

## PATENT ASSIGNMENT COVER SHEET

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<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT	
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT	
<b>CONVEYING PARTY DATA</b>		
	<b>Name</b>	<b>Execution Date</b>
	KOREA INSTITUTE OF ENERGY RESEARCH	11/12/2018
<b>RECEIVING PARTY DATA</b>		
<b>Name:</b>	TORAY CHEMICAL KOREA INC.	
<b>Street Address:</b>	#34F/36F, FKI TOWER, 24, YEOUNI-DAERO, YEONGDEUNGPO-GU	
<b>City:</b>	SEOUL	
<b>State/Country:</b>	KOREA, REPUBLIC OF	
<b>Postal Code:</b>	07320	
<b>PROPERTY NUMBERS Total: 4</b>		
<b>Property Type</b>	<b>Number</b>	
<b>Patent Number:</b>	8871406	
<b>Patent Number:</b>	9982104	
<b>Patent Number:</b>	9077016	
<b>Patent Number:</b>	9306233	
<b>CORRESPONDENCE DATA</b>		
<b>Fax Number:</b>		
<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>	NOVICK, KIM & LEE PLLC	
<b>Address Line 1:</b>	3251 OLD LEE HWY, SUITE 404	
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<b>ATTORNEY DOCKET NUMBER:</b>	PLK0742809	
<b>NAME OF SUBMITTER:</b>	JISOO JEONG	
<b>SIGNATURE:</b>	/Jisoo Jeong/	
<b>DATE SIGNED:</b>	11/20/2018	
<b>Total Attachments: 2</b>		
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source=Executed Assignment_US_#page2.tif		

ASSIGNMENT OF PATENT

WHEREAS **KOREA INSTITUTE OF ENERGY RESEARCH**, a corporation organized and existing under the laws of Republic of Korea, whose post office address is 152 Gajeong-ro, Yuseong-gu, Daejeon, 34129, Republic of Korea (hereinafter referred to as ASSIGNOR), is the sole owner, by assignment, of the United States Patent Applications and/or issued Patents (hereinafter "said APPLICATIONS and/or PATENTS") listed below:

Patent Number	Issued Date
8871406	2014-10-28
9982104	2018-05-29
9077016	2015-07-07
9306233	2016-04-05

AND WHEREAS, **Toray Chemical Korea Inc.**, a corporation organized and existing under the laws of Republic of Korea, whose post office address is #34 F/36 F, FKI Tower, 24, Yeoui-daero, Yeongdeungpo -gu, Seoul 07320, Republic of Korea (hereinafter referred to as the ASSIGNEE), is desirous of acquiring the entire right, title and interest for the United States to said APPLICATIONS and/or PATENTS and the inventions and improvements disclosed therein, all rights of priority under the terms of the International Convention for the Protection of Industrial Property, and in and to any and all divisions, and continuations thereof, and any and all Letters Patents which may be granted thereon, including any and all reexaminations, reissues, renewals, revalidations, prolongations and/or extensions thereof.

NOW THEREFORE, in consideration of the sum of one U.S. dollar (\$1.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the ASSIGNOR hereby assigns, sells, transfers and sets over onto the ASSIGNEE, its assigns and legal representatives, its entire right, title and interest for the United States to said APPLICATIONS and/or PATENTS and the inventions and improvements disclosed therein, all rights of priority under the terms of the International Convention for the Protection of Industrial Property, and in and to any and all divisions, and continuations thereof, and any and all Letters Patents which may be granted thereon, including any and all reexaminations, reissues, renewals, revalidations, prolongations and/or extensions thereof, with all the rights, powers, privileges, and advantages in any way arising from or pertaining thereto, for and during the term or terms of any and all such Letters Patents when granted, including the terms of any and all divisions, continuations, reexaminations, reissues, renewals, revalidations, prolongations and/or extensions thereof, the ASSIGNEE to have and to hold the interests herein assigned to the full ends of the terms of said Letters Patents, and any and all divisions, continuations, reexaminations, reissues, renewals, revalidations, prolongations and/or extensions thereof, respectively, and including all causes of action that may have accrued with respect to said APPLICATIONS and/or PATENTS, any patent damages from infringement, and any royalties that may be owed and due thereon, and all claims for damages by reason of past infringement of said APPLICATIONS and/or PATENTS with the right to sue for, and collect the same for the ASSIGNEE's own use, all as fully and entirely as the same would have been held and enjoyed by the ASSIGNOR had this assignment not been made.

And for the same consideration aforesaid, the ASSIGNOR agrees that the ASSIGNOR will, upon request, without expense to ASSIGNEE, testify in any legal proceedings, sign all lawful papers, execute all divisional, continuation, reexamination, reissue, renewal, revalidations and/or extension applications thereof in the United States, make all rightful oaths, and generally do all other and further lawful acts, deemed necessary or expedient by the ASSIGNEE, or any assignee thereof, or by counsel for the ASSIGNEE, to assist or enable the ASSIGNEE to obtain and enforce full benefits from the rights and interests herein assigned.

This Assignment shall be binding upon the ASSIGNOR and the heirs, executors, administrators, successors and/or assigns of the ASSIGNOR, and shall inure to the benefit of the ASSIGNEE and the heirs, executors, administrators, successors, beneficiaries, distributees and/or assigns, as the case may be, of the ASSIGNEE.

IN TESTIMONY WHEREOF, this Assignment is executed by the duly authorized officer of the ASSIGNOR.

Byong-Sung Kwak, President

Assignor: Printed Name and Title

Byong S. Kwak

Signature

Nov. 12, 2018

Date

Kang-jin Kim, Vice President

Assignee: Printed Name and Title

K. J. Kim

Signature

Nov. 19, 2018

Date