


Form PTO-1595 (Rev. 03-11)  
OMB No. 0651-0027 (exp. 03/31/2015)

U.S. DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office

### RECORDATION FORM COVER SHEET PATENTS ONLY

To the Director of the U.S. Patent and Trademark Office: Please record the attached documents or the new address(es) below.

<p><b>1. Name of conveying party(ies):</b> Jun-Han Kang (06/01/2010), Jonghun Song (06/01/2010), and Junseon Choi (06/01/2010)</p> <p>Additional name(s) of conveying party(ies) attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p><b>2. Name and address of receiving party(ies)</b></p> <p>Name: <u>LG Chem, Ltd.</u></p> <p>Internal Address: _____</p> <p>Street Address: _____</p> <p>LG Twin Towers 20, Yeouido-dong Yeongdeungpo-gu</p> <p>City: <u>Seoul</u></p> <p>State: _____</p> <p>Country: <u>Republic of Korea</u> Zip: <u>150-721</u></p> <p>Additional name(s) &amp; address(es) attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p><b>3. Nature of conveyance/Execution Date(s):</b></p> <p>Execution Date(s): in parentheses after inventor name</p> <p><input checked="" type="checkbox"/> Assignment <input type="checkbox"/> Merger <input type="checkbox"/> Change of Name</p> <p><input type="checkbox"/> Security Agreement <input type="checkbox"/> Joint Research Agreement</p> <p><input type="checkbox"/> Government Interest Assignment</p> <p><input type="checkbox"/> Executive Order 9424, Confirmatory License</p> <p><input type="checkbox"/> Other _____</p>	<p><b>4. Application or patent number(s):</b> <input checked="" type="checkbox"/> This document is being filed together with a new application.</p> <p>A. Patent Application No.(s) <u>13/686,713</u></p> <p>B. Patent No.(s)</p> <p>Additional numbers attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p><b>5. Name and address to whom correspondence concerning document should be mailed:</b></p> <p>Name: <u>Kelly Y. Hwang</u> <u>LERNER, DAVID, LITTENBERG,</u> <u>KRUMHOLZ &amp; MENTLIK, LLP</u></p> <p>Internal Address: <u>Atty. Dkt.: LGCHEM 3.0-147 DIV II</u></p> <p>Street Address: <u>600 South Avenue West</u></p> <p>City: <u>Westfield</u></p> <p>State: <u>NJ</u> Zip: <u>07090</u></p> <p>Phone Number: <u>908-654-5000</u></p> <p>Fax Number: <u>908-654-7866</u></p> <p>Email Address: <u>ataylor@ldlkm.com</u></p>	<p><b>6. Total number of applications and patents involved:</b> <span style="border: 1px solid black; padding: 2px;">1</span></p> <p><b>7. Total fee (37 CFR 1.21(h) &amp; 3.41)</b> \$ <u>40.00</u></p> <p><input checked="" type="checkbox"/> Authorized to be charged to deposit account</p> <p><input type="checkbox"/> Enclosed</p> <p><input type="checkbox"/> None required (government interest not affecting title)</p>
<p><b>8. Signature:</b></p> <p style="text-align: center;"></p> <p style="text-align: center;">Signature <span style="float: right;">Date</span></p> <p style="text-align: center;"><u>Kelly Y. Hwang - 51,831</u> <span style="float: right;"><u>May 7, 2013</u></span></p> <p style="text-align: center;">Name of Person Signing</p> <p style="text-align: right;">Total number of pages including cover sheet, attachments, and documents: <span style="border: 1px solid black; padding: 2px;">4</span></p>	

CH \$40.00 121095 13886713

former PTO/SB/15 (8-00) Modified LDLKSM

<b>ASSIGNMENT OF UTILITY APPLICATION</b>	Docket Number (Optional)
	LGCHEM

Whereas, I, KANG, Jun-Han of

304-508, Expo Apt., Jeonmin-dong, Yuseong-gu, Daejeon 305-761, Korea

hereafter referred to as assignor, have with others invented certain new and useful improvements in **CATALYST FOR HYDROCARBON STEAM CRACKING, METHOD OF PREPARING THE SAME AND METHOD OF PREPARING OLEFIN BY USING THE SAME**

for which an application for a United States Letters Patent was filed on 06/04/2010

Application Number 12/793,855

for which an application for a United States Letters Patent was executed by me on \_\_\_\_\_

for which an International Application was filed on \_\_\_\_\_, as

\_\_\_\_\_, designating the United States.

And

Whereas, LG Chem, Ltd.

a corporation of Korea, Republic of herein referred to as "assignee" whose mailing address is

LG Twin Towers; 20, Yeouido-dong; Yeongdeungpo-gu; Seoul; REPUBLIC OF KOREA 150-721

is desirous of acquiring the entire right, title and interest in the same;

NOW, THEREFORE, in consideration of the sum of one dollars (\$ 1.00 ), the receipt whereof is acknowledged, and other good and valuable consideration, I as assignor hereby sell, assign and set over to said assignee my entire right, title and interest for the United States of America and all other countries in and to said invention and the aforesaid utility patent application and all original, divisional, continuation, substitute or reissue applications and patents applied for or granted therefor in the United States of America and all other countries, for said invention, including without limitation all applications and patents for said invention claiming priority or benefit of the aforesaid utility application pursuant to any law or treaty, and including all claims for damages by reason of past infringement with the right to sue for and collect the same for its own use and the use of its successors, assigns and legal representatives, and including the right to claim such priority or benefit and the Commissioner of Patents and Trademarks is hereby authorized and requested to issue all patents on said improvements or resulting therefrom to said assignee herein, as assignee of the entire interest therein; and the undersigned for me and my legal representatives, heirs and assigns do hereby agree and covenant without further remuneration, to execute and deliver all original, divisional, continuation, reissue and other applications for Letters Patent on said improvements and all assignments thereof to said assignee or its assigns, to communicate to said assignee or its representatives all facts known to the undersigned respecting said improvements, whenever requested, to testify in any interferences or other legal proceedings in which any of said applications or patents may become involved, to sign all lawful papers, make all rightful oaths, and to do generally everything necessary to aid assignee, its successors, assigns and nominees to obtain patent protection for said improvements in all countries, the expenses incident to said applications to be borne and paid by said assignee.

And I do hereby authorize my attorneys to insert on this deed the filing date and application number of said application when known.

June 1, 2010

Date

Kang Junhan

KANG, Jun-Han

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Typed Name of Witness

\*Total of 3 forms are submitted.

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ASSIGNMENTS

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PATENT

REEL: 030360 FRAME: 0514

Former PTO/SB/15 (8-00) Modified LDLK&amp;M

<b>ASSIGNMENT OF UTILITY APPLICATION</b>	Docket Number (Optional) <b>LGCHEM</b>
<p>Whereas, I, <u>SONG, Jonghun</u> of <u>16-1008, Suleong Town Apt., Dunsan-dong, Seo-gu, Daejeon, Seoul 302-775 Korea</u> hereafter referred to as assignor, have with others invented certain new and useful improvements in <b>CATALYST FOR HYDROCARBON STEAM CRACKING, METHOD OF PREPARING THE SAME AND METHOD OF PREPARING OLEFIN BY USING THE SAME</b></p> <p><input checked="" type="checkbox"/> for which an application for a United States Letters Patent was filed on <u>06/04/2010</u> Application Number <u>12/793,855</u></p> <p><input type="checkbox"/> for which an application for a United States Letters Patent was executed by me on _____</p> <p><input type="checkbox"/> for which an International Application was filed on _____, as _____, designating the United States.</p> <p>And</p> <p>Whereas, <u>LG Chem, Ltd.</u> a corporation of <u>Korea, Republic of</u> herein referred to as "assignee" whose mailing address is <u>LG Twin Towers; 20, Yeouido-dong; Yeongdeungpo-gu; Seoul; REPUBLIC OF KOREA 150-721</u> is desirous of acquiring the entire right, title and interest in the same;</p> <p>NOW, THEREFORE, in consideration of the sum of <u>one</u> dollars (\$ <u>1.00</u> ), the receipt whereof is acknowledged, and other good and valuable consideration, I as assignor hereby sell, assign and set over to said assignee my entire right, title and interest for the United States of America and all other countries in and to said invention and the aforesaid utility patent application and all original, divisional, continuation, substitute or reissue applications and patents applied for or granted therefor in the United States of America and all other countries, for said invention, including without limitation all applications and patents for said invention claiming priority or benefit of the aforesaid utility application pursuant to any law or treaty, and including all claims for damages by reason of past infringement with the right to sue for and collect the same for its own use and the use of its successors, assigns and legal representatives, and including the right to claim such priority or benefit and the Commissioner of Patents and Trademarks is hereby authorized and requested to issue all patents on said improvements or resulting therefrom to said assignee herein, as assignee of the entire interest therein; and the undersigned for me and my legal representatives, heirs and assigns do hereby agree and covenant without further remuneration, to execute and deliver all original, divisional, continuation, reissue and other applications for Letters Patent on said improvements and all assignments thereof to said assignee or its assigns, to communicate to said assignee or its representatives all facts known to the undersigned respecting said improvements, whenever requested, to testify in any interferences or other legal proceedings in which any of said applications or patents may become involved, to sign all lawful papers, make all rightful oaths, and to do generally everything necessary to aid assignee, its successors, assigns and nominees to obtain patent protection for said improvements in all countries, the expenses incident to said applications to be borne and paid by said assignee.</p> <p>And I do hereby authorize my attorneys to insert on this deed the filing date and application number of said application when known,</p> <p><u>June 1 2010</u> Date</p> <p><u>Song, Jonghun</u> SONG, Jonghun</p> <p>_____ Witness</p> <p>_____ Typed Name of Witness</p>	
<p><input checked="" type="checkbox"/> *Total of 3 forms are submitted.</p>	

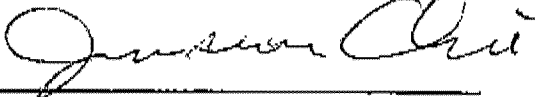
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PATENT

REEL: 030360 FRAME: 0515

former PTO/EP/15 (6-00) Modified LDLKM

ASSIGNMENT OF UTILITY APPLICATION	Docket Number (Optional) LGCHEM
Whereas, I, <u>CHOI, Junseon</u> of	
<u>202-802, Expo Apt., Jeonmin-dong, Yuseong-gu, Daejeon 305-761, Korea</u>	
hereafter referred to as assignor, have with others invented certain new and useful improvements in <u>CATALYST FOR HYDROCARBON STEAM CRACKING, METHOD OF PREPARING THE SAME AND METHOD OF PREPARING OLEFIN BY USING THE SAME</u>	
<input checked="" type="checkbox"/> for which an application for a United States Letters Patent was filed on <u>06/04/2010</u> Application Number <u>12/793,855</u>	
<input type="checkbox"/> for which an application for a United States Letters Patent was executed by me on _____	
<input type="checkbox"/> for which an International Application was filed on _____, as _____, designating the United States.	
And	
Whereas, <u>LG Chem, Ltd.</u>	
a corporation of <u>Korea, Republic of</u> herein referred to as "assignee" whose mailing address is <u>LG Twin Towers; 20, Yeouido-dong; Yeongdeungpo-gu; Seoul; REPUBLIC OF KOREA 150-721</u>	
is desirous of acquiring the entire right, title and interest in the same;	
NOW, THEREFORE, in consideration of the sum of <u>one</u> dollars (\$ <u>1.00</u> ), the receipt whereof is acknowledged, and other good and valuable consideration, I as assignor hereby sell, assign and set over to said assignee my entire right, title and interest for the United States of America and all other countries in and to said invention and the aforesaid utility patent application and all original, divisional, continuation, substitute or reissue applications and patents applied for or granted therefor in the United States of America and all other countries, for said invention, including without limitation all applications and patents for said invention claiming priority or benefit of the aforesaid utility application pursuant to any law or treaty, and including all claims for damages by reason of past infringement with the right to sue for and collect the same for its own use and the use of its successors, assigns and legal representatives, and including the right to claim such priority or benefit and the Commissioner of Patents and Trademarks is hereby authorized and requested to issue all patents on said improvements or resulting therefrom to said assignee herein, as assignee of the entire interest therein; and the undersigned for me and my legal representatives, heirs and assigns do hereby agree and covenant without further remuneration, to execute and deliver all original, divisional, continuation, reissue and other applications for Letters Patent on said improvements and all assignments thereof to said assignee or its assigns, to communicate to said assignee or its representatives all facts known to the undersigned respecting said improvements, whenever requested, to testify in any Interferences or other legal proceedings in which any of said applications or patents may become involved, to sign all lawful papers, make all rightful oaths, and to do generally everything necessary to aid assignee, its successors, assigns and nominees to obtain patent protection for said improvements in all countries, the expenses incident to said applications to be borne and paid by said assignee.	
And I do hereby authorize my attorneys to insert on this deed the filing date and application number of said application when known.	
<u>June 1, 2010</u> Date	 _____ CHOI, Junseon
_____ Witness	
_____ Typed Name of Witness	

 \*Total of 3 forms are submitted.

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