PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT4891946

| SUBMISSION TYPE: | CORRECTIVE ASSIGNMENT |
|------------------|--|
| | Corrective Assignment to correct the THE NAME OF 4TH ASSIGNOR previously recorded on Reel 044604 Frame 0552. Assignor(s) hereby confirms the ASSIGNMENT. |

CONVEYING PARTY DATA

| Name | Execution Date |
|-----------------|----------------|
| HSIANG-CHU HU | 12/12/2017 |
| CHUN-HAI HUANG | 12/12/2017 |
| MU-HAN CHENG | 12/11/2017 |
| YU-CHIN TSENG | 02/13/2018 |
| CHIEN-CHIH CHEN | 12/11/2017 |
| TZU-SHIN CHEN | 12/12/2017 |

RECEIVING PARTY DATA

| Name: | TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD. |
|-----------------|--|
| Street Address: | NO.8, LI-HSIN RD. 6, HSINCHU SCIENCE PARK, |
| City: | HSINCHU |
| State/Country: | TAIWAN |
| Postal Code: | 30078 |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 15869056 |

CORRESPONDENCE DATA

Fax Number:

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.

Email: USA@JCIPGroup.com

Correspondent Name: JCIPRNET

Address Line 1: P.O. BOX 600 TAIPEI GUTING

Address Line 4: TAIPEI, TAIWAN 10099

ATTORNEY DOCKET NUMBER: 73349-US-PA

NAME OF SUBMITTER: BELINDA LEE

SIGNATURE: /Belinda Lee/

DATE SIGNED: 03/30/2018

Total Attachments: 6

PATENT REEL: 045788 FRAME: 0142



PATENT REEL: 045788 FRAME: 0143

PATENT ASSIGNMENT COVER SHEET

lectronic Version v1.1 tylesheet Version v1.2

EPAS ID: PAT477308

| SUBMISSION TYPE: | NEW ASSIGNMENT |
|-----------------------|----------------|
| NATURE OF CONVEYANCE: | ASSIGNMENT |

CONVEYING PARTY DATA

| Name | Execution Date |
|---------------------------|--------------------|
| HSIANG-CHU HU | 12/12/2017 |
| CHUN-HAI HUANG | 12/12/2017 |
| MU-HAN CHENG | 12/11/2017 |
| YU-CHINTSEN YU-CHIN TSENG | 12/21/2017-2/13/20 |
| CHIEN-CHIH CHEN | 12/11/2017 |
| TZU-SHIN CHEN | 12/12/2017 |

RECEIVING PARTY DATA

| Name: | TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD. |
|-----------------|--|
| Street Address: | NO.8, LI-HSIN RD. 6, HSINCHU SCIENCE PARK, |
| City: | HSINCHU |
| State/Country: | TAIWAN |
| Postal Code: | 30078 |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 15869056 |

CORRESPONDENCE DATA

Fax Number:

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: 8775045885,EXT 1

Email: USA@JCIPGROUP.COM

Correspondent Name: JCIPRNET

Address Line 1: P.O. BOX 600 TAIPEI GUTING Address Line 4: TAIPEI CITY, TAIWAN 10099

| ATTORNEY DOCKET NUMBER: | 73349-US-PA |
|-------------------------|---------------|
| NAME OF SUBMITTER: | BELINDA LEE |
| GNATURE: | /Belinda Lee/ |
| DATE SIGNED: | 01/12/2018 |

otal Attachments: 3

PATENT REEL: 045788 FRAME: 0144



P20172979US00 73349-US-PA

DECLARATION AND ASSIGNMENT FOR UTILITY OR DESIGN PATENT APPLICATION

Declaration Submitted With Initial Filing

OR

Declaration Submitted After Initial Filing (surcharge 37 CFR 1.16(f) required)

(Title of the Invention)

SYSTEM, CONTROL METHOD AND APPARATUS FOR CHEMICAL MECHANICAL POLISHING

As a below named inventor (hereinafter designated as the undersigned), I hereby declare that:

This declaration is directed to:

The attached application,

OR

☑ United States Application Number or PCT International application number (5/869,056 Filed on ≥018 1.12

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

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

The undersigned 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.

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P20172979US00 73349-US-PA

DECLARATION AND ASSIGNMENT

FOR UTILITY OR DESIGN PATENT APPLICATION

WHEREAS, the undersigned has invented certain new and useful improvements described in the application identified.

WHEREAS 1. Taiwan Semiconductor Manufacturing Co., Ltd.
of No.8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu, Taiwan 300-78,
R.O.C.

hereinafter referred to as ASSIGNEE, is desirous of acquiring the undersigned's interest in the said invention and application and in any U.S. Letters Patent which may be granted on the same:

NOW, THEREFORE, TO ALL WHOM IT MAY CONCERN: Be it known that, for good and valuable consideration, receipt of which is hereby acknowledged by the undersigned, the undersigned has/have sold, assigned and transferred, and by these presents does/do sell, assign and transfer unto the said Assignee, and Assignee's successors and assigns, all his/her/their rights, title and interest in and to the said invention and application and all future improvements thereon, and in and to any Letters Patent which may hereafter be granted on the same in the United States, the said rights, title and interest to be held and enjoyed by said Assignee as fully and exclusively as it would have been held and enjoyed by said the undersigned had this Assignment and transfer not been made, to the full end and term of any Letters Patent which may be granted thereon, or of any division, renewal, continuation in whole or in part, substitution, conversion, reissue, prolongation or extension thereof.

The undersigned further agrees/agree that he/she/they will, without charge to said Assignee, but at Assignee's expense, cooperate with Assignee in the prosecution of said application and/or applications, execute, verify, acknowledge and deliver all such further papers, including applications for Letters Patent and for the reissue thereof, and instruments of assignment and transfer thereof, and will perform such other acts as Assignee Lawfully may request, to obtain or maintain Letters Patent for said invention and improvement, and to vest title thereto in said Assignee, or Assignee's successors and assigns.



P20172979US00 73349-US-PA

DECLARATION AND ASSIGNMENT FOR UTILITY OR DESIGN PATENT APPLICATION

| Signature: HSTAM - Chu Hy Date: Dec. (2. 201) |
|--|
| Legal Name of Sole or First Inventor: Hsiang - Chu Hu |
| Residence: Tainan City, Taiwan |
| Mailing Address: c/o No.8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu, Taiwan 300-78, R.O.C. |
| Signature: Chuh - Idul hurry Date: Dec. 12. 2017 Legal Name of Additional Joint Inventor, if any: Chun-Hai Huang |
| Legal Name of Additional Joint Inventor, if any: Chun-Hai Huang |
| Residence: Changhua County, Taiwan |
| Mailing Address: c/o No.8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu, Taiwan 300-78, R.O.C. |
| Signature: My-hap Chang Date: Dec 11 2017 |
| Legal Name of Additional Joint Inventor, if any: Mu-Han Cheng |
| Residence: Tainan, Taiwan |
| Mailing Address: c/o No.8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu, Taiwan 300-78, R.O.C. |
| Signature: Yw Chrin Tseng Feb. 13. 2018 Date: Pew 21. 2017 Legal Name of Additional Joint Inventor if any 18. 2017 |
| Legal Name of Additional Joint Inventor, if any: Yu-Chin Tsenq |
| Residence: Tainan City, Taiwan |
| Mailing Address: c/o No.8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu, Taiwan 300-78, R.O.C. |
| Signature: Chien-Chiel Chen Date: Bec. 11. 2017 |
| Legal Name of Additional Joint Inventor, if any: Chien-Chih Chen |
| Residence: Changhua County, Taiwan |
| Mailing Address: c/o No.8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu, Taiwan 300-78, R.O.C. |
| Signature: TZu Shin Chen Date: Dec. 12. 2017 |
| egal Name of Additional Joint Inventor, if any: Tzu-Shin Chen |
| Residence: Tainan City, Taiwan |
| Mailing Address: c/o No.8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu, Taiwan 200, 78, D. O. |

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