

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT5189051

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
ABNEESH SRIVASTAVA	03/25/2013
THOMAS RICHARD GAFFNEY	03/25/2013
JOSHUA T. COOK	03/25/2013
PETER K. SHOGREN	03/25/2013
DAIMHIN PAUL MURPHY	03/25/2013
STENIO DA COSTA PEREIRA	04/02/2013
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	ENTEGRIS, INC.
<b>Street Address:</b>	129 CONCORD ROAD
<b>City:</b>	BILLERICA
<b>State/Country:</b>	MASSACHUSETTS
<b>Postal Code:</b>	01821
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	15614409
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	
<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>	978-436-6500
<b>Email:</b>	ip_prosecution@entegris.com
<b>Correspondent Name:</b>	ENTEGRIS, INC.
<b>Address Line 1:</b>	129 CONCORD ROAD
<b>Address Line 4:</b>	BILLERICA, MASSACHUSETTS 01821
<b>ATTORNEY DOCKET NUMBER:</b>	201100015 US CON
<b>NAME OF SUBMITTER:</b>	CATHERINE D. GATES
<b>SIGNATURE:</b>	/Catherine D. Gates/
<b>DATE SIGNED:</b>	10/15/2018
<b>Total Attachments: 9</b>	

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JointASSIGNMENT

WHEREAS, we, **Abneesh Srivastava, Thomas Richard Gaffney, Joshua T. Cook, Peter K. Shogren, Daimhin Paul Murphy and Stenio da Costa Pereira**, have invented a certain improvement in **Gas Purifier** described in an application for Patent,

- ☐ the specification of which is about to be filed in the United States Patent Office (*use for utility (37 CFR § 1.53(b)) and design filings only*);
- ☐ is about to be filed in the United States Patent Office as a Provisional Application;
- ☐ the specification of which is United States Application No. [    ], filed [    ];
- ☒ the specification of which is a Patent Cooperation Treaty Application, International Application No. **PCT/US2013/025239**, filed **February 8, 2013**, which designates the United States of America;
- ☐ which was patented under United States Patent No. [    ].

WHEREAS, **Entegris, Inc.** (hereinafter "ASSIGNEE"), a corporation organized and existing under the laws of the **State of Delaware**, and having a usual place of business at **129 Concord Road, Building 2, Billerica, MA 01821** US desires to confirm its interest therein in accordance with agreements duly entered into with us;

NOW, THEREFORE, to all whom it may concern be it known that for and in consideration of said agreements and of other good and valuable consideration, the receipt of which is hereby acknowledged, we have sold, assigned and transferred and by these presents do hereby sell, assign and transfer unto said ASSIGNEE, its successors, assigns and legal representatives, the entire right, title and interest in and throughout the United States of America, its territories and all foreign countries, in and to said invention as described in said application, together with the entire right, title and interest in and to said application and such Letters Patent as may issue on said invention; said invention, application and Letters Patent to be held and enjoyed by said ASSIGNEE for its own use and behalf and for its successors, assigns and legal representatives, to the full end of the term for which said Letters Patent may be granted as fully and entirely as the same would have been held by us had this assignment and sale not been made; we hereby convey all rights arising under or pursuant to any and all international agreements, treaties or laws relating to the protection of industrial property by filing any such applications for Letters Patent. We hereby acknowledge that this assignment, being of the entire right, title and interest in and to said invention, carries with it the right in ASSIGNEE to apply for any and all related provisional and nonprovisional, international and national phase applications, including any and all substitution, reissue, divisional, continuation, and continuation-in-part applications, and obtain from competent authorities in all countries of the world any and all Letters Patent by attorneys and agents of ASSIGNEE's selection and the right to procure the grant of all such Letters Patent to ASSIGNEE for its own name as assignee of the entire right, title and interest therein; we hereby expressly authorize the filing of an International Patent Application under the Patent Cooperation Treaty which corresponds to and claims the priority of the above-identified application;

**PATENT****REEL: 033589 FRAME: 0865**

AND, we hereby further agree for ourselves and our executors and administrators to execute upon request any other lawful documents and likewise to perform any other lawful acts which may be deemed necessary to secure fully the aforesaid invention to said ASSIGNEE, its successors, assigns and legal representatives, but at its or their expense and charges, including the execution of applications for patents in foreign countries, and the execution of any future applications including substitution, reissue, divisional or continuation, continuation-in-part applications, and all related provisional and nonprovisional, international and national phase applications, and preliminary or other statements and the giving of testimony in any interference or other proceeding in which said invention or any application or patent directed thereto may be involved;

AND, we do hereby authorize and request each Patent Office and the Commissioner of Patents of the United States to issue such Letters Patent as shall be granted upon said invention to said ASSIGNEE, its successors, assigns, and legal representatives.

Inventor's Signature: \_\_\_\_\_

Abneesh

Abneesh Srivastava

State/Commonwealth

of New York

County of Erie

On this 25<sup>th</sup> day of March 2013, before me, the undersigned notary public, personally appeared Abneesh Srivastava,

☐ personally known to me, or

☒ proved to me through satisfactory evidence of identification, which was

CA Drivers Lic #D5306818

to be the person whose name was signed on the foregoing instrument in my presence, and acknowledged that he/she signed the foregoing instrument as his/her free act and deed.

(SEAL)

Notary Public L. Yvonne Curry  
L. YVONNE CURRY (print name)  
 My Commission expires 1 / 1 / 2015

L. YVONNE CURRY  
 NOTARY PUBLIC - STATE OF NEW YORK  
 NO. 01CU5006471  
 QUALIFIED IN ERIE COUNTY  
 MY COMMISSION EXPIRES 01-04-2015

Inventor's Signature: \_\_\_\_\_

Thomas Richard Gaffney

State/Commonwealth  
of \_\_\_\_\_  
County of \_\_\_\_\_

On this 25<sup>th</sup> day of March 2013, before me, the undersigned notary public, personally appeared Thomas Richard Gaffney,

- ☐ personally known to me, or  
☐ proved to me through satisfactory evidence of identification, which was

to be the person whose name was signed on the foregoing instrument in my presence, and acknowledged that he/she signed the foregoing instrument as his/her free act and deed.

(SEAL)

Notary Public

SEE ATTACHED

(print name)

My Commission expires

   /    /   

Inventor's Signature: \_\_\_\_\_

Joshua T. Cook

State/Commonwealth  
of \_\_\_\_\_  
County of \_\_\_\_\_

On this 25<sup>th</sup> day of March 2013, before me, the undersigned notary public, personally appeared Joshua T. Cook,

- ☐ personally known to me, or  
☐ proved to me through satisfactory evidence of identification, which was

to be the person whose name was signed on the foregoing instrument in my presence, and acknowledged that he/she signed the foregoing instrument as his/her free act and deed.

(SEAL)

Notary Public

SEE ATTACHED

(print name)

My Commission expires

   /    /

Inventor's Signature: \_\_\_\_\_

Peter K. Shogren

State/Commonwealth  
of \_\_\_\_\_  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me, the undersigned notary  
public, personally appeared Peter K. Shogren,

- ☐ personally known to me, or  
☐ proved to me through satisfactory evidence of identification, which was

to be the person whose name was signed on the foregoing instrument in my presence, and  
acknowledged that he/she signed the foregoing instrument as his/her free act and deed.

(SEAL)

Notary Public SEE ATTACHED  
\_\_\_\_\_  
(print name)

My Commission expires \_\_\_\_/\_\_\_\_/\_\_\_\_

Inventor's Signature: \_\_\_\_\_

Daimhin Paul Murphy

State/Commonwealth  
of \_\_\_\_\_  
County of \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me, the undersigned notary  
public, personally appeared Daimhin P. Murphy,

- ☐ personally known to me, or  
☐ proved to me through satisfactory evidence of identification, which was

to be the person whose name was signed on the foregoing instrument in my presence, and  
acknowledged that he/she signed the foregoing instrument as his/her free act and deed.

(SEAL)

Notary Public SEE ATTACHED  
\_\_\_\_\_  
(print name)

My Commission expires \_\_\_\_/\_\_\_\_/\_\_\_\_

Inventor's Signature: \_\_\_\_\_

Stenio da Costa Pereira

State/Commonwealth

of CALIFORNIA

County of SAN DIEGO

On this 2nd day of APRIL 2013, before me, the undersigned notary public, personally appeared Stenio da Costa Pereira,

☐ personally known to me, or

☒ proved to me through satisfactory evidence of identification, which was

CALIFORNIA DRIVERS LICENSE

to be the person whose name was signed on the foregoing instrument in my presence, and acknowledged that he/she signed the foregoing instrument as his/her free act and deed.

(SEAL)



KIRSTI JO DONALDSON  
COMM. #1892989  
Notary Public - California  
San Diego County  
My Comm. Expires June 18, 2014

Notary Public Kirsti Jo Donaldson  
KIRSTI JO DONALDSON (print name)  
My Commission expires 06 / 18 / 2014

1412251.1

# CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

CIVIL CODE § 1189

State of California

County of SAN DIEGO

On MARCH 25, 2013 before me, DEBORAH I. SHAWVER, NOTARY PUBLIC  
Date Here Insert Name and Title of the Officer

personally appeared THOMAS RICHARD GAGNEY  
Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.



Signature: [Signature]  
Signature of Notary Public

Place Notary Seal Above

## OPTIONAL

*Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.*

### Description of Attached Document

Title or Type of Document: ASSIGNMENT OF PATENT

Document Date: \_\_\_\_\_ Number of Pages: \_\_\_\_\_

Signer(s) Other Than Named Above: \_\_\_\_\_

### Capacity(ies) Claimed by Signer(s)

Signer's Name: \_\_\_\_\_ Signer's Name: \_\_\_\_\_

☐ Corporate Officer — Title(s): \_\_\_\_\_ ☐ Corporate Officer — Title(s): \_\_\_\_\_

☐ Individual ☐ Individual

☐ Partner — ☐ Limited ☐ General ☐ Partner — ☐ Limited ☐ General

☐ Attorney in Fact ☐ Attorney in Fact

☐ Trustee ☐ Trustee

☐ Guardian or Conservator ☐ Guardian or Conservator

☐ Other: \_\_\_\_\_ ☐ Other: \_\_\_\_\_

Signer Is Representing: \_\_\_\_\_ Signer Is Representing: \_\_\_\_\_

RIGHT THUMBPRINT OF SIGNER  
Top of thumb here

RIGHT THUMBPRINT OF SIGNER  
Top of thumb here



# CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

CIVIL CODE § 1189

State of California

County of SAN DIEGO

On MARCH 25, 2013 before me, DEBORAH F. SHAWVER, NOTARY PUBLIC  
Date Here Insert Name and Title of the Officer

personally appeared JOSHUA T. COOK

Name(s) of Signer(s)



who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Place Notary Seal Above

Signature: [Signature]

Signature of Notary Public

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Signer's Name: \_\_\_\_\_

☐ Corporate Officer — Title(s): \_\_\_\_\_

☐ Individual

☐ Partner — ☐ Limited ☐ General

☐ Attorney in Fact

☐ Trustee

☐ Guardian or Conservator

☐ Other: \_\_\_\_\_

Signer Is Representing: \_\_\_\_\_

**RIGHT THUMBPRINT OF SIGNER**  
Top of thumb here

Signer's Name: \_\_\_\_\_

☐ Corporate Officer — Title(s): \_\_\_\_\_

☐ Individual

☐ Partner — ☐ Limited ☐ General

☐ Attorney in Fact

☐ Trustee

☐ Guardian or Conservator

☐ Other: \_\_\_\_\_

Signer Is Representing: \_\_\_\_\_

**RIGHT THUMBPRINT OF SIGNER**  
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PATENT

REEL: 033589 FRAME: 0864

# CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

CIVIL CODE § 1189

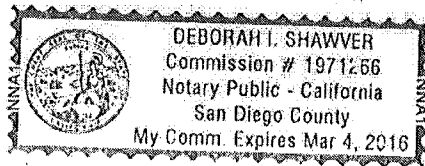
State of California

County of SAN DIEGO

On MARCH 25, 2013 before me, DEBORAH I. SHAWVER, NOTARY PUBLIC  
Date Here Insert Name and Title of the Officer

personally appeared PETER K. SHOGBEN

Name(s) of Signer(s)



who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Place Notary Seal Above

Signature: [Signature]

Signature of Notary Public

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Signer's Name: \_\_\_\_\_

☐ Corporate Officer — Title(s): \_\_\_\_\_

☐ Individual

☐ Partner — ☐ Limited ☐ General

☐ Attorney in Fact

☐ Trustee

☐ Guardian or Conservator

☐ Other: \_\_\_\_\_

Signer Is Representing: \_\_\_\_\_

**RIGHT THUMBPRINT OF SIGNER**  
Top of thumb here

Signer's Name: \_\_\_\_\_

☐ Corporate Officer — Title(s): \_\_\_\_\_

☐ Individual

☐ Partner — ☐ Limited ☐ General

☐ Attorney in Fact

☐ Trustee

☐ Guardian or Conservator

☐ Other: \_\_\_\_\_

Signer Is Representing: \_\_\_\_\_

**RIGHT THUMBPRINT OF SIGNER**  
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**PATENT**

**REEL: 033589 FRAME: 0862**

# CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

CIVIL CODE § 1189

State of California

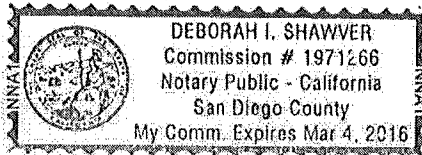
County of SAN DIEGO

On MARCH 25, 2013 before me, DEBORAH I. SHAWVER, NOTARY PUBLIC

personally appeared DAIMHIN PAUL MURPHY

Here Insert Name and Title of the Officer

Name(s) of Signer(s)



who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Place Notary Seal Above

Signature: [Signature]

Signature of Notary Public

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☐ Individual

☐ Partner — ☐ Limited ☐ General

☐ Attorney in Fact

☐ Trustee

☐ Guardian or Conservator

☐ Other: \_\_\_\_\_

Signer Is Representing: \_\_\_\_\_

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☐ Individual

☐ Partner — ☐ Limited ☐ General

☐ Attorney in Fact

☐ Trustee

☐ Guardian or Conservator

☐ Other: \_\_\_\_\_

Signer Is Representing: \_\_\_\_\_

RIGHT THUMBPRINT OF SIGNER  
Top of thumb here

PATENT

RECORDED: 08/25/2018

REEL: 083589 FRAME: 0866