
(703) 740-8322
Customer No. 62008

Respectfully submitted,

/Timothy J. Maier/
Timothy J. Maier
Attorney for Applicant
Reg. No. 51986

Attachments:

Notice to File Corrected Application Papers
Replacement Sheet



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/707,137	03/29/2022	Chaowang LIN	14850042COA	5194
62008	7590	03/07/2024		
MAIER & MAIER, PLLC 345 SOUTH PATRICK STREET ALEXANDRIA, VA 22314			EXAMINER AMPONSAH, OSEI K	
			ART UNIT	PAPER NUMBER
			1729	
			NOTIFICATION DATE	DELIVERY MODE
			03/07/2024	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@maierandmaier.com
maierandmaier_PAIR@firsttofile.com



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Application No. : 17707137
Applicant : Lin
Filing Date : 03/29/2022
Date Mailed : 03/07/2024

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given two (2) months from the mail date of this Notice within which to respond. This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), “all outstanding requirements” will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

See attachment(s).

*A copy of this notice **MUST** be returned with the reply. Please address response to
“Mail Stop Issue Fee, Commissioner for Patents,
P.O. Box 1450, Alexandria, VA 22313-1450”.*

/Joanna Black/
Publication Branch
Office of Data Management
(571) 272-4200

IDENTIFICATION OF DRAWING DEFICIENCIES

- ☐ There is a hole or the image thereof within the illustration. FIG(s)
- ☐ The illustration is penetrated or traversed by a solid or broken line that is not intended to be part of the drawing, such as a dark line caused by a flaw in the copying process. FIG(s)
- ☐ An ink stamp or the image thereof obscures part of the illustration. FIG(s)
- ☐ The drawing is marred by black smudges, obliterations, or fax/copier marks (for example, speckles or dots in a substantial portion of the drawing). FIG(s)
- ☐ Figure numbers are duplicated or missing. FIG(s)
- ☐ Drawing sheet or figure is missing. FIG(s)
- ☐ Numbers, letters, or reference characters in the drawing have been crossed out or are illegibly handwritten. FIG(s)
- ☐ The character of the lines, numbers, and letters is poor. FIG(s)
- ☐ The drawing's background shows that the original drawing was made on graph paper or other paper with a pattern or decoration. FIG(s)
- ☐ The FIG. number label is placed in a location that causes the drawing to be read upside down. FIG(s)
- ☒ Data, a reference number, or part of the drawing is truncated or missing, or a lead line has no reference number. FIG(s) 1 and 2
- ☐ The drawing and/or the FIG. label contain(s) foreign language. FIG(s)
- ☐ This utility application contains a photograph of a view that is capable of being illustrated as a line drawing. FIG(s)
- ☐ A petition under 37 CFR 1.84(a)(2) to accept color drawings has been granted, but the brief description of the drawings in the specification does not contain (or has not been amended to contain) the paragraph required by 37 CFR 1.84(a)(2)(iii).
- ☐ This reissue application contains added and/or amended drawings that are not labeled as "New" or "Amended" or "Canceled" as required by 37 CFR 1.173(b)(3). FIG(s)
- ☐ This Design reissue application contains a drawing that is labeled as "Canceled" but is not surrounded by brackets, or a drawing that is surrounded by brackets but is not labeled as "Canceled." See 37 CFR 1.173(b)(3). FIG(s)
- ☐ OTHER:
- ☐ COMMENTS:



ELECTRONIC PAYMENT RECEIPT

APPLICATION #
17/707,137

RECEIPT DATE / TIME
05/14/2024 08:26:15 AM Z ET

ATTORNEY DOCKET #
14850042COA

Title of Invention

ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 5194

FILED BY Franklin Gomez

PATENT CENTER # 65511495

AUTHORIZED BY Timothy Maier

CUSTOMER # 62006

FILING DATE 03/29/2022

CORRESPONDENCE
ADDRESS -

FIRST NAMED
INVENTOR Chaowang LIN

Payment Information

PAYMENT METHOD
CARD / 8716

PAYMENT TRANSACTION ID
E20245D926496102

PAYMENT AUTHORIZED BY
Franklin Gomez

FEE CODE	DESCRIPTION	ITEM PRICE(\$)	QUANTITY	ITEM TOTAL(\$)
1501	UTILITY ISSUE FEE	1200.00	1	1200.00
TOTAL AMOUNT:				\$1,200.00

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage

submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via the USPTO patent electronic filing system.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

62008 7590 02/14/2024

MAIER & MAIER, PLLC
345 SOUTH PATRICK STREET
ALEXANDRIA, VA 22314

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via the USPTO patent electronic filing system or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/707,137	03/29/2022	Chaowang LIN	14850042COA	5194

TITLE OF INVENTION: ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	05/14/2024

EXAMINER	ART UNIT	CLASS-SUBCLASS
AMPONSAH, OSEI K	1729	429-223000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 Maier & Maier, PLLC

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Ningde Ampere Technology Limited

Ningde, P.R. China

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required)

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☒ Electronic Payment via the USPTO patent electronic filing system ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 50-5976

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Timothy J. Maier/

Date May 14, 2024

Typed or printed name Timothy J. Maier

Registration No. 51986



ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #
17/707,137

RECEIPT DATE / TIME
05/14/2024 08:26:15 AM Z ET

ATTORNEY DOCKET #
14850042COA

Title of Invention

ELECTRODE ELECTROCHEMICAL DEVICE AND ELECTRONIC DEVICE

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # -

CONFIRMATION # 5194

FILED BY Franklin Gomez

PATENT CENTER # 65511495

FILING DATE 03/29/2022

CUSTOMER # 62008

FIRST NAMED
INVENTOR Chaowang LIN

CORRESPONDENCE
ADDRESS -

AUTHORIZED BY Timothy Maier

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
Issue Fee Transmittal.pdf	1	Issue Fee Payment (PTO-85B)	146 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
Issue Fee Transmittal.pdf	B6686AA7071790BD767B4F600439C0B8F0BCC04A6D6D327FA 8C4937A921B3D43C0AE709D22B7A307A4665A0C8807C77341 C6F1E719F06174D40C20EC15DDF7EA

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as

described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/707,137	06/18/2024	12015118	14850042COA	5194

62008 7590 05/29/2024
MAIER & MAIER, PLLC
345 SOUTH PATRICK STREET
ALEXANDRIA, VA 22314

ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at <https://patentcenter.uspto.gov/>. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

The USPTO is implementing electronic patent issuance with a transition period, during which period the USPTO will mail a ceremonial paper copy of the electronic patent grant to the correspondence address of record. Additional copies of the patent (i.e., certified and presentation copies) may be ordered for a fee from the USPTO's Certified Copy Center at <https://certifiedcopycenter.uspto.gov/index.html>. The Certified Copy Center may be reached at (800)972-6382.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 26 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Center (<https://patentcenter.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PATENT CENTER site <https://patentcenter.uspto.gov> for additional inventors):

Chaowang LIN, Ningde, CHINA;
Fan YANG, Ningde, CHINA;
Yisong SU, Ningde, CHINA;
Huawei ZHONG, Ningde, CHINA;
Changming QU, Ningde, CHINA;

APPLICANT(s) (Please see PATENT CENTER site <https://patentcenter.uspto.gov> for additional applicants):

Ningde Amperex Technology Limited, Ningde, CHINA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit [SelectUSA.gov](https://selectusa.gov).



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/707,137	03/29/2022	Chaowang LIN	14850042COA	5194
62008	7590	06/18/2024		
MAIER & MAIER, PLLC 345 SOUTH PATRICK STREET ALEXANDRIA, VA 22314			EXAMINER AMPONSAH, OSEI K	
			ART UNIT	PAPER NUMBER
			1729	
			NOTIFICATION DATE	DELIVERY MODE
			06/18/2024	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@maierandmaier.com
maierandmaier_PAIR@firsttofile.com

APPLICATION NO.	ISSUE DATE	PATENT NO.
17/707,137	18-Jun-2024	12015118

MAIER & MAIER, PLLC
345 SOUTH PATRICK STREET
ALEXANDRIA, VA 22314

EGRANT NOTIFICATION

Your electronic patent grant (eGrant) is now available, which can be accessed via Patent Center at <https://patentcenter.uspto.gov>

The electronic patent grant is the official patent grant under 35 U.S.C. 153. For more information, please visit <https://www.uspto.gov/electronicgrants>