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PATENT ASSIGNMENT

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

CONVEYING PARTY DATA

| Name | Execution Date | |
|-------------------|----------------|--|
| Kenji SHIMADA | 02/25/2013 | |
| Hiroshi MATSUNAGA | 02/25/2013 | |

RECEIVING PARTY DATA

| Name: | MITSUBISHI GAS CHEMICAL COMPANY, INC. | |
|-----------------|---------------------------------------|--|
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| City: | Tokyo | |
| State/Country: | JAPAN | |
| Postal Code: | 100-8324 | |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 13823769 |

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NAME OF SUBMITTER: Adel Samuel

Total Attachments: 2

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PATENT REEL: 030041 FRAME: 0985 OP \$40.00 13823769

continuations, substitutions and renewals thereof,

Assignment of Application

| RTNAMUS | WHEREAS, I (WE) | 1) Kenji SHIMADA | | | | | | |
|---------------------------------------|--|---|------------------|---------------------------------------|---------|--------------|------------------|---------------------------------------|
| RPAIDENCE RESS OF INVENTORS: | | 2) Hiroshi MATSUNAGA both of | ; - _ | | | | | |
| Pry Pri OKS; | | c/o Mitsubishi Gas Chemical Com | pany In | c., Tokyo I | Resear | ch Laborato | ory, 1-1, Niijyu | ku 6-chome, |
| | | Katsushika-ku, Tokyo 125-0051, J | apan | • • | | | | |
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| | | | | · · · · · · · · · · · · · · · · · · · | | | | , respectively, |
| CY THE OF | have invented certai | n new and useful improvements in: | SILIC | ON ETCH | NG FI | LUID AND | METHOD FO |)R |
| NTION: | | NSISTOR USING SAME | | | | | | |
| | (Application No. | 13/823,769 | , filed | March | 15, | 2013 | |), and |
| LT NAME | WHEREAS, MITSUBISHI GAS CHEMICAL COMPANY, INC. | | | | | | | |
| ALEDRESS OF PANY OR IR ASSECUES | 100-8324. Japan is | to as "ASSIGNEE") having a place desirous of acquiring the entire right may be granted therefore in the U | ht, title | and intere | st in a | nd to said i | invention and i | n and to any |

NOW, THEREFORE, in consideration of the sum of FIVE DOLLARS (\$5,00), the receipt whereof is hereby acknowledged, and for other good and valuable consideration, I (WE), by these presents do sell, assign and transfer unto said ASSIGNEE, the full and exclusive right to the said invention in the United States and its territorial possessions and in all foreign countries (including the right to claim priority under the terms of the International Convention and other relevant International Treaties and Arrangements from the aforesaid application(s)) and the entire right, title and interest in and to any and all Letters Patent which may be granted therefor in the United States and

its territorial possessions and in any and all foreign countries and in and to any and all divisions, reissues,

I (WE) hereby authorize and request the Patent Office Officials in the United States and its territorial possessions and any and all foreign countries to issue any and all of said Letters Patent, when granted, to said ASSIGNEE as the assignee of my (our) entire right, title and interest in and to the same, for the sole use and behoof of said ASSIGNEE, its (his) successors and assigns, 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 mc (us) had this Assignment and sale not been made.

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Further, I (WE) agree that I (WE) will communicate to said ASSIGNEE or its (his) representatives any facts known to me (us) respecting said invention, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuation, substitute, renewal and reissue applications, execute all necessary assignment papers to cause any and all of said Letters Patent to be issued to said ASSIGNEE, make all rightful oaths, and, generally do everything possible to aid said ASSIGNEE, its (his) successors and assigns, to obtain and enforce proper protection for said invention in the United States and its territorial possessions and in any and all foreign countries.

The undersigned hereby grant(s) the firm of Oblon, Spivak, McClelland, Maier & Neustadt, L.L.P. of 1940 Duke Street, Alexandria, Virginia 22314 the power to insert on this assignment any further identification, including the application number and filing date, which may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

| Date: | FEB. 25. 2013 | Kenji SHIMAPA |
|-------|---------------|---|
| Date: | FEB. 25. 2013 | (Signature of Inventor) Kenji SHIMADA / Hiroshi Matsunaga (Signature of Inventor) Winnehi MATSUNAGA |
| Date: | | (Signature of Inventor) Hiroshi MATSUNAGA (Signature of Inventor) |
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