

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT6557783

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
ELIZABETH T. KUNKEE	02/03/2021
DAH-WEIH DUAN	01/27/2021
DINO FERIZOVIC	01/27/2021
CHUNBO ZHANG	02/08/2021
GRETA S. TSAI	02/04/2021
MING-JONG SHIAU	01/27/2021
DANIEL R. SCHERRER	01/27/2021
MARTIN E. RODEN	01/27/2021
RECEIVING PARTY DATA	
Name:	NORTHROP GRUMMAN SYSTEMS CORPORATION
Street Address:	2980 FAIRVIEW PARK DRIVE
City:	FALLS CHURCH
State/Country:	VIRGINIA
Postal Code:	22042-4511
PROPERTY NUMBERS Total: 1	
Property Type	Number
Application Number:	16860642
CORRESPONDENCE DATA	
Fax Number:	(630)286-7611
<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>	
Phone:	630-286-7600
Email:	mail@mfgip.com
Correspondent Name:	MCCRACKEN & GILLEN LLC
Address Line 1:	1315 WEST 22ND STREET
Address Line 2:	SUITE 225
Address Line 4:	OAK BROOK, ILLINOIS 60523
ATTORNEY DOCKET NUMBER:	C0588/011562-0030/US/NPV
NAME OF SUBMITTER:	GARY R. GILLEN
SIGNATURE:	/Gary R. Gillen/

PATENT

DATE SIGNED:

02/18/2021

Total Attachments: 24

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ASSIGNMENT

WHEREAS, I, Elizabeth T. Kunkee together with Dah-Wei Duan, Dino Ferizovic, Chunbo Zhang, Greta S. Tsai, Ming-Jong Shiau, Daniel R. Scherrer, and Martin E. Roden hereinafter referred to as Assignor, have jointly invented certain new and useful improvements in **FILTER WITH AN ENCLOSURE HAVING A MICROMACHINED INTERIOR USING SEMICONDUCTOR FABRICATION** described in an application for United States Letters Patent, executed by me on the date as stated below;

WHEREAS, Northrop Grumman Systems Corporation, a Delaware corporation, having its principal place of business at:

2980 Fairview Park Drive
Falls Church, VA 22042-4511
United States of America

hereinafter referred to as Assignee, is desirous of acquiring the entire right, title and interest in, to and under said improvements and said application:

NOW, THEREFORE, in consideration of Assignor's obligations to Northrop Grumman Systems Corporation, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignor has sold, assigned, transferred and set over, and by these presents does hereby sell, assign, transfer and set over, unto Assignee, its successors, legal representatives and assigns, Assignor's entire right, title and interest in, to and under said improvements, and said application and all divisions, renewals, continuations, and continuations-in-part thereof, and all United States Letters patent that may be granted thereon and all reissues and extensions thereof, and all applications for Letters Patent that may hereafter be filed for said improvements in any country or countries foreign to the United States, including the full right to claim for any such application the priority benefits of the International Convention for the Protection of Industrial Property and other priority-conferring treaties, and all Letters Patent that may be granted for said improvements in any country or countries foreign to the United States and all extensions, divisions, continuations, continuations-in-part, renewals and reissues thereof; and Assignor hereby authorizes and requests the Commissioner of Patents and Trademarks of the United States, and any official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvements to said Assignee, its successors, legal representatives and assigns, in accordance with the terms of this instrument;

Assignor hereby acknowledges that at the time of making the improvements herein identified, Assignor was under an obligation to assign to Assignee, Assignor's entire right, title and interest in, to and under said improvements;

Assignor hereby covenants that Assignor has full right to convey the interest herein assigned, and that Assignor has not executed, and will not execute, any agreement in conflict herewith and that Assignee, Northrop Grumman Systems Corporation, its successors, assigns and other legal representatives shall have the right to hold and enjoy for its and their own use and benefit, to the end of the term or terms for which such Letters Patent shall or may be granted, reissued or extended as fully and completely as the same right could have been held and enjoyed by Assignor had this Assignment not been made.

Assignor hereby further covenants and agrees to communicate to Assignee, its successors, legal representatives and assigns, any and all facts known to Assignor respecting said improvements; to promptly provide Assignee with all documents relating to said improvements, said invention, and said Letters Patent as may be known or accessible to Assignor; to testify as to the same in any interference or litigation or other legal proceedings related thereto; to sign all lawful papers, execute all extensions, continuations, continuations-in-part, divisional and reissue

applications, and to make all rightful oaths or declarations and generally do everything possible to aid Assignee, its successors, legal representatives and assigns in obtaining and enforcing all the rights herein conveyed for said improvements in all countries without further compensation, but at the expense of Assignee, its successors, legal representatives and assigns.

The undersigned has executed and delivered this instrument this 3 day of February, 2021, and has executed the referenced patent application on the 3 day of February, 2021.

Elizabeth T. Kunkee 2-3-2021
Elizabeth T. Kunkee

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Dah-Wei Duan

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Dino Ferizovic

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Chunbo Zhang

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Greta S. Tsai

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Ming-Jong Shiau

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Daniel R. Scherrer

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Martin E. Roden

ASSIGNMENT

WHEREAS, I, Elizabeth T. Kunkee together with Dah-Wei Duan, Dino Ferizovic, Chunbo Zhang, Greta S. Tsai, Ming-Jong Shiau, Daniel R. Scherrer, and Martin E. Roden hereinafter referred to as Assignor, have jointly invented certain new and useful improvements in **FILTER WITH AN ENCLOSURE HAVING A MICROMACHINED INTERIOR USING SEMICONDUCTOR FABRICATION** described in an application for United States Letters Patent, executed by me on the date as stated below;

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2980 Fairview Park Drive
Falls Church, VA 22042-4511
United States of America

hereinafter referred to as Assignee, is desirous of acquiring the entire right, title and interest in, to and under said improvements and said application:

NOW, THEREFORE, in consideration of Assignor's obligations to Northrop Grumman Systems Corporation, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignor has sold, assigned, transferred and set over, and by these presents does hereby sell, assign, transfer and set over, unto Assignee, its successors, legal representatives and assigns, Assignor's entire right, title and interest in, to and under said improvements, and said application and all divisions, renewals, continuations, and continuations-in-part thereof, and all United States Letters patent that may be granted thereon and all reissues and extensions thereof, and all applications for Letters Patent that may hereafter be filed for said improvements in any country or countries foreign to the United States, including the full right to claim for any such application the priority benefits of the International Convention for the Protection of Industrial Property and other priority-conferring treaties, and all Letters Patent that may be granted for said improvements in any country or countries foreign to the United States and all extensions, divisions, continuations, continuations-in-part, renewals and reissues thereof; and Assignor hereby authorizes and requests the Commissioner of Patents and Trademarks of the United States, and any official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvements to said Assignee, its successors, legal representatives and assigns, in accordance with the terms of this instrument;

Assignor hereby acknowledges that at the time of making the improvements herein identified, Assignor was under an obligation to assign to Assignee, Assignor's entire right, title and interest in, to and under said improvements;

Assignor hereby covenants that Assignor has full right to convey the interest herein assigned, and that Assignor has not executed, and will not execute, any agreement in conflict herewith and that Assignee, Northrop Grumman Systems Corporation, its successors, assigns and other legal representatives shall have the right to hold and enjoy for its and their own use and benefit, to the end of the term or terms for which such Letters Patent shall or may be granted, reissued or extended as fully and completely as the same right could have been held and enjoyed by Assignor had this Assignment not been made.

Assignor hereby further covenants and agrees to communicate to Assignee, its successors, legal representatives and assigns, any and all facts known to Assignor respecting said improvements; to promptly provide Assignee with all documents relating to said improvements, said invention, and said Letters Patent as may be known or accessible to Assignor; to testify as to the same in any interference or litigation or other legal proceedings related thereto; to sign all lawful papers, execute all extensions, continuations, continuations-in-part, divisional and reissue

rights herein conveyed for said improvements in all countries without further compensation, but at the expense of Assignee, its successors, legal representatives and assigns.

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Elizabeth T. Kunkee

The undersigned has executed and delivered this instrument this 27th day of January, 2021, and has executed the referenced patent application on the 27th day of January, 2021.

Dah-Wei Duan
Dah-Wei Duan

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Dino Ferizovic

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Chunbo Zhang

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Greta S. Tsai

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Ming-Jong Shiau

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Daniel R. Scherrer

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Martin E. Roden

ASSIGNMENT

WHEREAS, I, Elizabeth T. Kunkee together with Dah-Wei Duan, Dino Ferizovic, Chunbo Zhang, Greta S. Tsai, Ming-Jong Shiau, Daniel R. Scherrer, and Martin E. Roden hereinafter referred to as Assignor, have jointly invented certain new and useful improvements in **FILTER WITH AN ENCLOSURE HAVING A MICROMACHINED INTERIOR USING SEMICONDUCTOR FABRICATION** described in an application for United States Letters Patent, executed by me on the date as stated below;

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Falls Church, VA 22042-4511
United States of America

hereinafter referred to as Assignee, is desirous of acquiring the entire right, title and interest in, to and under said improvements and said application:

NOW, THEREFORE, in consideration of Assignor's obligations to Northrop Grumman Systems Corporation, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignor has sold, assigned, transferred and set over, and by these presents does hereby sell, assign, transfer and set over, unto Assignee, its successors, legal representatives and assigns, Assignor's entire right, title and interest in, to and under said improvements, and said application and all divisions, renewals, continuations, and continuations-in-part thereof, and all United States Letters patent that may be granted thereon and all reissues and extensions thereof, and all applications for Letters Patent that may hereafter be filed for said improvements in any country or countries foreign to the United States, including the full right to claim for any such application the priority benefits of the International Convention for the Protection of Industrial Property and other priority-conferring treaties, and all Letters Patent that may be granted for said improvements in any country or countries foreign to the United States and all extensions, divisions, continuations, continuations-in-part, renewals and reissues thereof; and Assignor hereby authorizes and requests the Commissioner of Patents and Trademarks of the United States, and any official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvements to said Assignee, its successors, legal representatives and assigns, in accordance with the terms of this instrument;

Assignor hereby acknowledges that at the time of making the improvements herein identified, Assignor was under an obligation to assign to Assignee, Assignor's entire right, title and interest in, to and under said improvements;

Assignor hereby covenants that Assignor has full right to convey the interest herein assigned, and that Assignor has not executed, and will not execute, any agreement in conflict herewith and that Assignee, Northrop Grumman Systems Corporation, its successors, assigns and other legal representatives shall have the right to hold and enjoy for its and their own use and benefit, to the end of the term or terms for which such Letters Patent shall or may be granted, reissued or extended as fully and completely as the same right could have been held and enjoyed by Assignor had this Assignment not been made.

Assignor hereby further covenants and agrees to communicate to Assignee, its successors, legal representatives and assigns, any and all facts known to Assignor respecting said improvements; to promptly provide Assignee with all documents relating to said improvements, said invention, and said Letters Patent as may be known or accessible to Assignor; to testify as to the same in any interference or litigation or other legal proceedings related thereto; to sign all lawful papers, execute all extensions, continuations, continuations-in-part, divisional and reissue

applications; and to make all rightful oaths or declarations and generally do everything possible to aid Assignee, its successors, legal representatives and assigns in obtaining and enforcing all the rights herein conveyed for said improvements in all countries without further compensation, but at the expense of Assignee, its successors, legal representatives and assigns.


The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Elizabeth T. Kunkee

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Dah-Weih Duan

The undersigned has executed and delivered this instrument this 27th day of January, 2021, and has executed the referenced patent application on the 27th day of January, 2021.



Dino Ferizovic

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Chunbo Zhang

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Greta S. Tsai

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Ming-Jong Shiau

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Daniel R. Scherrer

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Martin E. Roden

ASSIGNMENT

WHEREAS, I, Elizabeth T. Kunkee together with Dah-Wei Duan, Dino Ferizovic, Chunbo Zhang, Greta S. Tsai, Ming-Jong Shiau, Daniel R. Scherrer, and Martin E. Roden hereinafter referred to as Assignor, have jointly invented certain new and useful improvements in **FILTER WITH AN ENCLOSURE HAVING A MICROMACHINED INTERIOR USING SEMICONDUCTOR FABRICATION** described in an application for United States Letters Patent, executed by me on the date as stated below;

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2980 Fairview Park Drive
Falls Church, VA 22042-4511
United States of America

hereinafter referred to as Assignee, is desirous of acquiring the entire right, title and interest in, to and under said improvements and said application:

NOW, THEREFORE, in consideration of Assignor's obligations to Northrop Grumman Systems Corporation, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignor has sold, assigned, transferred and set over, and by these presents does hereby sell, assign, transfer and set over, unto Assignee, its successors, legal representatives and assigns, Assignor's entire right, title and interest in, to and under said improvements, and said application and all divisions, renewals, continuations, and continuations-in-part thereof, and all United States Letters patent that may be granted thereon and all reissues and extensions thereof, and all applications for Letters Patent that may hereafter be filed for said improvements in any country or countries foreign to the United States, including the full right to claim for any such application the priority benefits of the International Convention for the Protection of Industrial Property and other priority-conferring treaties, and all Letters Patent that may be granted for said improvements in any country or countries foreign to the United States and all extensions, divisions, continuations, continuations-in-part, renewals and reissues thereof; and Assignor hereby authorizes and requests the Commissioner of Patents and Trademarks of the United States, and any official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvements to said Assignee, its successors, legal representatives and assigns, in accordance with the terms of this instrument;

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Assignor hereby covenants that Assignor has full right to convey the interest herein assigned, and that Assignor has not executed, and will not execute, any agreement in conflict herewith and that Assignee, Northrop Grumman Systems Corporation, its successors, assigns and other legal representatives shall have the right to hold and enjoy for its and their own use and benefit, to the end of the term or terms for which such Letters Patent shall or may be granted, reissued or extended as fully and completely as the same right could have been held and enjoyed by Assignor had this Assignment not been made.

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applications; and to make all rightful oaths or declarations and generally do everything possible to aid Assignee, its successors, legal representatives and assigns in obtaining and enforcing all the rights herein conveyed for said improvements in all countries without further compensation, but at the expense of Assignee, its successors, legal representatives and assigns.

The undersigned has executed and delivered this instrument this _____ day of _____, 2020, and has executed the referenced patent application on the _____ day of _____, 2020.

Elizabeth T. Kunkee


The undersigned has executed and delivered this instrument this _____ day of _____, 2020, and has executed the referenced patent application on the _____ day of _____, 2020.

Dah-Wei Duan

The undersigned has executed and delivered this instrument this _____ day of _____, 2020, and has executed the referenced patent application on the _____ day of _____, 2020.

Dino Ferizovic

The undersigned has executed and delivered this instrument this 8th day of February, 2021, and has executed the referenced patent application on the 4th day of February, 2021.



Chunbo Zhang

The undersigned has executed and delivered this instrument this _____ day of _____, 2020, and has executed the referenced patent application on the _____ day of _____, 2020.

Greta S. Tsai

The undersigned has executed and delivered this instrument this _____ day of _____, 2020, and has executed the referenced patent application on the _____ day of _____, 2020.

Ming-Jong Shiau

The undersigned has executed and delivered this instrument this _____ day of _____, 2020, and has executed the referenced patent application on the _____ day of _____, 2020.

Daniel R. Scherrer

The undersigned has executed and delivered this instrument this _____ day of _____, 2020, and has executed the referenced patent application on the _____ day of _____, 2020.

Martin E. Roden

ASSIGNMENT

WHEREAS, I, Elizabeth T. Kunkee together with Dah-Wei Duan, Dino Ferizovic, Chunbo Zhang, Greta S. Tsai, Ming-Jong Shiau, Daniel R. Scherrer, and Marlin E. Roden hereinafter referred to as Assignor, have jointly invented certain new and useful improvements in **FILTER WITH AN ENCLOSURE HAVING A MICROMACHINED INTERIOR USING SEMICONDUCTOR FABRICATION** described in an application for United States Letters Patent, executed by me on the date as stated below;

WHEREAS, Northrop Grumman Systems Corporation, a Delaware corporation, having its principal place of business at:

2980 Fairview Park Drive
Falls Church, VA 22042-4511
United States of America

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NOW, THEREFORE, in consideration of Assignor's obligations to Northrop Grumman Systems Corporation, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignor has sold, assigned, transferred and set over, and by these presents does hereby sell, assign, transfer and set over, unto Assignee, its successors, legal representatives and assigns, Assignor's entire right, title and interest in, to and under said improvements, and said application and all divisions, renewals, continuations, and continuations-in-part thereof, and all United States Letters patent that may be granted thereon and all reissues and extensions thereof, and all applications for Letters Patent that may hereafter be filed for said improvements in any country or countries foreign to the United States, including the full right to claim for any such application the priority benefits of the International Convention for the Protection of Industrial Property and other priority-conferring treaties, and all Letters Patent that may be granted for said improvements in any country or countries foreign to the United States and all extensions, divisions, continuations, continuations-in-part, renewals and reissues thereof; and Assignor hereby authorizes and requests the Commissioner of Patents and Trademarks of the United States, and any official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvements to said Assignee, its successors, legal representatives and assigns, in accordance with the terms of this instrument;

Assignor hereby acknowledges that at the time of making the improvements herein identified, Assignor was under an obligation to assign to Assignee, Assignor's entire right, title and interest in, to and under said improvements;

Assignor hereby covenants that Assignor has full right to convey the interest herein assigned, and that Assignor has not executed, and will not execute, any agreement in conflict herewith and that Assignee, Northrop Grumman Systems Corporation, its successors, assigns and other legal representatives shall have the right to hold and enjoy for its and their own use and benefit, to the end of the term or terms for which such Letters Patent shall or may be granted, reissued or extended as fully and completely as the same right could have been held and enjoyed by Assignor had this Assignment not been made.

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applications; and to make all rightful oaths or declarations and generally do everything possible to aid Assignee, its successors, legal representatives and assigns in obtaining and enforcing all the rights herein conveyed for said improvements in all countries without further compensation, but at the expense of Assignee, its successors, legal representatives and assigns.

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Elizabeth T. Kunkee

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Dah-Weih Duan


The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Dino Ferizovic

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Chunbo Zhang

The undersigned has executed and delivered this instrument this 4th day of February, 2021, and has executed the referenced patent application on the 4th day of February, 2021.



Greta S. Tsai

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Ming-Jong Shiau

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Daniel R. Scherrer

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Martin E. Roden

ASSIGNMENT

WHEREAS, I, Elizabeth T. Kunkee together with Dah-Wei Duan, Dino Ferizovic, Chunbo Zhang, Greta S. Tsai, Ming-Jong Shiau, Daniel R. Scherrer, and Martin E. Roden hereinafter referred to as Assignor, have jointly invented certain new and useful improvements in **FILTER WITH AN ENCLOSURE HAVING A MICROMACHINED INTERIOR USING SEMICONDUCTOR FABRICATION** described in an application for United States Letters Patent, executed by me on the date as stated below;

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NOW, THEREFORE, in consideration of Assignor's obligations to Northrop Grumman Systems Corporation, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignor has sold, assigned, transferred and set over, and by these presents does hereby sell, assign, transfer and set over, unto Assignee, its successors, legal representatives and assigns, Assignor's entire right, title and interest in, to and under said improvements, and said application and all divisions, renewals, continuations, and continuations-in-part thereof, and all United States Letters Patent that may be granted thereon and all reissues and extensions thereof, and all applications for Letters Patent that may hereafter be filed for said improvements in any country or countries foreign to the United States, including the full right to claim for any such application the priority benefits of the International Convention for the Protection of Industrial Property and other priority-conferring treaties, and all Letters Patent that may be granted for said improvements in any country or countries foreign to the United States and all extensions, divisions, continuations, continuations-in-part, renewals and reissues thereof; and Assignor hereby authorizes and requests the Commissioner of Patents and Trademarks of the United States, and any official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvements to said Assignee, its successors, legal representatives and assigns, in accordance with the terms of this instrument;

Assignor hereby acknowledges that at the time of making the improvements herein identified, Assignor was under an obligation to assign to Assignee, Assignor's entire right, title and interest in, to and under said improvements;

Assignor hereby covenants that Assignor has full right to convey the interest herein assigned, and that Assignor has not executed, and will not execute, any agreement in conflict herewith and that Assignee, Northrop Grumman Systems Corporation, its successors, assigns and other legal representatives shall have the right to hold and enjoy for its and their own use and benefit, to the end of the term or terms for which such Letters Patent shall or may be granted, reissued or extended as fully and completely as the same right could have been held and enjoyed by Assignor had this Assignment not been made.

Assignor hereby further covenants and agrees to communicate to Assignee, its successors, legal representatives and assigns, any and all facts known to Assignor respecting said improvements; to promptly provide Assignee with all documents relating to said improvements, said invention, and said Letters Patent as may be known or accessible to Assignor; to testify as to the same in any interference or litigation or other legal proceedings related thereto; to sign all lawful papers, execute all extensions, continuations, continuations-in-part, divisional and reissue

applications; and to make all rightful oaths or declarations and generally do everything possible to aid Assignee, its successors, legal representatives and assigns in obtaining and enforcing all the rights herein conveyed for said improvements in all countries without further compensation, but at the expense of Assignee, its successors, legal representatives and assigns.

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Elizabeth T. Kunkee

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Dah-Wei Duan

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Dino Ferizovic

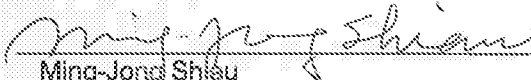
The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Chunbo Zhang

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Greta S. Tsai

The undersigned has executed and delivered this instrument this 27th day of January, 2021, and has executed the referenced patent application on the 27th day of January, 2021.


Ming-Jong Shiao

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Daniel R. Scherrer

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Martin E. Roden

ASSIGNMENT

WHEREAS, I, Elizabeth T. Kunkee together with Dah-Weih Duan, Dino Ferizovic, Chunbo Zhang, Greta S. Tsai, Ming-Jong Shiau, Daniel R. Scherrer, and Martin E. Roden hereinafter referred to as Assignor, have jointly invented certain new and useful improvements in **FILTER WITH AN ENCLOSURE HAVING A MICROMACHINED INTERIOR USING SEMICONDUCTOR FABRICATION** described in an application for United States Letters Patent, executed by me on the date as stated below:

WHEREAS, Northrop Grumman Systems Corporation, a Delaware corporation, having its principal place of business at:

2980 Fairview Park Drive
Falls Church, VA 22042-4511
United States of America

hereinafter referred to as Assignee, is desirous of acquiring the entire right, title and interest in, to and under said improvements and said application:

NOW, THEREFORE, in consideration of Assignor's obligations to Northrop Grumman Systems Corporation, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignor has sold, assigned, transferred and set over, and by these presents does hereby sell, assign, transfer and set over, unto Assignee, its successors, legal representatives and assigns, Assignor's entire right, title and interest in, to and under said improvements, and said application and all divisions, renewals, continuations, and continuations-in-part thereof, and all United States Letters patent that may be granted thereon and all reissues and extensions thereof, and all applications for Letters Patent that may hereafter be filed for said improvements in any country or countries foreign to the United States, including the full right to claim for any such application the priority benefits of the International Convention for the Protection of Industrial Property and other priority-conferring treaties, and all Letters Patent that may be granted for said improvements in any country or countries foreign to the United States and all extensions, divisions, continuations, continuations-in-part, renewals and reissues thereof, and Assignor hereby authorizes and requests the Commissioner of Patents and Trademarks of the United States, and any official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvements to said Assignee, its successors, legal representatives and assigns, in accordance with the terms of this instrument;

Assignor hereby acknowledges that at the time of making the improvements herein identified, Assignor was under an obligation to assign to Assignee, Assignor's entire right, title and interest in, to and under said improvements;

Assignor hereby covenants that Assignor has full right to convey the interest herein assigned, and that Assignor has not executed, and will not execute, any agreement in conflict herewith and that Assignee, Northrop Grumman Systems Corporation, its successors, assigns and other legal representatives shall have the right to hold and enjoy for its and their own use and benefit, to the end of the term or terms for which such Letters Patent shall or may be granted, reissued or extended as fully and completely as the same right could have been held and enjoyed by Assignor had this Assignment not been made.

Assignor hereby further covenants and agrees to communicate to Assignee, its successors, legal representatives and assigns, any and all facts known to Assignor respecting said improvements; to promptly provide Assignee with all documents relating to said improvements, said invention, and said Letters Patent as may be known or accessible to Assignor; to testify as to the same in any interference or litigation or other legal proceedings related thereto; to sign all lawful papers, execute all extensions, continuations, continuations-in-part, divisional and reissue

applications; and to make all rightful oaths or declarations and generally do everything possible to aid Assignee, its successors, legal representatives and assigns in obtaining and enforcing all the rights herein conveyed for said improvements in all countries without further compensation, but at the expense of Assignee, its successors, legal representatives and assigns.

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Elizabeth T. Kunkee

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Dah-Wei Duan

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Dino Ferizovic

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Ming-Jong Shiau

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Daniel R. Scherrer

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Martin E. Roden

ASSIGNMENT

WHEREAS, I, Elizabeth T. Kunkee together with Dah-Weih Duan, Dino Ferizovic, Chunbo Zhang, Greta S. Tsai, Ming-Jong Shiau, Daniel R. Scherrer, and Martin E. Roden hereinafter referred to as Assignor, have jointly invented certain new and useful improvements in **FILTER WITH AN ENCLOSURE HAVING A MICROMACHINED INTERIOR USING SEMICONDUCTOR FABRICATION** described in an application for United States Letters Patent, executed by me on the date as stated below;

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NOW, THEREFORE, in consideration of Assignor's obligations to Northrop Grumman Systems Corporation, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignor has sold, assigned, transferred and set over, and by these presents does hereby sell, assign, transfer and set over, unto Assignee, its successors, legal representatives and assigns, Assignor's entire right, title and interest in, to and under said improvements, and said application and all divisions, renewals, continuations, and continuations-in-part thereof, and all United States Letters patent that may be granted thereon and all reissues and extensions thereof, and all applications for Letters Patent that may hereafter be filed for said improvements in any country or countries foreign to the United States, including the full right to claim for any such application the priority benefits of the International Convention for the Protection of Industrial Property and other priority-conferring treaties, and all Letters Patent that may be granted for said improvements in any country or countries foreign to the United States and all extensions, divisions, continuations, continuations-in-part, renewals and reissues thereof; and Assignor hereby authorizes and requests the Commissioner of Patents and Trademarks of the United States, and any official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvements to said Assignee, its successors, legal representatives and assigns, in accordance with the terms of this instrument;

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Assignor hereby covenants that Assignor has full right to convey the interest herein assigned, and that Assignor has not executed, and will not execute, any agreement in conflict herewith and that Assignee, Northrop Grumman Systems Corporation, its successors, assigns and other legal representatives shall have the right to hold and enjoy for its and their own use and benefit, to the end of the term or terms for which such Letters Patent shall or may be granted, reissued or extended as fully and completely as the same right could have been held and enjoyed by Assignor had this Assignment not been made.

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applications; and to make all rightful oaths or declarations and generally do everything possible to aid Assignee, its successors, legal representatives and assigns in obtaining and enforcing all the rights herein conveyed for said improvements in all countries without further compensation, but at the expense of Assignee, its successors, legal representatives and assigns.

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Elizabeth T. Kunkee

The undersigned has executed and delivered this instrument this _____ day of _____, 2021, and has executed the referenced patent application on the _____ day of _____, 2021.

Dah-Weih Duan

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Daniel R. Scherrer

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Martin E. Roden