

## PATENT ASSIGNMENT COVER SHEET

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 Stylesheet Version v1.2

EPAS ID: PAT5200725

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
JERRY R. MEYER	05/31/2017
IGOR VURGFTMAN	06/16/2017
CHADWICK LAWRENCE CANEDY	06/15/2017
WILLIAM W. BEWLEY	06/08/2017
CHOOOL SOO KIM	06/08/2017
CHARLES D. MERRITT	06/08/2017
MICHAEL V. WARREN	05/31/2017
MIJIN KIM	05/31/2017
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	THE GOVERNMENT OF THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE SECRETARY OF THE NAVY
<b>Street Address:</b>	875 N. RANDOLPH STREET
<b>Internal Address:</b>	SUITE 1425
<b>City:</b>	ARLINGTON
<b>State/Country:</b>	VIRGINIA
<b>Postal Code:</b>	22202
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	16167729
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(202)404-7380
<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>	202-404-1558
<b>Email:</b>	patent.docketing@nrl.navy.mil
<b>Correspondent Name:</b>	NAVAL RESEARCH LABORATORY ASSOCIATE COUN
<b>Address Line 1:</b>	CODE 1008.2
<b>Address Line 2:</b>	4555 OVERLOOK AVENUE, S.W.
<b>Address Line 4:</b>	WASHINGTON, D.C. 20375-5320
<b>ATTORNEY DOCKET NUMBER:</b>	104086-US5

<b>NAME OF SUBMITTER:</b>	JOSLYN BARRITT
<b>SIGNATURE:</b>	/Joslyn Barritt/
<b>DATE SIGNED:</b>	10/23/2018
<b>Total Attachments: 14</b> source=104_086 Assignment_US NRL inventors#page1.tif source=104_086 Assignment_US NRL inventors#page2.tif source=104_086 Assignment_US NRL inventors#page3.tif source=104_086 Assignment_US NRL inventors#page4.tif source=104_086 Assignment_US NRL inventors#page5.tif source=104_086 Assignment Michael Warren#page1.tif source=104_086 Assignment Michael Warren#page2.tif source=104_086 Assignment Michael Warren#page3.tif source=104_086 Assignment Michael Warren#page4.tif source=104_086 Assignment Mijin Kim (WITH Sotera and Kerry)#page1.tif source=104_086 Assignment Mijin Kim (WITH Sotera and Kerry)#page2.tif source=104_086 Assignment Mijin Kim (WITH Sotera and Kerry)#page3.tif source=104_086 Assignment Mijin Kim (WITH Sotera and Kerry)#page4.tif source=104_086 Assignment Mijin Kim (WITH Sotera and Kerry)#page5.tif	

## ASSIGNMENT BY INVENTORS (UNITED STATES PATENTS)

**THIS ASSIGNMENT**, made by Jerry R. Meyer; Igor Vurgaftman; Chadwick Lawrence Canedy; William W. Bewley; Chul Soo Kim; and Charles D. Merritt (hereinafter referred to as Assignors), residing at 121 Oak Drive, Catonsville, Maryland 21228; 492 St. Martins Lane, Severna Park, Maryland 21146; 910 M St NW #902, Washington, DC 20001; 3509 Gordon Street, Falls Church, Virginia 22041; 6400 Wainfleet Ct., Springfield, Virginia 22152; and 4957 Swinton Drive, Fairfax, Virginia 22032, respectively;

**WHEREAS**, Assignors, while employed by the Government of the United States, have invented certain new and useful improvements in **Highly Sensitive III-V-Based Resonant-Cavity Infrared Photodetectors**, set forth in a Provisional application for Letters Patent of the United States filed on May 27, 2016 as U.S. Application No. **62/342260**, and in **Resonant-Cavity Infrared Photodetectors with Fully-Depleted Absorbers**, set forth in a Patent application for Letters Patent of the United States filed on May 26, 2017 as U.S. Application No. **15/605,996**; and

**WHEREAS**, The Government of the United States of America, as represented by the Secretary of the Navy, a Federal Agency (hereinafter referred to as the Government), is desirous of acquiring the entire right, title and interest in and to said inventions and said Application(s) for Letters Patent of the United States, and in and to any Letters Patent of the United States to be obtained therefor and thereon;

**WHEREAS**, by acquiring the Assignors' entire right, title, and interest in and to the invention the Government will be enabled to license the invention and share the income from the licensing with the Assignors as allowed by law;

**WHEREAS**, the conditions under which the invention was made are such as to entitle the Government under Paragraph 1(a) of Executive Order 10096, to the Assignors' entire right, title, and interest therein, including the foreign rights; and

**WHEREAS**, as to foreign rights, it is the policy of the Government to obtain an option to exercise such rights;

**NOW, THEREFORE**, in consideration of the premises and other good and sufficient consideration, the receipt of which is hereby acknowledged, Assignors have assigned, transferred and set over, and by these presents do assign, transfer and set over, unto the Government, its successors, legal representatives and assigns, the entire right, title and interest in and to the above-mentioned inventions and application(s) for Letters Patent, and in and to any and all direct and indirect divisions, continuations and continuations-in-part of said application(s), and any and all Letters Patent in the United States which may be granted therefor and thereon, and reissues, reexaminations and extensions of said Letters Patent, the same to be held and enjoyed by the Government, for its own use and benefit and the use and benefit of its successors, legal representatives and assigns, to the full end of the term or terms for which Letters Patent may be granted and/or extended, as fully and entirely as the same would have been held and enjoyed by Assignors, had this assignment not been made.

**AND** for the same consideration, Assignors hereby represent and warrant to the Government, its successors, legal representatives and assigns, that, at the time of execution and delivery of these presents, except for any rights, titles and/or interests that have arisen to the Government under law or that have already been transferred to the Government, Assignors are the sole and lawful owners of the entire right, title and interest in and to the said inventions and application(s) for Letters Patent above-mentioned, and that the same are unencumbered and that Assignors have good and full right and lawful authority to sell and convey the same in the manner herein set forth.

**AND** for the same consideration, Assignors hereby covenant and agree to and with the Government, its successors, legal representatives and assigns, that Assignors will sign all papers and documents, take all lawful oaths and do all acts necessary or required to be done for the procurement, maintenance, enforcement and defense of any Letters Patent and applications for Letters Patent for said inventions in the U.S. or any foreign country, without charge to the

Government, its successors, legal representatives and assigns, whenever counsel of the Government, or counsel of its successors, legal representatives and assigns, shall advise: that any proceeding in connection with said inventions, or said Patent application(s) for Letters Patent, or any proceeding in connection with any Letters Patent or applications for Letters Patent for said inventions including but not limited to interference proceedings, is lawful and desirable; or, that any division, continuation or continuation-in-part of any application(s) for Letters Patent, or any reissue, reexamination or extension of any Letters Patent, to be obtained thereon, is lawful and desirable.

**AND** Assignors hereby request the Commissioner of Patent and Trademarks to issue said Letters Patent of the United States to Assignee, as Assignee of said inventions and the Letters Patent to be issued thereon, for the sole use and benefit of the Government, its successors, legal representatives and assigns.

**AND** the Assignors do hereby also grant unto the Government, the option to take the Assignors' entire right, title, and interest in the invention and all patent applications or other forms of protection thereon in all countries foreign to the United States in which the Government may file, or cause to be filed, applications for Letters Patent or other forms of protection, without payment of any consideration; provided, however, that this grant of an option to take foreign rights in the invention, or applications or other forms of protection thereon, shall have force and effect only as to such applications for which a decision to file in foreign countries is made within eight months of the filing date of any application for United States Letters Patent and/or any provisional application covering the invention, or within eight months from the declassification of the invention, whichever is later, and that all foreign rights not exercised under the option are left to Assignors subject to a nonexclusive, irrevocable, royalty-free license to the Government in any patent or other form of protection which may issue on said invention in any foreign country, including the power to issue sub-licenses for use in behalf of the Government and/or in furtherance of the foreign policies of the Government.

**AND** the Assignors do hereby also grant unto the Government, the right to claim priority to the application(s) identified above.

**AND** the Assignors hereby further agree to make, execute, and deliver to the Government, any and all papers, documents, affidavits, statements, or other instruments that may be necessary in the prosecution of the application(s) and of any continuation, division, or substitution of the application(s), or any application(s) for reissue or extension of said Letters Patent, and to assist the Government in every way in protecting the invention as may be requested, provided that any expense arising through such efforts will be paid by the Government.

**AND** Assignors hereby appoint all practitioners at Customer Number 26384, all of US Naval Research Laboratory, 4555 Overlook Ave, SW, Code 1008.2, Washington, DC 20375, jointly, and each of them severally, our attorneys at law/patent agent(s), with full power of substitution, delegation and revocation, to prosecute the above-mentioned application(s), to make alterations and amendments therein, and to transact all business in the U. S. Patent and Trademark Office connected therewith.

**AND** Assignors hereby grant the following individuals the power to insert on this Assignment any further identification which may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document:

US NAVAL RESEARCH LABORATORY

All practitioners at Customer Number 26384.

Date: 5-31-17

Signature: Jerry R. Meyer

Jerry R. Meyer, Assignor

Date: 6/15/2017

Signature: Igor Vargafman  
Igor Vargafman, Assignor

Date: 6/15/2017

Signature: [Signature]  
Chadwick Lawrence Canedy, Assignor

Date: 6/08/2017

Signature: [Signature]  
William W. Bewley, Assignor

Date: 06/08/2017

Signature: [Signature]  
Chul Soo Kim, Assignor

Date: 8 June 2017

Signature: [Signature]  
Charles D. Merritt, Assignor

Date: 6/19/17

Signature: [Signature]  
Kerry L. Broome, for Assignee, The  
Government of the United States of  
America

## ASSIGNMENT BY INVENTOR

**THIS ASSIGNMENT**, made by Michael V. Warren (hereinafter referred to as Assignor), residing at 900 Army-Navy Drive, Apt. 1213, Arlington, Virginia 22202;

**WHEREAS**, Assignor has invented certain new and useful improvements in **Highly Sensitive III-V-Based Resonant-Cavity Infrared Photodetectors**, set forth in a Provisional application for Letters Patent of the United States filed on June 3, 2016 as U.S. Application No. **62/345019**, and in **Resonant-Cavity Infrared Photodetectors with Fully-Depleted Absorbers**, set forth in a Patent application for Letters Patent of the United States filed on May 26, 2017 as U.S. Patent Application No. **15/605,996**; and

**WHEREAS**, The Government of the United States of America, as represented by the Secretary of the Navy, a Federal Agency (hereinafter referred to as the Government), is desirous of acquiring the entire right, title and interest in and to said inventions and said Application(s) for Letters Patent of the United States, and in and to any Letters Patent of the United States to be obtained therefor and thereon and in and to any foreign patents to be obtained therefor and thereon;

**WHEREAS**, by acquiring the Assignor's entire right, title, and interest in and to the invention the Government will be enabled to license the invention and share the income from the licensing with the Assignor as allowed by law;

**WHEREAS**, Assignor has certain rights in the invention under the National Research Council Cooperative Research Associateship Program and the Naval Research Laboratory Postdoctoral Fellow Program;

**NOW, THEREFORE, in consideration of the premises and other good and sufficient consideration, the receipt of which is hereby acknowledged**, Assignor has assigned, transferred and set over, and by these presents do assign, transfer and set over, unto the



Government, its successors, legal representatives and assigns, subject to a nonexclusive and royalty-free license which is hereby reserved to Assignor, the entire right, title and interest in and to the above-mentioned inventions and application(s) for Letters Patent, and in and to any and all direct and indirect divisions, continuations and continuations-in-part of said application(s), and any and all Letters Patent in the United States and in all other Patent Cooperation Treaty member states which may be granted therefor and thereon, and reissues, reexaminations and extensions of said Letters Patent, and all rights under the International Convention for the Protection of Industrial Property, the same to be held and enjoyed by the Government, for its own use and benefit and the use and benefit of its successors, legal representatives and assigns, to the full end of the term or terms for which Letters Patent may be granted and/or extended, as fully and entirely as the same would have been held and enjoyed by Assignor, had this assignment not been made.

**AND** for the same consideration, Assignor hereby represents and warrants to the Government, its successors, legal representatives and assigns, that, at the time of execution and delivery of these presents, except for any rights, titles and/or interests that have arisen to the Government under law or that have already been transferred to the Government, Assignor is the sole and lawful owners of Assignor's entire right, title and interest in and to the said inventions and application(s) for Letters Patent above-mentioned, and that the same are unencumbered and that Assignor has good and full right and lawful authority to sell and convey the same in the manner herein set forth.

**AND** for the same consideration, Assignor hereby covenants and agrees to and with the Government, its successors, legal representatives and assigns, that Assignor will sign all papers and documents, take all lawful oaths and do all acts necessary or required to be done for the procurement, maintenance, enforcement and defense of any Letters Patent and applications for Letters Patent for said inventions in the U.S. or any foreign country, without charge to the Government, its successors, legal representatives and assigns, whenever counsel of the Government, or counsel of its successors, legal representatives and assigns, shall advise: that any proceeding in connection with said inventions, or said Patent application(s) for Letters Patent, or any proceeding in connection with any Letters Patent or applications for Letters Patent

for said inventions including but not limited to interference proceedings, is lawful and desirable; or, that any division, continuation or continuation-in-part of any application(s) for Letters Patent, or any reissue, reexamination or extension of any Letters Patent, to be obtained thereon, is lawful and desirable.

**AND** Assignor hereby requests the Commissioner of Patent and Trademarks to issue said Letters Patent of the United States to Assignee, as Assignee of said inventions and the Letters Patent to be issued thereon, for the sole use and benefit of the Government, its successors, legal representatives and assigns.

**AND** the Assignor does hereby also grant unto the Government, the right to claim priority to the application(s) identified above.

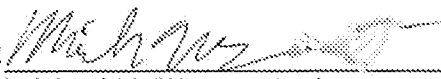
**AND** the Assignor hereby further agrees to make, execute, and deliver to the Government, any and all papers, documents, affidavits, statements, or other instruments that may be necessary in the prosecution of the application(s) and of any continuation, division, or substitution of the application(s), or any application(s) for reissue or extension of said Letters Patent, and to assist the Government in every way in protecting the invention as may be requested, provided that any expense arising through such efforts will be paid by the Government.

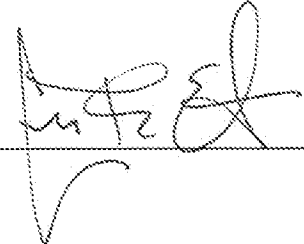
**AND** Assignor hereby appoints all practitioners at Customer Number 26384, all of US Naval Research Laboratory, 4555 Overlook Ave, SW, Code 1008.2, Washington, DC 20375, jointly, and each of them severally, his attorneys at law/patent agent(s), with full power of substitution, delegation and revocation, to prosecute the above-mentioned application(s), to make alterations and amendments therein, and to transact all business in the U. S. Patent and Trademark Office connected therewith and in all other Patent Cooperation Treaty member states which may be granted therefor and thereon, and reissues, reexaminations and extensions of said Letters Patent, and all rights under the International Convention for the Protection of Industrial Property, the same to be held and enjoyed by the Government.

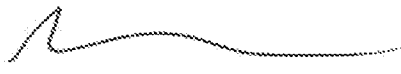
AND Assignor hereby grants the following individuals the power to insert on this Assignment any further identification which may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office and any foreign patent office for recordation of this document:

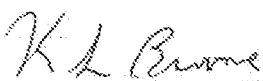
US NAVAL RESEARCH LABORATORY

All practitioners at Customer Number 26384.

Date: 5/31/17 Signature:   
Michael V. Warren, Assignor

Date: 5/31/17 Witness Signature: 

Date: 5/31/17 Witness Signature: 

Date: 6/19/17 Signature:   
Kerry L. Broome, for Assignee, The  
Government of the United States of  
America

## ASSIGNMENT BY INVENTOR

**THIS ASSIGNMENT**, made by Mijin Kim (hereinafter referred to as Assignor), residing at 6400 Wainfleet Ct., Springfield, Virginia 22152;

**WHEREAS**, Assignor has invented certain new and useful improvements in **Highly Sensitive III-V-Based Resonant-Cavity Infrared Photodetectors**, set forth in a Provisional application for Letters Patent of the United States filed on May 27, 2016 as U.S. Application No. **62/342260**, and in **Resonant-Cavity Infrared Photodetectors with Fully-Depleted Absorbers**, set forth in a Patent application for Letters Patent of the United States filed on May 26, 2017 as U.S. Application No. **15/605,996**; and

**WHEREAS**, The Government of the United States of America, as represented by the Secretary of the Navy, a Federal Agency (hereinafter referred to as the Government), is desirous of acquiring the entire right, title and interest in and to said inventions and said Application(s) for Letters Patent of the United States, and in and to any Letters Patent of the United States to be obtained therefor and thereon and in and to any foreign patents to be obtained therefor and thereon;

**WHEREAS**, by acquiring the Assignor's entire right, title, and interest in and to the invention the Government will be enabled to license the invention and share the income from the licensing with the Assignor as allowed by law;

**WHEREAS**, Assignor is obligated as employee of Sotera Defense Solutions, Inc. (Contractor) to assign inventions to Contractor, and Contractor is obligated to the Government under contract no. N00173-14-D-2023;

**NOW, THEREFORE**, in consideration of the premises and other good and sufficient consideration, the receipt of which is hereby acknowledged, Assignor has

assigned, transferred and set over, and by these presents does assign, transfer and set over, unto the Government, its successors, legal representatives and assigns, subject to a nonexclusive and royalty-free license which is hereby reserved to Contractor, the entire right, title and interest in and to the above-mentioned inventions and application(s) for Letters Patent, and in and to any and all direct and indirect divisions, continuations and continuations-in-part of said application(s), and any and all Letters Patent in the United States and in all other Patent Cooperation Treaty member states which may be granted therefor and thereon, and reissues, reexaminations and extensions of said Letters Patent, and all rights under the International Convention for the Protection of Industrial Property, the same to be held and enjoyed by the Government, for its own use and benefit and the use and benefit of its successors, legal representatives and assigns, to the full end of the term or terms for which Letters Patent may be granted and/or extended, as fully and entirely as the same would have been held and enjoyed by Assignor, had this assignment not been made.

**AND** the license reserved to the Contractor shall extend to all existing and future associated and affiliated companies, if any within the corporate structure of Contractor is a part and shall be assignable to the successor of that part of Contractor's business to which such invention pertains.

**AND** for the same consideration, Assignor hereby represents and warrants to the Government, its successors, legal representatives and assigns, that, at the time of execution and delivery of these presents, except for any rights, titles and/or interests that have arisen to the Government under law or that have already been transferred to the Government, Assignor is the sole and lawful owner of the entire right, title and interest in and to the said inventions and application(s) for Letters Patent above-mentioned, and that the same are unencumbered and that Assignor has good and full right and lawful authority to sell and convey the same in the manner herein set forth.

**AND** for the same consideration, Assignor hereby covenants and agrees to and with the Government, its successors, legal representatives and assigns, that Assignor will sign all

papers and documents, take all lawful oaths and do all acts necessary or required to be done for the procurement, maintenance, enforcement and defense of any Letters Patent and applications for Letters Patent for said inventions in the U.S. or any foreign country, without charge to the Government, its successors, legal representatives and assigns, whenever counsel of the Government, or counsel of its successors, legal representatives and assigns, shall advise: that any proceeding in connection with said inventions, or said Patent application(s) for Letters Patent, or any proceeding in connection with any Letters Patent or applications for Letters Patent for said inventions including but not limited to interference proceedings, is lawful and desirable; or, that any division, continuation or continuation-in-part of any application(s) for Letters Patent, or any reissue, reexamination or extension of any Letters Patent, to be obtained thereon, is lawful and desirable.

**AND** Assignor hereby requests the Commissioner of Patent and Trademarks to issue said Letters Patent of the United States to Assignee, as Assignee of said inventions and the Letters Patent to be issued thereon, for the sole use and benefit of the Government, its successors, legal representatives and assigns.

**AND** the Assignor does hereby also grant unto the Government, the right to claim priority to the application(s) identified above.

**AND** the Assignor hereby further agrees to make, execute, and deliver to the Government, any and all papers, documents, affidavits, statements, or other instruments that may be necessary in the prosecution of the application(s) and of any continuation, division, or substitution of the application(s), or any application(s) for reissue or extension of said Letters Patent, and to assist the Government in every way in protecting the invention as may be requested, provided that any expense arising through such efforts will be paid by the Government.

**AND** Assignor hereby appoints all practitioners at Customer Number 26384, all of US Naval Research Laboratory, 4555 Overlook Ave, SW, Code 1008.2, Washington, DC 20375, jointly, and each of them severally, my attorneys at law/patent agent(s), with full power of substitution, delegation and revocation, to prosecute the above-mentioned application(s), to

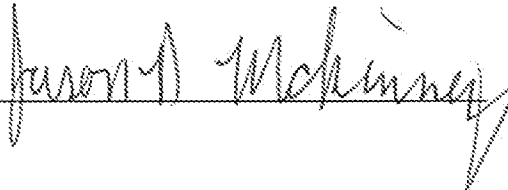
make alterations and amendments therein, and to transact all business in the U. S. Patent and Trademark Office connected therewith and in all other Patent Cooperation Treaty member states which may be granted therefor and thereon, and reissues, reexaminations and extensions of said Letters Patent, and all rights under the International Convention for the Protection of Industrial Property, the same to be held and enjoyed by the Government.

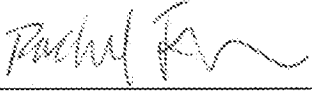
AND Assignor hereby grants the following individuals the power to insert on this Assignment any further identification which may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office and any foreign patent office for recordation of this document:

US NAVAL RESEARCH LABORATORY

All practitioners at Customer Number 26384.

Date: 5/31/2017 Signature:   
Mijin Kim, Assignor

Date: 05/31/2017 Witness Signature: 

Date: 5/31/2017 Witness Signature: 

Date: 6/19/17

Signature: K L Broome  
Kerry L. Broome, for Assignee, The  
Government of the United States of  
America

Contractor joins in and agrees to the foregoing assignment, and except for the above reservation of a license, relinquishes and assigns all right, title and interest in and to such invention, and further agrees to furnish to the Government, upon request, any available information and documents necessary for the prosecution of any patent application(s) (including prosecution and settlement of interferences) on the above-identified invention(s), and any substitution, division, continuation-in-part, or continuation of such patent application(s) and any application for reissue of any patent resulting from such patent application(s).

Sotera Defense Solutions, Inc. **Frances  
Harvey**

Digitally signed by Frances Harvey  
DN: cn=Frances Harvey, o=Sotera  
Defense Solutions, Inc., ou,  
email=frances.harvey@soteradefen  
se.com, c=US  
Date: 2017.06.06 11:19:31 -04'00'

06 June 2017

Date

Authorized Signer: Frances L. Harvey  
Title: Sr. Contracts Manager