

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT3845855

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
ALAN J. RUSSELL	04/04/2016
RICHARD R. KOEPEL	03/29/2016
CHAD CUMMINGS	03/29/2016
HIRONOBU MURATA	03/23/2016
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	CARNEGIE MELLON UNIVERSITY
<b>Street Address:</b>	5000 FORBES AVENUE
<b>City:</b>	PITTSBURGH
<b>State/Country:</b>	PENNSYLVANIA
<b>Postal Code:</b>	15213
<b>Name:</b>	UNIVERSITY OF PITTSBURGH
<b>Street Address:</b>	200 GARDNER STEEL CONFERENCE CENTER
<b>Internal Address:</b>	THACKERY & O'HARA STREETS
<b>City:</b>	PITTSBURGH
<b>State/Country:</b>	PENNSYLVANIA
<b>Postal Code:</b>	15260
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	14785868
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(412)355-6501
<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>	412-355-6338
<b>Email:</b>	piuspatents@klgates.com
<b>Correspondent Name:</b>	K&L GATES LLP - JAIMIE R. ANDERSON
<b>Address Line 1:</b>	210 SIXTH AVENUE
<b>Address Line 2:</b>	K&L GATES CENTER
<b>Address Line 4:</b>	PITTSBURGH, PENNSYLVANIA 15222-2613

<b>ATTORNEY DOCKET NUMBER:</b>	140104US
<b>NAME OF SUBMITTER:</b>	JAIMIE R. ANDERSON
<b>SIGNATURE:</b>	/Jaimie R. Anderson/
<b>DATE SIGNED:</b>	04/26/2016

**Total Attachments: 9**

source=140104US\_-\_Assignment#page1.tif  
source=140104US\_-\_Assignment#page2.tif  
source=140104US\_-\_Assignment#page3.tif  
source=140104US\_-\_Assignment#page4.tif  
source=140104US\_-\_Assignment#page5.tif  
source=140104US\_-\_Assignment#page6.tif  
source=140104US\_-\_Assignment#page7.tif  
source=140104US\_-\_Assignment#page8.tif  
source=140104US\_-\_Assignment#page9.tif

ASSIGNMENT OF APPLICATION FOR PATENT

## WHEREAS:

Alan J. Russell, of Gibsonia, PA, and Richard R. Koepsel, Chad Cummings, and Hironobu Murata, of Pittsburgh, PA (hereinafter referred to as ASSIGNORS) have made an invention or discovery entitled:

**POLYMER-BASED PROTEIN ENGINEERING METHODS TO RATIONALLY TUNE ENZYME ACTIVITY,  
pH-DEPENDENCE AND STABILITY**

- ☐ for which application for Letters Patent of the United States has been executed on even date herewith, or
- ☒ for which application for Letters Patent of the United States has been filed on October 21, 2015 under Serial No. 14/785,868, and

## WHEREAS:

- (1) Carnegie Mellon University, a non-profit Pennsylvania organization having an office at 5000 Forbes Avenue, Pittsburgh, PA 15213, United States and
- (2) University of Pittsburgh - of the Commonwealth System of Higher Education, a non-profit Pennsylvania organization having an office at 200 Gardner Steel Conference Center, Thackeray & O'Hara Streets, Pittsburgh, PA 15260, United States

(hereinafter referred to as the JOINT ASSIGNEES), are desirous of acquiring, jointly, the entire right, title and interest in, to and under said invention or discovery, and in, to and under said United States application, and in, to and under Letters Patent or similar legal protection to be granted thereon in the United States and in any and all foreign countries, and of confirming the same or any part thereof heretofore acquired by the JOINT ASSIGNEES.

## NOW, THEREFORE:

In consideration of the payment by the JOINT ASSIGNEES to ASSIGNORS of the sum of One Dollar (\$1.00) and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, ASSIGNORS hereby sell, assign, transfer to and confirm in the JOINT ASSIGNEES, its successors, legal representatives and assigns, the full and exclusive right, title and interest to said invention or discovery in the United States and its territorial possessions and in all foreign countries, with each JOINT ASSIGNEE having an undivided joint interest in said invention or discovery; and to said United States application and any and all other applications on said invention or discovery in whatsoever countries, including any continuations, divisions, substitutes or renewals; and to all Letters Patent, and all reissues, re-examinations, and extensions thereof, or similar legal protection in the United States and its territorial possessions and in any and all foreign countries to be obtained for said invention or discovery or upon said applications or any legal equivalent thereof in a foreign country for the full term or terms for which the same may be granted; and every priority right that is or may be predicated upon or arise from said invention or discovery, said applications and said Letters Patent,

WE, SAID ASSIGNORS, hereby authorize and request the Director of the United States Patent and Trademark Office, the Commissioner for Patents of the United States of America, any other United States Official, and/or any Official of any country or countries foreign to the United States of America whose duty it is to issue Letters Patent on applications as aforesaid, to issue or transfer all such Letters Patent for said invention or discovery to the JOINT ASSIGNEES, as joint assignees of the entire right, title and interest in, to and under the same, for the sole use and behalf of the JOINT ASSIGNEES, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

WE, SAID ASSIGNORS, hereby covenant that we have full right to convey the entire right, title and interest herein sold, assigned, transferred, set over and confirmed, and that we have not executed and will not execute any agreement in conflict herewith;

AND WE, SAID ASSIGNORS, hereby further covenant and agree that the JOINT ASSIGNEES, its successors, legal representatives, or assigns, may apply for Letters Patent in any or all countries on said invention or discovery in our names or in the name of the JOINT ASSIGNEES or otherwise as the JOINT ASSIGNEES may deem advisable, and may claim the benefits of the International Convention or otherwise claim priority rights;

AND WE, SAID ASSIGNORS, hereby further covenant that we will, at any time when called upon to do so by the JOINT ASSIGNEES, its successors, legal representatives, or assigns: communicate to the JOINT ASSIGNEES, its successors, legal representatives, or assigns, as the case may be, any facts known to us respecting said invention or discovery or the history thereof,

including without limitation the furnishing of any and all documents, photographs, models, samples and other physical exhibits in our control which may be useful for establishing the facts of our conception, disclosures, and reduction to practice of said invention or discovery; execute and deliver to the JOINT ASSIGNEES, its successors, legal representatives, or assigns, as the case may be, any and all lawful papers that may be necessary or desirable to perfect the title to the said invention or discovery, the said applications and the said Letters Patent in the JOINT ASSIGNEES, its successors, legal representatives and assigns; if reissues, re-examinations, or other like proceedings involving the said Letters Patent or disclaimers relating thereto, or divisions, continuations, or refilings of the said applications, or any thereof, shall hereafter be desired by the JOINT ASSIGNEES, its successors, legal representatives, or assigns, we will sign all lawful papers, make all rightful oaths, execute and deliver all such disclaimers and all divisional, continuation, re-examination and reissue applications so desired, and do all lawful acts requisite for the application for such reissues, re-examinations and the procuring thereof and for the filing of such disclaimers and such applications; and generally do everything possible, including testifying in any legal proceedings, signing all lawful papers and making all rightful oaths, to aid the JOINT ASSIGNEES, its successors, legal representatives and assigns, to obtain and enforce proper patent protection for said invention or discovery in all countries, and without further compensation but at the expense of the JOINT ASSIGNEES, its successors, legal representatives and assigns.

IN WITNESS WHEREOF, We have hereunto affixed our signatures on the date and year opposite our signatures.

Date: April 4, 2016

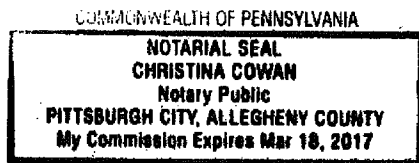
ALAN J. RUSSELL

By: [Signature] (signature)

COUNTY OF ALLEGHENY

STATE OF PENNSYLVANIA

BE IT KNOWN, that on this 4th day of April, 2016, before me personally came ALAN J. RUSSELL, to me known to be the person mentioned in and who executed the foregoing Assignment of Application for Patent, and he acknowledged to me that he executed the same as his free act and deed for the use and purposes therein mentioned.



[Signature]  
Notary Public

[Affix notary stamp and notary seal]

Date: \_\_\_\_\_, 2016

RICHARD R. KOEPEL

By: \_\_\_\_\_ (signature)

COUNTY OF ALLEGHENY

STATE OF PENNSYLVANIA

BE IT KNOWN, that on this \_\_\_\_\_ day of \_\_\_\_\_, 2016, before me personally came RICHARD R. KOEPEL, to me known to be the person mentioned in and who executed the foregoing Assignment of Application for Patent, and he acknowledged to me that he executed the same as his free act and deed for the use and purposes therein mentioned.

\_\_\_\_\_  
Notary Public

[Affix notary stamp and notary seal]

Date: \_\_\_\_\_, 2016

CHAD CUMMINGS

By: \_\_\_\_\_ (signature)

COUNTY OF ALLEGHENY

STATE OF PENNSYLVANIA

BE IT KNOWN, that on this \_\_\_\_\_ day of \_\_\_\_\_, 2016, before me personally came CHAD CUMMINGS, to me known to be the person mentioned in and who executed the foregoing Assignment of Application for Patent, and he acknowledged to me that he executed the same as his free act and deed for the use and purposes therein mentioned.

\_\_\_\_\_  
Notary Public

[Affix notary stamp and notary seal]

---

---

Date: \_\_\_\_\_, 2016

HIRONOBU MURATA

By: \_\_\_\_\_ (signature)

COUNTY OF ALLEGHENY

STATE OF PENNSYLVANIA

BE IT KNOWN, that on this \_\_\_\_\_ day of \_\_\_\_\_, 2016, before me personally came HIRONOBU MURATA, to me known to be the person mentioned in and who executed the foregoing Assignment of Application for Patent, and he acknowledged to me that he executed the same as his free act and deed for the use and purposes therein mentioned.

\_\_\_\_\_  
Notary Public

[Affix notary stamp and notary seal]

**ASSIGNMENT OF APPLICATION FOR PATENT**

WHEREAS:

Alan J. Russell, of Gibsonia, PA, and Richard R. Koepsel, Chad Cummings, and Hironobu Murata, of Pittsburgh, PA (hereinafter referred to as ASSIGNORS) have made an invention or discovery entitled:

**POLYMER-BASED PROTEIN ENGINEERING METHODS TO RATIONALLY TUNE ENZYME ACTIVITY,  
pH-DEPENDENCE AND STABILITY**

☐ for which application for Letters Patent of the United States has been executed on even date herewith, or

☒ for which application for Letters Patent of the United States has been filed on October 21, 2015 under Serial No. 14/785,868, and

WHEREAS:

(1) Carnegie Mellon University, a non-profit Pennsylvania organization having an office at 5000 Forbes Avenue, Pittsburgh, PA 15213, United States and

(2) University of Pittsburgh - of the Commonwealth System of Higher Education, a non-profit Pennsylvania organization having an office at 200 Gardner Steel Conference Center, Thackery & O'Hara Streets, Pittsburgh, PA 15260, United States

(hereinafter referred to as the JOINT ASSIGNEES), are desirous of acquiring, jointly, the entire right, title and interest in, to and under said invention or discovery, and in, to and under said United States application, and in, to and under Letters Patent or similar legal protection to be granted thereon in the United States and in any and all foreign countries, and of confirming the same or any part thereof heretofore acquired by the JOINT ASSIGNEES.

NOW, THEREFORE:

In consideration of the payment by the JOINT ASSIGNEES to ASSIGNORS of the sum of One Dollar (\$1.00) and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, ASSIGNORS hereby sell, assign, transfer to and confirm in the JOINT ASSIGNEES, its successors, legal representatives and assigns, the full and exclusive right, title and interest to said invention or discovery in the United States and its territorial possessions and in all foreign countries, with each JOINT ASSIGNEE having an undivided joint interest in said invention or discovery; and to said United States application and any and all other applications on said invention or discovery in whatsoever countries, including any continuations, divisions, substitutes or renewals; and to all Letters Patent, and all reissues, re-examinations, and extensions thereof, or similar legal protection in the United States and its territorial possessions and in any and all foreign countries to be obtained for said invention or discovery or upon said applications or any legal equivalent thereof in a foreign country for the full term or terms for which the same may be granted; and every priority right that is or may be predicated upon or arise from said invention or discovery, said applications and said Letters Patent,

WE, SAID ASSIGNORS, hereby authorize and request the Director of the United States Patent and Trademark Office, the Commissioner for Patents of the United States of America, any other United States Official, and/or any Official of any country or countries foreign to the United States of America whose duty it is to issue Letters Patent on applications as aforesaid, to issue or transfer all such Letters Patent for said invention or discovery to the JOINT ASSIGNEES, as joint assignees of the entire right, title and interest in, to and under the same, for the sole use and behalf of the JOINT ASSIGNEES, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

WE, SAID ASSIGNORS, hereby covenant that we have full right to convey the entire right, title and interest herein sold, assigned, transferred, set over and confirmed, and that we have not executed and will not execute any agreement in conflict herewith;

AND WE, SAID ASSIGNORS, hereby further covenant and agree that the JOINT ASSIGNEES, its successors, legal representatives, or assigns, may apply for Letters Patent in any or all countries on said invention or discovery in our names or in the name of the JOINT ASSIGNEES or otherwise as the JOINT ASSIGNEES may deem advisable, and may claim the benefits of the International Convention or otherwise claim priority rights;

AND WE, SAID ASSIGNORS, hereby further covenant that we will, at any time when called upon to do so by the JOINT ASSIGNEES, its successors, legal representatives, or assigns: communicate to the JOINT ASSIGNEES, its successors, legal representatives, or assigns, as the case may be, any facts known to us respecting said invention or discovery or the history thereof,

including without limitation the furnishing of any and all documents, photographs, models, samples and other physical exhibits in our control which may be useful for establishing the facts of our conception, disclosures, and reduction to practice of said invention or discovery; execute and deliver to the JOINT ASSIGNEES, its successors, legal representatives, or assigns, as the case may be, any and all lawful papers that may be necessary or desirable to perfect the title to the said invention or discovery, the said applications and the said Letters Patent in the JOINT ASSIGNEES, its successors, legal representatives and assigns; if reissues, re-examinations, or other like proceedings involving the said Letters Patent or disclaimers relating thereto, or divisions, continuations, or refilings of the said applications, or any thereof, shall hereafter be desired by the JOINT ASSIGNEES, its successors, legal representatives, or assigns, we will sign all lawful papers, make all rightful oaths, execute and deliver all such disclaimers and all divisional, continuation, re-examination and reissue applications so desired, and do all lawful acts requisite for the application for such reissues, re-examinations and the procuring thereof and for the filing of such disclaimers and such applications; and generally do everything possible, including testifying in any legal proceedings, signing all lawful papers and making all rightful oaths, to aid the JOINT ASSIGNEES, its successors, legal representatives and assigns, to obtain and enforce proper patent protection for said invention or discovery in all countries, and without further compensation but at the expense of the JOINT ASSIGNEES, its successors, legal representatives and assigns.

IN WITNESS WHEREOF, We have hereunto affixed our signatures on the date and year opposite our signatures.

Date: \_\_\_\_\_, 2016

ALAN J. RUSSELL

By: \_\_\_\_\_ (signature)

COUNTY OF ALLEGHENY

STATE OF PENNSYLVANIA

BE IT KNOWN, that on this \_\_\_\_\_ day of \_\_\_\_\_, 2016, before me personally came ALAN J. RUSSELL, to me known to be the person mentioned in and who executed the foregoing Assignment of Application for Patent, and he acknowledged to me that he executed the same as his free act and deed for the use and purposes therein mentioned.

\_\_\_\_\_  
Notary Public

[Affix notary stamp and notary seal]

Date: March 29, 2016

RICHARD R. KOEPEL

By: *Richard R. Koepel* (signature)

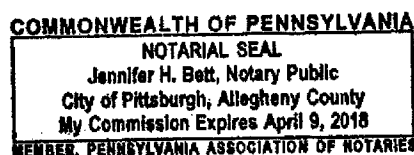
COUNTY OF ALLEGHENY

STATE OF PENNSYLVANIA

BE IT KNOWN, that on this 29 day of March, 2016, before me personally came RICHARD R. KOEPEL, to me known to be the person mentioned in and who executed the foregoing Assignment of Application for Patent, and he acknowledged to me that he executed the same as his free act and deed for the use and purposes therein mentioned.

*Jennifer H. Bett*  
Notary Public

[Affix notary stamp and notary seal]



Date: March 29, 2016

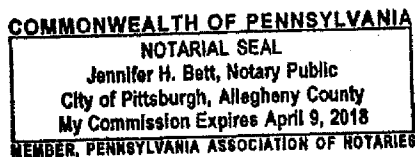
CHAD CUMMINGS

By: *Chad Cummings* (signature)

COUNTY OF ALLEGHENY

STATE OF PENNSYLVANIA

BE IT KNOWN, that on this 29 day of March, 2016, before me personally came CHAD CUMMINGS, to me known to be the person mentioned in and who executed the foregoing Assignment of Application for Patent, and he acknowledged to me that he executed the same as his free act and deed for the use and purposes therein mentioned.



*Jennifer H. Bett*  
Notary Public  
[Affix notary stamp and notary seal]

Date: \_\_\_\_\_, 2016

HIRONOBU MURATA

By: \_\_\_\_\_ (signature)

COUNTY OF ALLEGHENY

STATE OF PENNSYLVANIA

BE IT KNOWN, that on this \_\_\_\_\_ day of \_\_\_\_\_, 2016, before me personally came HIRONOBU MURATA, to me known to be the person mentioned in and who executed the foregoing Assignment of Application for Patent, and he acknowledged to me that he executed the same as his free act and deed for the use and purposes therein mentioned.

\_\_\_\_\_  
Notary Public

[Affix notary stamp and notary seal]



**ASSIGNMENT OF APPLICATION FOR PATENT****WHEREAS:**

Alan J. Russell, of Gibsonia, PA, and Richard R. Koepsel, Chad Cummings, and Hironobu Murata, of Pittsburgh, PA (hereinafter referred to as ASSIGNORS) have made an invention or discovery entitled:

**POLYMER-BASED PROTEIN ENGINEERING METHODS TO RATIONALLY TUNE ENZYME ACTIVITY,  
pH-DEPENDENCE AND STABILITY**

- ☐ for which application for Letters Patent of the United States has been executed on even date herewith, or
- ☒ for which application for Letters Patent of the United States has been filed on October 21, 2015 under Serial No. 14/785,868, and

**WHEREAS:**

- (1) Carnegie Mellon University, a non-profit Pennsylvania organization having an office at 5000 Forbes Avenue, Pittsburgh, PA 15213, United States and
- (2) University of Pittsburgh - of the Commonwealth System of Higher Education, a non-profit Pennsylvania organization having an office at 200 Gardner Steel Conference Center, Thackery & O'Hara Streets, Pittsburgh, PA 15260, United States

(hereinafter referred to as the JOINT ASSIGNEES), are desirous of acquiring, jointly, the entire right, title and interest in, to and under said invention or discovery, and in, to and under said United States application, and in, to and under Letters Patent or similar legal protection to be granted thereon in the United States and in any and all foreign countries, and of confirming the same or any part thereof heretofore acquired by the JOINT ASSIGNEES.

**NOW, THEREFORE:**

In consideration of the payment by the JOINT ASSIGNEES to ASSIGNORS of the sum of One Dollar (\$1.00) and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, ASSIGNORS hereby sell, assign, transfer to and confirm in the JOINT ASSIGNEES, its successors, legal representatives and assigns, the full and exclusive right, title and interest to said invention or discovery in the United States and its territorial possessions and in all foreign countries, with each JOINT ASSIGNEE having an undivided joint interest in said invention or discovery; and to said United States application and any and all other applications on said invention or discovery in whatsoever countries, including any continuations, divisions, substitutes or renewals; and to all Letters Patent, and all reissues, re-examinations, and extensions thereof, or similar legal protection in the United States and its territorial possessions and in any and all foreign countries to be obtained for said invention or discovery or upon said applications or any legal equivalent thereof in a foreign country for the full term or terms for which the same may be granted; and every priority right that is or may be predicated upon or arise from said invention or discovery, said applications and said Letters Patent,

WE, SAID ASSIGNORS, hereby authorize and request the Director of the United States Patent and Trademark Office, the Commissioner for Patents of the United States of America, any other United States Official, and/or any Official of any country or countries foreign to the United States of America whose duty it is to issue Letters Patent on applications as aforesaid, to issue or transfer all such Letters Patent for said invention or discovery to the JOINT ASSIGNEES, as joint assignees of the entire right, title and interest in, to and under the same, for the sole use and behalf of the JOINT ASSIGNEES, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

WE, SAID ASSIGNORS, hereby covenant that we have full right to convey the entire right, title and interest herein sold, assigned, transferred, set over and confirmed, and that we have not executed and will not execute any agreement in conflict herewith;

AND WE, SAID ASSIGNORS, hereby further covenant and agree that the JOINT ASSIGNEES, its successors, legal representatives, or assigns, may apply for Letters Patent in any or all countries on said invention or discovery in our names or in the name of the JOINT ASSIGNEES or otherwise as the JOINT ASSIGNEES may deem advisable, and may claim the benefits of the International Convention or otherwise claim priority rights;

AND WE, SAID ASSIGNORS, hereby further covenant that we will, at any time when called upon to do so by the JOINT ASSIGNEES, its successors, legal representatives, or assigns: communicate to the JOINT ASSIGNEES, its successors, legal representatives, or assigns, as the case may be, any facts known to us respecting said invention or discovery or the history thereof,

including without limitation the furnishing of any and all documents, photographs, models, samples and other physical exhibits in our control which may be useful for establishing the facts of our conception, disclosures, and reduction to practice of said invention or discovery; execute and deliver to the JOINT ASSIGNEES, its successors, legal representatives, or assigns, as the case may be, any and all lawful papers that may be necessary or desirable to perfect the title to the said invention or discovery, the said applications and the said Letters Patent in the JOINT ASSIGNEES, its successors, legal representatives and assigns; if reissues, re-examinations, or other like proceedings involving the said Letters Patent or disclaimers relating thereto, or divisions, continuations, or refilings of the said applications, or any thereof, shall hereafter be desired by the JOINT ASSIGNEES, its successors, legal representatives, or assigns, we will sign all lawful papers, make all rightful oaths, execute and deliver all such disclaimers and all divisional, continuation, re-examination and reissue applications so desired, and do all lawful acts requisite for the application for such reissues, re-examinations and the procuring thereof and for the filing of such disclaimers and such applications; and generally do everything possible, including testifying in any legal proceedings, signing all lawful papers and making all rightful oaths, to aid the JOINT ASSIGNEES, its successors, legal representatives and assigns, to obtain and enforce proper patent protection for said invention or discovery in all countries, and without further compensation but at the expense of the JOINT ASSIGNEES, its successors, legal representatives and assigns.

IN WITNESS WHEREOF, We have hereunto affixed our signatures on the date and year opposite our signatures.

Date: \_\_\_\_\_, 2016                      ALAN J. RUSSELL

By: \_\_\_\_\_ (signature)  
COUNTY OF ALLEGHENY

STATE OF PENNSYLVANIA

BE IT KNOWN, that on this \_\_\_\_\_ day of \_\_\_\_\_, 2016, before me personally came ALAN J. RUSSELL, to me known to be the person mentioned in and who executed the foregoing Assignment of Application for Patent, and he acknowledged to me that he executed the same as his free act and deed for the use and purposes therein mentioned.

\_\_\_\_\_  
Notary Public

[Affix notary stamp and notary seal]

Date: \_\_\_\_\_, 2016                      RICHARD R. KOEPESEL

By: \_\_\_\_\_ (signature)  
COUNTY OF ALLEGHENY

STATE OF PENNSYLVANIA

BE IT KNOWN, that on this \_\_\_\_\_ day of \_\_\_\_\_, 2016, before me personally came RICHARD R. KOEPESEL, to me known to be the person mentioned in and who executed the foregoing Assignment of Application for Patent, and he acknowledged to me that he executed the same as his free act and deed for the use and purposes therein mentioned.

\_\_\_\_\_  
Notary Public

[Affix notary stamp and notary seal]

Date: \_\_\_\_\_, 2016

CHAD CUMMINGS

By: \_\_\_\_\_ (signature)

COUNTY OF ALLEGHENY

STATE OF PENNSYLVANIA

BE IT KNOWN, that on this \_\_\_\_\_ day of \_\_\_\_\_, 2016, before me personally came CHAD CUMMINGS, to me known to be the person mentioned in and who executed the foregoing Assignment of Application for Patent, and he acknowledged to me that he executed the same as his free act and deed for the use and purposes therein mentioned.

\_\_\_\_\_  
Notary Public

[Affix notary stamp and notary seal]

Date: 3/23, 2016

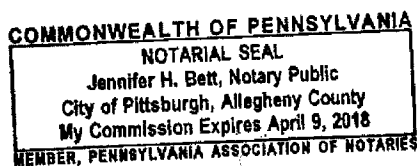
HIRONOBU MURATA

By: *H. Murata* (signature)

COUNTY OF ALLEGHENY

STATE OF PENNSYLVANIA

BE IT KNOWN, that on this 23 day of March, 2016, before me personally came HIRONOBU MURATA, to me known to be the person mentioned in and who executed the foregoing Assignment of Application for Patent, and he acknowledged to me that he executed the same as his free act and deed for the use and purposes therein mentioned.



*Jennifer H. Bett*  
Notary Public

[Affix notary stamp and notary seal]