505200005 11/20/2018

PATENT ASSIGNMENT COVER SHEET

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

CONVEYING PARTY DATA

| Name | Execution Date |
|---------------|----------------|
| HYUNCHUL LEE | 08/27/2018 |
| JUNHWAN KU | 09/14/2018 |
| HYEOKJO GWON | 08/31/2018 |
| NAGJONG KIM | 08/27/2018 |
| CHILHEE CHUNG | 09/17/2018 |
| SANGMIN JI | 08/31/2018 |
| JINKYU KANG | 08/27/2018 |
| CHANGDUK KANG | 08/31/2018 |
| RYOUNGHEE KIM | 09/14/2018 |
| MINSANG KIM | 09/14/2018 |
| EUNCHEOL DO | 09/14/2018 |
| KITAE PARK | 08/27/2018 |
| SUNGHAENG LEE | 08/27/2018 |

RECEIVING PARTY DATA

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| City: | SUWON-SI, GYEONGGI-DO |
| State/Country: | KOREA, REPUBLIC OF |
| Postal Code: | 16677 |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 16196729 |

CORRESPONDENCE DATA

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REEL: 047556 FRAME: 0212

PATENT

505200005

| | 180 NORTH STETSON AVENUE CHICAGO, ILLINOIS 60601-6731 | | |
|--------------------------------|--|--|--|
| ATTORNEY DOCKET NUMBER: | R : 739229 | | |
| NAME OF SUBMITTER: | JOHN L. GASE | | |
| SIGNATURE: | /John L. Gase/ | | |
| DATE SIGNED: 11/20/2018 | | | |
| | This document serves as an Oath/Declaration (37 CFR 1.63). | | |

Total Attachments: 3

source=Combined_Declaration_and_Assignment#page1.tif source=Combined_Declaration_and_Assignment#page2.tif source=Combined_Declaration_and_Assignment#page3.tif

> PATENT REEL: 047556 FRAME: 0213

COMBINED DECLARATION AND ASSIGNMENT

Title of Invention: POROUS FILM, SEPARATOR INCLUDING THE SAME, ELECTROCHEMICAL DEVICE INCLUDING SEPARATOR, AND METHOD OF PREPARING POROUS FILM

DECLARATION

| As an inventor named below, I hereby declare for: |
|--|
| the attached patent application, or United States patent application or PCT international patent application numberfiledfiledfiled |
| (i) the patent application identified above was made or authorized to be made by me; |
| (ii) I believe that I am the original inventor or an original joint inventor of an invention claimed in the patent application identified above; and |
| (iii) I bereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years or both fine and imprisonment. |

ASSIGNMENT

For good and valuable consideration, the receipt and sufficiency of which are acknowledged, I sell, assign, and transfer to

SAMSUNG ELECTRONICS CO., LTD., 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, KR

(hereinafter "ASSIGNEE") and its successors, assigns, and legal representatives, my entire right, title and interest for the United States of America, as defined in 35 U.S.C. 100, in the invention(s) disclosed in the patent application identified above, and any and all extensions, divisions, reissues, reexaminations, continuations, or continuations-in-part patent applications of the patent application identified above;

I authorize and request the United States Director of Patents and Trademarks to issue any and all United States Letters Patent which may be granted for the invention(s) disclosed in the patent application identified above, and any and all extensions, divisions, reissues, reexaminations, continuations, or continuations-in-part patent applications of the patent application identified above, and the right to all benefits under the Patent Corporation Treaty, and the international Convention for the Protection of Industrial Property to the ASSIGNEE, for its interest as ASSIGNEE; and

I agree to transfer a like interest, and to render all necessary assistance in making application for and obtaining original, continuation, divisional, continuation-in-part, reissued, or reexamined Letters Patent of the United States, upon request of the ASSIGNEE, and without further remuneration, in and to any improvements, and applications for patent based on the patent application identified above, growing out of or related to the invention(s) disclosed in the patent application identified above, and to execute any papers of the ASSIGNEE, deemed essential to ASSIGNEE'S full protection and title in and to the invention(s) transferred by this Assignment.

It is agreed the terms of this assignment shall bind, and inure to the benefit of, the legal representatives, successors, and assigns of all parties hereto.

I authorize ASSIGNEE to insert in this assignment the number and filing date of the application if the number and filing date of the application are not recited herein at the time of execution of this assignment.

PATENT REEL: 047556 FRAME: 0214

| Hyunchen Lee | Date _ | 20/8 | · 8, 27 |
|----------------------------|--------|-------|----------------|
| Jinhuru Ku Junhwan Ku | Date _ | 20/8 | 9. 14 |
| Hyeokjo Gewon Hyeokjo Gwon | Date _ | 2018. | 8.31 |
| Nag - Jong Kim Nagjong Kim | Date_ | 2018. | 8 2 <u>2</u> |
| Chilhee Chang | Date _ | 2018. | 9,17 |
| Song Min Ji Sangmin Ji | Date _ | 90/8 | 3 8 <u>8</u> / |
| Jankyu Kang | Date_ |)d8. | 8-47 |

| Chang Duk Lang Changduk Kang | Date 31. Aug. 2018 |
|------------------------------|--------------------|
| Ryounghee Kim. | Date 20/8 . 9 . 14 |
| Minsang Kim | Date 2018 9 14 |
| Earn Wel 20 Euncheol Do | Date 2018.9.14 |
| Pat kun | Date 22, Aug 2018 |
| Aitae Park | Date 27, Av. 2018 |
| Sunghaeng Lee | Date |