

## PATENT ASSIGNMENT COVER SHEET

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<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
ANDREW B. COWE	07/22/2021
GORDON HILL	07/23/2021
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<b>Street Address:</b>	2 TECH DRIVE, SUITE 201
<b>City:</b>	ANDOVER
<b>State/Country:</b>	MASSACHUSETTS
<b>Postal Code:</b>	01810
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	16849871
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<b>ATTORNEY DOCKET NUMBER:</b>	ASX-190
<b>NAME OF SUBMITTER:</b>	ALAN S. TERAN
<b>SIGNATURE:</b>	/Alan S Teran/
<b>DATE SIGNED:</b>	07/23/2021
<b>Total Attachments: 2</b>	
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**PATENT**  
Attorney Docket No. ASX-190

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

APPLICANT: MKS Instruments, Inc. CONFIRMATION NO.: 4220  
APPLICATION NO.: 16/849,871 FILING DATE: April 15, 2020  
TITLE: Valve Apparatuses and Related Methods for Reactive Process Gas Isolation  
and Facilitating Purge During Isolation

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WHEREAS, I have invented, solely or jointly, one or more inventions described in the above-identified patent application for letters patent; and

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

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, I have sold, assigned and transferred and by these presents do hereby sell, assign and transfer unto said ASSIGNEE, its successors, assigns, and legal representatives, my 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 my 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 I 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 me had this assignment and sale not been made. I hereby convey all of my 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. I hereby acknowledge that this assignment, being of my 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 my entire right, title and interest therein.

I hereby further agree for myself and my 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,

**PATENT**  
**REEL: 056959 FRAME: 0816**

Attorney Docket No. ASX-190  
U.S. Application No. 16/849,871  
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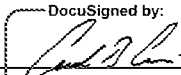
assigns, and legal representatives, but at its or their expense and charges, including the execution of non-provisional, substitution, continuation, divisional, reissue, reexamination, or corresponding foreign or international patent applications.

I 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.

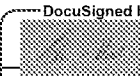
I hereby authorize and request the Director of the United States Patent and Trademark Office to issue such letters patent as shall be granted upon said application, or applications based thereon, to said ASSIGNEE, its successors, assigns, or legal representatives.

### ASSIGNMENT

Inventor: Andrew B. Cowe Date: 7/22/2021

Signature:   
DocuSigned by:  
A26F8E5238274F7...

Inventor: Gordon Hill Date: 7/23/2021

Signature:   
DocuSigned by:  
0D5342261DA1412...