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- (71) **Applicant (for all designated States except US):** APPLIED MATERIALS, INC. [US/US]; 3050 Bowers Avenue, Santa Clara, California 95054 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** BHATNAGAR, Yashraj K. [IN/US]; 1783 Wadwe Avenue, Santa Clara, California 95051 (US). MCCOMB, Brendan [US/US];

29 Moonbeam Drive, Mountain View, California 94043 (US). SU, Xiao Ming [CN/CN]; 28 Xinxu Road, Xi'an Hi-tech Industrial Dev Zone, Xi'an, Shaanxi 710119 (CN). JADHAV, Deepak [IN/IN]; 35, Prasanna Colony, Basaveshwaramagar Gokul Road, Hubli 580030 (IN). SUBRAMANI, Anantha K. [US/US]; 4245 Merlot Court, San Jose, California 95135 (US). WANG, Wei D. [CN/US]; 951 McBride Loop, San Jose, California 95125 (US). TANG, Jianshe [US/US]; 6203 Lean Avenue, San Jose, California 95123 (US).

(74) **Agents:** PATTERSON, B. Todd et al.; Patterson & Sheridan, L.L.P., 3040 Post Oak Blvd., Suite 1500, Houston, Texas 77056-6582 (US).

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[Continued on next page]

(54) **Title:** USE OF AL BARRIER LAYER TO PRODUCE HIGH HAZE ZNO FILMS ON GLASS SUBSTRATES

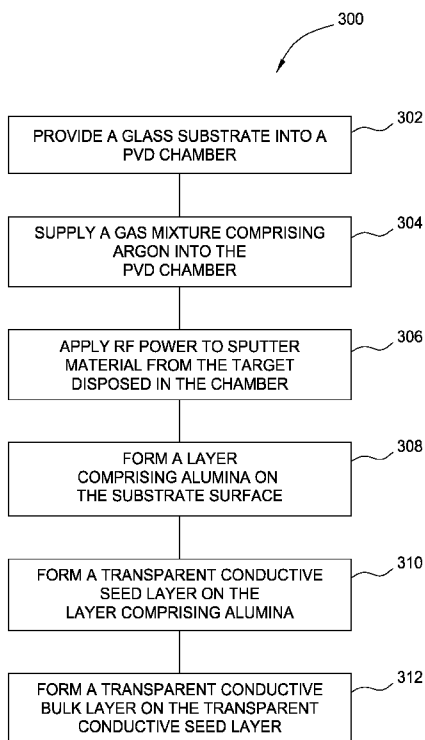


FIG. 3

(57) **Abstract:** Embodiments of the invention provide a method for forming a solar cell including forming a layer comprising alumina on a substrate and forming a transparent conductive layer on the layer comprising alumina. The method may also include forming a transparent conductive seed layer on the layer comprising alumina and forming a transparent conductive bulk layer on the transparent conductive seed layer. Embodiments of the invention also include photovoltaic devices having a substrate, a layer comprising alumina adjacent to the substrate, a zinc oxide-containing transparent conductive seed layer adjacent to the layer comprising alumina, and a zinc oxide-containing transparent conductive bulk layer adjacent the zinc oxide-containing transparent conductive seed layer.

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**A. CLASSIFICATION OF SUBJECT MATTER****H01L 31/042(2006.01)i, H01L 31/0216(2006.01)i, H01L 31/18(2006.01)i**

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**B. FIELDS SEARCHED**

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) &amp; Keywords: alumina, substrate, TCO

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	JP 2006-005021 A (NIPPON SHEET GLASS CORP.) 05 January 2006 See paragraphs [0035]-[0042] and figure 1.	1,7,9 2-6,8,10-15
A	JP 2009-088503 A (MITSUBISHI CHEMICALS CORP.) 23 April 2009 See paragraphs [0028]-[0029], [0040]-[0043] and [0119].	1-15
A	KR 10-2002-0079003 A (SAMSUNG CORNING CO., LTD. et al.) 19 October 2002 See abstract and claims 1-3.	1-15

 Further documents are listed in the continuation of Box C. See patent family annex.

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Korean Intellectual Property Office  
Government Complex-Daejeon, 189 Cheongsu-ro,  
Seo-gu, Daejeon 302-701, Republic of Korea

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Authorized officer

KIM Min Soo

Telephone No. 82-42-481-8249



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Information on patent family members

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JP 2006-005021 A	05.01.2006	None	
JP 2009-088503 A	23.04.2009	None	
KR 10-2002-0079003 A	19.10.2002	None	