

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT3620787

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT	
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT	
<b>CONVEYING PARTY DATA</b>		
	<b>Name</b>	<b>Execution Date</b>
	MIN-CHEOL KIM	10/21/2015
	YOUN-GYOUNG CHANG	10/21/2015
	KWON-SHIK PARK	10/21/2015
	SO-HYUNG LEE	10/21/2015
	HO-YOUNG JUNG	10/28/2015
	HA-JIN YOO	10/21/2015
	JEONG-SUK YANG	10/21/2015
<b>RECEIVING PARTY DATA</b>		
<b>Name:</b>	LG DISPLAY CO., LTD.	
<b>Street Address:</b>	128, YEOUNI-DAERO, YEONGDEUNGPO-GU	
<b>City:</b>	SEOUL	
<b>State/Country:</b>	KOREA, REPUBLIC OF	
<b>Postal Code:</b>	150-721	
<b>PROPERTY NUMBERS Total: 1</b>		
	<b>Property Type</b>	<b>Number</b>
	Application Number:	14937598
<b>CORRESPONDENCE DATA</b>		
<b>Fax Number:</b>	(703)205-8050	
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>		
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<b>Correspondent Name:</b>	BIRCH STEWART KOLASCH & BIRCH, LLP	
<b>Address Line 1:</b>	8110 GATEHOUSE RD.	
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<b>ATTORNEY DOCKET NUMBER:</b>	6655-0465PUS1	
<b>NAME OF SUBMITTER:</b>	TIMOTHY W. STONE	
<b>SIGNATURE:</b>	/timothy w. stone/	
<b>DATE SIGNED:</b>	11/18/2015	

PATENT

**Total Attachments: 5**

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**DECLARATION AND ASSIGNMENT  
FOR PATENT AND DESIGN APPLICATIONS**

UNITED STATES PATENT RIGHTS, OR  
UNITED STATES PLUS ALL FOREIGN PATENT RIGHTS

Title of Invention ⇒ CRYSTALLIZATION METHOD FOR OXIDE SEMICONDUCTOR LAYER, SEMICONDUCTOR DEVICE  
MANUFACTURED USING THE SAME, AND METHOD FOR MANUFACTURING THE  
SEMICONDUCTOR DEVICE

As a below named inventor (hereinafter designated as the undersigned), I hereby declare that:

This declaration is directed to the application attached hereto.

Application not ⇒ If the application is not attached hereto, the application is as identified by the attorney docket number as  
Attached set forth above and/or the following:

Enter Appl. No. ⇒ United States Application Number or PCT International Appln. No. \_\_\_\_\_

Enter Filing Date ⇒ filed on \_\_\_\_\_

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 have reviewed and understand the contents of the above-identified application, including the claims.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37,  
Code of Federal Regulations § 1.56.

WHEREAS, the undersigned has invented certain new and useful improvements described in the  
application identified.

Insert Name ⇒ WHEREAS, LG DISPLAY CO., LTD.  
of Assignee

Insert Address ⇒ of 128, Yeoui-daero, Yeongdeungpo-gu, Seoul, Republic of Korea  
of Assignee

its heirs, successors, legal representatives and assigns (hereinafter designated as the Assignee) is desirous  
of acquiring the entire right, title and interest in and to said invention and in and to any Letters Patent(s)  
that may be granted therefor in the United States of America and

Check Box if ⇒ ☐ in any foreign countries.  
Appropriate

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged,  
the undersigned has sold, assigned and transferred, and by these presents does (do) sell, assign and  
transfer unto said Assignee the full and exclusive right to the said invention in the United States of  
America, its territories, dependencies and possessions and the entire right, title and interest in and to any  
and all Letters Patent(s) which may be granted therefor in the United States of America, its territories,  
dependencies and possessions, and if the box above is designated, in any and all foreign countries; and to  
any and all divisions, reissues, continuations, conversions and extensions thereof for the full term or  
terms for which the same may be granted.

The undersigned agrees to execute all papers necessary in connection with this application and any continuing, divisional, conversion or reissue applications thereof and also to execute separate assignments in connection with such applications as the Assignee may deem necessary or expedient.

The undersigned agrees to execute all papers necessary in connection with any interference which may be declared concerning this application or continuation, division, conversion or reissue thereof or Letters Patent(s) or reissue patent issued thereon and to cooperate with the Assignee in every way possible in obtaining and producing evidence and proceeding with such interference.

The undersigned agrees to execute all papers and documents and to perform any act which may be necessary in connection with claims or provisions of the International Convention for the Protection of Industrial Property or similar agreements.

The undersigned agrees to perform all affirmative acts which may be necessary to obtain a grant of (a) valid United States of America patent(s) or a grant of (a) valid United States of America and any foreign patent(s) to the Assignee and to vest all rights therein hereby conveyed to said Assignee as fully and entirely as the same would have been held by the undersigned if this Assignment and sale had not been made.

The undersigned hereby authorizes and requests the Patent and Trademark Office Officials in the United States of America and in any foreign countries to issue any and all Letters Patent(s) resulting from said application or any continuing, divisional conversion or reissue applications thereof to the said Assignee, as Assignee of the entire interest, and hereby covenants that he has the full right to convey the entire interest herein assigned, and that he has not executed, and will not execute, any agreement in conflict herewith.

The undersigned hereby grants the law firm of Birch, Stewart, Kolasch & Birch, LLP the power to insert any further identification which may be necessary or desirable in order to comply with the rules of the U.S. Patent and Trademark Office.

The undersigned hereby covenants that no assignment, sale, agreement or encumbrance has been or will be made or entered into which would conflict with this assignment.

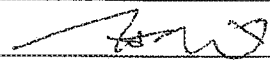
The undersigned hereby acknowledges that any willful false statement made in this declaration is punishable under 18 U.S.C. § 1001 by fine or imprisonment of not more than five (5) years, or both.

In witness whereof, executed by the undersigned on the date opposite the undersigned name.

LEGAL NAME OF INVENTOR

Inventor's Name → Inventor: Min-Cheol KIM

Date: 21, Oct, 2015

Inventor's Signature → Signature: 

An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use a separate form for each inventor; or check the box below and complete the attached page(s) to list additional inventors.

☒ Additional inventors are being named on the 1 supplemental sheet(s) attached hereto.

**SUPPLEMENTAL SHEET FOR  
DECLARATION AND ASSIGNMENT**

**ADDITIONAL INVENTOR(S)**  
Supplemental Sheet Page 1 of 1

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor's Name ⇨ Inventor: Youn-Gyoung CHANG Date: 21. Oct. 2015

Inventor's Signature ⇨ Signature: Youn-Gyoung Chang

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor's Name ⇨ Inventor: Kwon-Shik PARK Date: 21. Oct. 2015

Inventor's Signature ⇨ Signature: K. S. Park

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor's Name ⇨ Inventor: So-Hyung LEE Date: 21. Oct. 2015

Inventor's Signature ⇨ Signature: So-Hyung LEE

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor's Name ⇨ Inventor: Ho-Young JUNG Date: \_\_\_\_\_

Inventor's Signature ⇨ Signature: \_\_\_\_\_

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor's Name ⇨ Inventor: Ha-Jin YOO Date: 21. Oct. 2015

Inventor's Signature ⇨ Signature: Ha-Jin Yoo

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor's Name ⇨ Inventor: Jeong-Suk YANG Date: 21. Oct. 2015

Inventor's Signature ⇨ Signature: Jeong-Suk YANG

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor's Name ⇨ Inventor: \_\_\_\_\_ Date: \_\_\_\_\_

Inventor's Signature ⇨ Signature: \_\_\_\_\_

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor's Name ⇨ Inventor: \_\_\_\_\_ Date: \_\_\_\_\_

Inventor's Signature ⇨ Signature: \_\_\_\_\_

BSKB-DECASSIGN\ (09-12)

U.S. Application No. 14/937,598

Doc code: Oath

Document Description: Oath or declaration filed

PTO/AIA/02 (07-13)

Approved for use through 01/31/2014. OMB 0651-0032

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

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**SUBSTITUTE STATEMENT IN LIEU OF AN OATH OR DECLARATION FOR UTILITY  
OR DESIGN PATENT APPLICATION (35 U.S.C. 115(d) AND 37 CFR 1.64)**

Title of Invention	CRYSTALLIZATION METHOD FOR OXIDE SEMICONDUCTOR LAYER, SEMICONDUCTOR DEVICE MANUFACTURED USING THE SAME, AND METHOD FOR MANUFACTURING THE SEMICONDUCTOR DEVICE		
This statement is directed to:			
<input checked="" type="checkbox"/> The attached application,			
OR			
<input type="checkbox"/> United States application or PCT international application number <u>NEW</u> filed on _____			
LEGAL NAME of inventor to whom this substitute statement applies:			
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)			
Ho-Young JUNG			
Residence (except for a deceased or legally incapacitated inventor):			
City	Paju-si, Gyeonggi-do	State	Country REPUBLIC OF KOREA
Mailing Address (except for a deceased or legally incapacitated inventor):			
101/606 Gyohe 1 Cha World Mardiang Apt., Mokdong-dong			
City	Paju-si, Gyeonggi-do	State	Country KR
I believe the above-named inventor or joint inventor to be the original inventor or an original joint inventor of a claimed invention in the application.			
The above-identified application was made or authorized to be made by me.			
I hereby acknowledge that any willful false statement made in this statement is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.			
Relationship to the inventor to whom this substitute statement applies:			
<input type="checkbox"/>	Legal Representative (for deceased or legally incapacitated inventor only),		
<input checked="" type="checkbox"/>	Assignee,		
<input type="checkbox"/>	Person to whom the inventor is under an obligation to assign,		
<input type="checkbox"/>	Person who otherwise shows a sufficient proprietary interest in the matter (petition under 37 CFR 1.46 is required), or		
<input type="checkbox"/>	Joint Inventor.		

[Page 1 of 2]

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-8189 and select option 2.

U.S. Application No. 14/937,598

PTO/SB/AIA02 (07-13)

Approved for use through 9/13/2014. OMB 0591-0032  
U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

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**SUBSTITUTE STATEMENT**

Circumstances permitting execution of this substitute statement:

- ☐ Inventor is deceased,  
☐ Inventor is under legal incapacity,  
☒ Inventor cannot be found or reached after diligent effort, or  
☐ Inventor has refused to execute the oath or declaration under 37 CFR 1.63.

If there are joint inventors, please check the appropriate box below:

- ☒ An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) naming the entire inventive entity has been or is currently submitted.

OR

- ☐ An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) has not been submitted. Thus, a Substitute Statement Supplemental Sheet (PTO/AIA/11 or equivalent) naming the entire inventive entity and providing inventor information is attached. See 37 CFR 1.64(b).

**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.

**PERSON EXECUTING THIS SUBSTITUTE STATEMENT:**

Name: Junghoon Kenneth Oh

Date (Optional):

Signature:

**APPLICANT NAME AND TITLE OF PERSON EXECUTING THIS SUBSTITUTE STATEMENT:**

If the applicant is a juristic entity, list the applicant name and the title of the signer:

Applicant Name: LG Display Co., Ltd.

Title of Person Executing  
This Substitute Statement: Vice President

The signer, whose title is supplied above, is authorized to act on behalf of the applicant.

Residence of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent):

City Seoul

State

Country REPUBLIC OF KOREA

Mailing Address of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent)

128, Yeouido-dong, Yeongdeungpo-gu

City Seoul

State

Zip

Country KR

Note: Use an additional PTO/AIA/02 form for each inventor who is deceased, legally incapacitated, cannot be found or reached after diligent effort, or has refused to execute the oath or declaration under 37 CFR 1.63.

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