

## PATENT ASSIGNMENT

Electronic Version v1.1  
 Stylesheet Version v1.1

SUBMISSION TYPE:	NEW ASSIGNMENT																																		
NATURE OF CONVEYANCE:	ASSIGNMENT																																		
CONVEYING PARTY DATA																																			
<table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr><td>Tadahiro Ohmi</td><td>03/13/2013</td></tr> <tr><td>Masahito Saito</td><td>03/14/2013</td></tr> <tr><td>Shoichi Hino</td><td>03/18/2013</td></tr> <tr><td>Tsuyoshi Shimazu</td><td>03/22/2013</td></tr> <tr><td>Kazuyuki Miura</td><td>03/28/2013</td></tr> <tr><td>Kouji Nishino</td><td>04/24/2013</td></tr> <tr><td>Masaaki Nagase</td><td>04/24/2013</td></tr> <tr><td>Katsuyuki Sugita</td><td>04/24/2013</td></tr> <tr><td>Kaoru Hirata</td><td>04/24/2013</td></tr> <tr><td>Ryousuke Dohi</td><td>04/24/2013</td></tr> <tr><td>Takashi Hirose</td><td>04/24/2013</td></tr> <tr><td>Tsutomu Shinohara</td><td>04/24/2013</td></tr> <tr><td>Nobukazu Ikeda</td><td>04/24/2013</td></tr> <tr><td>Tomokazu Imai</td><td>04/24/2013</td></tr> <tr><td>Toshihide Yoshida</td><td>04/24/2013</td></tr> <tr><td>Hisashi Tanaka</td><td>04/24/2013</td></tr> </tbody> </table>		Name	Execution Date	Tadahiro Ohmi	03/13/2013	Masahito Saito	03/14/2013	Shoichi Hino	03/18/2013	Tsuyoshi Shimazu	03/22/2013	Kazuyuki Miura	03/28/2013	Kouji Nishino	04/24/2013	Masaaki Nagase	04/24/2013	Katsuyuki Sugita	04/24/2013	Kaoru Hirata	04/24/2013	Ryousuke Dohi	04/24/2013	Takashi Hirose	04/24/2013	Tsutomu Shinohara	04/24/2013	Nobukazu Ikeda	04/24/2013	Tomokazu Imai	04/24/2013	Toshihide Yoshida	04/24/2013	Hisashi Tanaka	04/24/2013
Name	Execution Date																																		
Tadahiro Ohmi	03/13/2013																																		
Masahito Saito	03/14/2013																																		
Shoichi Hino	03/18/2013																																		
Tsuyoshi Shimazu	03/22/2013																																		
Kazuyuki Miura	03/28/2013																																		
Kouji Nishino	04/24/2013																																		
Masaaki Nagase	04/24/2013																																		
Katsuyuki Sugita	04/24/2013																																		
Kaoru Hirata	04/24/2013																																		
Ryousuke Dohi	04/24/2013																																		
Takashi Hirose	04/24/2013																																		
Tsutomu Shinohara	04/24/2013																																		
Nobukazu Ikeda	04/24/2013																																		
Tomokazu Imai	04/24/2013																																		
Toshihide Yoshida	04/24/2013																																		
Hisashi Tanaka	04/24/2013																																		
RECEIVING PARTY DATA																																			
<table border="1"> <tr><td>Name:</td><td>FUJIKIN INCORPORATED</td></tr> <tr><td>Street Address:</td><td>3-2, Itachibori 2-chome, Nishi-ku, Osaka-shi</td></tr> <tr><td>City:</td><td>Osaka</td></tr> <tr><td>State/Country:</td><td>JAPAN</td></tr> <tr><td>Postal Code:</td><td>5500012</td></tr> </table>		Name:	FUJIKIN INCORPORATED	Street Address:	3-2, Itachibori 2-chome, Nishi-ku, Osaka-shi	City:	Osaka	State/Country:	JAPAN	Postal Code:	5500012																								
Name:	FUJIKIN INCORPORATED																																		
Street Address:	3-2, Itachibori 2-chome, Nishi-ku, Osaka-shi																																		
City:	Osaka																																		
State/Country:	JAPAN																																		
Postal Code:	5500012																																		
<table border="1"> <tr><td>Name:</td><td>National University Corporation Tohoku University</td></tr> <tr><td>Street Address:</td><td>1-1, Katahira 2-chome, Aoba-ku, Sendai-shi</td></tr> <tr><td>City:</td><td>Miyagi</td></tr> <tr><td>State/Country:</td><td>JAPAN</td></tr> <tr><td>Postal Code:</td><td>9800812</td></tr> </table>		Name:	National University Corporation Tohoku University	Street Address:	1-1, Katahira 2-chome, Aoba-ku, Sendai-shi	City:	Miyagi	State/Country:	JAPAN	Postal Code:	9800812																								
Name:	National University Corporation Tohoku University																																		
Street Address:	1-1, Katahira 2-chome, Aoba-ku, Sendai-shi																																		
City:	Miyagi																																		
State/Country:	JAPAN																																		
Postal Code:	9800812																																		

CH \$40.00 13763178

PATENT

Name:	Tokyo Electron Ltd.
Street Address:	3-6, Akasaka 5-chome, Minato-ku
City:	Tokyo
State/Country:	JAPAN
Postal Code:	1078481

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	13763178

#### CORRESPONDENCE DATA

Fax Number: 7039797429  
*Correspondence will be sent via US Mail when the fax attempt is unsuccessful.*  
 Phone: 703-979-5700  
 Email: GandS@szipl.com  
 Correspondent Name: GRIFFIN & SZIPL, PC  
 Address Line 1: SUITE PH-1  
 Address Line 2: 2300 NINTH STREET, SOUTH  
 Address Line 4: ARLINGTON, VIRGINIA 22204

ATTORNEY DOCKET NUMBER:	SUGI0227
NAME OF SUBMITTER:	Bridget D. Burke
Signature:	/bburke/
Date:	05/15/2013
	This document serves as an Oath/Declaration (37 CFR 1.63).

#### Total Attachments: 5

source=13-05-15 Assignment and Declaration#page1.tif  
 source=13-05-15 Assignment and Declaration#page2.tif  
 source=13-05-15 Assignment and Declaration#page3.tif  
 source=13-05-15 Assignment and Declaration#page4.tif  
 source=13-05-15 Assignment and Declaration#page5.tif

## ASSIGNMENT and DECLARATION under AIA

The undersigned (hereinafter collectively referred to as "ASSIGNOR"), in consideration of the sum of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, hereby sells, assigns and transfers to

- 1) Fujikin Incorporated
- 2) National University Corporation Tohoku University
- 3) Tokyo Electron Ltd.

(hereinafter referred to as "ASSIGNEE"), of

- 1) 3-2, Itachibori 2-chome, Nishi-ku, Osaka-shi, Osaka 5500012 JAPAN
- 2) 1-1, Katahira 2-chome, Aoba-ku, Sendai-shi, Miyagi 9800812 JAPAN
- 3) 3-6, Akasaka 5-chome, Minato-ku, Tokyo 1078481 JAPAN

the entire right, title and interest for the United States of America as defined in 35 U.S.C. §100, in the invention (hereinafter "INVENTION") entitled:

### FLOW RATE RANGE VARIABLE TYPE FLOW RATE CONTROL APPARATUS

for which ASSIGNOR has executed an application for United States Patent

[ ] on this date (check if Assignment and application are executed on same date)

[ X ] filed on [ February 8, 2013 ] (check if Assignment is executed after application)  
Month/Day/Year

as United States Patent Application No. 13/763,178  
(Insert if known)

and all applications on the INVENTION, including any and all divisions, continuations, substitutes and reissues thereof, and all resulting patents on the INVENTION;

ASSIGNOR hereby agrees to testify and to execute any papers for ASSIGNEE, its successors, assigns and legal representatives, deemed essential by ASSIGNEE to ASSIGNEE'S full protection of and title in and to the INVENTION hereby transferred;

ASSIGNOR hereby declares that: (1) the above-identified application was made or authorized by the ASSIGNOR; (2) the ASSIGNOR believes ASSIGNOR to be an original inventor or original joint inventor of the invention claimed in the above-identified application; (3) ASSIGNOR acknowledges that any willful false statement made herein is punishable under 18 U.S.C. 1001 by fine or imprisonment more than five (5) years, or both; and

ASSIGNOR hereby authorizes Joerg-Uwe Szipl and Griffin & Szipl, P.C. to insert in this Assignment any further information necessary or desirable for recordation.

<u>Full Name of the Inventor(s)</u> (Please type)	<u>Signature</u>	<u>Date Signed</u>
(1) Tadahiro Ohmi		
(2) Masahito Saito		
(3) Shoichi Hino		
(4) Tsuyoshi Shimazu		
(5) Kazuyuki Miura		
(6) Kouji Nishino	<i>Kouji Nishino</i>	<i>Apr. 24, 2013</i>
(7) Masaki Nagase	<i>Masaki Nagase</i>	<i>Apr. 24, 2013</i>

[ x ] Check if additional pages are attached.

\* For use with non-U.S. inventors.

Revised September 2012

## ASSIGNMENT and DECLARATION under AIA

The undersigned (hereinafter collectively referred to as "ASSIGNOR"), in consideration of the sum of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, hereby sells, assigns and transfers to

- 1) Fujikin Incorporated
- 2) National University Corporation Tohoku University
- 3) Tokyo Electron Ltd.

(hereinafter referred to as "ASSIGNEE"), of

- 1) 3-2, Itachibori 2-chome, Nishi-ku, Osaka-shi, Osaka 5500012 JAPAN
- 2) 1-1, Katahira 2-chome, Aoba-ku, Sendai-shi, Miyagi 9800812 JAPAN
- 3) 3-6, Akasaka 5-chome, Minato-ku, Tokyo 1078481 JAPAN

the entire right, title and interest for the United States of America as defined in 35 U.S.C. §100, in the invention (hereinafter "INVENTION") entitled:

### FLOW RATE RANGE VARIABLE TYPE FLOW RATE CONTROL APPARATUS

for which ASSIGNOR has executed an application for United States Patent

☐ on this date (check if Assignment and application are executed on same date)

☒ filed on February 8, 2013 (check if Assignment is executed after application)  
Month/Day/Year

as United States Patent Application No. 13/763,178  
(Insert if known)

and all applications on the INVENTION, including any and all divisions, continuations, substitutes and reissues thereof, and all resulting patents on the INVENTION;

ASSIGNOR hereby agrees to testify and to execute any papers for ASSIGNEE, its successors, assigns and legal representatives, deemed essential by ASSIGNEE to ASSIGNEE'S full protection of and title in and to the INVENTION hereby transferred;

ASSIGNOR hereby declares that: (1) the above-identified application was made or authorized by the ASSIGNOR; (2) the ASSIGNOR believes ASSIGNOR to be an original inventor or original joint inventor of the invention claimed in the above-identified application; (3) ASSIGNOR acknowledges that any willful false statement made herein is punishable under 18 U.S.C. 1001 by fine or imprisonment more than five (5) years, or both; and

ASSIGNOR hereby authorizes Joerg-Uwe Szipl and Griffin & Szipl, P.C. to insert in this Assignment any further information necessary or desirable for recordation.

<u>Full Name of the Inventor(s)</u> (Please type)	<u>Signature</u>	<u>Date Signed</u>
(1) Tadahihiro Ohmi	<u>Tadahihiro Ohmi</u>	<u>Mar-13, 2013</u>
(2) Masahito Saito	_____	_____
(3) Shoichi Hino	_____	_____
(4) Tsuyoshi Shimazu	_____	_____
(5) Kazuyuki Miura	_____	_____
(6) Kouji Nishino	_____	_____
(7) Massaki Nagase	_____	_____

☒ Check if additional pages are attached.

\* For use with non-U.S. inventors.

Revised September 2012

## ASSIGNMENT and DECLARATION under AIA

The undersigned (hereinafter collectively referred to as "ASSIGNOR"), in consideration of the sum of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, hereby sells, assigns and transfers to

- 1) Fujikin Incorporated
- 2) National University Corporation Tohoku University
- 3) Tokyo Electron Ltd.

(hereinafter referred to as "ASSIGNEE"), of

- 1) 3-2, Itachibori 2-chome, Nishi-ku, Osaka-shi, Osaka 5500012 JAPAN
- 2) 1-1, Katahira 2-chome, Aoba-ku, Sendai-shi, Miyagi 9800812 JAPAN
- 3) 3-6, Akasaka 5-chome, Minato-ku, Tokyo 1078481 JAPAN

the entire right, title and interest for the United States of America as defined in 35 U.S.C. §100, in the invention (hereinafter "INVENTION") entitled:

### FLOW RATE RANGE VARIABLE TYPE FLOW RATE CONTROL APPARATUS

for which ASSIGNOR has executed an application for United States Patent

☐ on this date (check if Assignment and application are executed on same date)

☒ filed on February 8, 2013 (check if Assignment is executed after application)  
Month/Day/Year

as United States Patent Application No. 13/763,178  
(Insert if known)

and all applications on the INVENTION, including any and all divisions, continuations, substitutes and reissues thereof, and all resulting patents on the INVENTION;

ASSIGNOR hereby agrees to testify and to execute any papers for ASSIGNEE, its successors, assigns and legal representatives, deemed essential by ASSIGNEE to ASSIGNEE'S full protection of and title in and to the INVENTION hereby transferred;

ASSIGNOR hereby declares that: (1) the above-identified application was made or authorized by the ASSIGNOR; (2) the ASSIGNOR believes ASSIGNOR to be an original inventor or original joint inventor of the invention claimed in the above-identified application; (3) ASSIGNOR acknowledges that any willful false statement made herein is punishable under 18 U.S.C. 1001 by fine or imprisonment more than five (5) years, or both; and

ASSIGNOR hereby authorizes Joerg-Uwe Szipl and Griffin & Szipl, P.C. to insert in this Assignment any further information necessary or desirable for recordation.

<u>Full Name of the Inventor(s)</u> (Please type)	<u>Signature</u>	<u>Date Signed</u>
(1) Tadahiro Ohmi		
(2) Masahito Saito	<u>Masahito Saito</u>	<u>Mar. 14. 2013</u>
(3) Shoichi Hino	<u>Shoichi Hino</u>	<u>Mar. 18. 2013</u>
(4) Tsuyoshi Shimazu	<u>Tsuyoshi Shimazu</u>	<u>Mar. 22. 2013</u>
(5) Kazuyuki Miura	<u>Kazuyuki Miura</u>	<u>Mar. 28. 2013</u>
(6) Kouji Nishino		
(7) Massaki Nagase		

☐ Check if additional pages are attached.

\* For use with non-U.S. inventors.

Revised September 2012

## ASSIGNMENT and DECLARATION under AIA

The undersigned (hereinafter collectively referred to as "ASSIGNOR"), in consideration of the sum of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, hereby sells, assigns and transfers to

- 1) Fujikin Incorporated
- 2) National University Corporation Tohoku University
- 3) Tokyo Electron Ltd.

(hereinafter referred to as "ASSIGNEE"), of

- 1) 3-2, Itachibori 2-chome, Nishi-ku, Osaka-shi, Osaka 5500012 JAPAN
- 2) 1-1, Katahira 2-chome, Aoba-ku, Sendai-shi, Miyagi 9800812 JAPAN
- 3) 3-6, Akasaka 5-chome, Minato-ku, Tokyo 1078481 JAPAN

the entire right, title and interest for the United States of America as defined in 35 U.S.C. §100, in the invention (hereinafter "INVENTION") entitled:

### FLOW RATE RANGE VARIABLE TYPE FLOW RATE CONTROL APPARATUS

for which ASSIGNOR has executed an application for United States Patent

[ ] on this date (check if Assignment and application are executed on same date)

[ X ] filed on [ February 8, 2013 ] (check if Assignment is executed after application)  
Month/Day/Year

as United States Patent Application No. 13/763,178  
(Insert if known)

and all applications on the INVENTION, including any and all divisions, continuations, substitutes and reissues thereof, and all resulting patents on the INVENTION;

ASSIGNOR hereby agrees to testify and to execute any papers for ASSIGNEE, its successors, assigns and legal representatives, deemed essential by ASSIGNEE to ASSIGNEE'S full protection of and title in and to the INVENTION hereby transferred;

ASSIGNOR hereby declares that: (1) the above-identified application was made or authorized by the ASSIGNOR; (2) the ASSIGNOR believes ASSIGNOR to be an original inventor or original joint inventor of the invention claimed in the above-identified application; (3) ASSIGNOR acknowledges that any willful false statement made herein is punishable under 18 U.S.C. 1001 by fine or imprisonment more than five (5) years, or both; and

ASSIGNOR hereby authorizes Joerg-Uwe Szipl and Griffin & Szipl, P.C. to insert in this Assignment any further information necessary or desirable for recordation.

<u>Full Name of the Inventor(s)</u> (Please type)	<u>Signature</u>	<u>Date Signed</u>
(8) Katsuyuki Sugita	<u>Katsuyuki Sugita</u>	<u>Apr. 24, 2013</u>
(9) Kaoru Hirata	<u>Kaoru Hirata</u>	<u>Apr. 24, 2013</u>
(10) Ryosuke Dohi	<u>Ryosuke Dohi</u>	<u>Apr. 24, 2013</u>
(11) Takashi Hirose	<u>Takashi Hirose</u>	<u>Apr. 24, 2013</u>
(12) Tsutomu Shinohara	<u>Tsutomu Shinohara</u>	<u>Apr. 24, 2013</u>
(13) Nobukazu Ikeda	<u>Nobukazu Ikeda</u>	<u>Apr. 24, 2013</u>
(14) Tomokazu Imai	<u>Tomokazu Imai</u>	<u>Apr. 24, 2013</u>

[ x ] Check if additional pages are attached.

\* For use with non-U.S. inventors.

Revised September 2012

## ASSIGNMENT and DECLARATION under AIA

The undersigned (hereinafter collectively referred to as "ASSIGNOR"), in consideration of the sum of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, hereby sells, assigns and transfers to

- 1) Fujikin Incorporated
- 2) National University Corporation Tohoku University
- 3) Tokyo Electron Ltd.

(hereinafter referred to as "ASSIGNEE"), of

- 1) 3-2, Itachibori 2-chome, Nishi-ku, Osaka-shi, Osaka 5500012 JAPAN
- 2) 1-1, Katahira 2-chome, Aoba-ku, Sendai-shi, Miyagi 9800812 JAPAN
- 3) 3-6, Akasaka 5-chome, Minato-ku, Tokyo 1078481 JAPAN

the entire right, title and interest for the United States of America as defined in 35 U.S.C. §100, in the invention (hereinafter "INVENTION") entitled:

### FLOW RATE RANGE VARIABLE TYPE FLOW RATE CONTROL APPARATUS

for which ASSIGNOR has executed an application for United States Patent

☐ on this date (check if Assignment and application are executed on same date)

☒ filed on February 8, 2013 (check if Assignment is executed after application)  
Month/Day/Year

as United States Patent Application No. 13/763,178  
(Insert if known)

and all applications on the INVENTION, including any and all divisions, continuations, substitutes and reissues thereof, and all resulting patents on the INVENTION;

ASSIGNOR hereby agrees to testify and to execute any papers for ASSIGNEE, its successors, assigns and legal representatives, deemed essential by ASSIGNEE to ASSIGNEE'S full protection of and title in and to the INVENTION hereby transferred;

ASSIGNOR hereby declares that: (1) the above-identified application was made or authorized by the ASSIGNOR; (2) the ASSIGNOR believes ASSIGNOR to be an original inventor or original joint inventor of the invention claimed in the above-identified application; (3) ASSIGNOR acknowledges that any willful false statement made herein is punishable under 18 U.S.C. 1001 by fine or imprisonment more than five (5) years, or both; and

ASSIGNOR hereby authorizes Joerg-Uwe Szipl and Griffin & Szipl, P.C. to insert in this Assignment any further information necessary or desirable for recordation.

<u>Full Name of the Inventor(s)</u> (Please type)	<u>Signature</u>	<u>Date Signed</u>
(15) Toshihide Yoshida	<u>Toshihide Yoshida</u>	<u>Apr. 24, 2013</u>
(16) Hisashi Tanaka	<u>Tanaka Hisashi</u>	<u>Apr. 24, 2013</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

☒ Check if additional pages are attached.

\* For use with non-U.S. inventors.

Revised September 2012