

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT4569940

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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>                    |
| YONG YI   | 08/15/2017                               |
| SHUHAI HOU  | 08/15/2017                               |
| HONGSHENG SUN   | 08/15/2017                               |
| <b>RECEIVING PARTY DATA</b>   |  |
| <b>Name:</b>  | CATERPILLAR INC.                         |
| <b>Street Address:</b>  | 100 NE ADAMS STREET                      |
| <b>City:</b>  | PEORIA                                   |
| <b>State/Country:</b>   | ILLINOIS                                 |
| <b>Postal Code:</b>   | 61629                                    |
| <b>PROPERTY NUMBERS Total: 1</b>  |  |
| <b>Property Type</b>  | <b>Number</b>                            |
| <b>Application Number:</b>  | 15688964                                 |
| <b>CORRESPONDENCE DATA</b>  |  |
| <b>Fax Number:</b>  | (309)675-1236                            |
| <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>   | 3096362223                               |
| <b>Email:</b>   | US_Docket_Clerk@cat.com                  |
| <b>Correspondent Name:</b>  | CATERPILLAR INC. INTELLECTUAL PROPERTY D |
| <b>Address Line 1:</b>  | 100 N.E. ADAMS STREET                    |
| <b>Address Line 2:</b>  | AH 9510                                  |
| <b>Address Line 4:</b>  | PEORIA, ILLINOIS 61629-9510              |
| <b>ATTORNEY DOCKET NUMBER:</b>  | 17-0407                                  |
| <b>NAME OF SUBMITTER:</b>   | MARY M. UMHOLTZ                          |
| <b>SIGNATURE:</b>   | /Mary M. Umholtz/                        |
| <b>DATE SIGNED:</b>   | 08/29/2017                               |
| <b>Total Attachments: 6</b>   |  |
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| source=17-0407-Assignments#page2.tif  |  |
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## ASSIGNMENT

WHEREAS I/We, the below named inventor(s), [hereinafter referred to as Assignor(s)], have made an invention entitled:

### METHOD AND SYSTEM FOR MODELING REDUCTANT DEPOSIT GROWTH

for which I/We will or have filed a patent application; and

WHEREAS, **Caterpillar Inc.**, a corporation of **Delaware**, whose post office address is **100 NE Adams Street, Peoria, IL 61629, US** (hereinafter referred to as Assignee), is desirous of securing the entire right, title, and interest in and to this invention, and in and to the patent application for this invention and any and all patents to be issued upon this application throughout the world;

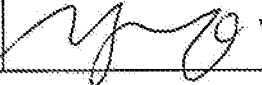
NOW THEREFORE, be it known that for good and valuable consideration the receipt of which from Assignee is hereby acknowledged, I/We, as Assignor(s), have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer, and set over unto the Assignee, its lawful successors and assigns, my/our entire right, title, and interest in and to this invention, and this application, and all divisions, and continuations thereof, and all patents which may be granted thereon, and all reissues thereof, as well as all rights to claim priority in any country or jurisdiction or patent office on the basis of this application, and all applications for patents which may hereafter be filed for this invention in any country or jurisdiction or patent office and all patents which may be granted on this invention in any country or jurisdiction or patent office, and all extensions, renewals, and reissues thereof; and I/We hereby authorize and request any official of any country or jurisdiction or patent office whose duty it is to issue patents on applications as described above, to issue all patents for this invention to Assignee, its successors and assigns, in accordance with the terms of this Assignment;

AND, I/WE HEREBY covenant that I/We have the full right to convey the interest assigned by this Assignment, and I/We have not executed and will not execute any agreement in conflict with this Assignment;

AND, I/WE HEREBY further covenant and agree that I/We will, without further consideration, communicate with Assignee, its successors and assigns, any facts known to me/us respecting this invention, and testify in any legal proceeding, sign all lawful papers when called upon to do so, execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee, its successors or assigns; execute all divisional, continuation, and reissue applications, make all rightful oaths and generally do everything possible to aid Assignee, its successors and assigns, to obtain and enforce proper patent protection for this invention in any country or jurisdiction or patent office, it being understood that any expense incident to the execution of such papers shall be borne by the Assignee, its successors and assigns;

AND, I/WE HEREBY authorize the attorneys/representatives that I/WE have empowered to prosecute this application to insert here in parentheses the country, application number, and official filing date ( \_\_\_\_\_ Application No. \_\_\_\_\_, filed \_\_\_\_\_).

IN TESTIMONY WHEREOF, I/We have hereunto set our hands.

|   |   |                           |
|---|---|---------------------------|
| 1. FULL NAME OF FIRST ASSIGNOR<br><b>Yong Yi</b>          | ASSIGNOR'S SIGNATURE<br> | DATE<br><b>08/15/2017</b> |
| ADDRESS<br><b>2010 W. Miners Dr, Dunlap, IL 61525, US</b> |   | CITIZENSHIP<br><b>USA</b> |
|   |   | <b>US</b>                 |

|   |   |                    |
|---|---|--------------------|
| 1. WITNESS NAME<br>Wesley G. Benson                   | WITNESS SIGNATURE<br><i>Wesley Benson</i> | DATE<br>8/16/2017  |
| ADDRESS<br>2520 W. Stonehenge Ct.<br>Peoria, IL 61615 |   | CITIZENSHIP<br>USA |

|   |  |                    |
|---|--|--------------------|
| 2. WITNESS NAME<br>Colleen Anderson                     | WITNESS SIGNATURE<br><i>Colleen Anderson</i> | DATE<br>8/16/2017  |
| ADDRESS<br>410 Windsor Drive, Germantown Hills IL 60138 |  | CITIZENSHIP<br>USA |

## ASSIGNMENT

WHEREAS I/We, the below named inventor(s), [hereinafter referred to as Assignor(s)], have made an invention entitled:

### METHOD AND SYSTEM FOR MODELING REDUCTANT DEPOSIT GROWTH

for which I/We will or have filed a patent application; and

WHEREAS, **Caterpillar Inc.**, a corporation of **Delaware**, whose post office address is **100 NE Adams Street, Peoria, IL 61629, US** (hereinafter referred to as Assignee), is desirous of securing the entire right, title, and interest in and to this invention, and in and to the patent application for this invention and any and all patents to be issued upon this application throughout the world;


NOW THEREFORE, be it known that for good and valuable consideration the receipt of which from Assignee is hereby acknowledged, I/We, as Assignor(s), have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer, and set over unto the Assignee, its lawful successors and assigns, my/our entire right, title, and interest in and to this invention, and this application, and all divisions, and continuations thereof, and all patents which may be granted thereon, and all reissues thereof, as well as all rights to claim priority in any country or jurisdiction or patent office on the basis of this application, and all applications for patents which may hereafter be filed for this invention in any country or jurisdiction or patent office and all patents which may be granted on this invention in any country or jurisdiction or patent office, and all extensions, renewals, and reissues thereof; and I/We hereby authorize and request any official of any country or jurisdiction or patent office whose duty it is to issue patents on applications as described above, to issue all patents for this invention to Assignee, its successors and assigns, in accordance with the terms of this Assignment;

AND, I/WE HEREBY covenant that I/We have the full right to convey the interest assigned by this Assignment, and I/We have not executed and will not execute any agreement in conflict with this Assignment;

AND, I/WE HEREBY further covenant and agree that I/We will, without further consideration, communicate with Assignee, its successors and assigns, any facts known to me/us respecting this invention, and testify in any legal proceeding, sign all lawful papers when called upon to do so, execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee, its successors or assigns, execute all divisional, continuation, and reissue applications, make all rightful oaths and generally do everything possible to aid Assignee, its successors and assigns, to obtain and enforce proper patent protection for this invention in any country or jurisdiction or patent office, it being understood that any expense incident to the execution of such papers shall be borne by the Assignee, its successors and assigns;

AND, I/WE HEREBY authorize the attorneys/representatives that I/WE have empowered to prosecute this application to insert here in parentheses the country, application number, and official filing date ( \_\_\_\_\_ Application No. \_\_\_\_\_, filed \_\_\_\_\_).

IN TESTIMONY WHEREOF, I/We have hereunto set our hands.

|  |   |                          |
|--|---|--------------------------|
| 1. FULL NAME OF SECOND ASSIGNOR<br><b>Shuhai Hou</b>           | ASSIGNOR'S SIGNATURE<br> | DATE<br><b>8/15/2017</b> |
| ADDRESS<br><b>10310 Creekstone Court, Peoria, IL 61615, US</b> |   | CITIZENSHIP<br><b>US</b> |

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|--|--|----------------------------|
| 1. WITNESS NAME<br><i>Roger L. Urven Jr.</i>           | WITNESS SIGNATURE<br><i>Roger L. Urven Jr.</i> | DATE<br><i>8/15/2017</i>   |
| ADDRESS<br><i>10918 N Schopp Ln., Peoria, IL 61615</i> |  | CITIZENSHIP<br><i>U.S.</i> |
|  |  |                            |

|  |  |                                  |
|--|--|----------------------------------|
| 2. WITNESS NAME<br><i>Qingzhong Li</i>                   | WITNESS SIGNATURE<br><i>Qingzhong Li</i> | DATE<br><i>8/15/2017</i>         |
| ADDRESS<br><i>2121 W. Casecreek Dr. Peoria, IL 61615</i> |  | CITIZENSHIP<br><i>P.R. China</i> |
|  |  |                                  |

## ASSIGNMENT

WHEREAS I/We, the below named inventor(s), [hereinafter referred to as Assignor(s)], have made an invention entitled:

### METHOD AND SYSTEM FOR MODELING REDUCTANT DEPOSIT GROWTH

for which I/We will or have filed a patent application; and

WHEREAS, Caterpillar Inc., a corporation of Delaware, whose post office address is 100 NE Adams Street, Peoria, IL 61629, US (hereinafter referred to as Assignee), is desirous of securing the entire right, title, and interest in and to this invention, and in and to the patent application for this invention and any and all patents to be issued upon this application throughout the world;


NOW THEREFORE, be it known that for good and valuable consideration the receipt of which from Assignee is hereby acknowledged, I/We, as Assignor(s), have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer, and set over unto the Assignee, its lawful successors and assigns, my/our entire right, title, and interest in and to this invention, and this application, and all divisions, and continuations thereof, and all patents which may be granted thereon, and all reissues thereof, as well as all rights to claim priority in any country or jurisdiction or patent office on the basis of this application, and all applications for patents which may hereafter be filed for this invention in any country or jurisdiction or patent office and all patents which may be granted on this invention in any country or jurisdiction or patent office, and all extensions, renewals, and reissues thereof; and I/We hereby authorize and request any official of any country or jurisdiction or patent office whose duty it is to issue patents on applications as described above, to issue all patents for this invention to Assignee, its successors and assigns, in accordance with the terms of this Assignment;

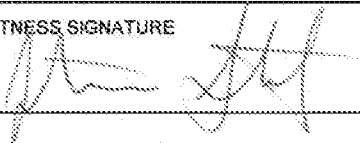
AND, I/WE HEREBY covenant that I/We have the full right to convey the interest assigned by this Assignment, and I/We have not executed and will not execute any agreement in conflict with this Assignment;

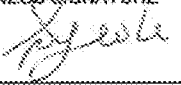
AND, I/WE HEREBY further covenant and agree that I/We will, without further consideration, communicate with Assignee, its successors and assigns, any facts known to me/us respecting this invention, and testify in any legal proceeding, sign all lawful papers when called upon to do so, execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee, its successors or assigns, execute all divisional, continuation, and reissue applications, make all rightful oaths and generally do everything possible to aid Assignee, its successors and assigns, to obtain and enforce proper patent protection for this invention in any country or jurisdiction or patent office, it being understood that any expense incident to the execution of such papers shall be borne by the Assignee, its successors and assigns;

AND, I/WE HEREBY authorize the attorneys/representatives that I/WE have empowered to prosecute this application to insert here in parentheses the country, application number, and official filing date ( \_\_\_\_\_ Application No. \_\_\_\_\_, filed \_\_\_\_\_).

IN TESTIMONY WHEREOF, I/We have hereunto set our hands.

|   |  |                             |
|---|--|-----------------------------|
| 1. FULL NAME OF THIRD ASSIGNOR<br><b>Hongsheng Sun</b>        | ASSIGNOR'S SIGNATURE<br> | DATE<br><b>08/15/2017</b>   |
| ADDRESS<br><b>717 S. Breckenridge Dr, Dunlap IL 61525, US</b> |  | CITIZENSHIP<br><b>China</b> |

|   |   |                    |
|---|---|--------------------|
| 1. WITNESS NAME<br>Jonathan Stef              | WITNESS SIGNATURE<br> | DATE<br>8/15/2017  |
| ADDRESS<br>6216 N FAIRLANE DR PEORIA IL 61614 |   | CITIZENSHIP<br>USA |
|   |   |                    |

|  |  |                      |
|--|--|----------------------|
| 2. WITNESS NAME<br>Sanket P. Yeole                           | WITNESS SIGNATURE<br> | DATE<br>8/15/2017    |
| ADDRESS<br>1609 W. Viking Ct., Apt # 301, Peoria, IL - 61614 |  | CITIZENSHIP<br>India |
|  |  |                      |