

PATENT ASSIGNMENT COVER SHEET

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

CONVEYING PARTY DATA

| Name | Execution Date |
|-------------------|----------------|
| JENS PAULSEN | 12/11/2015 |
| SHINICHI KOMABA | 10/24/2015 |
| RYO HARA | 12/30/2015 |
| NAOAKI YABUUCHI | 10/21/2015 |
| MASATAKA KAJIYAMA | 10/30/2015 |

RECEIVING PARTY DATA

| | |
|--------------------------|--|
| Name: | UMICORE |
| Street Address: | RUE DU MARAIS 31 |
| City: | BRUSSELS |
| State/Country: | BELGIUM |
| Postal Code: | B-1000 |
| Name: | UMICORE KOREA LTD. |
| Street Address: | 410, CHAAM-DONG, CHEONAN |
| Internal Address: | CHEONAN |
| City: | CHUNGNAM |
| State/Country: | KOREA, REPUBLIC OF |
| Postal Code: | 330-200 |
| Name: | TOKYO UNIVERSITY OF SCIENCE FOUNDATION |
| Street Address: | 1-3 KAGURAZAKA |
| Internal Address: | SHINJUKU-KU |
| City: | TOKYO |
| State/Country: | JAPAN |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 14770536 |

CORRESPONDENCE DATA

Fax Number: (919)998-5701

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.

PATENT

| | |
|----------------------------|--|
| Phone: | 9199985700 |
| Email: | mcapozzi@brinksgilson.com |
| Correspondent Name: | BRINKS GILSON & LIONE |
| Address Line 1: | P.O. BOX 110285 |
| Address Line 4: | RESEARCH TRIANGLE PK, NORTH CAROLINA 27709 |

| | |
|--------------------------------|---------------------------------|
| ATTORNEY DOCKET NUMBER: | 13810-129 |
| NAME OF SUBMITTER: | ALLYN B ELLIOTT, REG. NO. 56745 |
| SIGNATURE: | /Allyn B. Elliott/ |
| DATE SIGNED: | 02/05/2016 |

Total Attachments: 9

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ASSIGNMENT

WHEREAS, I/we, Jens PAULSEN; Shinichi KOMABA; Ryo HARA; Naoaki YABUUCHI; and Masataka KAJIYAMA, residing at Hanul Apt. 108-201, 160-1 ShinSeong Dong, Yuseong-Gu, Daejeon, Korea, 305-707; Administrative Organization 1-3, Kagurazaka Shinjuku-ku, Tokyo, Japan, 1628601; Administrative Organization 1-3, Kagurazaka Shinjuku-ku, Tokyo, Japan 162601; Administrative Organization 1-3, Kagurazaka Shinjuku-ku, Tokyo, Japan 162601; and Administrative Organization 1-3, Kagurazaka Shinjuku-ku, Tokyo, Japan 162601, respectively, have made certain new and useful inventions and improvements in:

Doped Sodium Manganese Oxide Cathode Material for Sodium Ion Batteries;

set forth in:

- (1) ☐ United States provisional patent application
 - (a) ☐ bearing Application No. _____, filed on _____; or
 - (b) ☐ to be filed herewith;
- (2) ☒ United States nonprovisional patent application
 - (a) ☐ filed herewith; or
 - (b) ☒ bearing Application No. 14/770,536, filed on August 26, 2015,
and
- (3) ☐ International Patent Application No. _____, designating the United States and filed on _____;

AND WHEREAS, Umicore, a corporation, having an office and place of business at Rue du Marais 31, B-1000, Brussels, Belgium; Umicore Korea Ltd., a corporation, having an office and place of business at 410, Chaam-Dong, Cheonan, Chungnam, 330-200, Korea; and Tokyo University of Science Foundation, having an office at 1-3 Kagurazaka, Shinjuku-ku, Tokyo, Japan, (hereinafter "Assignees"), is desirous of acquiring the entire right, title and interest in and to said inventions, improvements and application and in and to the Letters Patent to be obtained therefor;

NOW, THEREFORE, to all whom it may concern, be it known that for good and valuable consideration, the receipt and sufficiency whereof is hereby acknowledged, I/we have sold, assigned, set over, and transferred, and by these presents do sell, assign, set over and transfer unto said Assignees, its successors or assigns, the entire right, title and interest in and to said inventions and improvements, the right to file applications for all countries in and to all inventions and improvements disclosed in the aforesaid application, the entire right, title and interest in and to the said application, any and all other applications for Letters Patent on said inventions and improvements, including all provisional, nonprovisional,

divisional, continuation, continuation-in-part, and renewal applications based in whole, or in part, upon said inventions or improvements, or upon said applications, and all Letters Patent which may be granted therefrom, and all reissues, reexaminations, or extensions of such patents, and in and to any and all applications which have been or shall be filed in any foreign countries for Letters Patent on the said inventions and improvements, including an assignment of all rights under the provisions of the International Convention, and all Letters Patent of foreign countries which may be granted therefrom; and I/we do hereby authorize and request the Commissioner of Patents and Trademarks to issue any and all United States Letters Patent for the aforesaid inventions and improvements to the said Assignees as the assignee of the entire right, title and interest in and to the same, for the use of the said Assignees, its successors and assigns.

AND, for the consideration aforesaid, I/we do hereby agree that I/we and my/our executors and legal representatives will make, execute and deliver any and all other instruments in writing including any and all further application papers, affidavits, assignments and other documents, and will communicate to said Assignee, its successors and representatives all facts known to us relating to said improvements and the history thereof and will testify in all legal proceedings and generally do all things which may be necessary or desirable more effectually to secure to and vest in said Assignees, its successors or assigns the entire right, title and interest in and to the said improvements, inventions, applications, Letters Patent, rights, titles, benefits, privileges and advantages hereby sold, assigned and conveyed, or intended so to be.

AND, furthermore, I/we covenant and agree with said Assignees, its successors and assigns, that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by me/us and that full right to convey the same as herein expressed is possessed by me/us.

AND, I/we hereby authorize and request the attorneys of Brinks, Gilson & Lione to insert in the spaces provided above the filing date, application number, and attorney's docket number of said application when known.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 11 day of Dec, 2015.


Jens PAULSEN

IN TESTIMONY WHEREOF, I have hereunto set my hand this ____ day of _____, 2015.

Shinichi KOMABA

IN TESTIMONY WHEREOF, I have hereunto set my hand this ____ day of _____, 2015.

Ryo HARA

IN TESTIMONY WHEREOF, I have hereunto set my hand this ____ day of _____, 2015.

Naoaki YABUUCHI

IN TESTIMONY WHEREOF, I have hereunto set my hand this ____ day of _____, 2015.

Masataka KAJIYAMA

ASSIGNMENT

WHEREAS, I/we, Jens PAULSEN; Shinichi KOMABA; Ryo HARA; Naoaki YABUUCHI; and Masataka KAJIYAMA, residing at Hanul Apt. 108-201, 160-1 ShinSeong Dong, Yuseong-Gu, Daejeon, Korea, 305-707; Administrative Organization 1-3, Kagurazaka Shinjuku-ku, Tokyo, Japan, 1628601; Administrative Organization 1-3, Kagurazaka Shinjuku-ku, Tokyo, Japan 162601; Administrative Organization 1-3, Kagurazaka Shinjuku-ku, Tokyo, Japan 162601; and Administrative Organization 1-3, Kagurazaka Shinjuku-ku, Tokyo, Japan 162601, respectively, have made certain new and useful inventions and improvements in:

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 - (a) ☐ bearing Application No. _____, filed on _____; or
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- (2) ☒ United States nonprovisional patent application
 - (a) ☐ filed herewith; or
 - (b) ☒ bearing Application No. 14/770,536, filed on August 26, 2015,
and
- (3) ☐ International Patent Application No. _____, designating the United States and filed on _____;

AND WHEREAS, Umicore, a corporation, having an office and place of business at Rue du Marais 31, B-1000, Brussels, Belgium; Umicore Korea Ltd., a corporation, having an office and place of business at 410, Chaam-Dong, Cheonan, Chungnam, 330-200, Korea; and Tokyo University of Science Foundation, having an office at 1-3 Kagurazaka, Shinjuku-ku, Tokyo, Japan, (hereinafter "Assignees"), is desirous of acquiring the entire right, title and interest in and to said inventions, improvements and application and in and to the Letters Patent to be obtained therefor;

NOW, THEREFORE, to all whom it may concern, be it known that for good and valuable consideration, the receipt and sufficiency whereof is hereby acknowledged, I/we have sold, assigned, set over, and transferred, and by these presents do sell, assign, set over and transfer unto said Assignees, its successors or assigns, the entire right, title and interest in and to said inventions and improvements, the right to file applications for all countries in and to all inventions and improvements disclosed in the aforesaid application, the entire right, title and interest in and to the said application, any and all other applications for Letters Patent on said inventions and improvements, including all provisional, nonprovisional,

divisional, continuation, continuation-in-part, and renewal applications based in whole, or in part, upon said inventions or improvements, or upon said applications, and all Letters Patent which may be granted therefrom, and all reissues, reexaminations, or extensions of such patents, and in and to any and all applications which have been or shall be filed in any foreign countries for Letters Patent on the said inventions and improvements, including an assignment of all rights under the provisions of the International Convention, and all Letters Patent of foreign countries which may be granted therefrom; and I/we do hereby authorize and request the Commissioner of Patents and Trademarks to issue any and all United States Letters Patent for the aforesaid inventions and improvements to the said Assignees as the assignee of the entire right, title and interest in and to the same, for the use of the said Assignees, its successors and assigns.

AND, for the consideration aforesaid, I/we do hereby agree that I/we and my/our executors and legal representatives will make, execute and deliver any and all other instruments in writing including any and all further application papers, affidavits, assignments and other documents, and will communicate to said Assignee, its successors and representatives all facts known to us relating to said improvements and the history thereof and will testify in all legal proceedings and generally do all things which may be necessary or desirable more effectually to secure to and vest in said Assignees, its successors or assigns the entire right, title and interest in and to the said improvements, inventions, applications, Letters Patent, rights, titles, benefits, privileges and advantages hereby sold, assigned and conveyed, or intended so to be.

AND, furthermore, I/we covenant and agree with said Assignees, its successors and assigns, that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been made to others by me/us and that full right to convey the same as herein expressed is possessed by me/us.

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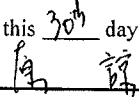
IN TESTIMONY WHEREOF, I have hereunto set my hand this ____ day of _____, 2015.

Jens PAULSEN

IN TESTIMONY WHEREOF, I have hereunto set my hand this 24th day of Oct., 2015.


Shinichi KOMABA

IN TESTIMONY WHEREOF, I have hereunto set my hand this 30th day of Dec., 2015.


Ryo HARA

IN TESTIMONY WHEREOF, I have hereunto set my hand this ____ day of _____, 2015.

Naoaki YABUUCHI

IN TESTIMONY WHEREOF, I have hereunto set my hand this ____ day of _____, 2015.

Masataka KAJIYAMA

ASSIGNMENT

WHEREAS, I/we, Jens PAULSEN; Shinichi KOMABA; Ryo HARA; Naoaki YABUUCHI; and Masataka KAJIYAMA, residing at Hanul Apt. 108-201, 160-1 ShinSeong Dong, Yuseong-Gu, Daejeon, Korea, 305-707; Administrative Organization 1-3, Kagurazaka Shinjuku-ku, Tokyo, Japan, 1628601; Administrative Organization 1-3, Kagurazaka Shinjuku-ku, Tokyo, Japan 162601; Administrative Organization 1-3, Kagurazaka Shinjuku-ku, Tokyo, Japan 162601; and Administrative Organization 1-3, Kagurazaka Shinjuku-ku, Tokyo, Japan 162601, respectively, have made certain new and useful inventions and improvements in:

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IN TESTIMONY WHEREOF, I have hereunto set my hand this ____ day of _____, 2015.

Jens PAULSEN

IN TESTIMONY WHEREOF, I have hereunto set my hand this ____ day of _____, 2015.

Shinichi KOMABA

IN TESTIMONY WHEREOF, I have hereunto set my hand this ____ day of _____, 2015.

Ryo HARA

IN TESTIMONY WHEREOF, I have hereunto set my hand this 21 day of Oct, 2015.

Naoaki YABUCHI
Naoaki YABUCHI

IN TESTIMONY WHEREOF, I have hereunto set my hand this 30 day of Oct, 2015.

M. KajiYama
Masataka KAJIYAMA