

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT3556731

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
KAREN E. WAWROUSEK	09/10/2015
PATRICK RICHARDS	09/15/2015
ALAN E. BLAND	09/10/2015
TENGYAN ZHANG	01/31/2015
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	THE UNIVERSITY OF WYOMING RESEARCH CORPORATION D/B/A WESTERN RESEARCH INSTITUTE
<b>Street Address:</b>	3474 NORTH 3RD STREET
<b>City:</b>	LARAMIE
<b>State/Country:</b>	WYOMING
<b>Postal Code:</b>	82070
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>PCT Number:</b>	US1429843
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(970)224-3175
<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>	9702243100
<b>Email:</b>	ideas@idea-asset.com
<b>Correspondent Name:</b>	SANTANGELO LAW OFFICES
<b>Address Line 1:</b>	125 S HOWES
<b>Address Line 2:</b>	3RD FLOOR
<b>Address Line 4:</b>	FORT COLLINS, COLORADO 80521
<b>ATTORNEY DOCKET NUMBER:</b>	WRI-NACETATE-PCT
<b>NAME OF SUBMITTER:</b>	LINDSEY SPALLONE
<b>SIGNATURE:</b>	/Lindsey Spallone/
<b>DATE SIGNED:</b>	10/05/2015
<b>Total Attachments: 20</b>	
source=PCT-Assignment-Combo#page1.tif	

source=PCT-Assignment-Combo#page2.tif  
source=PCT-Assignment-Combo#page3.tif  
source=PCT-Assignment-Combo#page4.tif  
source=PCT-Assignment-Combo#page5.tif  
source=PCT-Assignment-Combo#page6.tif  
source=PCT-Assignment-Combo#page7.tif  
source=PCT-Assignment-Combo#page8.tif  
source=PCT-Assignment-Combo#page9.tif  
source=PCT-Assignment-Combo#page10.tif  
source=PCT-Assignment-Combo#page11.tif  
source=PCT-Assignment-Combo#page12.tif  
source=PCT-Assignment-Combo#page13.tif  
source=PCT-Assignment-Combo#page14.tif  
source=PCT-Assignment-Combo#page15.tif  
source=PCT-Assignment-Combo#page16.tif  
source=PCT-Assignment-Combo#page17.tif  
source=PCT-Assignment-Combo#page18.tif  
source=PCT-Assignment-Combo#page19.tif  
source=PCT-Assignment-Combo#page20.tif

IN THE UNITED STATES PATENT AND  
TRADEMARK OFFICE PCT OFFICE

International Application Number: PCT/US14/29843  
International Filing Date: March 14, 2014  
Applicant: University of Wyoming Research Corporation d/b/a Western  
Research Institute  
Title: Conversion of Carbon Dioxide Utilizing Chemoautotrophic  
Microorganisms Systems and Methods  
Receiving Office: RO/US  
Attorney Docket: WRI-NACETATE-PCT  
Customer Number: 33549  
Confirmation No.: 1908

**ASSIGNMENT OF PATENT RIGHTS**

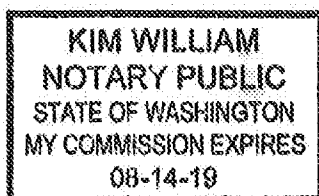
THIS ASSIGNMENT document is made effective as of the 14<sup>th</sup> day of March, 2014, between and among Karen E. Wawrousek, Patrick Richards, Tengyan Zhang, and Alan E. Bland whose addresses are respectively:

- 1720 Beaufort Street, Laramie, WY 82072, US;
- 951 North 45<sup>th</sup> Street, Seattle, WA 98103, US;
- 1713 Mill Street, Laramie, WY 82072, US;
- 1067 Alta Vista Drive, WY 82072, US;

(individually and collectively the "Assignor" or "Assignors") and The University of Wyoming Research Corporation d/b/a Western Research Institute, having its principal office at: 3474 North 3<sup>rd</sup> Street, Laramie, WY 82070 US, (the "Assignee").

WHEREAS, the Assignors have each contributed to some degree in conceiving or developing technology relating to methods and systems for biological coal-to-biofuels and bioproducts including, but not limited to, the technology initially described or indicated in the application identified by the caption listed above, and also including for the purpose of this assignment those improvements which are related to the subject matter of such technology to the extent conceived or developed during the time serving as a consultant or employee of the Assignee, or its subsidiaries, affiliates, or related parties, and to improvements related to such technology which are identified, developed, or conceived using trade secret or confidential information of the Assignee or which are likely to cause disclosure of such trade secret or confidential information (the "Invention");

WHEREAS, each Assignor, either by him/herself or in conjunction with other individuals, may be an inventor of the Invention;



A handwritten signature in cursive script, appearing to read "Kim William".

PR (Initial) \_\_\_\_\_ (Initial)  
\_\_\_\_\_ (Initial) \_\_\_\_\_ (Initial)

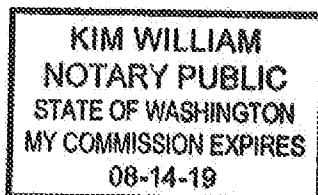
WHEREAS, each Assignor confirms that all his/her right, title and interest in any and all patent rights and any other proprietary rights in the Invention was vested in the Assignee; and

WHEREAS, each Assignor desires to formalize his/her obligation for assignment of all right, title and interest to the Invention to Assignee to the extent he/she has any such rights worldwide; and

WHEREAS, each Assignor acknowledges his/her obligation to assign all right, title and interest in any and all patent rights and any other proprietary rights in the Invention, to Assignee;

NOW, THEREFORE, for US \$10.00 or other good and valuable consideration, receipt of which is hereby acknowledged, each of the undersigned hereby agrees as follows:

1. Each Assignor warrants that:
  - a. he has the authority to assign all right, title, and interest originated now or hereafter by him/her involving the Invention;
  - b. he has conveyed no right, title, or interest in the Invention to any party other than the Assignee;
  - c. to the extent any Assignor conducted any efforts relevant to the ownership of all rights to the Invention under, on behalf of, or through any entity or assumed name, he/she has the authority to act as agent for such an entity and to fully transfer such rights; and
  - d. at the time of signing of this Assignment, he/she neither knows nor has reason to know of any outstanding right, title, or interest in the Invention inconsistent with a full assignment of rights to the Assignee other than any right, title, or interest which may exist as a result of any other's coinventorship.
2. Each Assignor, for good and valuable consideration, hereby sells, grants, transfers, authorizes application for, agrees to support, and assigns to the Assignee the entire right, title, and interest in and to the Invention, including, but not limited to:
  - a. all such worldwide rights to make, use, and sell the Invention;
  - b. all rights to make, own, and control any applications for United States or foreign patents relating to or based upon the Invention, including, but not limited to: all rights to the above-identified application, all rights to make any claim for any priority to which such applications may be entitled, all rights to any continuing application(s), divisional application(s), substitution application(s), continuation application(s), continuation-in-part application(s), national phase application(s), regional phase application(s), foreign application(s); and all patents which may be granted thereon; and all reissues, extensions, or other related rights related thereto;



*William*

*PK* (Initial) \_\_\_\_\_ (Initial)  
\_\_\_\_\_ (Initial) \_\_\_\_\_ (Initial)

c. all related rights involving the Invention in any country such as utility-model registrations, inventor's certificates, and the like, and all rights, titles, and interests involving the Invention under any foreign government;

d. all rights to any documents, notes, and evidence regarding any aspect of the Invention; and

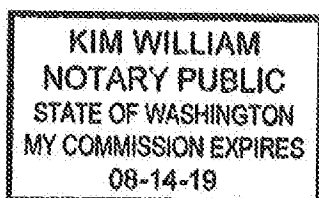
e. all rights to seek protection covering such aspects or claims as the Assignee deems appropriate, specifically, including, but not limited to: claims which seek protection for device, apparatus, method, process, business method, or other coverage; claims which seek protection for as broad a level of coverage as might be desired by the Assignee; claims which address any aspect conceived, developed, or disclosed as separate inventions; claims which address any permutations or combinations of any aspects; claims which address any aspects independent of any initial context considered as preferred embodiments; and claims which seek broad protection in general.

3. Each Assignor acknowledges a legal and equitable obligation to assign to the Assignee any and all patent rights and any other proprietary rights related to the Invention to the extent conceived (even if later reduced to practice) or developed while he/she is an employee or consultant of the Assignee or its subsidiaries, affiliates, or related parties, and covenants that he/she has not and will not execute any agreement in conflict with this Assignment and will not offer any opinions, or take or assist in taking any actions which might tend to diminish the scope of protection available to the Assignee. Further, each Assignor warrants that other than rights of the Assignee, he/she maintains the entire right, title, and interest in and to the Invention as may exist by virtue of his/her contribution and has made no conveyance of any rights whatsoever to any other person. Each Assignor also covenants that he/she will promptly and continuously inform the Assignee of any articles, patents, or other references, or prior art of which he/she becomes aware which may be material to the assessment of patentability of the Invention.

4. Each Assignor further covenants and agrees that he/she will communicate to the Assignee any facts known to him/her respecting any improvements involving or in any way related to the Invention, and will testify in any legal proceeding, sign all lawful papers, execute all division, continuation, continuation-in-part, substitute, foreign, or reissue applications, make all rightful oaths, and generally do everything possible to aid the Assignee to obtain and enforce full protection and title in and to said Invention in all countries without further consideration but at the expense of the Assignee.

5. Each Assignor acknowledges that pursuant to the sale, grant, transfer, and assignment to the Assignee of the entire right, title, and interest in and to the Invention, as provided in the above paragraphs, this assignment shall be complete as to all rights owned.

6. Each Assignor recognizes that, until published by a governmental authority, each feature of all designs which relate to the Invention and all associated information, including but not limited to patent prosecution information such as amendments to the claims, supporting affidavits, or the like, shall be considered confidential, whether labeled as such or not, whether disclosed before or



*William*

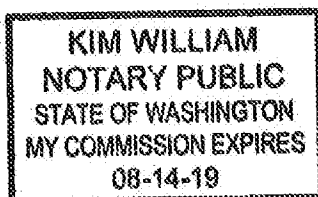
<sup>3</sup>  
*PR* (Initial) \_\_\_\_\_ (Initial)  
\_\_\_\_\_ (Initial) \_\_\_\_\_ (Initial)

after entering into this Assignment, whether of a technical, business, or legal nature including but not limited to any aspects relevant to any prosecution of a patent application in any country, and whether discovered by explicit disclosure or mere inspection of any item or facility. In addition, it is agreed that the Invention and its associated information represent trade secrets and may become subject to patent, trademark, or other additional proprietary protection. In recognition of such existing and potential proprietary rights which exist or may be obtained, each Assignor agrees to take all reasonable steps to maintain, continue, and protect the secrecy of the Invention and all related information as he/she may possess, to subject his/her employees to like restrictions, and to subject any third persons to which he/she discloses information to like restrictions. Each Assignor may disclose the information to any of its employees or other persons only as appropriate as determined by the Assignee. Each Assignor agrees not to utilize, exploit, or incorporate any of the information for his/her own benefit directly or indirectly except as expressly agreed by the Assignee in writing.

7. Each Assignor grants the firm of Santangelo Law Offices, P.C., the power to insert on this Assignment or any other document any further identification which may be necessary or desirable such as to indicate filing information or to comply with the rules of the United States Patent Office or any foreign patent office for recordation of this document, including, but not limited to, inserting the application number, the execution date, mailing information, or the filing date of the above-identified United States Patent Application.

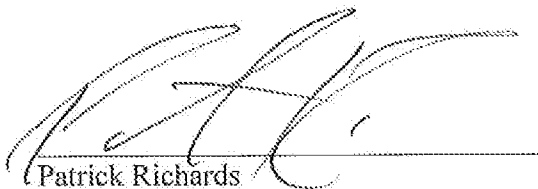
8. This assignment shall be binding on all parties, their heirs, executors, administrators, successors, or assigns, and may be recorded in the United States Patent and Trademark Office or elsewhere. In the event any provision of this Agreement is found to be unenforceable or to be unreasonable in scope, such provision shall be modified to the extent necessary to make it enforceable, and as so modified, this Agreement shall remain in full force and effect.

9. This Agreement shall be construed and enforced in accordance with the laws and jurisdiction of the State of Colorado or under the federal laws of the United States to the extent they supersede state law. In the event any claim or controversy arises under this agreement or the parties' relationship, the parties agree to submit to exclusive jurisdiction and venue for the resolution of such dispute in the District Court of Larimer County, Colorado, or to the extent necessary in federal court in the District of Colorado, United States of America.



*[Handwritten signature]*

<sup>4</sup>  
*PK* (Initial)      \_\_\_\_\_ (Initial)  
\_\_\_\_\_ (Initial)      \_\_\_\_\_ (Initial)

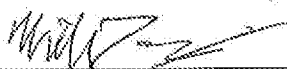
  
Patrick Richards

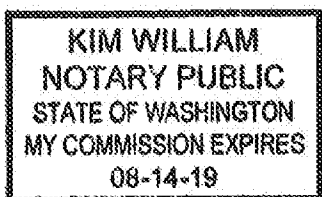
9/15/15  
Date

UNITED STATES OF AMERICA    )  
STATE OF WASHINGTON        )ss.  
COUNTY OF KING)

SUBSCRIBED AND SWORN to before me in the County of King, State of Washington, United States of America, by Patrick Richards, this 15 day of Sept, 2015.

WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Washington.

  
Notary Public



My Commission Expires: 8-14-19

PR (Initial)    \_\_\_\_ (Initial)  
\_\_\_\_ (Initial)    \_\_\_\_ (Initial)

IN THE UNITED STATES PATENT AND  
TRADEMARK OFFICE PCT OFFICE

International Application Number: PCT/US14/29843  
International Filing Date: March 14, 2014  
Applicant: University of Wyoming Research Corporation d/b/a Western  
Research Institute  
Title: Conversion of Carbon Dioxide Utilizing Chemoautotrophic  
Microorganisms Systems and Methods  
Receiving Office: RO/US  
Attorney Docket: WRI-NACETATE-PCT  
Customer Number: 33549  
Confirmation No.: 1908

**ASSIGNMENT OF PATENT RIGHTS**


THIS ASSIGNMENT document is made effective as of the 14<sup>th</sup> day of March, 2014, between and among Karen E. Wawrousek, Patrick Richards, Tengyan Zhang, and Alan E. Bland whose addresses are respectively:

- 1720 Beaufort Street, Laramie, WY 82072, US;
- 951 North 45<sup>th</sup> Street, Seattle, WA 98103, US;
- 1713 Mill Street, Laramie, WY 82072, US;
- 1067 Alta Vista Drive, WY 82072, US;

(individually and collectively the "Assignor" or "Assignors") and The University of Wyoming Research Corporation d/b/a Western Research Institute, having its principal office at: 3474 North 3<sup>rd</sup> Street, Laramie, WY 82070 US, (the "Assignee").

WHEREAS, the Assignors have each contributed to some degree in conceiving or developing technology relating to methods and systems for biological coal-to-biofuels and bioproducts including, but not limited to, the technology initially described or indicated in the application identified by the caption listed above, and also including for the purpose of this assignment those improvements which are related to the subject matter of such technology to the extent conceived or developed during the time serving as a consultant or employee of the Assignee, or its subsidiaries, affiliates, or related parties, and to improvements related to such technology which are identified, developed, or conceived using trade secret or confidential information of the Assignee or which are likely to cause disclosure of such trade secret or confidential information (the "Invention");

WHEREAS, each Assignor, either by him/herself or in conjunction with other individuals, may be an inventor of the Invention;

 (Initial) \_\_\_\_\_ (Initial)  
\_\_\_\_\_ (Initial) \_\_\_\_\_ (Initial)



WHEREAS, each Assignor confirms that all his/her right, title and interest in any and all patent rights and any other proprietary rights in the Invention was vested in the Assignee; and

WHEREAS, each Assignor desires to formalize his/her obligation for assignment of all right, title and interest to the Invention to Assignee to the extent he/she has any such rights worldwide; and

WHEREAS, each Assignor acknowledges his/her obligation to assign all right, title and interest in any and all patent rights and any other proprietary rights in the Invention, to Assignee;

NOW, THEREFORE, for US \$10.00 or other good and valuable consideration, receipt of which is hereby acknowledged, each of the undersigned hereby agrees as follows:

1. Each Assignor warrants that:

- a. he has the authority to assign all right, title, and interest originated now or hereafter by him/her involving the Invention;
- b. he has conveyed no right, title, or interest in the Invention to any party other than the Assignee;
- c. to the extent any Assignor conducted any efforts relevant to the ownership of all rights to the Invention under, on behalf of, or through any entity or assumed name, he/she has the authority to act as agent for such an entity and to fully transfer such rights; and
- d. at the time of signing of this Assignment, he/she neither knows nor has reason to know of any outstanding right, title, or interest in the Invention inconsistent with a full assignment of rights to the Assignee other than any right, title, or interest which may exist as a result of any other's coinventorship.

2. Each Assignor, for good and valuable consideration, hereby sells, grants, transfers, authorizes application for, agrees to support, and assigns to the Assignee the entire right, title, and interest in and to the Invention, including, but not limited to:

- a. all such worldwide rights to make, use, and sell the Invention;
- b. all rights to make, own, and control any applications for United States or foreign patents relating to or based upon the Invention, including, but not limited to: all rights to the above-identified application, all rights to make any claim for any priority to which such applications may be entitled, all rights to any continuing application(s), divisional application(s), substitution application(s), continuation application(s), continuation-in-part application(s), national phase application(s), regional phase application(s), foreign application(s); and all patents which may be granted thereon; and all reissues, extensions, or other related rights related thereto;

2 (Initial) \_\_\_\_\_ (Initial)  
\_\_\_\_\_ (Initial) \_\_\_\_\_ (Initial)

c. all related rights involving the Invention in any country such as utility-model registrations, inventor's certificates, and the like, and all rights, titles, and interests involving the Invention under any foreign government;

d. all rights to any documents, notes, and evidence regarding any aspect of the Invention; and

e. all rights to seek protection covering such aspects or claims as the Assignee deems appropriate, specifically, including, but not limited to: claims which seek protection for device, apparatus, method, process, business method, or other coverage; claims which seek protection for as broad a level of coverage as might be desired by the Assignee; claims which address any aspect conceived, developed, or disclosed as separate inventions; claims which address any permutations or combinations of any aspects; claims which address any aspects independent of any initial context considered as preferred embodiments; and claims which seek broad protection in general.

3. Each Assignor acknowledges a legal and equitable obligation to assign to the Assignee any and all patent rights and any other proprietary rights related to the Invention to the extent conceived (even if later reduced to practice) or developed while he/she is an employee or consultant of the Assignee or its subsidiaries, affiliates, or related parties, and covenants that he/she has not and will not execute any agreement in conflict with this Assignment and will not offer any opinions, or take or assist in taking any actions which might tend to diminish the scope of protection available to the Assignee. Further, each Assignor warrants that other than rights of the Assignee, he/she maintains the entire right, title, and interest in and to the Invention as may exist by virtue of his/her contribution and has made no conveyance of any rights whatsoever to any other person. Each Assignor also covenants that he/she will promptly and continuously inform the Assignee of any articles, patents, or other references, or prior art of which he/she becomes aware which may be material to the assessment of patentability of the Invention.

4. Each Assignor further covenants and agrees that he/she will communicate to the Assignee any facts known to him/her respecting any improvements involving or in any way related to the Invention, and will testify in any legal proceeding, sign all lawful papers, execute all division, continuation, continuation-in-part, substitute, foreign, or reissue applications, make all rightful oaths, and generally do everything possible to aid the Assignee to obtain and enforce full protection and title in and to said Invention in all countries without further consideration but at the expense of the Assignee.

5. Each Assignor acknowledges that pursuant to the sale, grant, transfer, and assignment to the Assignee of the entire right, title, and interest in and to the Invention, as provided in the above paragraphs, this assignment shall be complete as to all rights owned.

6. Each Assignor recognizes that, until published by a governmental authority, each feature of all designs which relate to the Invention and all associated information, including but not limited to patent prosecution information such as amendments to the claims, supporting affidavits, or the like, shall be considered confidential, whether labeled as such or not, whether disclosed before or

<sup>3</sup>  
AB (Initial)      \_\_\_\_ (Initial)  
\_\_\_\_ (Initial)      \_\_\_\_ (Initial)

after entering into this Assignment, whether of a technical, business, or legal nature including but not limited to any aspects relevant to any prosecution of a patent application in any country, and whether discovered by explicit disclosure or mere inspection of any item or facility. In addition, it is agreed that the Invention and its associated information represent trade secrets and may become subject to patent, trademark, or other additional proprietary protection. In recognition of such existing and potential proprietary rights which exist or may be obtained, each Assignor agrees to take all reasonable steps to maintain, continue, and protect the secrecy of the Invention and all related information as he/she may possess, to subject his/her employees to like restrictions, and to subject any third persons to which he/she discloses information to like restrictions. Each Assignor may disclose the information to any of its employees or other persons only as appropriate as determined by the Assignee. Each Assignor agrees not to utilize, exploit, or incorporate any of the information for his/her own benefit directly or indirectly except as expressly agreed by the Assignee in writing.

7. Each Assignor grants the firm of Santangelo Law Offices, P.C., the power to insert on this Assignment or any other document any further identification which may be necessary or desirable such as to indicate filing information or to comply with the rules of the United States Patent Office or any foreign patent office for recordation of this document, including, but not limited to, inserting the application number, the execution date, mailing information, or the filing date of the above-identified United States Patent Application.

8. This assignment shall be binding on all parties, their heirs, executors, administrators, successors, or assigns, and may be recorded in the United States Patent and Trademark Office or elsewhere. In the event any provision of this Agreement is found to be unenforceable or to be unreasonable in scope, such provision shall be modified to the extent necessary to make it enforceable, and as so modified, this Agreement shall remain in full force and effect.

9. This Agreement shall be construed and enforced in accordance with the laws and jurisdiction of the State of Colorado or under the federal laws of the United States to the extent they supersede state law. In the event any claim or controversy arises under this agreement or the parties' relationship, the parties agree to submit to exclusive jurisdiction and venue for the resolution of such dispute in the District Court of Larimer County, Colorado, or to the extent necessary in federal court in the District of Colorado, United States of America.

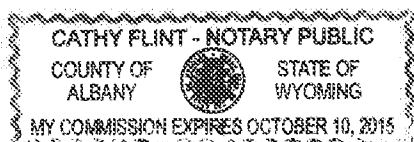
ASB (Initial)      \_\_\_\_\_ (Initial)  
\_\_\_\_\_ (Initial)      \_\_\_\_\_ (Initial)

Alan E. Bland Date 9/10/15  
Alan E. Bland

UNITED STATES OF AMERICA )  
STATE OF WYOMING )ss.  
COUNTY OF ALBANY)

ACKNOWLEDGED before me in the County of Albany, State of Wyoming, United States of America, by Alan E. Bland, this 10 day of Sept., 2015.

WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Wyoming.



Cathy Flint  
Notary Public  
Address (Required) 3474 N 3rd St  
Laramie, WY 82007  
My Commission Expires: 10-10-15

8  
AB (Initial) \_\_\_\_\_ (Initial)  
\_\_\_\_\_ (Initial) \_\_\_\_\_ (Initial)

International Application Number:	PCT/US14/29843
International Filing Date:	March 14, 2014
Applicant:	University of Wyoming Research Corporation d/b/a Western Research Institute
Title:	Conversion of Carbon Dioxide Utilizing Chemoautotrophic Microorganisms Systems and Methods
Receiving Office:	RO/US
Attorney Docket:	WRI-NACETATE-PCT
Customer Number:	33549
Confirmation No.:	1908

THIS ASSIGNMENT document is made effective as of the 14<sup>th</sup> day of March, 2014, between and among Karen E. Wawrousek, Patrick Richards, Tengyan Zhang, and Alan E. Bland whose addresses are respectively:

- 1720 Beaufort Street, Laramie, WY 82072, US;
- 951 North 45<sup>th</sup> Street, Seattle, WA 98103, US;
- 1713 Mill Street, Laramie, WY 82072, US;
- 1067 Alta Vista Drive, WY 82072, US;

(individually and collectively the "Assignor" or "Assignors") and The University of Wyoming Research Corporation d/b/a Western Research Institute, having its principal office at: 3474 North 3<sup>rd</sup> Street, Laramie, WY 82070 US, (the "Assignee").

WHEREAS, the Assignors have each contributed to some degree in conceiving or developing technology relating to methods and systems for biological coal-to-biofuels and bioproducts including, but not limited to, the technology initially described or indicated in the application identified by the caption listed above, and also including for the purpose of this assignment those improvements which are related to the subject matter of such technology to the extent conceived or developed during the time serving as a consultant or employee of the Assignee, or its subsidiaries, affiliates, or related parties, and to improvements related to such technology which are identified, developed, or conceived using trade secret or confidential information of the Assignee or which are likely to cause disclosure of such trade secret or confidential information (the "Invention");

WHEREAS, each Assignor, either by him/herself or in conjunction with other individuals, may be an inventor of the Invention;

1. ~~Initial~~ (Initial) \_\_\_\_\_ (Initial)  
 (Initial) \_\_\_\_\_ (Initial)

WHEREAS, each Assignor confirms that all his/her right, title and interest in any and all patent rights and any other proprietary rights in the Invention was vested in the Assignee; and

WHEREAS, each Assignor desires to formalize his/her obligation for assignment of all right, title and interest to the Invention to Assignee to the extent he/she has any such rights worldwide; and

WHEREAS, each Assignor acknowledges his/her obligation to assign all right, title and interest in any and all patent rights and any other proprietary rights in the Invention, to Assignee;

NOW, THEREFORE, for US \$10.00 or other good and valuable consideration, receipt of which is hereby acknowledged, each of the undersigned hereby agrees as follows:

1. Each Assignor warrants that:

a. he has the authority to assign all right, title, and interest originated now or hereafter by him/her involving the Invention;

b. he has conveyed no right, title, or interest in the Invention to any party other than the Assignee;

c. to the extent any Assignor conducted any efforts relevant to the ownership of all rights to the Invention under, on behalf of, or through any entity or assumed name, he/she has the authority to act as agent for such an entity and to fully transfer such rights; and

d. at the time of signing of this Assignment, he/she neither knows nor has reason to know of any outstanding right, title, or interest in the Invention inconsistent with a full assignment of rights to the Assignee other than any right, title, or interest which may exist as a result of any other's coinventorship.

2. Each Assignor, for good and valuable consideration, hereby sells, grants, transfers, authorizes application for, agrees to support, and assigns to the Assignee the entire right, title, and interest in and to the Invention, including, but not limited to:

a. all such worldwide rights to make, use, and sell the Invention;

b. all rights to make, own, and control any applications for United States or foreign patents relating to or based upon the Invention, including, but not limited to: all rights to the above-identified application, all rights to make any claim for any priority to which such applications may be entitled, all rights to any continuing application(s), divisional application(s), substitution application(s), continuation application(s), continuation-in-part application(s), national phase application(s), regional phase application(s), foreign application(s); and all patents which may be granted thereon; and all reissues, extensions, or other related rights related thereto;

2  
\_\_\_\_\_  
\_\_\_\_\_  
(Initial) (Initial)  
(Initial) (Initial)

c. all related rights involving the Invention in any country such as utility-model registrations, inventor's certificates, and the like, and all rights, titles, and interests involving the Invention under any foreign government;

d. all rights to any documents, notes, and evidence regarding any aspect of the Invention; and

e. all rights to seek protection covering such aspects or claims as the Assignee deems appropriate, specifically, including, but not limited to: claims which seek protection for device, apparatus, method, process, business method, or other coverage; claims which seek protection for as broad a level of coverage as might be desired by the Assignee; claims which address any aspect conceived, developed, or disclosed as separate inventions; claims which address any permutations or combinations of any aspects; claims which address any aspects independent of any initial context considered as preferred embodiments; and claims which seek broad protection in general.

3. Each Assignor acknowledges a legal and equitable obligation to assign to the Assignee any and all patent rights and any other proprietary rights related to the Invention to the extent conceived (even if later reduced to practice) or developed while he/she is an employee or consultant of the Assignee or its subsidiaries, affiliates, or related parties, and covenants that he/she has not and will not execute any agreement in conflict with this Assignment and will not offer any opinions, or take or assist in taking any actions which might tend to diminish the scope of protection available to the Assignee. Further, each Assignor warrants that other than rights of the Assignee, he/she maintains the entire right, title, and interest in and to the Invention as may exist by virtue of his/her contribution and has made no conveyance of any rights whatsoever to any other person. Each Assignor also covenants that he/she will promptly and continuously inform the Assignee of any articles, patents, or other references, or prior art of which he/she becomes aware which may be material to the assessment of patentability of the Invention.

4. Each Assignor further covenants and agrees that he/she will communicate to the Assignee any facts known to him/her respecting any improvements involving or in any way related to the Invention, and will testify in any legal proceeding, sign all lawful papers, execute all division, continuation, continuation-in-part, substitute, foreign, or reissue applications, make all rightful oaths, and generally do everything possible to aid the Assignee to obtain and enforce full protection and title in and to said Invention in all countries without further consideration but at the expense of the Assignee.

5. Each Assignor acknowledges that pursuant to the sale, grant, transfer, and assignment to the Assignee of the entire right, title, and interest in and to the Invention, as provided in the above paragraphs, this assignment shall be complete as to all rights owned.

6. Each Assignor recognizes that, until published by a governmental authority, each feature of all designs which relate to the Invention and all associated information, including but not limited to patent prosecution information such as amendments to the claims, supporting affidavits, or the like, shall be considered confidential, whether labeled as such or not, whether disclosed before or

3

KWQ (Initial)      \_\_\_\_\_ (Initial)  
\_\_\_\_\_ (Initial)      \_\_\_\_\_ (Initial)

after entering into this Assignment, whether of a technical, business, or legal nature including but not limited to any aspects relevant to any prosecution of a patent application in any country, and whether discovered by explicit disclosure or mere inspection of any item or facility. In addition, it is agreed that the Invention and its associated information represent trade secrets and may become subject to patent, trademark, or other additional proprietary protection. In recognition of such existing and potential proprietary rights which exist or may be obtained, each Assignor agrees to take all reasonable steps to maintain, continue, and protect the secrecy of the Invention and all related information as he/she may possess, to subject his/her employees to like restrictions, and to subject any third persons to which he/she discloses information to like restrictions. Each Assignor may disclose the information to any of its employees or other persons only as appropriate as determined by the Assignee. Each Assignor agrees not to utilize, exploit, or incorporate any of the information for his/her own benefit directly or indirectly except as expressly agreed by the Assignee in writing.

7. Each Assignor grants the firm of Santangelo Law Offices, P.C., the power to insert on this Assignment or any other document any further identification which may be necessary or desirable such as to indicate filing information or to comply with the rules of the United States Patent Office or any foreign patent office for recordation of this document, including, but not limited to, inserting the application number, the execution date, mailing information, or the filing date of the above-identified United States Patent Application.

8. This assignment shall be binding on all parties, their heirs, executors, administrators, successors, or assigns, and may be recorded in the United States Patent and Trademark Office or elsewhere. In the event any provision of this Agreement is found to be unenforceable or to be unreasonable in scope, such provision shall be modified to the extent necessary to make it enforceable, and as so modified, this Agreement shall remain in full force and effect.

9. This Agreement shall be construed and enforced in accordance with the laws and jurisdiction of the State of Colorado or under the federal laws of the United States to the extent they supersede state law. In the event any claim or controversy arises under this agreement or the parties' relationship, the parties agree to submit to exclusive jurisdiction and venue for the resolution of such dispute in the District Court of Larimer County, Colorado, or to the extent necessary in federal court in the District of Colorado, United States of America.

4  
KWL (Initial) \_\_\_\_\_ (Initial)  
\_\_\_\_\_ (Initial) \_\_\_\_\_ (Initial)



Karen E. Wawrousek  
Karen E. Wawrousek

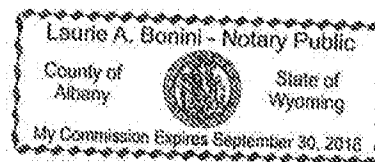
9/10/15  
Date

UNITED STATES OF AMERICA )  
STATE OF WYOMING )ss.  
COUNTY OF ALBANY )

ACKNOWLEDGED before me in the County of Albany, State of Wyoming, United States of America, by Karen E. Wawrousek, this \_\_\_\_ day of \_\_\_\_\_, 2015.

WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Wyoming.

Laurie A. Bonini  
Notary Public  
Address (Required) 2411 Hillside  
Laramie, WY 82070  
My Commission Expires: Sept 30, 2018



<sup>5</sup>  
Kul (Initial) \_\_\_\_\_ (Initial)  
\_\_\_\_\_ (Initial) \_\_\_\_\_ (Initial)

IN THE UNITED STATES PATENT AND  
TRADEMARK OFFICE PCT OFFICE

International Application Number: PCT/US14/29843  
International Filing Date: March 14, 2014  
Applicant: University of Wyoming Research Corporation d/b/a Western  
Research Institute  
Title: Conversion of Carbon Dioxide Utilizing Chemoautotrophic  
Microorganisms Systems and Methods  
RO/US  
Receiving Office: WRI-NACETATE-PCT  
Attorney Docket: 33549  
Customer Number: 1908  
Confirmation No.:

**ASSIGNMENT OF PATENT RIGHTS**

THIS ASSIGNMENT document is made effective as of the 14<sup>th</sup> day of March, 2014, between and among Karen E. Wawrousek, Patrick Richards, Tengyan Zhang, and Alan E. Bland whose addresses are respectively:

- 1720 Beaufort Street, Laramie, WY 82072, US;
- 951 North 45<sup>th</sup> Street, Seattle, WA 98103, US;
- ~~1713 Mill Street, Laramie, WY 82072, US;~~
- 1067 Alta Vista Drive, WY 82072, US;

141 154th PL NE, Bellevue,  
Washington, 98007, US

(individually and collectively the "Assignor" or "Assignors") and The University of Wyoming Research Corporation d/b/a Western Research Institute, having its principal office at: 3474 North 3<sup>rd</sup> Street, Laramie, WY 82070 US, (the "Assignee").

WHEREAS, the Assignors have each contributed to some degree in conceiving or developing technology relating to methods and systems for biological coal-to-biofuels and bioproducts including, but not limited to, the technology initially described or indicated in the application identified by the caption listed above, and also including for the purpose of this assignment those improvements which are related to the subject matter of such technology to the extent conceived or developed during the time serving as a consultant or employee of the Assignee, or its subsidiaries, affiliates, or related parties, and to improvements related to such technology which are identified, developed, or conceived using trade secret or confidential information of the Assignee or which are likely to cause disclosure of such trade secret or confidential information (the "Invention");

WHEREAS, each Assignor, either by him/herself or in conjunction with other individuals, may be an inventor of the Invention;

1  
\_\_\_\_ (Initial)      \_\_\_\_ (Initial)  
T.Z. (Initial)      \_\_\_\_ (Initial)

WHEREAS, each Assignor confirms that all his/her right, title and interest in any and all patent rights and any other proprietary rights in the Invention was vested in the Assignee; and

WHEREAS, each Assignor desires to formalize his/her obligation for assignment of all right, title and interest to the Invention to Assignee to the extent he/she has any such rights worldwide; and

WHEREAS, each Assignor acknowledges his/her obligation to assign all right, title and interest in any and all patent rights and any other proprietary rights in the Invention, to Assignee;

NOW, THEREFORE, for US \$10.00 or other good and valuable consideration, receipt of which is hereby acknowledged, each of the undersigned hereby agrees as follows:

1. Each Assignor warrants that:

a. he has the authority to assign all right, title, and interest originated now or hereafter by him/her involving the Invention;

b. he has conveyed no right, title, or interest in the Invention to any party other than the Assignee;

c. to the extent any Assignor conducted any efforts relevant to the ownership of all rights to the Invention under, on behalf of, or through any entity or assumed name, he/she has the authority to act as agent for such an entity and to fully transfer such rights; and

d. at the time of signing of this Assignment, he/she neither knows nor has reason to know of any outstanding right, title, or interest in the Invention inconsistent with a full assignment of rights to the Assignee other than any right, title, or interest which may exist as a result of any other's coinventorship.

2. Each Assignor, for good and valuable consideration, hereby sells, grants, transfers, authorizes application for, agrees to support, and assigns to the Assignee the entire right, title, and interest in and to the Invention, including, but not limited to:

a. all such worldwide rights to make, use, and sell the Invention;

b. all rights to make, own, and control any applications for United States or foreign patents relating to or based upon the Invention, including, but not limited to: all rights to the above-identified application, all rights to make any claim for any priority to which such applications may be entitled, all rights to any continuing application(s), divisional application(s), substitution application(s), continuation application(s), continuation-in-part application(s), national phase application(s), regional phase application(s), foreign application(s); and all patents which may be granted thereon; and all reissues, extensions, or other related rights related thereto;

2

\_\_\_\_ (Initial)      \_\_\_\_ (Initial)  
T.Z. (Initial)      \_\_\_\_ (Initial)

c. all related rights involving the Invention in any country such as utility-model registrations, inventor's certificates, and the like, and all rights, titles, and interests involving the Invention under any foreign government;

d. all rights to any documents, notes, and evidence regarding any aspect of the Invention; and

e. all rights to seek protection covering such aspects or claims as the Assignee deems appropriate, specifically, including, but not limited to: claims which seek protection for device, apparatus, method, process, business method, or other coverage; claims which seek protection for as broad a level of coverage as might be desired by the Assignee; claims which address any aspect conceived, developed, or disclosed as separate inventions; claims which address any permutations or combinations of any aspects; claims which address any aspects independent of any initial context considered as preferred embodiments; and claims which seek broad protection in general.

3. Each Assignor acknowledges a legal and equitable obligation to assign to the Assignee any and all patent rights and any other proprietary rights related to the Invention to the extent conceived (even if later reduced to practice) or developed while he/she is an employee or consultant of the Assignee or its subsidiaries, affiliates, or related parties, and covenants that he/she has not and will not execute any agreement in conflict with this Assignment and will not offer any opinions, or take or assist in taking any actions which might tend to diminish the scope of protection available to the Assignee. Further, each Assignor warrants that other than rights of the Assignee, he/she maintains the entire right, title, and interest in and to the Invention as may exist by virtue of his/her contribution and has made no conveyance of any rights whatsoever to any other person. Each Assignor also covenants that he/she will promptly and continuously inform the Assignee of any articles, patents, or other references, or prior art of which he/she becomes aware which may be material to the assessment of patentability of the Invention.

4. Each Assignor further covenants and agrees that he/she will communicate to the Assignee any facts known to him/her respecting any improvements involving or in any way related to the Invention, and will testify in any legal proceeding, sign all lawful papers, execute all division, continuation, continuation-in-part, substitute, foreign, or reissue applications, make all rightful oaths, and generally do everything possible to aid the Assignee to obtain and enforce full protection and title in and to said Invention in all countries without further consideration but at the expense of the Assignee.

5. Each Assignor acknowledges that pursuant to the sale, grant, transfer, and assignment to the Assignee of the entire right, title, and interest in and to the Invention, as provided in the above paragraphs, this assignment shall be complete as to all rights owned.

6. Each Assignor recognizes that, until published by a governmental authority, each feature of all designs which relate to the Invention and all associated information, including but not limited to patent prosecution information such as amendments to the claims, supporting affidavits, or the like, shall be considered confidential, whether labeled as such or not, whether disclosed before or

3

\_\_\_\_ (Initial)      \_\_\_\_ (Initial)  
T.Z. (Initial)      \_\_\_\_ (Initial)

after entering into this Assignment, whether of a technical, business, or legal nature including but not limited to any aspects relevant to any prosecution of a patent application in any country, and whether discovered by explicit disclosure or mere inspection of any item or facility. In addition, it is agreed that the Invention and its associated information represent trade secrets and may become subject to patent, trademark, or other additional proprietary protection. In recognition of such existing and potential proprietary rights which exist or may be obtained, each Assignor agrees to take all reasonable steps to maintain, continue, and protect the secrecy of the Invention and all related information as he/she may possess, to subject his/her employees to like restrictions, and to subject any third persons to which he/she discloses information to like restrictions. Each Assignor may disclose the information to any of its employees or other persons only as appropriate as determined by the Assignee. Each Assignor agrees not to utilize, exploit, or incorporate any of the information for his/her own benefit directly or indirectly except as expressly agreed by the Assignee in writing.

7. Each Assignor grants the firm of Santangelo Law Offices, P.C., the power to insert on this Assignment or any other document any further identification which may be necessary or desirable such as to indicate filing information or to comply with the rules of the United States Patent Office or any foreign patent office for recordation of this document, including, but not limited to, inserting the application number, the execution date, mailing information, or the filing date of the above-identified United States Patent Application.

8. This assignment shall be binding on all parties, their heirs, executors, administrators, successors, or assigns, and may be recorded in the United States Patent and Trademark Office or elsewhere. In the event any provision of this Agreement is found to be unenforceable or to be unreasonable in scope, such provision shall be modified to the extent necessary to make it enforceable, and as so modified, this Agreement shall remain in full force and effect.

9. This Agreement shall be construed and enforced in accordance with the laws and jurisdiction of the State of Colorado or under the federal laws of the United States to the extent they supersede state law. In the event any claim or controversy arises under this agreement or the parties' relationship, the parties agree to submit to exclusive jurisdiction and venue for the resolution of such dispute in the District Court of Larimer County, Colorado, or to the extent necessary in federal court in the District of Colorado, United States of America.

4

\_\_\_\_ (Initial)      \_\_\_\_ (Initial)  
T.Z. (Initial)      \_\_\_\_ (Initial)

Tengyan Zhang

Tengyan Zhang

1/31/2015

Date

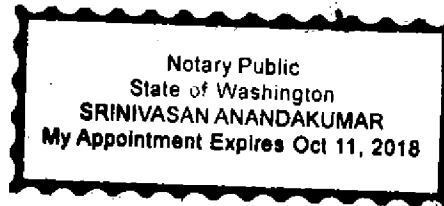
UNITED STATES OF AMERICA )  
STATE OF ~~WYOMING~~ WASHINGTON ss.  
COUNTY OF ~~ALBANY~~ King

ACKNOWLEDGED before me in the County of Albany, State of Wyoming, United States of America, by Tengyan Zhang, this 31 day of January 2015.

WITNESS my hand and official seal pursuant to the authority vested in me as a Notary Public by the State of Wyoming. Washington

Notary Public

My Commission Expires: 10/11/2018



7

\_\_\_\_ (Initial)      \_\_\_\_ (Initial)  
I.Z. (Initial)      \_\_\_\_ (Initial)