503733198 03/11/2016

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT3779840

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

CONVEYING PARTY DATA

| Name | Execution Date |
|----------------------------------|----------------|
| XUEPENG QIU | 10/21/2014 |
| HYUNSOO YANG | 10/21/2014 |
| KULOTHUNGASAGARAN NARAYANAPILLAI | 10/21/2014 |

RECEIVING PARTY DATA

| Name: | NATIONAL UNIVERSITY OF SINGAPORE | |
|-----------------|----------------------------------|--|
| Street Address: | 21 LOWER KENT RIDGE ROAD | |
| City: | SINGAPORE | |
| State/Country: | SINGAPORE | |
| Postal Code: | 119077 | |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 15021382 |

CORRESPONDENCE DATA

Fax Number:

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.

Email: docket@c-m.com

Correspondent Name: CESARI AND MCKENNA, LLP

Address Line 1: 88 BLACK FALCON AVE

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Address Line 4: BOSTON, MASSACHUSETTS 02210

| ATTORNEY DOCKET NUMBER: | 218005-0085 | |
|-------------------------|-----------------|--|
| NAME OF SUBMITTER: | Y. ROCKY TSAO | |
| SIGNATURE: | /Y. Rocky Tsao/ | |
| DATE SIGNED: | 03/11/2016 | |

Total Attachments: 2 source=29M4402#page1.tif source=29M4402#page2.tif

PATENT 503733198 REEL: 037956 FRAME: 0483

ASSIGNMENT

THIS ASSIGNMENT is made this 21st of October 2014 between:

Xuepeng QIU, a citizen of China c/o National University of Singapore of 21 Lower Kent Ridge Road, Singapore 119077;

Hyunsoo YANG, a citizen of South Korea c/o National University of Singapore of 21 Lower Kent Ridge Road, Singapore 119077;

Kulothungasagaran NARAYANAPILLAI, a citizen of Sri Lanka c/o National University of Singapore of 21 Lower Kent Ridge Road, Singapore 119077;

("the Assignors") of the one part; and

NATIONAL UNIVERSITY OF SINGAPORE of 21 Lower Kent Ridge Road, Singapore 119077.

("the Assignee") of the other part.

WHEREAS

- A. The Assignors jointly developed an invention relating to "Spin Orbit and Spin Transfer Torque-Based Spintronics Devices" ("the Invention"), which has been filed as U.S. Application No. 61/881,539 on 24 September 2013, and Patent Cooperation Treaty (PCT) Application No. PCT/SG2014/000451 on 23 September 2014 claiming priority to U.S. Application No. 61/881,539 on 24 September 2013 ("Patent Applications").
- B. The Assignors have previously agreed to assign and transfer to the Assignee all their rights, title and interests in the Invention and Patent Applications in all countries in the world ("the Territory") and that the Assignee should be substituted as the applicant in its place. They wish to formalise and confirm the assignment in this agreement ("Assignment").

NOW THIS ASSIGNMENT WITNESSETH AS FOLLOWS:

- 1. In consideration of the sum of One Singapore dollar (S\$1) now paid by the Assignee to the Assignors, receipt of which the Assignors hereby acknowledge, the Assignors assign to the Assignee, free from all encumbrances, all right, title and interest in respect of the Invention and the Patent Applications, all divisions, continuations or reissues filed thereon, all patents granted thereon, and TOGETHER WITH their right to apply for and obtain patents or other similar forms of protection in respect of the Invention or any part or parts of the Invention in the Territory and the right to claim priority of the Patent Applications when making applications in the Territory TOGETHER WITH the right to bring proceedings for infringement in the Territory for any previous infringement TO HOLD the same unto the Assignee and its successors and assign absolutely.
- 2. The Assignors hereby covenant with the Assignee that the Assignors have the full right to convey the entire interest here assigned, have not done or knowingly suffered or been party or privy to any act or thing whereby the Assignors are prevented from assigning the Invention and the Patent Applications, and have not and will not execute any agreement in conflict herewith. The Assignors undertake they will not publish or disclose any particulars of the Invention and the Patent Applications to any person without the prior written consent of the Assignee.

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- 3. At the request and cost of the Assignee, the Assignors shall execute all such documents and do all such acts as may be necessary to enable the Assignee or its successors, assigns, or other legal representatives to enjoy the full benefit of the rights confirmed and assigned by this Assignment including applying for and obtaining a patent or patents or other similar forms of protection in respect of the Invention in the Territory, vesting their right in the same in the Assignee when obtained, and testifying as to facts relating to the application and patents granted thereon in any litigation when requested to do so without further compensation, but at the expense of Assignee, its successors or other legal representatives.
- 4. This Assignment may be entered into in any number of counterparts, all of which taken together shall constitute one and the same instrument. Any party hereto may enter into this Assignment by signing any such counterpart.

IN WITNESS whereof the Assignors and Assignee have hereunto executed this Assignment the date and year first above written.

Assignors

Xuepeng

Hyunsoo YANG

RAYANAPILLAI

Kwon In Hun Witness Name and signature

Witness Name and signature

Assignee

Signed for and on behalf of

NATIONAL UNIVERSITY OF SINGAPORE

in the presence of

Kwon Jackyn

Irene Cheong

Director

Industry Liaison Office

National University of Singapore

Stawng Low Staw Stawy Witness Name and signature

> **PATENT REEL: 037956 FRAME: 0485**

RECORDED: 03/11/2016