

## PATENT ASSIGNMENT

Electronic Version v1.1  
 Stylesheet Version v1.1

SUBMISSION TYPE:	NEW ASSIGNMENT												
NATURE OF CONVEYANCE:	ASSIGNMENT												
CONVEYING PARTY DATA													
<table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>Jerry Chance Carter</td> <td>02/20/2013</td> </tr> <tr> <td>Michael P. Chrisp</td> <td>11/06/2012</td> </tr> <tr> <td>Anastacia M. Manuel</td> <td>11/05/2012</td> </tr> </tbody> </table>		Name	Execution Date	Jerry Chance Carter	02/20/2013	Michael P. Chrisp	11/06/2012	Anastacia M. Manuel	11/05/2012				
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RECEIVING PARTY DATA													
<table border="1"> <tr> <td>Name:</td> <td>Lawrence Livermore National Security, LLC</td> </tr> <tr> <td>Street Address:</td> <td>2300 First Street</td> </tr> <tr> <td>Internal Address:</td> <td>Suite 204</td> </tr> <tr> <td>City:</td> <td>Livermore</td> </tr> <tr> <td>State/Country:</td> <td>CALIFORNIA</td> </tr> <tr> <td>Postal Code:</td> <td>94550</td> </tr> </table>		Name:	Lawrence Livermore National Security, LLC	Street Address:	2300 First Street	Internal Address:	Suite 204	City:	Livermore	State/Country:	CALIFORNIA	Postal Code:	94550
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PROPERTY NUMBERS Total: 1													
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CORRESPONDENCE DATA													
<p>Fax Number: 9254232231  <i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i></p> <p>Phone: 925-422-7272        Email: disney2@llnl.gov        Correspondent Name: Lawrence Livermore National Laboratory        Address Line 1: 7000 East Avenue        Address Line 2: L-703, P.O. Box 808        Address Line 4: Livermore, CALIFORNIA 94551</p>													
ATTORNEY DOCKET NUMBER:	IL-12493												
NAME OF SUBMITTER:	Mark H. Lough												
This document serves as an Oath/Declaration (37 CFR 1.63).													

CH \$40.00 13631936

**Total Attachments: 6**

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**PATENT**

**REEL: 029867 FRAME: 0734**

**DECLARATION AND ASSIGNMENT BY INVENTOR**  
**UNDER 37 CFR §1.63**

Title of Invention: **SUBSTRATE-INTEGRATED HOLLOW WAVEGUIDE SENSORS**

I, Jerry Chance Carter, hereby declare that:

1. This declaration is directed to:

- ☐ the attached application identified as Attorney Docket No. \_\_\_\_\_  
☒ United States application or PCT international application number 13/631,936 filed on 09/29/2012  
and identified as Attorney Docket No. IL-12493  
☐ As amended on \_\_\_\_\_ (if applicable).

2. I believe I am the original inventor or an original joint inventor of a claimed invention in the patent application identified in Section 1 ("Patent Application").

3. I made or authorized to make the Patent Application.

4. I have reviewed and understand the contents of the Patent Application including the claims.

5. I am aware of the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to patentability as defined in 37 CFR §1.56.

6. I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 USC §1001 by fine or imprisonment of not more than five (5) years, or both.

**7. ASSIGNMENT**

For good and valuable consideration the receipt of which is hereby acknowledged, I hereby sell, assign, transfer, and convey to Lawrence Livermore National Security, LLC., a Delaware corporation having its administrative offices located at 2300 First Street, Suite 204, Livermore, CA 94550, and its successors, legal representatives and assigns (collectively, "Assignee"), the entire right, title and interest throughout the world in and to the following (collectively, "Rights"):

- (a) all inventions and improvements claimed and/or disclosed in the Patent Application and in any and all divisional, continuation, continuation-in-part, and substitute applications based on the Patent Application.
- (b) the Patent Application and any and all divisional, continuation, continuation-in-part, and substitute applications based on the Patent Application (collectively, "Related Applications").
- (c) any and all patent(s) which may be granted in the United States, its territories, dependencies and possessions, for the inventions and improvements claimed and/or disclosed in the Related Applications, for the full term or terms for which the same may be granted.
- (d) any and all patent(s) resulting from extension, renewal, reinstatement, reissue or reexamination, or any interference, opposition, or judicial proceeding, directed to any of the

Related Applications or any patent described above, for the full term or terms for which the same may be granted.

- (e) any foreign equivalent or counterpart of any of the Related Applications or of any of the patent(s) described above, including without limitation, certificates of invention, utility models, and design registrations.
- (f) the right to claim priority based on the filing dates of the Related Applications or any of the patent(s) described above, under, but not limited to, the International Convention for the Protection of Industrial Property, the Patent Cooperation Treaty, the European Patent Convention, and all other treaties of like purposes.
- (g) the right to seek relief and recover all damages, including, but not limited to, a reasonable royalty, by reason of infringement or any other violation of patent or patent application rights.


In addition, I hereby confirm the sale, assignment, transfer and conveyance to the Assignee of the entire right, title and interest throughout the world in the Rights, including the inventions and improvements, that occurred by operation of an employment agreement between me and the Assignee existing at the time said inventions and improvements were made. Should I have any remaining interest, I hereby sell, assign, transfer and convey any right, title and interest I may have in said inventions and improvements anywhere in the world to the Assignee.

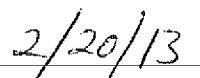
I hereby represent and covenant that no assignment, sale, agreement or encumbrance has been or will be made or entered into that would conflict with this assignment.

I further covenant to provide reasonable assistance to the Assignee in handling various procedures, tasks and documentation in connection with this assignment, including, but not limited to, providing to the Assignee promptly upon the request of the Assignee all pertinent facts and documents relating to said invention and improvements, and said patents, said legal equivalents or other legal instrument as may be known and accessible to me and testifying as to the same in any interference, litigation, or proceeding relating thereto, and promptly executing and delivering to the Assignee or its legal representative any and all papers, documents, instruments or affidavits in connection with obtaining, maintaining, issuing or enforcing said application, said inventions and improvements, and said patents, said equivalents and other legal instrument which may be necessary or desirable to carry out the purposes thereof.

I hereby authorize and request the respective patent office or governmental agency in each jurisdiction to issue any and all patents, certificates of invention, utility models, or other governmental grants or issuances, and any reissue or extension thereof, that may be granted upon any of the Rights in the name of the Assignee, as the assignee to the entire interest therein.

8. I am competent to execute the above declaration and assignment. I hereby have duly executed the declaration and assignment below with my name.

  
\_\_\_\_\_  
Jerry Chance Carter  
Signature of Inventor

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

**DECLARATION AND ASSIGNMENT BY INVENTOR**  
**UNDER 37 CFR §1.63**

Title of Invention: **SUBSTRATE-INTEGRATED HOLLOW WAVEGUIDE SENSORS**

I, Michael P. Chrisp, hereby declare that:

1. This declaration is directed to:

- ☐ the attached application identified as Attorney Docket No. \_\_\_\_\_  
☒ United States application or PCT international application number 13/631,936 filed on 09/29/2012  
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6. I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 USC §1001 by fine or imprisonment of not more than five (5) years, or both.

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- (b) the Patent Application and any and all divisional, continuation, continuation-in-part, and substitute applications based on the Patent Application (collectively, "Related Applications").
- (c) any and all patent(s) which may be granted in the United States, its territories, dependencies and possessions, for the inventions and improvements claimed and/or disclosed in the Related Applications, for the full term or terms for which the same may be granted.
- (d) any and all patent(s) resulting from extension, renewal, reinstatement, reissue or reexamination, or any interference, opposition, or judicial proceeding, directed to any of the

Related Applications or any patent described above, for the full term or terms for which the same may be granted.

- (e) any foreign equivalent or counterpart of any of the Related Applications or of any of the patent(s) described above, including without limitation, certificates of invention, utility models, and design registrations.
- (f) the right to claim priority based on the filing dates of the Related Applications or any of the patent(s) described above, under, but not limited to, the International Convention for the Protection of Industrial Property, the Patent Cooperation Treaty, the European Patent Convention, and all other treaties of like purposes.
- (g) the right to seek relief and recover all damages, including, but not limited to, a reasonable royalty, by reason of infringement or any other violation of patent or patent application rights.

In addition, I hereby confirm the sale, assignment, transfer and conveyance to the Assignee of the entire right, title and interest throughout the world in the Rights, including the inventions and improvements, that occurred by operation of an employment agreement between me and the Assignee existing at the time said inventions and improvements were made. Should I have any remaining interest, I hereby sell, assign, transfer and convey any right, title and interest I may have in said inventions and improvements anywhere in the world to the Assignee.

I hereby represent and covenant that no assignment, sale, agreement or encumbrance has been or will be made or entered into that would conflict with this assignment.

I further covenant for myself and my respective heirs, legal representatives and assigns, to assist the Assignee, without further compensation, in handling various procedures, tasks and documentation in connection with this assignment, including, but not limited to, providing to the Assignee promptly upon the request of the Assignee all pertinent facts and documents relating to said invention and improvements, and said patents, said legal equivalents or other legal instrument as may be known and accessible to me and testifying as to the same in any interference, litigation, or proceeding relating thereto, and promptly executing and delivering to the Assignee or its legal representative any and all papers, documents, instruments or affidavits in connection with obtaining, maintaining, issuing or enforcing said application, said inventions and improvements, and said patents, said equivalents and other legal instrument which may be necessary or desirable to carry out the purposes thereof.

I hereby authorize and request the respective patent office or governmental agency in each jurisdiction to issue any and all patents, certificates of invention, utility models, or other governmental grants or issuances, and any reissue or extension thereof, that may be granted upon any of the Rights in the name of the Assignee, as the assignee to the entire interest therein.

8. I am competent to execute the above declaration and assignment. I hereby have duly executed the declaration and assignment below with my name.

Michael P. Chrisp  
Michael P. Chrisp  
Signature of Inventor

11/6/2012  
Date:

**DECLARATION AND ASSIGNMENT BY INVENTOR**  
**UNDER 37 CFR §1.63**

Title of Invention: **SUBSTRATE-INTEGRATED HOLLOW WAVEGUIDE SENSORS**

I, Anastacia M. Manuel, hereby declare that:

1. This declaration is directed to:

- ☐ the attached application identified as Attorney Docket No. \_\_\_\_\_  
☒ United States application or PCT international application number 13/631,936 filed on 09/29/2012  
and identified as Attorney Docket No. IL-12493  
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Anastacia Manuel

Anastacia M. Manuel

Signature of Inventor

11/5/12

Date: