

<b>PATENT ASSIGNMENT COVER SHEET</b>
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Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT3097800

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
MAX M. TIRTOWIDJOJO	02/17/2010
HUA BAI	02/08/2010
CHAKRABORTY DEBASHIS	02/10/2010
KURT F. HIRSEKORN	02/08/2010
WILLIAM J. KRUPER JR	02/10/2010
AVANI M. PATEL	02/17/2010
SHIRLEY S. SEXTON	04/14/2010
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	DOW GLOBAL TECHNOLOGIES INC.
<b>Street Address:</b>	2040 DOW CENTER
<b>City:</b>	MIDLAND
<b>State/Country:</b>	MICHIGAN
<b>Postal Code:</b>	48674
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	14024023
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(866)496-6981
<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>	
<b>Phone:</b>	651-760-3250
<b>Email:</b>	lisa@ksjlaw.com
<b>Correspondent Name:</b>	KSJLAW, LLC
<b>Address Line 1:</b>	P.O. BOX 517
<b>Address Line 4:</b>	WILLERNIE, MINNESOTA 55090
<b>ATTORNEY DOCKET NUMBER:</b>	69036-US-DIV
<b>NAME OF SUBMITTER:</b>	LISA D. GENTRY
<b>SIGNATURE:</b>	/Lisa D. Gentry/
<b>DATE SIGNED:</b>	11/06/2014
<b>Total Attachments: 5</b>	

PATENT

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source=69036-US-NP US inventors to Dow Global 23AUG2013#page3.tif

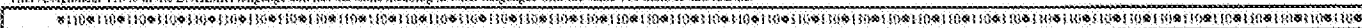
source=69036-US-NP US inventors to Dow Global 23AUG2013#page4.tif

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**PATENT**

**REEL: 034120 FRAME: 0038**

This Assignment, 110 is in the ENGLISH language and has the same meaning in other languages with the same 110 number and R/Date.



This Assignment, 110 is in the ENGLISH language and has the same meaning in other languages with the same 110 number and R/Date.

FORM 110 (R 3/97)

# INDIVIDUAL ASSIGNMENT AND INVENTOR'S DECLARATION

(with Priority Rights)

I/we verily believe I am/we are the original, first and sole/joint inventor(s) of the subject matter which is embraced by and for which a patent is sought on the invention entitled: **ISOTHERMAL MULTITUBE REACTORS AND PROCESSES INCORPORATING THE SAME**

which invention was made and invented by me/us out of and in the course of my/our employment with my/our respective employers as stated below my/our name(s). I/we acknowledge that I/we hold the invention and all patent and other rights and powers obtainable or exercisable in respect thereof in trust for our respective employers. As trustee(s), and for good and valuable consideration and/or the remuneration received for my/our work, I/we sell, assign and transfer unto:

Dow Global Technologies Inc.  
2040 Dow Center  
Midland, Michigan 48674  
United States of America

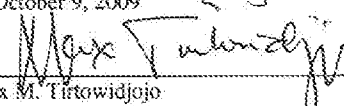
a corporation organized and existing under the laws of the State of Delaware (hereinafter referred to as the "Assignee"); my/our entire right, title and interest throughout the world, in and to the invention and all rights and powers to make applications, including provisional applications when permitted by law, for Letters Patent in its own name, or in the name of its designee (or nominee(s)); and all rights and powers to file any corresponding or equivalent applications in any and all countries, including all rights to claim priority under all United States domestic laws, International Convention(s) and Treaties in the name of Assignee, and do hereby authorize Assignee or its designee to insert here the Priority Number, Filing Date, and Filing Country


Priority Number	Filing Date	Filing Country
61/250,030	October 9, 2009	United States of America

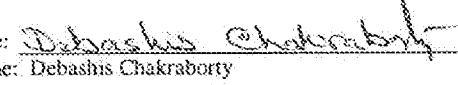
of the application, on which the claim for priority will be based; and in and to any Letters Patent that may be issued for the invention in any and all countries. I/we do hereby agree to assist Assignee in the prosecution of the application(s) and in any interference, conflict, opposition or litigation which may arise involving the invention or the patent or patents thereon, and to execute for any and all countries any document relating to applications derived from, corresponding to or equivalent to the above identified application as Assignee may request.

I/we authorize Assignee or its designee to translate this Assignment into all languages necessary; and we request that any such Letters Patent be issued to Assignee; and consent to the recordal of this Assignment, or a Notarial True Copy thereof, being under covenant not only that I/we have full power to make the same, but also that such assigned rights are not encumbered by any grant, license, or other right heretofore given.

Subscribed and Declared by me/us:

At: <u>Freeport TX</u>	
this <u>17<sup>th</sup></u> day of <u>February</u> , 20 <u>10</u>	
Effective as of October 9, 2009	
Signature: 	
Full Name: Max M. Tirtowidjojo	
Residence: 110 Rosewood Lake Jackson, Texas 77566	
Country: United States of America	
Citizenship: United States of America	
P.O. Address: Same as Residence	
Employed By: The Dow Chemical Company	
Of Country: United States of America	

At: <u>Texas</u>	
this <u>8<sup>th</sup></u> day of <u>Feb</u> , 20 <u>10</u>	
Effective as of October 9, 2009	
Signature: 	
Full Name: Hua Bai	
Residence: 155 Indian Warrior Trl Lake Jackson, Texas 77566	
Country: United States of America	
Citizenship: People's Republic of China	
P.O. Address: Same as Residence	
Employed By: The Dow Chemical Company	
Of Country: United States of America	

At: <u>Freeport, TX 77541, USA</u>	
this <u>10</u> day of <u>February</u> , 20 <u>10</u>	
Effective as of October 9, 2009	
Signature: 	
Full Name: Debashis Chakraborty	
Residence: 109 Northwood Drive Lake Jackson, Texas 77566	
Country: United States of America	
Citizenship: India	
P.O. Address: Same as Residence	
Employed By: The Dow Chemical Company	
Of Country: United States of America	

At: _____	
this _____ day of _____, 20____	
Effective as of October 9, 2009	
Signature: _____	
Full Name: Kurt F. Hirsekorn	
Residence: 5631 Bloomfield Ct. Midland, Michigan 48640	
Country: United States of America	
Citizenship: United States of America	
P.O. Address: Same as Residence	
Employed By: The Dow Chemical Company	
Of Country: United States of America	

( X ) Additional names and signatures are attached.

This Assignment 110 is in the ENGLISH language and has the same meaning in other languages with the same 110 number and R/Date.

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This Assignment 110 is in the ENGLISH language and has the same meaning in other languages with the same 110 number and R/Date.

FORM 110 (P. 5/97)

## INDIVIDUAL ASSIGNMENT AND INVENTOR'S DECLARATION (with Priority Rights)

I/we verily believe I am/we are the original, first and sole/joint inventor(s) of the subject matter which is embraced by and for which a patent is sought on the invention entitled: **ISOTHERMAL MULTITUBE REACTORS AND PROCESSES INCORPORATING THE SAME**

which invention was made and invented by me/us out of and in the course of my/our employment with my/our respective employers as stated below my/our name(s). I/we acknowledge that I/we hold the invention and all patent and other rights and powers obtainable or exercisable in respect thereof in trust for our respective employers. As trustee(s), and for good and valuable consideration and/or the remuneration received for my/our work, I/we sell, assign and transfer unto:

Dow Global Technologies Inc.  
2040 Dow Center  
Midland, Michigan 48674  
United States of America

a corporation organized and existing under the laws of the State of Delaware (hereinafter referred to as the "Assignee"); my/our entire right, title and interest throughout the world, in and to the invention and all rights and powers to make applications, including provisional applications when permitted by law, for Letters Patent in its own name, or in the name of its designee (or nominee(s)); and all rights and powers to file any corresponding or equivalent applications in any and all countries, including all rights to claim priority under all United States domestic laws, International Convention(s) and Treaties in the name of Assignee, and do hereby authorize Assignee or its designee to insert here the Priority Number, Filing Date, and Filing Country

Priority Number	Filing Date	Filing Country
61/250,030	October 9, 2009	United States of America

of the application, on which the claim for priority will be based; and in and to any Letters Patent that may be issued for the invention in any and all countries. I/we do hereby agree to assist Assignee in the prosecution of the application(s) and in any interference, conflict, opposition or litigation which may arise involving the invention or the patent or patents thereon, and to execute for any and all countries any document relating to applications derived from, corresponding to or equivalent to the above identified application as Assignee may request.

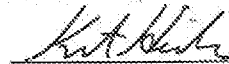
I/we authorize Assignee or its designee to translate this Assignment into all languages necessary; and we request that any such Letters Patent be issued to Assignee; and consent to the recordal of this Assignment, or a Notarial True Copy thereof, being under covenant not only that I/we have full power to make the same, but also that such assigned rights are not encumbered by any grant, license, or other right heretofore given.

Subscribed and Declared by me/us:

At: _____ this _____ day of _____, 20____ Effective as of October 9, 2009  Signature: _____ Full Name: Max M. Tirtowidjojo Residence: 110 Rosewood Lake Jackson, Texas 77566 Country: United States of America Citizenship: United States of America P.O. Address: Same as Residence Employed By: The Dow Chemical Company Of Country: United States of America
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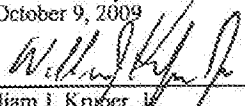
At: _____ this _____ day of _____, 20____ Effective as of October 9, 2009  Signature: _____ Full Name: Hua Bai Residence: 155 Indian Warrior Trl Lake Jackson, Texas 77566 Country: United States of America Citizenship: People's Republic of China P.O. Address: Same as Residence Employed By: The Dow Chemical Company Of Country: United States of America
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At: _____ this _____ day of _____, 20____ Effective as of October 9, 2009  Signature: _____ Full Name: Debashis Chakraborty Residence: 109 Northwood Drive Lake Jackson, Texas 77566 Country: United States of America Citizenship: India P.O. Address: Same as Residence Employed By: The Dow Chemical Company Of Country: United States of America
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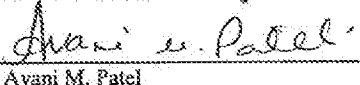
At: <u>Midland, Michigan</u> this <u>8th</u> day of <u>February</u> , 20 <u>10</u> Effective as of October 9, 2009  Signature:  Full Name: Kurt F. Hirsekorn Residence: 5631 Bloomfield Ct. Midland, Michigan 48640 Country: United States of America Citizenship: United States of America P.O. Address: Same as Residence Employed By: The Dow Chemical Company Of Country: United States of America
--

( X ) Additional names and signatures are attached.

At: Midland, Michigan  
 this 10<sup>th</sup> day of Feb, 2010  
 Effective as of October 9, 2009

Signature:   
 Full Name: William J. Kruger, Jr.  
 Residence: 230 Barden Road  
Sanford, Michigan 48657  
 Country: United States of America  
 Citizenship: United States of America  
 P.O. Address: Same as residence  
 Employed By: The Dow Chemical Company  
 Of Country: United States of America

At: Midland, Michigan  
 this 17<sup>th</sup> day of February, 2010  
 Effective as of October 9, 2009

Signature:   
 Full Name: Avani M. Patel  
 Residence: 6025 Emerson Ct  
Midland, Michigan 48640  
 Country: United States of America  
 Citizenship: India U.S.A. A.P.  
 P.O. Address: Same as residence  
 Employed By: The Dow Chemical Company  
 Of Country: United States of America

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of October 9, 2009

Signature: \_\_\_\_\_  
 Full Name: Shirley S. Sexton  
 Residence: 15422 Hillside Terrace Ln  
Cypress, Texas 77429  
 Country: United States of America  
 Citizenship: United States of America  
 P.O. Address: Same as residence  
 Employed By: The Dow Chemical Company  
 Of Country: United States of America

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of \_\_\_\_\_

Signature: \_\_\_\_\_  
 Full Name: \_\_\_\_\_  
 Residence: \_\_\_\_\_

Country: \_\_\_\_\_  
 Citizenship: United States of America  
 P.O. Address: Same as residence  
 Employed By: \_\_\_\_\_  
 Of Country: \_\_\_\_\_

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of \_\_\_\_\_

Signature: \_\_\_\_\_  
 Full Name: \_\_\_\_\_  
 Residence: \_\_\_\_\_

Country: \_\_\_\_\_  
 Citizenship: Germany  
 P.O. Address: Same as residence  
 Employed By: \_\_\_\_\_  
 Of Country: \_\_\_\_\_

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of \_\_\_\_\_

Signature: \_\_\_\_\_  
 Full Name: \_\_\_\_\_  
 Residence: \_\_\_\_\_

Country: \_\_\_\_\_  
 Citizenship: India  
 P.O. Address: Same as residence  
 Employed By: \_\_\_\_\_  
 Of Country: \_\_\_\_\_

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of \_\_\_\_\_

Signature: \_\_\_\_\_  
 Full Name: \_\_\_\_\_  
 Residence: \_\_\_\_\_

Country: \_\_\_\_\_  
 Citizenship: United States of America  
 P.O. Address: Same as residence  
 Employed By: \_\_\_\_\_  
 Of Country: \_\_\_\_\_

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of \_\_\_\_\_

Signature: \_\_\_\_\_  
 Full Name: \_\_\_\_\_  
 Residence: \_\_\_\_\_

Country: \_\_\_\_\_  
 Citizenship: Germany  
 P.O. Address: Same as residence  
 Employed By: \_\_\_\_\_  
 Of Country: \_\_\_\_\_

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of \_\_\_\_\_

Signature: \_\_\_\_\_  
 Full Name: \_\_\_\_\_  
 Residence: \_\_\_\_\_

Country: \_\_\_\_\_  
 Citizenship: Germany  
 P.O. Address: Same as residence  
 Employed By: \_\_\_\_\_  
 Of Country: \_\_\_\_\_

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of \_\_\_\_\_

Signature: \_\_\_\_\_  
 Full Name: \_\_\_\_\_  
 Residence: \_\_\_\_\_

Country: \_\_\_\_\_  
 Citizenship: \_\_\_\_\_  
 P.O. Address: Same as residence  
 Employed By: \_\_\_\_\_  
 Of Country: \_\_\_\_\_

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of October 9, 2009

Signature: \_\_\_\_\_  
 Full Name: William J. Kruper, Jr.  
 Residence: 230 Barden Road  
 Sanford, Michigan 48657  
 Country: United States of America  
 Citizenship: United States of America  
 P.O. Address: Same as residence  
 Employed By: The Dow Chemical Company  
 Of Country: United States of America

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of October 9, 2009.

Signature: \_\_\_\_\_  
 Full Name: Avani M. Patel  
 Residence: 6025 Emerson Ct  
 Midland, Michigan 48640  
 Country: United States of America  
 Citizenship: India  
 P.O. Address: Same as residence  
 Employed By: The Dow Chemical Company  
 Of Country: United States of America

At: Houston Texas  
 this 14 day of APRIL, 2010  
 Effective as of October 9, 2009

Signature: Shirley S. Sexton  
 Full Name: Shirley S. Sexton  
 Residence: 15422 Hillside Terrace Ln  
 Cypress, Texas 77429  
 Country: United States of America  
 Citizenship: United States of America  
 P.O. Address: Same as residence  
 Employed By: The Dow Chemical Company  
 Of Country: United States of America

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of \_\_\_\_\_

Signature: \_\_\_\_\_  
 Full Name: \_\_\_\_\_  
 Residence: \_\_\_\_\_  
 Country: \_\_\_\_\_  
 Citizenship: United States of America  
 P.O. Address: Same as residence  
 Employed By: \_\_\_\_\_  
 Of Country: \_\_\_\_\_

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of \_\_\_\_\_

Signature: \_\_\_\_\_  
 Full Name: \_\_\_\_\_  
 Residence: \_\_\_\_\_  
 Country: \_\_\_\_\_  
 Citizenship: Germany  
 P.O. Address: Same as residence  
 Employed By: \_\_\_\_\_  
 Of Country: \_\_\_\_\_

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of \_\_\_\_\_

Signature: \_\_\_\_\_  
 Full Name: \_\_\_\_\_  
 Residence: \_\_\_\_\_  
 Country: \_\_\_\_\_  
 Citizenship: India  
 P.O. Address: Same as residence  
 Employed By: \_\_\_\_\_  
 Of Country: \_\_\_\_\_

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of \_\_\_\_\_

Signature: \_\_\_\_\_  
 Full Name: \_\_\_\_\_  
 Residence: \_\_\_\_\_  
 Country: \_\_\_\_\_  
 Citizenship: United States of America  
 P.O. Address: Same as residence  
 Employed By: \_\_\_\_\_  
 Of Country: \_\_\_\_\_

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of \_\_\_\_\_

Signature: \_\_\_\_\_  
 Full Name: \_\_\_\_\_  
 Residence: \_\_\_\_\_  
 Country: \_\_\_\_\_  
 Citizenship: Germany  
 P.O. Address: Same as residence  
 Employed By: \_\_\_\_\_  
 Of Country: \_\_\_\_\_

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of \_\_\_\_\_

Signature: \_\_\_\_\_  
 Full Name: \_\_\_\_\_  
 Residence: \_\_\_\_\_  
 Country: \_\_\_\_\_  
 Citizenship: Germany  
 P.O. Address: Same as residence  
 Employed By: \_\_\_\_\_  
 Of Country: \_\_\_\_\_

At: \_\_\_\_\_  
 this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
 Effective as of \_\_\_\_\_

Signature: \_\_\_\_\_  
 Full Name: \_\_\_\_\_  
 Residence: \_\_\_\_\_  
 Country: \_\_\_\_\_  
 Citizenship: \_\_\_\_\_  
 P.O. Address: Same as residence  
 Employed By: \_\_\_\_\_  
 Of Country: \_\_\_\_\_

This Assignee Acceptance 660 is in the ENGLISH language and has the same meaning in other languages with the same 660 number.

This Assignee Acceptance 660 is in the ENGLISH language and has the same meaning in other languages with the same 660 number.  
FORM 660

# ASSIGNEE ACCEPTANCE

WE, the ASSIGNEE: **DOW GLOBAL TECHNOLOGIES LLC(FORMERLY KNOWN AS DOW GLOBAL TECHNOLOGIES INC.)**  
2040 Dow Center  
Midland, Michigan 48674  
United States of America

hereby accept the ASSIGNMENT attached hereto which is dated: February 8, 2010; February 10, 2010; February 17, 2010 and April 14, 2010, respectively

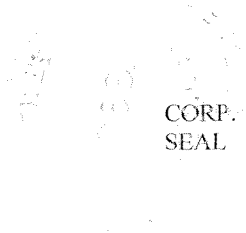
From, the ASSIGNOR: Hua Bai, 155 Indian Warrior, Lake Jackson, Texas 77566, United States of America, Citizen of People's Republic of China; Max M. Tirtowidjojo, 110 Rosewood, Lake Jackson, Texas 77566, United States of America, Citizen of United States of America; Debashis Chakraborty, 109 Northwood Drive, Lake Jackson, Texas 77566, United States of America, Citizen of India; Kurt F. Hirsekorn, 5631 Bloomfield Court, Midland, Michigan 48640, United States of America, Citizen of United States of America; William J. Kruper, Jr., 230 Barden Road, Sanford, Michigan 48657, United States of America, Citizen of United States of America; Avani M. Patel, 6025 Emerson Court, Midland, Michigan 48640, United States of America, Citizen of India; and Shirley S. Sexton, 1542 Hillside Terrace Ln, Cypress, Texas 77429, United States of America, Citizen of United States of America

of the invention entitled:

ISOTHERMAL MULTITUBE REACTORS AND PROCESSES INCORPORATING THE SAME without any restrictions and with all rights and obligations deriving therefrom and declare that this confirmation of acceptance shall be deemed a part of the said ASSIGNMENT.

Signed at Midland, Michigan 48674, USA

this 14 day of August, 20 13



**DOW GLOBAL TECHNOLOGIES LLC (FORMERLY KNOWN AS DOW GLOBAL TECHNOLOGIES INC.)**

By: Susan M. Zerull  
**SUSAN M. ZERULL**  
Authorized Representative

## NOTARIAL CERTIFICATE

UNITED STATES OF AMERICA )  
STATE OF MICHIGAN ) SS  
County/Parish of Midland )

On this 14 day of August, 20 13, personally appeared before me, **SUSAN M. ZERULL, Authorized Representative**, known or identified to me to be the individual described in and who executed the foregoing document and acknowledged the same as a free act and deed for uses and purposes therein expressed by authority of the said entity organized and existing under the laws of **the State of Delaware, United States of America**.

I further certify that said authority, dated **June 1, 2012**, is based on

**A delegation of signature authority of said Limited Liability Company**

which I have seen, appointing the said individual Authorized Representative with full power to sign the foregoing document on behalf of the said entity and that the purposes for which said document is granted are within the scope of the objects or activities of said entity.

Kathy Sue Weritz  
Kathy Sue Weritz  
NOTARY PUBLIC, MIDLAND COUNTY, MICHIGAN  
MY COMMISSION EXPIRES APRIL 07, 2018

SEAL