505258908 01/02/2019

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2

EPAS ID: PAT5305680

| SUBMISSION TYPE: | NEW ASSIGNMENT |
|-----------------------|----------------|
| NATURE OF CONVEYANCE: | ASSIGNMENT |

CONVEYING PARTY DATA

| Name | Execution Date |
|--------------------------|----------------|
| XINGCHEN YE | 01/23/2016 |
| CHRISTOPHER BRUCE MURRAY | 08/03/2017 |

RECEIVING PARTY DATA

| Name: | THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA |
|-------------------|--|
| Street Address: | 3160 CHESTNUT STREET |
| Internal Address: | SUITE 200 |
| City: | PHILADELPHIA |
| State/Country: | PENNSYLVANIA |
| Postal Code: | 19104 |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 16117453 |

CORRESPONDENCE DATA

Fax Number: (703)776-9701

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.

Phone: (703) 776-9700

Email: mail@jalindeman.com

J.A. LINDEMAN & CO., PLLC **Correspondent Name:** Address Line 1: 3190 FAIRVIEW PARK DRIVE

Address Line 2: **SUITE 1070**

Address Line 4: FALLS CHURCH, VIRGINIA 22042

| ATTORNEY DOCKET NUMBER: | 050.0001-US03 | |
|-------------------------|-------------------------------------|--|
| NAME OF SUBMITTER: | AARON M. RAPHAEL | |
| SIGNATURE: | /Aaron M. Raphael, Reg. No. 47,885/ | |
| DATE SIGNED: | 01/02/2019 | |

Total Attachments: 7

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Attorney Docket Number 050.0001-US00 Page 1 of 3

INVENTORS' WORLDWIDE ASSIGNMENT

WHEREAS, this patent assignment (the "Assignment") is made as of January レミ 2016 (the "Effective Date")

WHEREAS, inventors Xingchen YE and Christopher Bruce MURRAY (collectively, "Assignors") possess the right, title, and interest for and in an invention entitled MORPHOLOGICALLY AND SIZE UNIFORM MONODISPERSE PARTICLES AND THEIR SHAPE-DIRECTED SELF-ASSEMBLY ("the Invention"). The Invention is described in the corresponding listed patent applications (the "Applications"):

US Application No. 61/388,941, filed on October 1, 2010;

US Application No. 61/487,784, filed on May 19, 2011;

US Application No. 61/487,785, filed on May 19, 2011;

PCT Application No. PCT/US/2011/54593 filed on October 3, 2011;

US Application No. 13/876,266, filed on March 27, 2013; and

EP Application No. 11853852.9, and

WHEREAS, THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA, whose post office address is 3160 Chestnut Street, Suite 200, Philadelphia, PA 19104 USA, ("Assignee"), is desirous of acquiring Assignors' entire right, title, and interest in and to this Invention in all countries throughout the world, and in and to the applications for Letters Patent in all countries throughout the world on this Invention and any Letters Patent to be issued from this Application, including all continuation applications, divisional applications, reissues, and re-examinations and all Letters Patent throughout the world which may be granted thereon, and all reissues thereof, and all rights to claim priority on the basis of the above Application, and all applications for Letters Patent which may hereafter be filed for this invention in any foreign country (including any PCT International applications), and all Letters Patent which may be granted on this Invention in any foreign country, and all extensions, renewals, divisional applications, and reissues thereof (all of Inventors' right, title, and interest referred to in this paragraph are hereinafter collectively referred to as the "Rights");

NOW THEREFORE, for and in consideration of the sum of One Dollar (\$1.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignors confirm that they have sold, assigned, transferred, and conveyed, absolutely, and by way of further assurances do hereby sell, assign, transfer, and convey absolutely to Assignee, its lawful successors and assigns, Assignors' entire right, title, and interest in and to the aforesaid Rights in existence as of the Effective Date.

ASSIGNORS hereby authorize and request the Commissioner of Patents and Trademarks of the United States and any appropriate official of any foreign country whose duty it is to issue patents on applications as described above, to issue all Letters Patent under said Rights to Assignee, its successors and assigns, in accordance with the terms of this Assignment; and

ASSIGNORS hereby covenant that Assignors have the full right to convey the interest assigned by this Assignment, and that Assignors have not executed and will not execute any agreement in conflict with this Assignment;

, A J

Attorney Docket Number 050.0001-US00 Page 2 of 3

AND, the aforesaid Assignment includes the Assignors' right in and to all income, royalties, damages and payments now or hereafter due or payable with respect to any Letters Patent which may be granted, and in and to all causes of action (either in law or in equity), and the right to sue, counterclaim, and recover for past, present and future infringement of the rights assigned or to be assigned under this Assignment, as fully and entirely as the same would have been held and enjoyed by Assignors if this sale and assignment had not been made:

AND, nothing in this Assignment shall be construed as (i) a warranty or representation by Assignors as to the validity or scope of any Rights, (ii) a warranty or representation that anything made, used, imported, developed, promoted, offered for sale, sold, or otherwise disposed of under the Rights does not or will not infringe patents, trade secrets or other proprietary rights of third parties; (iii) a representation or warranty of operability or that development of a commercial products is possible; (iv) any other representations or warranties, either express or implied, unless specified herein; (v) directly or indirectly operating or applying as a waiver of sovereign immunity by the laws of Pennsylvania; or (vi) imposing any obligation or any liability on any party contrary to the laws of the Pennsylvania. ALL RIGHTS ARE ASSIGNED HEREUNDER "AS IS." ASSIGNORS DISCLAIM AND MAKE NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE RIGHTS.

ASSIGNORS further covenant and agree that, upon request of Assignee, Assignors will, without further consideration, communicate with Assignee, its successors and assigns, any facts known to Assignors respecting this Invention, sign and deliver all lawful papers when called upon to do so, including Declarations, Oaths, Powers of Attorney, Assignments, and Affidavits for or in relation to this Application and any continuation applications, divisional applications, reissues, and re-examinations, and to aid Assignee, its successors and assigns, to obtain and enforce proper patent protection for this Invention in the United States and any foreign country, it being understood that any expense incident to the execution of such papers shall be borne by Assignee, its successors and assigns.

The undersigned hereby authorize the firms of J.A. Lindeman & Co., PLLC to correct errors in this Assignment or to insert any further identification or other information necessary or desirable to make this Assignment suitable for recordal in any country.

IN WITNESS WHEREOF, said Assignors have hereunto set their hands.

| Signature of Assignor: | py | Date: January 23, 201 | |
|---------------------------|---|-----------------------|--|
| Printed Name: | Xingchen YE | Citizen of: China | |
| Post Office Address: | 2636 Warring St, Apt 202, Berkeley CA 94704 | | |
| Residence (if different): | | | |

Attorney Docket Number 050.0001-US00 Page 3 of 3

| STATEMENT OF NOTAR STATE OF | | | |
|--------------------------------|--|--------------------|--|
| : SS COUNTY OF | day of | , year of, befo | are me personally came |
| the above named | xecuted the foregoing assign that person's own free will fo | ment and who ackr | nowledged to me that |
| Notary Public | | | |
| ***** | × = = = = = = = = = = = = = = = = = = = | | *************** |
| Signature of Assignor: | | Date: | w |
| Printed Name: | Christopher Bruce MURRA | Y Citizen of: | Canada |
| Post Office Address: | 22 Derwen Road, Bala Cyn | wyd, Montgomery Co | unty, PA 19004 |
| Residence (if different): | | | |
| | | | |
| STATEMENT OF NOTA | | | |
| : SS COUNTY OF | _ | | _ |
| On this | day of | _, year of, be | fore me personally came |
| the above named | executed the foregoing assign of that person's own free will to | onment, and who ac | and known to me to be knowledged to me that les therein set forth. |
| Notary Public | | | |

CALIFORNIA ALL- PURPOSE CERTIFICATE OF ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

| State of California) | · |
|---|---|
| | |
| County of <u>Alameda</u>) | , , |
| On January 23, 2016 before me, 10 | Moon A. Hendley (Here insert name and title of the officer) |
| personally appeared | V |
| Xingchow Ge | |
| who proved to me on the basis of satisfactory name(s) is/are subscribed to the within instrume/she/they executed the same in his/her/their his/her/their signature(s) on the instrument the which the person(s) acted, executed the instrument person(s) acted the State of Califand correct. | nent and acknowledged to me that ir authorized capacity(ies), and that by a person(s), or the entity upon behalf of ument. I certify under PENALTY OF |
| Lathlaen A. Llenolley Signature of Notary Public (Seal) | KATHLEEN A. HENDLEY Commission # 2096756 Notary Public - Galifornia Contra Costa County My Comm. Expires Jan 14, 2019 |
| ADDITIONAL OPTIONAL INFORMATION | INSTRUCTIONS |
| DESCRIPTION OF THE ATTACHED DOCUMENT Number of Pages 3 Document Date 1/23/16 | State and County information must be the State and County where the document signer(s) personally appeared before the notary public for acknowledgment. Date of notarization must be the date that the signer(s) personally appeared which must also be the same date the acknowledgment is completed. The notary public must print his or her name as it appears within his or her commission followed by a comma and then your title (notary public). Print the name(s) of document signer(s) who personally appear at the time of notarization. Indicate the correct singular or plural forms by crossing off incorrect form (i.e.) he/she/the/ty, is /are) or circling the correct forms. Failure to correctly indicate this information may lead to rejection of document recording. The notary seal impression must be clear and photographically reproducible. Impression must not cover text or lines. If seal impression smudges, re-seal if sufficient area permits, otherwise complete a different acknowledgment form. Signature of the notary public must match the signature on file with the office of the county cterk. Additional information is not required but could help to ensure the acknowledgment is not misused or affached to a different document. |
| 2015 Version www.NotaryClasses.com 800-873-9865 | Securely attach this document to the signed document with a staple. |

INVENTORS' WORLDWIDE ASSIGNMENT

WHEREAS, this patent assignment (the "Assignment") is made as of _____, (the "Effective Date")

WHEREAS, inventors Xingchen YE and Christopher Bruce MURRAY (collectively, "Assignors") possess the right, title, and interest for and in an invention entitled MORPHOLOGICALLY AND SIZE UNIFORM MONODISPERSE PARTICLES AND THEIR SHAPE-DIRECTED SELF-ASSEMBLY ("the Invention"). The Invention is described in the corresponding listed patent applications (the "Applications"):

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WHEREAS, THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA, whose post office address is 3160 Chestnut Street, Suite 200, Philadelphia, PA 19104 USA, ("Assignee"), is desirous of acquiring Assignors' entire right, title, and interest in and to this Invention in all countries throughout the world, and in and to the applications for Letters Patent in all countries throughout the world on this Invention and any Letters Patent to be issued from this Application, including all continuation applications, divisional applications, reissues, and re-examinations and all Letters Patent throughout the world which may be granted thereon, and all reissues thereof, and all rights to claim priority on the basis of the above Application, and all applications for Letters Patent which may hereafter be filed for this invention in any foreign country (including any PCT International applications), and all Letters Patent which may be granted on this Invention in any foreign country, and all extensions, renewals, divisional applications, and reissues thereof (all of Inventors' right, title, and interest referred to in this paragraph are hereinafter collectively referred to as the "Rights");

NOW THEREFORE, for and in consideration of the sum of One Dollar (\$1.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignors confirm that they have sold, assigned, transferred, and conveyed, absolutely, and by way of further assurances do hereby sell, assign, transfer, and convey absolutely to Assignee, its lawful successors and assigns, Assignors' entire right, title, and interest in and to the aforesaid Rights in existence as of the Effective Date.

ASSIGNORS hereby authorize and request the Commissioner of Patents and Trademarks of the United States and any appropriate official of any foreign country whose duty it is to issue patents on applications as described above, to issue all Letters Patent under said Rights to Assignee, its successors and assigns, in accordance with the terms of this Assignment; and

ASSIGNORS hereby covenant that Assignors have the full right to convey the interest assigned by this Assignment, and that Assignors have not executed and will not execute any agreement in conflict with this Assignment;

AND, the aforesaid Assignment includes the Assignors' right in and to all income, royalties, damages and payments now or hereafter due or payable with respect to any Letters Patent which may be granted, and in and to all causes of action (either in law or in equity), and the right to sue, counterclaim, and recover for past, present and future infringement of the rights assigned or to be assigned under this Assignment, as fully and entirely as the same would have been held and enjoyed by Assignors if this sale and assignment had not been made;

AND, nothing in this Assignment shall be construed as (i) a warranty or representation by Assignors as to the validity or scope of any Rights, (ii) a warranty or representation that anything made, used, imported, developed, promoted, offered for sale, sold, or otherwise disposed of under the Rights does not or will not infringe patents, trade secrets or other proprietary rights of third parties; (iii) a representation or warranty of operability or that development of a commercial products is possible; (iv) any other representations or warranties, either express or implied, unless specified herein; (v) directly or indirectly operating or applying as a waiver of sovereign immunity by the laws of Pennsylvania; or (vi) imposing any obligation or any liability on any party contrary to the laws of the Pennsylvania. ALL RIGHTS ARE ASSIGNED HEREUNDER "AS IS." ASSIGNORS DISCLAIM AND MAKE NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE RIGHTS.

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The undersigned hereby authorize the firms of J.A. Lindeman & Co., PLLC to correct errors in this Assignment or to insert any further identification or other information necessary or desirable to make this Assignment suitable for recordal in any country.

IN WITNESS WHEREOF, said Assignors have hereunto set their hands.

| Signature of Assignor: | :: | Date: | |
|---------------------------|-------------|-------------|-------------|
| Printed Name: | Xingchen YE | Citizen of: | China |
| Post Office Address: | | | |
| Residence (if different): | | | 99000999999 |

Signature of Assignor:

Printed Name:

Christopher Bruce MURRAY

Citizen of:

Canada

22 Derwen Road, Bala Cynwyd, Montgomery County, PA 19004

Residence (if different):

STATEMENT OF NOTARY PUBLIC STATE OF Phasy vania

: 88

COUNTY OF Philadelphia:

On this $\frac{3^{kd}}{6^{kn}}$ day of $\frac{A v 905^{k}}{6^{kn}}$, year of $\frac{207}{6^{kn}}$, before me personally came the above named $\frac{26n^{kn}}{6^{kn}}$ for $\frac{207}{6^{kn}}$ to me personally known and known to me to be the same individual who executed the foregoing assignment, and who acknowledged to me that execution of the same was of that person's own free will for the use and purposes therein set forth.

Notary Public

Commonwealth of Pennsylvania

NOTARIAL SEAL STEPHANIE M. BONGIOVANNI, Notary Public City of Philadelphia, Phila. County My Commission Expires May 5, 2020

> PATENT REEL: 047882 FRAME: 0496

RECORDED: 01/02/2019