

PATENT ASSIGNMENT

Electronic Version v1.1
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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>Souheil Benzerrouk</td><td>03/23/2009</td></tr><tr><td>Siddharth P. Nagarkatti</td><td>03/23/2009</td></tr><tr><td>Andrew Cowe</td><td>03/23/2009</td></tr><tr><td>Ali Shajii</td><td>03/23/2009</td></tr><tr><td>Jesse E. Ambrosina</td><td>03/23/2009</td></tr><tr><td>Ken Tran</td><td>03/23/2009</td></tr><tr><td>Xing Chen</td><td>03/23/2009</td></tr></tbody></table>		Name	Execution Date	Souheil Benzerrouk	03/23/2009	Siddharth P. Nagarkatti	03/23/2009	Andrew Cowe	03/23/2009	Ali Shajii	03/23/2009	Jesse E. Ambrosina	03/23/2009	Ken Tran	03/23/2009	Xing Chen	03/23/2009
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RECEIVING PARTY DATA																	
<table border="1"><tr><td>Name:</td><td>MKS Instruments, Inc.</td></tr><tr><td>Street Address:</td><td>2 Tech Drive</td></tr><tr><td>Internal Address:</td><td>Suite 201</td></tr><tr><td>City:</td><td>Andover</td></tr><tr><td>State/Country:</td><td>MASSACHUSETTS</td></tr><tr><td>Postal Code:</td><td>01810</td></tr></table>		Name:	MKS Instruments, Inc.	Street Address:	2 Tech Drive	Internal Address:	Suite 201	City:	Andover	State/Country:	MASSACHUSETTS	Postal Code:	01810				
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CORRESPONDENCE DATA																	
Fax Number: (617)526-9899 <i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i>																	
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Address Line 4: Boston, MASSACHUSETTS 02110																	

CH \$40.00 12394904

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PATENT
REEL: 022578 FRAME: 0292

ATTORNEY DOCKET NUMBER:	ASX-147
NAME OF SUBMITTER:	Todd A. Gerety
<p>Total Attachments: 8</p> <p>source=ASX-147_Assignment#page1.tif</p> <p>source=ASX-147_Assignment#page2.tif</p> <p>source=ASX-147_Assignment#page3.tif</p> <p>source=ASX-147_Assignment#page4.tif</p> <p>source=ASX-147_Assignment#page5.tif</p> <p>source=ASX-147_Assignment#page6.tif</p> <p>source=ASX-147_Assignment#page7.tif</p> <p>source=ASX-147_Assignment#page8.tif</p>	

ASSIGNMENT

WHEREAS, We, Souheil Benzerrouk, Siddharth P. Nagarkatti, Andrew Cowe, Ali Shajii, Jesse E. Ambrosina, Ken Tran and Xing Chen have invented one or more inventions described in an application (or provisional application) for Letters Patent of the United States entitled:

**METHOD AND APPARATUS OF PROVIDING POWER TO IGNITE
AND SUSTAIN A PLASMA IN A REACTIVE GAS GENERATOR**

and identified by

☒ Attorney Docket No. ASX-147 and/or executed by us on even date herewith and about to be filed in the United States Patent Office;

☒ Application No. 12/394,904 filed in the United States Patent Office on February 27, 2009; and

WHEREAS, MKS Instruments, Inc. (hereinafter "ASSIGNEE"), a corporation organized and existing under the laws of the Commonwealth of Massachusetts, and having a usual place of business at 2 Tech Drive, Suite 201, Andover, Massachusetts 01810 desires to acquire an interest therein, in accordance with agreements duly entered into with us;

NOW, THEREFORE, to all whom it may concern be it known that for and in consideration of said agreements and of other good and valuable consideration, the receipt of which is hereby acknowledged, we have sold, assigned and transferred and by these presents do hereby sell, assign and transfer unto said ASSIGNEE, its successors, assigns, and legal representatives, our entire right, title and interest in and throughout the United States of America, its territories and all foreign countries, in and to the invention(s) described in said application, together with our entire right, title and interest in and to said application and such Letters Patent as may issue thereon or claim priority under United States law or international convention, including but not limited to non-provisionals, continuations, divisionals, reissues, reexaminations, extensions, and substitutions of said application or such Letters Patent, and any right, title and interest we may have in provisional applications to which said application claims priority; said invention(s), applications and Letters Patent to be held and enjoyed by said ASSIGNEE for its own use and behalf and for its successors, assigns and legal representatives, 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 us had this assignment and sale not been made; we hereby convey all of our rights arising under or pursuant to any and all United States laws and international agreements, treaties or laws relating to the protection of industrial property by filing any such applications for Letters Patent, including but not limited to any cause(s) of action and damages accruing prior to this assignment. We hereby acknowledge that this assignment, being of our entire right, title and interest in and to said invention(s), carries with it the right in ASSIGNEE to apply for and obtain from competent authorities in all countries of the world any and all Letters Patent by attorneys and agents of ASSIGNEE's selection and the right to procure the grant of all Letters Patent to ASSIGNEE in its own name as assignee of our entire right, title and interest therein;

AND, we hereby further agree for ourselves and our executors and administrators to execute upon request any other lawful documents and likewise to perform any other lawful acts which may be deemed necessary to secure fully the aforesaid invention(s) to said ASSIGNEE, its successors, assigns, and legal representatives, but at its or their expense and charges, including the execution of non-provisional, substitution, continuation, divisional, reissue, reexamination, or corresponding foreign or international patent applications;

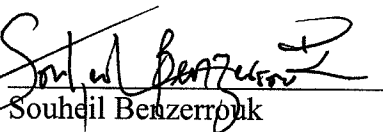
AND, we hereby further agree to provide statements or testimony in any interference or other proceeding in which said invention(s) or any application or patent directed thereto may be involved;

AND, we hereby authorize ASSIGNEE or its attorneys or agents to insert the correct serial number and filing date into this assignment, if none is indicated on the date of our execution of this assignment;

AND, we hereby authorize and request the Director of the United States Patent and Trademark Office to issue such Letters Patent as shall be granted upon said application, or applications based thereon, to said ASSIGNEE, its successors, assigns, or legal representatives.

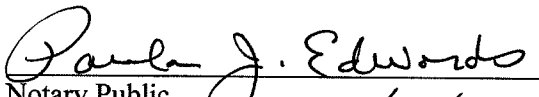
IN TESTIMONY WHEREOF, we have hereunto set our hands-and affixed our seals on the date(s) set forth below.

Inventor:


Souheil Benzerrouk

State/Commonwealth of Mass.)
County of Middlesex) ss

On this 23 day of March, 2009, before me, the undersigned notary public, personally appeared Souheil Benzerrouk, proved to me through satisfactory evidence of identification, which were Mass Drivers License to be the person whose name is signed on the preceding or attached document in my presence.

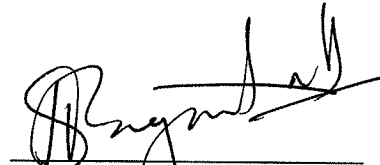

Notary Public
My Commission Expires: 7/24/09

Paula J. Edwards
Notary Public
My Commission Expires
July 24, 2009



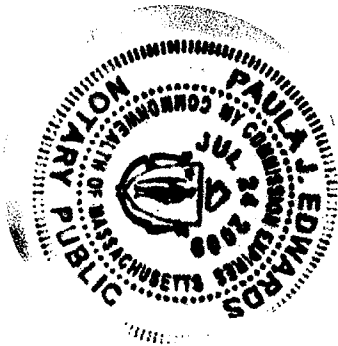
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Attorney Docket No. ASX-147
U.S. Application No. 12/394,904
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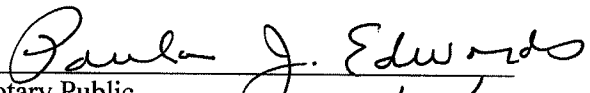
Inventor:


Siddharth P. Nagarkatti

State/Commonwealth of Massachusetts
County of Middlesex) ss

On this 23 day of March, 2009, before me, the undersigned notary public, personally appeared Siddharth P. Nagarkatti, proved to me through satisfactory evidence of identification, which were Mass Driver's License, to be the person whose name is signed on the preceding or attached document in my presence.




Notary Public
My Commission Expires: 7/24/2009

Paula J. Edwards
Notary Public
My Commission Expires
July 24, 2009

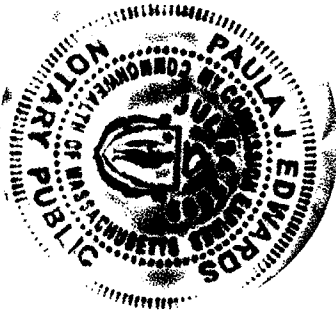
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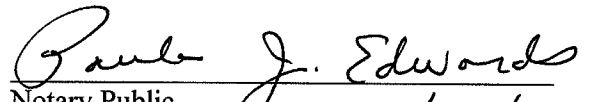
Inventor:


Andrew Cowe

State/Commonwealth of Massachusetts
County of Middlesex) ss

On this 23 day of March, 2009, before me, the undersigned notary public, personally appeared Andrew Cowe, proved to me through satisfactory evidence of identification, which were MA Driver's License to be the person whose name is signed on the preceding or attached document in my presence.




Notary Public
My Commission Expires: 7/24/2009

Paula J. Edwards
Notary Public
My Commission Expires
July 24, 2009

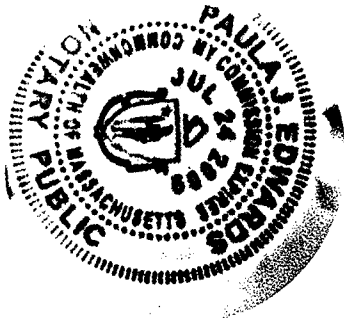
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Inventor:

Ali Shajii
Ali Shajii

State/Commonwealth of Massachusetts
County of Middlesex) ss

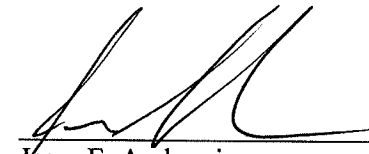
On this 23 day of March, 2009, before me, the undersigned notary public, personally appeared Ali Shajii, proved to me through satisfactory evidence of identification, which were Mass. Drivers License to be the person whose name is signed on the preceding or attached document in my presence.



Paula J. Edwards
Notary Public
My Commission Expires: 7/24/2009

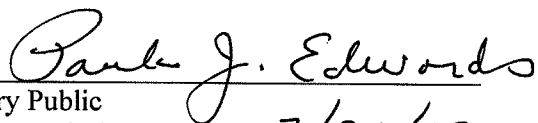
Paula J. Edwards
Notary Public
My Commission Expires
July 24, 2009

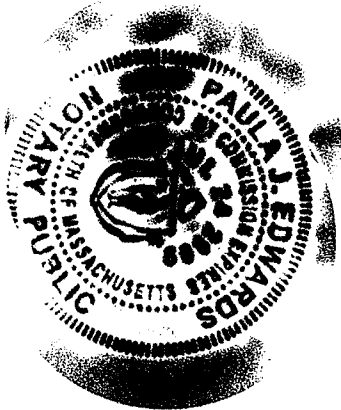
Inventor:


Jesse E. Ambrosina

State/Commonwealth of Massachusetts
County of Middlesex) ss

On this 23 day of March, 2009, before me, the undersigned notary public, personally appeared Jesse E. Ambrosina, proved to me through satisfactory evidence of identification, which were MA Drivers License, to be the person whose name is signed on the preceding or attached document in my presence.


Notary Public
My Commission Expires: 7/24/09



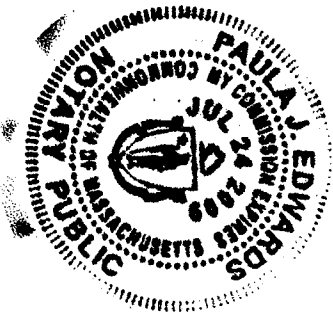
Paula J. Edwards
Notary Public
My Commission Expires
July 24, 2009

Inventor: Ken Tran
Ken Tran

State/Commonwealth of Massachusetts
County of Middlesex) ss

On this 23 day of March, 2009, before me, the undersigned notary public,
personally appeared Ken Tran, proved to me through satisfactory evidence of identification, which were
MA Driver's License, to be the person whose name is signed on the preceding or
attached document in my presence.

Paula J. Edwards
Notary Public
My Commission Expires: 7/24/2009



Paula J. Edwards
Notary Public
My Commission Expires
July 24, 2009

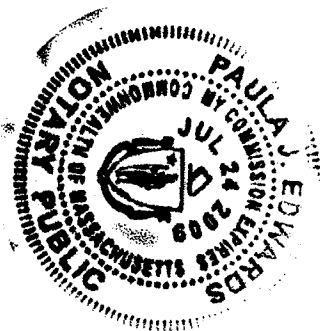
Inventor:

Xing Chen
Xing Chen

State/Commonwealth of Massachusetts
County of Middlesex) ss

On this 23 day of March, 2009, before me, the undersigned notary public,
personally appeared Xing Chen, proved to me through satisfactory evidence of identification, which were
Mass Driver's License to be the person whose name is signed on the preceding or
attached document in my presence.

Paula J. Edwards
Notary Public
My Commission Expires: 7/24/2009



Paula J. Edwards
Notary Public
My Commission Expires
July 24, 2009