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Published:
— *with international search report (Art. 21(3))*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:
29 November 2012

(54) Title: DEVICES INCLUDING QUANTUM DOTS AND METHOD

(57) Abstract: A method for preparing a device, the method comprising: forming a first device layer over a first electrode, the layer comprising a metal oxide formed from a sol-gel composition that does not generate acidic by-products, and forming a second electrode over the first device layer, wherein the method further includes forming a layer comprising quantum dots over the fust electrode before or after formation of the first device layer. Also disclosed is a device comprising a first device layer formed over a first electrode, the first device layer comprising a metal oxide formed by sol-gel processing that does not include acidic by-products, a second electrode over the first device layer, and a layer comprising quantum dots disposed between the first device layer and one of the two electrodes. A device prepared by the method is also disclosed.

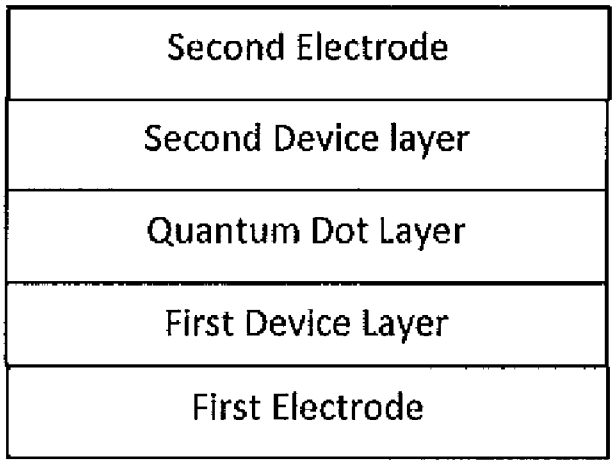


FIGURE 2

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/023671

A. CLASSIFICATION OF SUBJECT MATTER

H01B 13/00(2006.01)i, H01B 5/14(2006.01)i, H01B 1/02(2006.01)i, F21Y 101/02(2006.01)n

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H01B 13/00; C08L 65/00; H01B 1/12; H01L 33/06; H05B 33/20; H05B 33/18

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) & Keywords: metal oxide, quantum dot, sol-gel, acidic

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 10-2011-0008206 A (QD VISION, INC.) 26 January 2011 See paragraphs [0220]-[0232], and figure 1	1-19
A	KR 10-2011-0002847 A (E. I. DU PONT DE NEMOURS AND COMPANY) 10 January 2011 See paragraphs [0200]-[0224], and figure 1	1-19
A	KR 10-2010-0036055 A (LG DISPLAY CO., LTD.) 07 April 2010 See paragraphs [0043]-[0060], and figures 3, 4	1-19

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24 SEPTEMBER 2012 (24.09.2012)	**25 SEPTEMBER 2012 (25.09.2012)**

Name and mailing address of the ISA/KR
Korean Intellectual Property Office
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/023671

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 20
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

The claim is too broad to make meaningful search.

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required addtional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/023671

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		EP 2283342 A2	16.02.2011
		US 2011-0140075 A1	16.06.2011
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		US 2010-0247923 A1	30.09.2010
		WO 2009-117460 A1	24.09.2009
KR 10-2010-0036055 A	07.04.2010	None	