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RECORDATION FORM COVER SHEET	
PATENTS ONLY	
To the Director of the U.S. Patent and Trademark Office: Please record the attached documents or the new address(es) below.	
1. Name of conveying party(ies)	2. Name and address of receiving party(ies)
Youfan Gu	Name:MKS Instruments, Inc.
Jeffrey D Kiernan Charles C Lawhead	Internal Address:
Additional name(s) of conveying party(ies) attached? 🦳 Yes 🔀 No	
3. Nature of conveyance/Execution Date(s):	Street Address: 90 Industrial Way
Execution Date(\$) <u>October 27, 2006</u>	
X Assignment Merger	
Security Agreement Change of Name	City: <u>Wilmington</u>
Joint Research Agreement	State:MA
Government Interest Assignment	Country/United States of America Zip 01997
Executive Order 9424, Confirmatory License	Country: United States of America Zip. <u>01887</u>
Other	Additional name(s) & address(es) attached? 🗌 Yes 🔀 No
4. Application or patent number(s):	
A. Patent Application No.(s)	B. Patent No.(s)
13/048,824	
Additional numbers attached? Yes No	
<ol><li>Name and address to whom correspondence concerning document should be mailed:</li></ol>	6. Total number of applications and patents involved: <u>1 (one)</u>
Name: COCHRAN FREUND & YOUNG LLC	7. Total fee (37 CFR 1.21(h) & 3.41) \$ 40.00
Internal Address:	
	X Authorized to be charged to deposit account
Street Address:2026 CARIBOU DRIVE	Enclosed
SUITE 201	None required (government Interest not affecting title)
City: FT. COLLINS	8. Payment Information
State: <u>co</u> Zip: <u>80525</u>	
Phone Number: 970 492 1100	
Fax Number: 970 492 1101	Deposit Account Number 501491
Email Address: <u>lvnetted@patentlegal.com</u>	Authorized User Name_Pam Calderwood
9. Signature: Appette Debug Cota 5/27/2011 Signature Date	
Lynette DeBrey-Cota	Total number of pages including cover 4
Name of Person Signing sheet, attachments, and documents:	

Documents to be recorded (including cover sheet) should be faxed to (571) 273-0140, or malled to: Mail Stop Assignment Recordation Services, Director of the USPTO, P.O.Box 1460, Alexandria, V.A. 22313-1450 MAY-27-2011 FRI 04:34 PM COCHRAN FREUND & YOUNG

## ASSIGNMENT

WHEREAS, We, Youfan Gu, 3322 West Torreys Peak, Superior, CO 80027, Jeffrey D. Kiernan, 5442 Wolf Street, Frederick, CO 80504, and Charles C. Lawhead, 3260 47<sup>th</sup> Street, #106, Boulder, CO 80301, are joint inventors along with William C. Bohlinger, Eric E. Ellis, Curtis A. Foster, James P. Hentges, Markis Louis-Gilmer Hoven, James H. Kreisel, Shawn Leininger, Robert O. Moran, Kurt W. Peterson, Jason R. Powell, and Dale T. Wolfe, of a certain new and useful MULTIPLE HEATER CONTROL SYSTEM WITH EXPANDABLE MODULAR FUNCTIONALITY, for which application for Letters Patent of the United States was filed on April 5, 2006, and assigned Serial No. 11/278,800;

WHEREAS, MKS Instruments, Inc., of 90 Industrial Way, Wilmington, Massachusetts 01887, a corporation fully organized and existing under the laws of the Commonwealth of Massachusetts, is desirous of acquiring our rights, title and interests therein and thereto;

NOW, THEREFORE, be it known that for and in consideration of the sum of One Dollar (\$1.00) and certain other good and valuable consideration to me in hand paid, the receipt of which is hereby acknowledged, we, Youfan Gu, Jeffrey D. Kiernan, and Charles C. Lawhead, by these presents do sell, assign and transfer unto the said MKS Instruments, Inc., its successors, legal representatives and assigns, our entire rights, title, and interests in and to the said invention and the aforesaid patent application, for the territory of the United States of America and for all foreign countries and to all Letters Patent, continuations, reissues, and extensions to be obtained therefore; and we further agree to cooperate with the assignee hereunder in the obtaining and sustaining of any and all such Letters Patent, but at the expense of said assignee.

We do further agree to execute all applications for patent, assignments, and other appropriate

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documents and to perform all acts and to do all things necessary to make this Agreement effective and to perfect all right, title and interest in and to said discoveries, improvements or inventions in MKS Instruments, Inc., its successors, legal representative and assigns, as the assignce of our rights, title and interests therein.

IN WITNESS WHEREOF, we have individually and jointly hereunto set our hands and affixed our seals on the date(s) set forth hereinafter.

YOUFAN QU )ss.

STATE OF COLORADO

COUNTY OF BOULDER

Before me, a Notary Public in and for the said County and State, personally appeared YOUFAN GU, known to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of office this 27 day of 004000, 2006.

(SEAL)

Notary Public

My Commission Expires:  $\chi 118107$ .

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) )ss.

STATE OF COLORADO

COUNTY OF BOULDER

Before me, a Notary Public in and for the said County and State, personally appeared JEFFREY D. KIERNAN, known to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of office this  $\frac{\partial \mathcal{F}}{\partial day}$  day of <u>October</u>, 2006.

(SEAL)

Motary Public

INU

My Commission Expires: SILELO7

CHAF

STATE OF COLORADO

) )ss. )

COUNTY OF BOULDER

Before me, a Notary Public in and for the said County and State, personally appeared CHARLES C. LAWHEAD, known to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of office this 27 day of 0 to 100, 2006.

Notary Public

My Commission Expires: 8/18/07

(SEAL)

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**RECORDED: 05/27/2011**