

## PATENT ASSIGNMENT

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| SUBMISSION TYPE:  | NEW ASSIGNMENT                                   |
| NATURE OF CONVEYANCE:   | ASSIGNMENT                                       |
| CONVEYING PARTY DATA  |  |
| Name  | Execution Date                                   |
| Pei-Ren JENG  | 10/20/2011                                       |
| RECEIVING PARTY DATA  |  |
| Name:   | TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY, LTD. |
| Street Address:   | No. 8, Li-Hsin Rd. 6                             |
| Internal Address:   | Science-Based Industrial Park                    |
| City:   | Hsin-Chu   |
| State/Country:  | TAIWAN   |
| Postal Code:  | 300-77   |
| PROPERTY NUMBERS Total: 1   |  |
| Property Type   | Number   |
| Application Number:   | 13280838   |
| CORRESPONDENCE DATA   |  |
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| Total Attachments: 2<br>source=1961_Assignment#page1.tif<br>source=1961_Assignment#page2.tif                          |  |

OP \$40.00 13280838

## ASSIGNMENT

WHEREAS, I

Pei-Ren Jeng of 9F, No.5, Lane 68, Hsien-Cheng 8th St.,  
Chu-Bei City, Hsinchu County 302, Taiwan (R.O.C.)

has invented certain improvements in

### DOPING METHOD IN 3D SEMICONDUCTOR DEVICE

for which I filed an application for Letters Patent of the United States of America on October 25, 2011  
as U.S. Serial No. 13/280,838; and

WHEREAS, I authorize the attorney of record to update this document to include Patent Office information as deemed necessary (i.e., filing date, serial number, etc.);

WHEREAS, Taiwan Semiconductor Manufacturing Company, Ltd., ("TSMC"), No. 8, Li-Hsin Rd. 6, Science-Based Industrial Park Hsin-Chu, Taiwan 300-77, Republic of China is desirous of obtaining the entire right, title, and interest in, to and under the said invention and the said application in the United States of America and in any and all countries foreign thereto;

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and other good and valuable consideration, I have sold, assigned, transferred and set over, and by these presents do hereby sell, assign, transfer and set over, unto the said TSMC, its successors, legal representatives, and assigns, the entire right, title, and interest in, to and under the said invention, and the said application, and all divisional, renewal, substitutional, and continuing applications thereof, and all Letters Patent of the United States of America which may be granted thereon and all reissues and extensions thereof, and all applications for Letters Patent which may be filed for said invention in any country or countries foreign to the United States of America, and all extensions, renewals, and reissues thereof, and all prior patents and patent applications from which a filing priority of the above-described patent application may be obtained, including the right to collect past damages; and I hereby authorize and request the Commissioner of Patents of the United States of America, and any official of any country or countries foreign to the United States of America, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said invention to the said TSMC, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

AND I HEREBY covenant that I have full right to convey the entire interest herein assigned, and that I have not executed, and will not execute, any agreement in conflict herewith.

AND I HEREBY further covenant and agree that I will communicate to said TSMC, its successors, legal representatives and assigns, any facts known to us respecting said invention, and testify in any legal proceedings, sign all lawful papers, execute all divisional, renewal, substitutional, continuing, and reissue applications, make all rightful declarations and/or oaths and generally do everything possible to aid the said TSMC, its successors, legal representatives and assigns, to obtain and enforce proper patent protection for said invention in all countries.

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Inventor Name: Pei-Ren Jeng

Residence Address: 9F, No.5, Lane 68, Hsien-Cheng 8th St.,  
Chu-Bei City, Hsinchu County 302, Taiwan (R.O.C.)

Dated: 2011/10/20

  
Inventor Signature