

<b>PATENT ASSIGNMENT COVER SHEET</b>
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Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT7855308

<b>SUBMISSION TYPE:</b>	CORRECTIVE ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	Corrective Assignment to correct the INVENTORS THAT WERE LISTED previously recorded on Reel 054965 Frame 0297. Assignor(s) hereby confirms the ASSIGNMENT.

**CONVEYING PARTY DATA**

Name	Execution Date
JUI-YUAN HSU	01/25/2021
PRAMIT MANNA	01/25/2021
KARTHIK JANAKIRAMAN	01/25/2021

**RECEIVING PARTY DATA**

<b>Name:</b>	APPLIED MATERIALS, INC.
<b>Street Address:</b>	3050 BOWERS AVENUE
<b>City:</b>	SANTA CLARA
<b>State/Country:</b>	CALIFORNIA
<b>Postal Code:</b>	95054

**PROPERTY NUMBERS Total: 1**

Property Type	Number
<b>Application Number:</b>	17035265

**CORRESPONDENCE DATA**

**Fax Number:** (713)623-4846  
*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.*

**Phone:** 7136234844  
**Email:** abrewster@pattersonsheridan.com,  
 psdocketing@pattersonsheridan.com

**Correspondent Name:** PATTERSON + SHERIDAN, LLP  
**Address Line 1:** 24 GREENWAY PLAZA, SUITE 1600  
**Address Line 4:** HOUSTON, TEXAS 77046

<b>ATTORNEY DOCKET NUMBER:</b>	44017779US03CIP
<b>NAME OF SUBMITTER:</b>	CHAD DOUGHERTY
<b>SIGNATURE:</b>	/Chad M. Dougherty/
<b>DATE SIGNED:</b>	03/20/2023

**Total Attachments: 10**

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Atty Dkt No.: 44017779US03CIP

**ASSIGNMENT FOR APPLICATION FOR PATENT**

WHEREAS:

Names and Addresses of Inventors:

1) Jui-Yuan HSU c/o Applied Materials, Inc. Law Dept., MS/1269 3050 Bowers Avenue Santa Clara, California 95054	2) Prमित MANNA c/o Applied Materials, Inc. Law Dept., M/S 1269 3050 Bowers Avenue Santa Clara, California 95054
3) Karthik JANAKIRAMAN c/o Applied Materials, Inc. Law Dept., M/S 1269 3050 Bowers Avenue Santa Clara, California 95054	

(hereinafter referred to as Assignors), have invented a certain invention entitled:

**METHODS FOR PRODUCING HIGH-DENSITY CARBON FILMS FOR HARDMASKS AND OTHER PATTERNING APPLICATIONS**

for which application for Letters Patent in the United States was filed on September 28, 2020, under Serial No. 17/035,265, executed on even date herewith; and

WHEREAS, Applied Materials, Inc., a corporation of the State of Delaware, having a place of business at 3050 Bowers Avenue, Santa Clara, California 95054 (hereinafter referred to as Assignee), is desirous of acquiring the entire right, title and interest in and to said application (hereinafter referred to as Application), and the invention disclosed therein (hereinafter referred to as Invention), and in and to all embodiments of the Invention, heretofore conceived, made or discovered by said Assignors, and in and to any and all patents, inventor's certificates and other forms of protection (hereinafter referred to as Patents) thereon granted in any and all countries and groups of countries.

NOW, THEREFORE, in consideration of good and valuable consideration acknowledged by said Assignors to have been received in full from said Assignee:

1. Said Assignors hereby sell, assign, transfer and convey to Assignee the full and exclusive right, title and interest (a) in and to said Application and said Invention; (b) in and to all rights to apply for patents on said Invention in any and all countries pursuant to the International Convention for the Protection of Industrial Property or otherwise; (c) in and to any and all Applications filed and any and all Patents granted on said Invention in any and all countries and groups of countries, including each and every Application filed and each and every Patent granted on any application which is a conventional, division, substitution, or continuation of said Application; and (d) in and to each and every reissue or extension of any of said Patents.

2. Said Assignors hereby covenant and agree to cooperate with said Assignee to enable said Assignee to enjoy to the fullest extent the right, title and interest to said Invention herein conveyed in any and all countries and groups of countries. Such cooperation by said Assignors shall include prompt production of pertinent facts and documents, giving testimony, execution of petitions, oaths, specifications, declarations or other papers, and other assistance all to the extent deemed necessary or desirable by said Assignee (a) for perfecting in said Assignee the right, title and interest herein conveyed; (b) for prosecuting any of said applications; (c) for filing and prosecuting substitute, conventional, divisional, continuing or additional applications covering said Invention; (d) for filing and prosecuting applications for reissuance of any of said Patents; (e) for interference or other priority


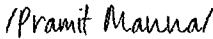

Atty Dkt No.: 44017779US03CIP

proceedings involving said Invention; and (f) for legal proceedings involving said Invention and any application therefore and any Patents granted thereon, including without limitation opposition proceedings, cancellation proceedings, priority contests, public use proceedings, infringement actions and court actions; provided, however, that the expense incurred by said Assignors in providing such cooperation shall be paid for by said Assignee.

3. The term and covenants of this agreement shall inure to the benefit of said Assignee, its successors, assigns and other legal representatives, and shall be binding upon said Assignors, their respective heirs, legal representatives and assigns.

4. Said Assignors hereby warrant and represent that they have not entered and will not enter into any assignment, contract, or understanding in conflict herewith.

IN WITNESS WHEREOF, the said Assignors have executed and delivered this instrument to said Assignee on the dates indicated below.

1)	1/25/2021 _____ (DATE)	DocuSigned by:  <small>EC18EC9E0C9C4C4</small> Jui-Yuan HSU
2)	1/25/2021 _____ (DATE)	DocuSigned by:  <small>7E1A20CB6E10F470</small> Prमित MANNA
3)	1/25/2021 _____ (DATE)	DocuSigned by:  <small>D213FD08B87C433</small> Karthik JANAKIRAMAN

<b>PATENT ASSIGNMENT COVER SHEET</b>
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Electronic Version v1.1  
 Stylesheet Version v1.2

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
<del>ESWARANAND VENKATASUBRAMANIAN</del> JUI-YUAN HSU	<del>07/07/2020</del> 01/25/2021
<del>PRAMIT MANNA</del> PRAMIT MANNA	<del>01/07/2021</del> 01/25/2021
<del>ABHIJIT BASU MALLICK</del> KARTHIK JANAKIRAMAN	<del>07/07/2020</del> 01/25/2021
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	APPLIED MATERIALS, INC.
<b>Street Address:</b>	3050 BOWERS AVENUE
<b>City:</b>	SANTA CLARA
<b>State/Country:</b>	CALIFORNIA
<b>Postal Code:</b>	95054
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	17035265
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(713)623-4846
<b>Phone:</b>	7136234844
<b>Email:</b>	abrewster@pattersonsheridan.com, psdocketing@pattersonsheridan.com
<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>Correspondent Name:</b>	PATTERSON + SHERIDAN, LLP
<b>Address Line 1:</b>	24 GREENWAY PLAZA, SUITE 1600
<b>Address Line 4:</b>	HOUSTON, TEXAS 77046
<b>ATTORNEY DOCKET NUMBER:</b>	44017779US03CIP
<b>NAME OF SUBMITTER:</b>	CHAD M. DOUGHERTY
<b>Signature:</b>	/Chad M. Dougherty/
<b>Date:</b>	01/20/2021

PATENT

**Total Attachments: 4**

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**RECEIPT INFORMATION**

**EPAS ID:** PAT6504690  
**Receipt Date:** 01/20/2021

**PATENT**

**ASSIGNMENT FOR APPLICATION FOR PATENT**

WHEREAS:

Names and Addresses of Inventors:

1) Eswaranand VENKATASUBRAMANIAN c/o Applied Materials, Inc., Law Dept., M/S 1269 3050 Bowers Avenue Santa Clara, California 95054	2) Pramit MANNA c/o Applied Materials, Inc., Law Dept., M/S 1269 3050 Bowers Avenue Santa Clara, California 95054
3) Abhijit Basu MALLICK c/o Applied Materials, Inc., Law Dept., M/S 1269 3050 Bowers Avenue Santa Clara, California 95054	

(hereinafter referred to as Assignors), have invented a certain invention entitled:

**METHODS FOR PRODUCING HIGH-DENSITY DOPED-CARBON FILMS FOR HARDMASK AND OTHER PATTERNING APPLICATIONS**

for which application for Letters Patent in the United States was filed on June 29, 2020, under Serial No. 16/915,110, executed on even date herewith; and

WHEREAS, Applied Materials, Inc., a corporation of the State of Delaware, having a place of business at 3050 Bowers Avenue, Santa Clara, California 95054 (hereinafter referred to as Assignee), is desirous of acquiring the entire right, title and interest in and to said application (hereinafter referred to as Application), and the invention disclosed therein (hereinafter referred to as Invention), and in and to all embodiments of the Invention, heretofore conceived, made or discovered by said Assignors, and in and to any and all patents, inventor's certificates and other forms of protection (hereinafter referred to as Patents) thereon granted in any and all countries and groups of countries.

NOW, THEREFORE, in consideration of good and valuable consideration acknowledged by said Assignors to have been received in full from said Assignee:

1. Said Assignors hereby sell, assign, transfer and convey to Assignee the full and exclusive right, title and interest (a) in and to said Application and said Invention; (b) in and to all rights to apply for patents on said Invention in any and all countries pursuant to the International Convention for the Protection of Industrial Property or otherwise; (c) in and to any and all Applications filed and any and all Patents granted on said Invention in any and all countries and groups of countries, including each and every Application filed and each and every Patent granted on any application which is a conventional, division, substitution, or continuation of said Application; and (d) in and to each and every reissue or extension of any of said Patents.

2. Said Assignors hereby covenant and agree to cooperate with said Assignee to enable said Assignee to enjoy to the fullest extent the right, title and interest to said Invention herein conveyed in any and all countries and groups of countries. Such cooperation by said Assignors shall include prompt production of pertinent facts and documents, giving testimony, execution of petitions, oaths, specifications, declarations or other papers, and other assistance all to the extent deemed necessary or desirable by said Assignee (a) for perfecting in said Assignee the right, title and interest herein conveyed; (b) for prosecuting any of said applications; (c) for filing and prosecuting substitute, conventional, divisional, continuing or additional applications covering said Invention; (d) for filing and prosecuting applications for reissuance of any of said Patents; (e) for interference or other priority

proceedings involving said Invention; and (f) for legal proceedings involving said Invention and any application therefore and any Patents granted thereon, including without limitation opposition proceedings, cancellation proceedings, priority contests, public use proceedings, infringement actions and court actions; provided, however, that the expense incurred by said Assignors in providing such cooperation shall be paid for by said Assignee.

3. The term and covenants of this agreement shall inure to the benefit of said Assignee, its successors, assigns and other legal representatives, and shall be binding upon said Assignors, their respective heirs, legal representatives and assigns.

4. Said Assignors hereby warrant and represent that they have not entered and will not enter into any assignment, contract, or understanding in conflict herewith.

IN WITNESS WHEREOF, the said Assignors have executed and delivered this instrument to said Assignee on the dates indicated below.

1) 7/7/2020 \_\_\_\_\_ (DATE)

DocuSigned by:  
*Eswaranand Venkatasubramanian*  
Eswaranand VENKATASUBRAMANIAN

2) \_\_\_\_\_ (DATE)

\_\_\_\_\_  
Pramit MANNA

3) 7/7/2020 \_\_\_\_\_ (DATE)

DocuSigned by:  
*Abhijit Basu Mallick*  
Abhijit Basu MALLICK



**ASSIGNMENT FOR APPLICATION FOR PATENT**

WHEREAS:

Names and Addresses of Inventors:

<p>1) Eswaranand VENKATASUBRAMANIAN c/o Applied Materials, Inc., Law Dept., M/S 1269 3050 Bowers Avenue Santa Clara, California 95054</p>	<p>2) Pramit MANNA c/o Applied Materials, Inc., Law Dept., M/S 1269 3050 Bowers Avenue Santa Clara, California 95054</p>
<p>3) Abhijit Basu MALLICK c/o Applied Materials, Inc., Law Dept., M/S 1269 3050 Bowers Avenue Santa Clara, California 95054</p>	

(hereinafter referred to as Assignors), have invented a certain invention entitled:

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WHEREAS, Applied Materials, Inc., a corporation of the State of Delaware, having a place of business at 3050 Bowers Avenue, Santa Clara, California 95054 (hereinafter referred to as Assignee), is desirous of acquiring the entire right, title and interest in and to said application (hereinafter referred to as Application), and the invention disclosed therein (hereinafter referred to as Invention), and in and to all embodiments of the Invention, heretofore conceived, made or discovered by said Assignors, and in and to any and all patents, inventor's certificates and other forms of protection (hereinafter referred to as Patents) thereon granted in any and all countries and groups of countries.

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proceedings involving said Invention; and (f) for legal proceedings involving said Invention and any application therefore and any Patents granted thereon, including without limitation opposition proceedings, cancellation proceedings, priority contests, public use proceedings, infringement actions and court actions; provided, however, that the expense incurred by said Assignors in providing such cooperation shall be paid for by said Assignee.

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4. Said Assignors hereby warrant and represent that they have not entered and will not enter into any assignment, contract, or understanding in conflict herewith.

IN WITNESS WHEREOF, the said Assignors have executed and delivered this instrument to said Assignee on the dates indicated below.

1) \_\_\_\_\_ (DATE) \_\_\_\_\_  
Eswaranand VENKATASUBRAMANIAN

2) 1/7/2021 \_\_\_\_\_ (DATE) \_\_\_\_\_  
DocuSigned by:  
*/Prमित Manna/*  
7FA29C662A85470  
Prमित MANNA

3) \_\_\_\_\_ (DATE) \_\_\_\_\_  
Abhijit Basu MALLICK