

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT4639242

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
FEE LI LIE	10/11/2017
SIVA KANAKASABAPATHY	10/04/2017
ERIC MILLER	10/11/2017
HYUNG JOO SHIN	10/11/2017
RECEIVING PARTY DATA	
Name:	INTERNATIONAL BUSINESS MACHINES CORPORATION
Street Address:	NEW ORCHARD ROAD
City:	ARMONK
State/Country:	NEW YORK
Postal Code:	10504
PROPERTY NUMBERS Total: 1	
Property Type	Number
Application Number:	15782967
CORRESPONDENCE DATA	
Fax Number:	(607)429-4119
<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:	914-945-2947
Email:	dbattagl@us.ibm.com
Correspondent Name:	IBM CORPORATION - ENDICOTT DRAFTING CENT
Address Line 1:	T.J. WATSON RESEARCH CENTER
Address Line 2:	1101 KITCHAWAN ROAD, ROUTE 134, PO BOX 2
Address Line 4:	YORKTOWN, NEW YORK 10598
ATTORNEY DOCKET NUMBER:	YOR820161854US01
NAME OF SUBMITTER:	MONCHAI CHUAYCHOO
SIGNATURE:	/Monchai Chuaychoo/
DATE SIGNED:	10/13/2017
This document serves as an Oath/Declaration (37 CFR 1.63).	
Total Attachments: 4	

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source=YOR820161854US01_Assignment-Declaration#page3.tif
source=YOR820161854US01_Assignment-Declaration#page4.tif

**DECLARATION (37 C.F.R. 1.63) FOR UTILITY PATENT APPLICATION USING AN
APPLICATION DATA SHEET (37 C.F.R. 1.76) AND ASSIGNMENT**

Title of Invention: PHASE SHIFTED GAS DELIVERY FOR HIGH THROUGHPUT AND
COST EFFECTIVENESS ASSOCIATED WITH ATOMIC LAYER ETCHING AND ATOMIC
LAYER DEPOSITION

As a below named and undersigned inventor, I hereby declare that:

This declaration is directed to the attached application, or (if following box is checked):

☐ United States application or PCT international application number _____
filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the
application.

I have reviewed and understand the contents of the application, including the claims.

I am aware of the duty to disclose to the United States Patent and Trademark Office all information
known to me to be material to patentability as defined in 37 CFR Section 1.56.

Whereas, I ("ASSIGNOR") have made certain inventions, improvements, and discoveries (herein referred
to as the "Invention") disclosed in the above-identified patent application and further identified by the
IBM Docket Number provided above in the header of this document;

Whereas, International Business Machines Corporation (herein referred to as the "ASSIGNEE"), a
corporation of New York having a place of business at Armonk, New York, desires to acquire, and I
desire to grant to the ASSIGNEE, my entire worldwide right, title, and interest in and to the Invention and
in and to any and all patent applications and patents directed thereto;

Now, therefore, for good and valuable consideration, the receipt and sufficiency thereof being hereby
acknowledged, I hereby sell or have sold, assign or have assigned, and otherwise transfer or have
transferred to the ASSIGNEE, its successors, legal representatives, and assigns, my entire worldwide
right, title, and interest in and to the Invention, the above-identified United States patent application, and
any and all other patent applications and patents for the Invention which may be applied for or granted
therefor in the United States and in all foreign countries and jurisdictions, including all divisions,
continuations, reissues, reexaminations, renewals, extensions, counterparts, substitutes, and extensions
thereof, and all rights of priority resulting from the filing of such applications and granting of such
patents. In addition, I hereby authorize and request the Director of the United States Patent and
Trademark Office to issue any United States Patent, and foreign patent authorities to issue any foreign
patent, granted for the Invention, to the ASSIGNEE, its successors, legal representatives, and assigns, my
entire worldwide right, title, and interest in and to the same to be held and enjoyed by the ASSIGNEE, its
successors, legal representatives, and assigns to the full end of the terms for which any and all such
patents may be granted, as fully and entirely as would have been held and enjoyed by me had this
Assignment not been made; and I agree to execute any and all documents and instruments and perform all
lawful acts reasonably related to recording this Assignment or perfecting title to the Invention and all
related patents and applications, in the ASSIGNEE, its successors, legal representatives, and assigns,

whenever requested by the ASSIGNEE, its successors, legal representatives, or assigns.

I acknowledge my prior and ongoing obligations to sell, assign, and transfer my rights under this Assignment to the ASSIGNEE and am unaware of any reason why I may not have the full and unencumbered right to sell, assign, and transfer my rights hereby sold, assigned, and transferred, and have not executed, and will not execute, any document or instrument in conflict herewith. I also hereby grant the ASSIGNEE, its successors, legal representatives, and assigns, the right to insert in this Assignment any further identification (including, but not limited to, patent Application Number) which may be necessary or desirable for recordation of this Assignment. This Assignment is governed by the substantive laws of the State of New York, and any disputes will be resolved in a New York state court or federal court sited in New York.

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

(1) Legal Name of Inventor: **Fee Li Lie**

Signature:  Date: 10/11/17

(2) Legal Name of Inventor: **Siva Kanakasabapathy**

Signature: _____ Date: _____

(3) Legal Name of Inventor: **Eric Miller**

Signature:  Date: 10/11/17

(4) Legal Name of Inventor: **Hyung Joo Shin**

Signature: _____ Date: _____

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Whereas, International Business Machines Corporation (herein referred to as the "ASSIGNEE"), a
corporation of New York having a place of business at Armonk, New York, desires to acquire, and I
desire to grant to the ASSIGNEE, my entire worldwide right, title, and interest in and to the Invention and
in and to any and all patent applications and patents directed thereto;

Now, therefore, for good and valuable consideration, the receipt and sufficiency thereof being hereby
acknowledged, I hereby sell or have sold, assign or have assigned, and otherwise transfer or have
transferred to the ASSIGNEE, its successors, legal representatives, and assigns, my entire worldwide
right, title, and interest in and to the Invention, the above-identified United States patent application, and
any and all other patent applications and patents for the Invention which may be applied for or granted
therefor in the United States and in all foreign countries and jurisdictions, including all divisions,
continuations, reissues, reexaminations, renewals, extensions, counterparts, substitutes, and extensions
thereof, and all rights of priority resulting from the filing of such applications and granting of such
patents. In addition, I hereby authorize and request the Director of the United States Patent and
Trademark Office to issue any United States Patent, and foreign patent authorities to issue any foreign
patent, granted for the Invention, to the ASSIGNEE, its successors, legal representatives, and assigns, my
entire worldwide right, title, and interest in and to the same to be held and enjoyed by the ASSIGNEE, its
successors, legal representatives, and assigns to the full end of the terms for which any and all such
patents may be granted, as fully and entirely as would have been held and enjoyed by me had this
Assignment not been made; and I agree to execute any and all documents and instruments and perform all
lawful acts reasonably related to recording this Assignment or perfecting title to the Invention and all
related patents and applications, in the ASSIGNEE, its successors, legal representatives, and assigns,

whenever requested by the ASSIGNEE, its successors, legal representatives, or assigns.

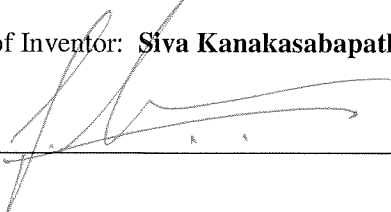
I acknowledge my prior and ongoing obligations to sell, assign, and transfer my rights under this Assignment to the ASSIGNEE and am unaware of any reason why I may not have the full and unencumbered right to sell, assign, and transfer my rights hereby sold, assigned, and transferred, and have not executed, and will not execute, any document or instrument in conflict herewith. I also hereby grant the ASSIGNEE, its successors, legal representatives, and assigns, the right to insert in this Assignment any further identification (including, but not limited to, patent Application Number) which may be necessary or desirable for recordation of this Assignment. This Assignment is governed by the substantive laws of the State of New York, and any disputes will be resolved in a New York state court or federal court sited in New York.

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(1) Legal Name of Inventor: **Fee Li Lie**

Signature: _____ Date: _____

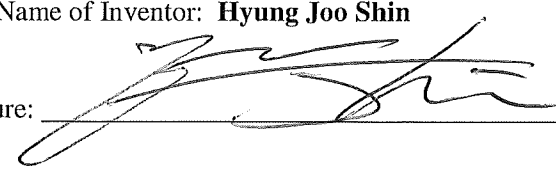
(2) Legal Name of Inventor: **Siva Kanakasabapathy**

Signature:  _____ Date: 10/4/2017

(3) Legal Name of Inventor: **Eric Miller**

Signature: _____ Date: _____

(4) Legal Name of Inventor: **Hyung Joo Shin**

Signature:  _____ Date: 10/11/2017