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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/810,897	01/18/2011	Ola Nilsen	ZNA-PT069	9883
3624	7590	10/18/2013	EXAMINER	
VOLPE AND KOENIG, P.C. UNITED PLAZA 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103			WILLS, MONIQUE M	
			ART UNIT	PAPER NUMBER
			1721	
			NOTIFICATION DATE	DELIVERY MODE
			10/18/2013	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):

eoffice@volpe-koenig.com

Office Action Summary	Application No. 12/810,897	Applicant(s) NILSEN ET AL.	
	Examiner MONIQUE WILLS	Art Unit 1721	AIA (First Inventor to File) Status No

-- 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 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, 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 6/28/2010.
 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) 1-13 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) 1-13 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 6/28/2013 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) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 3) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/28/2010</u> . | 4) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The present application is being examined under the pre-AIA first to invent provisions.

Information Disclosure Statement

The information disclosure statements filed June 28, 2010 has/have been received and complies with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. Accordingly, the information disclosure statement(s) is/are being considered by the examiner, and an initial copied is attached herewith.

Allowable Subject Matter

Claims 4-5 & 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and once the 112 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph rejection is overcome.

The instant claims would be allowable over the prior art of record, because the prior art is silent to a method for formation of a Li-comprising layer on a substrate by atomic layer deposition comprising: pulsing a lanthanum precursor through a reaction chamber; reacting said lanthanum precursor with at least one surface of the substrate; purging the reaction chamber; pulsing an oxygen precursor through the reaction chamber; reacting the oxygen precursor with the surface of the substrate; purging the

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reaction chamber' pulsing a lithium precursor through the reaction chamber' reacting the lithium precursor with a surface layer of the substrate; purging the reaction chamber' pulsing an oxygen precursor through the reaction chamber; reacting the oxygen precursor with the surface of the substrate' purging the reaction chamber; repeating in order to form a thin film layer of lithium and lanthanum.

The prior art, such as Gordon U.S. Pub. 2005/0277780, teaches a lithium precursor deposited on a substrate, and the chamber is subsequently purged. However, the reference is silent to separate lithium and lanthanum sources deposited on the substrate with subsequent purging then oxygen pulsating in between. Therefore, the claims are patentably distinct from Gordon.

Claims 5 & 9 would be allowed based on their dependency to claim 4.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):

(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3-5, 7 & 9 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

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It is unclear as to how the steps of claim 3 are supposed to fit in the steps of claim 1. Are steps "d1" and "d2" of claim 1 supposed to be included under step d of claim 3? In other words, the additional steps of dependent claims should be lettered successively after the steps of claim 1. Therefore, if claim 1 ends with "e", then claim 3 should not include steps "a" through "e" because it is confusing as to how claim 3 fits in or follows claim 1. Where does the method of claim 1 end, and the method of claim 3 begin? An appropriate correction is required.

The issue is further complicated with claims 4 and 5. The claims depend on claim 3, but step "b" of claims 4 and 5 is not the same step "b" of claims 1 and 3. Therefore, it is unclear as to how the steps of claims 4 and 5 fit into the steps of claim 1. An appropriate correction is required.

With respect to claim 7, the claim refers to steps that are not in the line of dependency. For example, there are no steps "g" and "m" in claim 1.

Claim 9, is rejected based on its dependency to claim 5.

Claim Rejections 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

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said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 6-8, 10 & 12-13 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Gordon et al. U.S. Pub. 2005/0277780.

With respect to **claims 1 & 3**, Gordon teaches a method for formation of a Li-comprising layer on a substrate by atomic layer deposition comprising the following steps: a) providing a substrate in a reaction chamber wherein said reaction chamber is arranged for gas-to-surface reactions (Metal silicates or phosphates are deposited on a heated substrate by the reaction of vapors of alkoxysilanol or alkylphosphates along with reactive metal amides, alkyls or alkoxides; see the Abstract), b) pulsing a lithium precursor through said reaction chamber (supplying lithium precursor vapors in alternating pulses (See the Abstract), c) reacting said lithium precursor with at least one surface of said substrate (exposing a substrate to one or more vapors (par. 39) with a lithium phosphate precursor (par. 91)) d) purging of said reaction chamber by sending a purge gas through said reaction chamber for the purging of the reaction chamber (carrier gas used for purging of reaction byproducts and un-reacted reactant vapor (par. 98)). Further concerning **claim 3**, Gordon teaches pulsing an oxygen precursor through said reaction chamber, reacting said oxygen precursor with said at least one surface of said substrate. See paragraph 71. With respect to **claim 8**, the film is oxidized. See paragraph 71. See also paragraph 9. With respect to **claim 10**, the lithium precursor is chosen from a metal-organic compound such as a lithium alkyl. See paragraph 44 and Table 2. With respect to **claims 12 & 13**, the limitation "for the

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production of a lithium-comprising electrolyte thin film for use in a battery” is an intended use. Intended use limitations are considered to the extent that they impart structure (capable of use) to the device. Here, the method and materials are identical to the instant claims. Therefore, it would be reasonable to expect the resulting lithium phosphate thin film is capable of use in an electrolyte thin film lithium battery.

Gordon does not expressly disclose repeating steps b) to d) a desired number of times in order for the formation of a thin film layer of a lithium comprising material upon said at least one surface of said substrate (**claims 1-3 & 6-7**).

However, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to repeat steps b) to d) in the method of Gordon in order to obtain the desired thickness and characteristics of the film. The skilled artisan recognizes that continuing to pulse lithium, react with the substrate and purge will form a film of desired homogenous thickness. Furthermore, selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946).

Claim Rejections 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been

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obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Gordon et al. U.S. Pub. 2005/0277780 in view of Jensen et al. U.S. Pub. 2008/0026929.

Gordon teaches a method of making a Li comprising layer including employing a metal or organometallic compound precursor.

Gordon does not expressly disclose a Li-Ti bimetallic precursor material.

Jensen teaches that it is well known in the art to employ organometallic (par. 161) or lithium and titanium precursors (par. 162) to form lithium containing products.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the lithium-titanium precursor of Jensen, to form the lithium containing film layer of Gordon, in order to improve conductivity of the film layer material. The skilled artisan recognizes that the increased conductivity enhances performance in electrical applications.

Conclusion

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Mark Huff, may be reached at 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Monique M Wills/
Examiner, Art Unit 1721

/Mark F. Huff/
Supervisory Patent Examiner, Art Unit 1721

Search Notes (continued)



Application/Control No. 12/810,897	Applicant(s)/Patent under Reexamination NILSEN ET AL.	
Examiner MONIQUE WILLS	Art Unit 1721	

SEARCHED			
Class	Subclass	Date	Examiner
429	231.95	9/7/2013	/MW/
556	57	9/7/2013	/MW/

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
EAST	9/7/2013	/MW/
INVENTOR SEARCH	9/7/2013	/MW/

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner