504467322 07/21/2017

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT4514024

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

CONVEYING PARTY DATA

| Name | Execution Date |
|----------------------|----------------|
| NARASIMHAN SUNDARAM | 07/07/2017 |
| DAVID C. CALABRO | 06/28/2017 |
| HANS THOMANN | 07/07/2017 |
| RANDALL D. PARTRIDGE | 06/28/2017 |

RECEIVING PARTY DATA

| Name: | EXXONMOBIL RESEARCH AND ENGINEERING COMPANY |
|-------------------|---|
| Street Address: | 1545 ROUTE 22 EAST |
| Internal Address: | P.O. BOX 900 |
| City: | ANNANDALE |
| State/Country: | NEW JERSEY |
| Postal Code: | 08801-0900 |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 15653853 |

CORRESPONDENCE DATA

Fax Number: (908)335-3649

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 908-335-3605

Email: kimberly.m.shapiro@exxonmobil.com

Correspondent Name: EXXONMOBIL RESEARCH AND ENGINEERING COMPANY

Address Line 1: 1545 ROUTE 22 EAST

Address Line 2: P.O. BOX 900

Address Line 4: ANNANDALE, NEW JERSEY 08801

| ATTORNEY DOCKET NUMBER: | 2016EM209-US2 |
|-------------------------|------------------|
| NAME OF SUBMITTER: | ANDREW T. WARD |
| SIGNATURE: | /Andrew T. Ward/ |
| DATE SIGNED: | 07/21/2017 |
| | • |

Total Attachments: 2

PATENT REEL: 043060 FRAME: 0135 source=2016EM209-US2-2017-07-19-Assignment#page1.tif source=2016EM209-US2-2017-07-19-Assignment#page2.tif

PATENT REEL: 043060 FRAME: 0136 PATENT TRADEMARK OFFICE

Application Serial No. EMRE Docket No. 2016EM209-US2

ASSIGNMENT INVENTOR or INVENTORS:

NARASIMHAN SUNDARAM DAVID C. CALABRO HANS THOMANN

RANDALL D. PARTRIDGE

For good and valuable consideration, the undersigned person(s) named above, herein referred to as UNDERSIGNED, hereby agree(s) as follows:

1) UNDERSIGNED hereby assign(s) to ExxonMobil Research and Engineering Company (formerly Exxon Research and Engineering Company), a corporation of Delaware, its successors, legal representatives and assigns, herein referred to collectively as ASSIGNEE, the entire right, title and interest, for the United States and all foreign countries, in and to UNDERSIGNED's invention or improvement and to all patent applications and patents covering same which is described in a patent application

SEPARATION OF GASES USING REACTIVE ADSORBENTS AND MEMBRANES

| 28th | $Jun\epsilon$ |
|------|---------------|
| | |

said application having been executed on the 7th day(s) of July, 2017, and being further identified as EMRE Docket No. 2016EM209-US2; all rights of priority created by said application under provisions of international convention or treaties.

- 2) UNDERSIGNED agree(s) upon the request of ASSIGNEE to execute any and all applications for and documents relating to obtaining patents and the prosecution thereof for said invention or improvement, and any continuations of such applications or substitutes therefor or registrations thereof, and any specific separate assignments of any of the above required for recording in the United States Patent and Trademark Office and any foreign patent office that ASSIGNEE may deem necessary or expedient.
- 3) UNDERSIGNED agree(s) that in the event of any application based on said assigned invention or improvement, or patent issued thereon, or any reissue or application for the reissue thereof, becoming involved in priority of invention proceedings, UNDERSIGNED will cooperate with ASSIGNEE to the best of the ability of UNDERSIGNED in the matter of preparing and executing all documents and giving and producing evidence in support thereof.
- 4) UNDERSIGNED agree(s) to perform upon ASSIGNEE's request any and all affirmative acts to obtain United States and foreign patents covering said invention or improvement and to vest all rights therein hereby conveyed to ASSIGNEE, as fully and as entirely as the same would have been held and enjoyed by UNDERSIGNED if this assignment and sale had not been made.
- 5) UNDERSIGNED hereby authorize(s) ASSIGNEE to insert in this instrument the date(s) on which UNDERSIGNED executed the Declaration for the above-referenced patent application.

IN WITNESS WHEREOF, this assignment has been executed by UNDERSIGNED on the date opposite UNDERSIGNED's NAME.

| Date 7/2/2017 | Inventor Daramin (LS) NARASIMHAN SUNDARAM | Wilness Atolia |
|---------------|---|----------------|
| | Invenio AMA C. CALABRO | |
| | Inventor (LS) HANS THOMANN | |
| Date | Inventor(LS) RANDALL D. PARTRIDGE | Wiiness |

PATENT REEL: 043060 FRAME: 0137

Application Serial No. 15/653,853 EMRE Docket No. 2016EM209-US2

ASSIGNMENT INVENTOR or INVENTORS:

NARASIMHAN SUNDARAM DAVID C. CALABRO

HANS THOMANN

RANDALL D. PARTRIDGE

For good and valuable consideration, the undersigned person(s) named above, herein referred to as UNDERSIGNED, hereby agree(s) as follows:

1) UNDERSIGNED hereby assign(s) to ExxonMobil Research and Engineering Company (formerly Exxon Research and Engineering Company), a corporation of Delaware, its successors, legal representatives and assigns, herein referred to collectively as ASSIGNEE, the entire right, title and interest, for the United States and all foreign countries, in and to UNDERSIGNED's invention or improvement and to all patent applications and patents covering same which is described in a patent application entitled

SEPARATION OF GASES USING REACTIVE ADSORBENTS AND MEMBRANES

28th

June

said application having been executed on the 7th day(s) of July, 2017, and being further identified as EMRE Docket No. 2016EM209-US2; all rights of priority created by said application under provisions of international convention or treaties.

- 2) UNDERSIGNED agree(s) upon the request of ASSIGNEE to execute any and all applications for and documents relating to obtaining patents and the prosecution thereof for said invention or improvement, and any continuations of such applications or substitutes therefor or registrations thereof, and any specific separate assignments of any of the above required for recording in the United States Patent and Trademark Office and any foreign patent office that ASSIGNEE may deem necessary or expedient.
- 3) UNDERSIGNED agree(s) that in the event of any application based on said assigned invention or improvement, or patent issued thereon, or any reissue or application for the reissue thereof, becoming involved in priority of invention proceedings, UNDERSIGNED will cooperate with ASSIGNEE to the best of the ability of UNDERSIGNED in the matter of preparing and executing all documents and giving and producing evidence in support thereof.
- 4) UNDERSIGNED agree(s) to perform upon ASSIGNEE's request any and all affirmative acts to obtain United States and foreign patents covering said invention or improvement and to vest all rights therein hereby conveyed to ASSIGNEE, as fully and as entirely as the same would have been held and enjoyed by UNDERSIGNED if this assignment and sale had not been made.
- UNDERSIGNED hereby authorize(s) ASSIGNEE to insert in this instrument the date(s) on which UNDERSIGNED
 executed the Declaration for the above-referenced patent application.

IN WITNESS WHEREOF, this assignment has been executed by UNDERSIGNED on the date opposite UNDERSIGNED'S NAME.

| Date | Inventor | _(LS) | Witness |
|---------------|-------------------------------|-------|-----------------------|
| | NARASIMHAN SUNDARAM | | |
| Date | InventorDAVID C. CALABRO | (LS) | Witness |
| Date | InventorHANS THOMANN | _(LS) | Witness |
| Date 628 2017 | Inventor RANDALL D. PARTRIDGE | 355 | wieness Market Growth |

PATENT REEL: 043060 FRAME: 0138

RECORDED: 07/21/2017