

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

EPAS ID: PAT3044952

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
AH-HYUNG ALISSA PARK	09/25/2014
CAMILLE PETIT	09/26/2014
YOUNGJUNE PARK	09/26/2014
KUN-YI ANDREW LIN	09/30/2014
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK
<b>Street Address:</b>	412 LOW MEMORIAL LIBRARY
<b>Internal Address:</b>	535 WEST 116TH STREET
<b>City:</b>	NEW YORK
<b>State/Country:</b>	NEW YORK
<b>Postal Code:</b>	10027
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>PCT Number:</b>	US2012049865
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(203)782-2889
<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>	203-498-4447
<b>Email:</b>	lblair@wiggins.com
<b>Correspondent Name:</b>	WIGGIN AND DANA LLP ATTN: PATENT DOCKET
<b>Address Line 1:</b>	ONE CENTURY TOWER
<b>Address Line 2:</b>	P.O. BOX 1832
<b>Address Line 4:</b>	NEW HAVEN, CONNECTICUT 06508-1832
<b>ATTORNEY DOCKET NUMBER:</b>	103438-201
<b>NAME OF SUBMITTER:</b>	ANTHONY P. GANGEMI
<b>SIGNATURE:</b>	/Anthony P. Gangemi/
<b>DATE SIGNED:</b>	09/30/2014
<b>Total Attachments: 12</b>	

source=Assignment#page1.tif  
source=Assignment#page2.tif  
source=Assignment#page3.tif  
source=Assignment#page4.tif  
source=Assignment#page5.tif  
source=Assignment#page6.tif  
source=Assignment#page7.tif  
source=Assignment#page8.tif  
source=Assignment#page9.tif  
source=Assignment#page10.tif  
source=Assignment#page11.tif  
source=Assignment#page12.tif

### ASSIGNMENT

WHEREAS, We, Ah-Hyung Alissa Park, residing at 560 Riverside Drive, Apt. #20A, New York, NY 10027, Camille Petit, residing at 77 Bleecker Street, Apt. 631, New York, NY 10012, Youngjune Park, residing at 325 Exporo, Yuseong-gu, Daejeon, Korea 305-712, and Kun-Yi Andrew Lin, residing at 156 Fitzpatrick Hall, Notre Dame, IN 46556, have invented certain new and useful improvements in METHODS AND SYSTEMS FOR CAPTURING CARBON DIOXIDE AND PRODUCING A FUEL USING A SOLVENT INCLUDING A NANOPARTICLE ORGANIC HYBRID MATERIAL AND A SECONDARY FLUID (“the Invention”) for which we:

- have executed or authorized the execution of an application for Letters Patent of the United States of even date herewith;
- have filed or authorized the filing of applications for Letters Patent of the United States on August 8, 2011 under Serial No. 61/521,276, on August 6, 2012 under Serial No. 61/680,083, on August 7, 2012 under Serial No. PCT/US2012/049865, and on February 7, 2014 under Serial No. 14/237,683; and

WHEREAS, We believe that we are the original inventor or an original joint inventor of a claimed invention in the application and hereby acknowledge that any willful false statement made in this document is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both;

WHEREAS, The Trustees of Columbia University in the City of New York, organized under the laws of the State of New York, having its principal place of business at 412 Low Memorial Library, 535 West 116<sup>th</sup> Street, New York, NY 10027, is desirous of obtaining the entire right, title, and interest in, to and under the said improvements and the said application;

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, we have sold, assigned, transferred and set over, and by these


presents do hereby sell, assign, transfer and set over, unto the said The Trustees of Columbia University in the City of New York, its successors, legal representatives, and assigns the entire right, title, and interest in, to and under the said Invention entitled METHODS AND SYSTEMS FOR CAPTURING CARBON DIOXIDE AND PRODUCING A FUEL USING A SOLVENT INCLUDING A NANOPARTICLE ORGANIC HYBRID MATERIAL AND A SECONDARY FLUID and any and all improvements thereto, and in and to the said application and any division, continuation, continuation-in-part thereof or renewal thereof, and in and to any and all Letters Patent of the United States which may be issued on any said applications thereon, claim priority therefrom, and any and all reissues, re-exams and extensions thereof, and in and to any and all applications for Letters Patent filed in any country or countries foreign to the United States for the said Invention or improvements, including all priority rights, and any and all Letters Patent which may be granted in any country or countries foreign to the United States therefor, and in and to any other applications based in whole or in part on any of the foregoing; and we hereby authorize and request the Commissioner of Patents of the United States and any Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvement to the said The Trustees of Columbia University in the City of New York, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

AND WE HEREBY represent, warrant and covenant that we have the full right and power to make this assignment and that the rights, titles, and interests assigned are not encumbered by any agent, license, or right heretofore given and that we have not executed, and will not execute, any agreement in conflict herewith.

AND WE HEREBY further represent, warrant, covenant and agree that we will communicate to said The Trustees of Columbia University in the City of New York, its successors, legal representatives and assigns, any facts known to us respecting the said Invention and any and all improvements thereto, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuing and reissue applications, make all rightful oaths, and generally do everything possible to aid said The Trustees of Columbia University in the City of New York,

its successors, legal representatives and assigns to obtain and enforce proper patent protection for said improvements in all countries.

IN TESTIMONY WHEREOF, We hereunto set our hands the day and year set opposite our signatures.

09/25/2014  
Date: \_\_\_\_\_  
  
\_\_\_\_\_  
Ah-Hyung Alissa Park

Date: \_\_\_\_\_  
\_\_\_\_\_  
Camille Petit

Date: \_\_\_\_\_  
\_\_\_\_\_  
Youngjune Park

Date: \_\_\_\_\_  
\_\_\_\_\_  
Kun-Yi Andrew Lin

18667/70/3048737.1

ASSIGNMENT

WHEREAS, We, Ah-Hyung Alissa Park, residing at 560 Riverside Drive, Apt. #20A, New York, NY 10027, Camille Petit, residing at 77 Bleecker Street, Apt. 631, New York, NY 10012, Youngjune Park, residing at 325 Exporo, Yuseong-gu, Daejeon, Korea 305-712, and Kun-Yi Andrew Lin, residing at 156 Fitzpatrick Hall, Notre Dame, IN 46556, have invented certain new and useful improvements in METHODS AND SYSTEMS FOR CAPTURING CARBON DIOXIDE AND PRODUCING A FUEL USING A SOLVENT INCLUDING A NANOPARTICLE ORGANIC HYBRID MATERIAL AND A SECONDARY FLUID (“the Invention”) for which we:

- have executed or authorized the execution of an application for Letters Patent of the United States of even date herewith;
- have filed or authorized the filing of applications for Letters Patent of the United States on August 8, 2011 under Serial No. 61/521,276, on August 6, 2012 under Serial No. 61/680,083, on August 7, 2012 under Serial No. PCT/US2012/049865, and on February 7, 2014 under Serial No. 14/237,683; and

WHEREAS, We believe that we are the original inventor or an original joint inventor of a claimed invention in the application and hereby acknowledge that any willful false statement made in this document is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both;

WHEREAS, The Trustees of Columbia University in the City of New York, organized under the laws of the State of New York, having its principal place of business at 412 Low Memorial Library, 535 West 116<sup>th</sup> Street, New York, NY 10027, is desirous of obtaining the entire right, title, and interest in, to and under the said improvements and the said application;

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, we have sold, assigned, transferred and set over, and by these

presents do hereby sell, assign, transfer and set over, unto the said The Trustees of Columbia University in the City of New York, its successors, legal representatives, and assigns the entire right, title, and interest in, to and under the said Invention entitled METHODS AND SYSTEMS FOR CAPTURING CARBON DIOXIDE AND PRODUCING A FUEL USING A SOLVENT INCLUDING A NANOPARTICLE ORGANIC HYBRID MATERIAL AND A SECONDARY FLUID and any and all improvements thereto, and in and to the said application and any division, continuation, continuation-in-part thereof or renewal thereof, and in and to any and all Letters Patent of the United States which may be issued on any said applications thereon, claim priority therefrom, and any and all reissues, re-exams and extensions thereof, and in and to any and all applications for Letters Patent filed in any country or countries foreign to the United States for the said Invention or improvements, including all priority rights, and any and all Letters Patent which may be granted in any country or countries foreign to the United States therefor, and in and to any other applications based in whole or in part on any of the foregoing; and we hereby authorize and request the Commissioner of Patents of the United States and any Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvement to the said The Trustees of Columbia University in the City of New York, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

AND WE HEREBY represent, warrant and covenant that we have the full right and power to make this assignment and that the rights, titles, and interests assigned are not encumbered by any agent, license, or right heretofore given and that we have not executed, and will not execute, any agreement in conflict herewith.

AND WE HEREBY further represent, warrant, covenant and agree that we will communicate to said The Trustees of Columbia University in the City of New York, its successors, legal representatives and assigns, any facts known to us respecting the said Invention and any and all improvements thereto, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuing and reissue applications, make all rightful oaths, and generally do everything possible to aid said The Trustees of Columbia University in the City of New York,

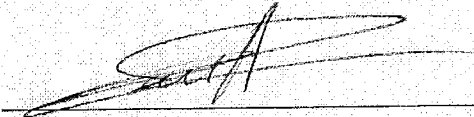
its successors, legal representatives and assigns to obtain and enforce proper patent protection for said improvements in all countries.

IN TESTIMONY WHEREOF, We hereunto set our hands the day and year set opposite our signatures.

Date: \_\_\_\_\_

\_\_\_\_\_  
Ah-Hyung Alissa Park

Date: Sep 26, 2014

  
\_\_\_\_\_  
Camille Petit

Date: \_\_\_\_\_

\_\_\_\_\_  
Youngjune Park

Date: \_\_\_\_\_

\_\_\_\_\_  
Kun-Yi Andrew Lin

18667/70/3048737.1



ASSIGNMENT

WHEREAS, We, Ah-Hyung Alissa Park, residing at 560 Riverside Drive, Apt. #20A, New York, NY 10027, Camille Petit, residing at 77 Bleecker Street, Apt. 631, New York, NY 10012, Youngjune Park, residing at 325 Exporo, Yuseong-gu, Daejeon, Korea 305-712, and Kun-Yi Andrew Lin, residing at 156 Fitzpatrick Hall, Notre Dame, IN 46556, have invented certain new and useful improvements in METHODS AND SYSTEMS FOR CAPTURING CARBON DIOXIDE AND PRODUCING A FUEL USING A SOLVENT INCLUDING A NANOPARTICLE ORGANIC HYBRID MATERIAL AND A SECONDARY FLUID (“the Invention”) for which we:

- have executed or authorized the execution of an application for Letters Patent of the United States of even date herewith;
- have filed or authorized the filing of applications for Letters Patent of the United States on August 8, 2011 under Serial No. 61/521,276, on August 6, 2012 under Serial No. 61/680,083, on August 7, 2012 under Serial No. PCT/US2012/049865, and on February 7, 2014 under Serial No. 14/237,683; and

WHEREAS, We believe that we are the original inventor or an original joint inventor of a claimed invention in the application and hereby acknowledge that any willful false statement made in this document is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both;

WHEREAS, The Trustees of Columbia University in the City of New York, organized under the laws of the State of New York, having its principal place of business at 412 Low Memorial Library, 535 West 116<sup>th</sup> Street, New York, NY 10027, is desirous of obtaining the entire right, title, and interest in, to and under the said improvements and the said application;

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, we have sold, assigned, transferred and set over, and by these

presents do hereby sell, assign, transfer and set over, unto the said The Trustees of Columbia University in the City of New York, its successors, legal representatives, and assigns the entire right, title, and interest in, to and under the said Invention entitled METHODS AND SYSTEMS FOR CAPTURING CARBON DIOXIDE AND PRODUCING A FUEL USING A SOLVENT INCLUDING A NANOPARTICLE ORGANIC HYBRID MATERIAL AND A SECONDARY FLUID and any and all improvements thereto, and in and to the said application and any division, continuation, continuation-in-part thereof or renewal thereof, and in and to any and all Letters Patent of the United States which may be issued on any said applications thereon, claim priority therefrom, and any and all reissues, re-exams and extensions thereof, and in and to any and all applications for Letters Patent filed in any country or countries foreign to the United States for the said Invention or improvements, including all priority rights, and any and all Letters Patent which may be granted in any country or countries foreign to the United States therefor, and in and to any other applications based in whole or in part on any of the foregoing; and we hereby authorize and request the Commissioner of Patents of the United States and any Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvement to the said The Trustees of Columbia University in the City of New York, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

AND WE HEREBY represent, warrant and covenant that we have the full right and power to make this assignment and that the rights, titles, and interests assigned are not encumbered by any agent, license, or right heretofore given and that we have not executed, and will not execute, any agreement in conflict herewith.

AND WE HEREBY further represent, warrant, covenant and agree that we will communicate to said The Trustees of Columbia University in the City of New York, its successors, legal representatives and assigns, any facts known to us respecting the said Invention and any and all improvements thereto, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuing and reissue applications, make all rightful oaths, and generally do everything possible to aid said The Trustees of Columbia University in the City of New York,

its successors, legal representatives and assigns to obtain and enforce proper patent protection for said improvements in all countries.

IN TESTIMONY WHEREOF, We hereunto set our hands the day and year set opposite our signatures.

Date: \_\_\_\_\_

\_\_\_\_\_  
Ah-Hyung Alissa Park

Date: \_\_\_\_\_

\_\_\_\_\_  
Camille Petit

Date: Sept. 26, 2014

Young June Park  
\_\_\_\_\_  
Youngjune Park

Date: \_\_\_\_\_

\_\_\_\_\_  
Kun-Yi Andrew Lin

**ASSIGNMENT**

WHEREAS, We, Ah-Hyung Alissa Park, residing at 560 Riverside Drive, Apt. #20A, New York, NY 10027, Camille Petit, residing at 77 Bleecker Street, Apt. 631, New York, NY 10012, Youngjune Park, residing at 325 Exporo, Yuseong-gu, Daejeon, Korea 305-712, and Kun-Yi Andrew Lin, residing at 156 Fitzpatrick Hall, Notre Dame, IN 46556, have invented certain new and useful improvements in METHODS AND SYSTEMS FOR CAPTURING CARBON DIOXIDE AND PRODUCING A FUEL USING A SOLVENT INCLUDING A NANOPARTICLE ORGANIC HYBRID MATERIAL AND A SECONDARY FLUID (“the Invention”) for which we:

- have executed or authorized the execution of an application for Letters Patent of the United States of even date herewith;
- have filed or authorized the filing of applications for Letters Patent of the United States on August 8, 2011 under Serial No. 61/521,276, on August 6, 2012 under Serial No. 61/680,083, on August 7, 2012 under Serial No. PCT/US2012/049865, and on February 7, 2014 under Serial No. 14/237,683; and

WHEREAS, We believe that we are the original inventor or an original joint inventor of a claimed invention in the application and hereby acknowledge that any willful false statement made in this document is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both;

WHEREAS, The Trustees of Columbia University in the City of New York, organized under the laws of the State of New York, having its principal place of business at 412 Low Memorial Library, 535 West 116<sup>th</sup> Street, New York, NY 10027, is desirous of obtaining the entire right, title, and interest in, to and under the said improvements and the said application;

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, we have sold, assigned, transferred and set over, and by these

presents do hereby sell, assign, transfer and set over, unto the said The Trustees of Columbia University in the City of New York, its successors, legal representatives, and assigns the entire right, title, and interest in, to and under the said Invention entitled METHODS AND SYSTEMS FOR CAPTURING CARBON DIOXIDE AND PRODUCING A FUEL USING A SOLVENT INCLUDING A NANOPARTICLE ORGANIC HYBRID MATERIAL AND A SECONDARY FLUID and any and all improvements thereto, and in and to the said application and any division, continuation, continuation-in-part thereof or renewal thereof, and in and to any and all Letters Patent of the United States which may be issued on any said applications thereon, claim priority therefrom, and any and all reissues, re-exams and extensions thereof, and in and to any and all applications for Letters Patent filed in any country or countries foreign to the United States for the said Invention or improvements, including all priority rights, and any and all Letters Patent which may be granted in any country or countries foreign to the United States therefor, and in and to any other applications based in whole or in part on any of the foregoing; and we hereby authorize and request the Commissioner of Patents of the United States and any Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvement to the said The Trustees of Columbia University in the City of New York, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

AND WE HEREBY represent, warrant and covenant that we have the full right and power to make this assignment and that the rights, titles, and interests assigned are not encumbered by any agent, license, or right heretofore given and that we have not executed, and will not execute, any agreement in conflict herewith.

AND WE HEREBY further represent, warrant, covenant and agree that we will communicate to said The Trustees of Columbia University in the City of New York, its successors, legal representatives and assigns, any facts known to us respecting the said Invention and any and all improvements thereto, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuing and reissue applications, make all rightful oaths, and generally do everything possible to aid said The Trustees of Columbia University in the City of New York,

its successors, legal representatives and assigns to obtain and enforce proper patent protection for said improvements in all countries.

IN TESTIMONY WHEREOF, We hereunto set our hands the day and year set opposite our signatures.

Date: \_\_\_\_\_

\_\_\_\_\_  
Ah-Hyung Alissa Park


Date: \_\_\_\_\_

\_\_\_\_\_  
Camille Petit

Date: \_\_\_\_\_

\_\_\_\_\_  
Youngjune Park

Date: 09 / 30 / 2014  
\_\_\_\_\_

  
\_\_\_\_\_  
Kun-Yi Andrew Lin

18667/70/3048737.1