PATENT ASSIGNMENT COVER SHEET

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SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
RICHARD LUEPTOW	06/05/2018
PAUL B. UMBANHOWAR	05/23/2018
YI FAN	05/23/2018

RECEIVING PARTY DATA

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PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	15984533

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NAME OF SUBMITTER:	DAVID M. THIMMIG
SIGNATURE:	/David M. Thimmig/
DATE SIGNED:	06/06/2018

Total Attachments: 5

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PATENT REEL: 045996 FRAME: 0468

Attorney Docket No. 1851-0047.01 NU Reference No. 2017-041-02

ASSIGNMENT

U.S. Serial No: 15/984.533

Filing Date: May 21, 2018

Inventors: Richard Lueptow; Paul B Umbanhowar; Yi Fan

Title of U.S. Patent Application: Devices for and Methods of Forming Segregated Layers from

Mixtures of Granular Materials

For good and valuable consideration, the receipt and sufficiency of which are hereby agreed, each of the undersigned hereby assigns to Northwestern University, an Illinois not-for-profit corporation, having a place of business at 633 Clark Street, Evanston, Illinois 60208 and its successors and assigns ("Assignee") the entire right, title and interest in and to the inventions of such undersigned disclosed in the application listed above, and in any and all other applications anywhere in the world which the undersigned may file and/or be named as an inventor of, solely or jointly, on said inventions, in any and all patents which may be obtained on any of said applications and in any and all reissues, reexaminations, supplemental examinations, inter partes reviews, oppositions, post-grant reviews, supplementary protection certificates and/or extensions thereof, including without limitation, the right to bring suit and to claim and retain all damages and/or seek other remedies for the past, present and future infringement of any of the foregoing, the right of priority, including without limitation to claim priority benefit of or to said patent applications, and request the Commissioner for Patents in the United States and similar authorities outside the United States to issue said patents to and in the name of the Assignee.

Each of the undersigned states that the application listed above is or was made or authorized to be made by him or her. Each of the undersigned believes himself or herself to be the original inventor or a joint inventor with another undersigned of a claimed invention in the application listed above. Each of the undersigned acknowledges that any willful false statement made by him or her in this paragraph is punishable under 18 U.S.C. §1001 by fine or imprisonment of not more than five years, or both.

Except in favor of Assignee, each of the undersigned warrants that: (i) he or she is the owner of all its rights, titles and interests herein assigned and has the right to make this unconditional and irrevocable assignment to Assignee without obtaining any approval or permission of a third party; and (ii) there are no outstanding encumbrances, liens, prior assignments, licenses, or other obligations or restrictions on the rights, titles and interests herein assigned.

Upon the request of Assignee and at no expense to the undersigned, each of the undersigned hereby agrees to execute any and all applications on said inventions, including without limitation for the reissue, reexamination, supplementary protection certificate or extension thereof and any oath, declaration or affidavit relating thereto that said Assignee may deem necessary or expedient, and to cooperate to the best of the ability of the undersigned with and perform any and all affirmative acts requested by Assignee to prepare, file, prosecute, maintain, defend, enforce and vest in Assignee the rights, titles and interests assigned herein, including without limitation, preparing and executing statements and giving and producing evidence in support thereof, whereby said rights, titles and interests will be held and enjoyed by said Assignee to the full end of the term for which said patents may be granted as fully and entirely as the same would have been held and enjoyed by the undersigned if this assignment had not been made.

Undersigned (ASSIGNORS):	
	March 52 2018
Inventor Name/Richard Lorpitow	DATE
State of Illinois	
County of (8)	
On this day of County and State aforesaid, appeared, to me :	<u>\$0.5</u> , before me, a Notary Public in and for the personally known to be the same person whose name is
subscribed to the loregoing instrument, and acki	conteased that he or she executed said instrument as his or
her free and voluntary act and for the uses and p	National Control of the Control of t
	NOTARY PERILC
[NOTARY SEAL]	My Commission Expires: 10/83/848

OFFICIAL SEAL
MOLLY E SCANLON
NOTARY PUBLIC, STATE OF BLINDIS
My Complesion Expires Oct 23, 2020

(Continued on next page)

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U.S. Serial No: 15/984,533 Filing Date: May 21, 2018

Inventors: Richard Lueptow; Paul B Umbanhowar; Yi Fan

Title of U.S. Patent Application: Devices for and Methods of Forming Segregated Layers from Mixtures

of Granular Materials

Undersitated (ASSIGNORS) continued:

	5/23//8
Inventor Name: Faul B. Umbanhowar	DATE "

State of	Illinos,		
County o	f Cook		
	11 M	. Warr	

On this 3 day of 5 2818, before me, a Notary Public in and for the County and State aforesaid, appeared, to me personally known to be the same person whose name is subscribed to the foregoing instrument, and acknowledged that he or she executed said instrument as his or her free and voluntary act and for the uses and purposes therein expressed.

MLG CAMENOTARY/UBLIC

[NOTARY SEAL]

My Commission Expires: 10/43/8000

OPPIGIAL BEAL MOLLY E SCANLON HOTARY PUBLIC, STATE OF ILLWOIS My Commission Expires Oct 23, 2020

Serial No:	15/984,533
Filing Date:	Msy 21, 2018
Title of U.S. Pate Granular Materia	est Application: Devices for and Mathods of Forming Sagregated Layers from Mixtures of its
Inventors: Richa	rd Lusptow; Paul B Umbanhowar; Yi Fan
	er: Arjen Quist, Ph.D.
Our Internal Refe	sressce: 2017-041-02
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INVENTOR PRI	nted name: <u>Y i Yam</u>
DATE OF EXBO	EUTION: <u>05-73-</u> /8
<u> </u>	Signature)
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EKOND WII	YXSS:(Signature)
Printed Name:	YANG YANG
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USA_	

MILARGE BYCE - BARCALLION OR YESICAMENA

PATENT REEL: 045996 FRAME: 0472

Attorney Docket No. 1851-0047.01 NU Reference No. 2017-041-02

U.S. Serial No: 15/984,533 Filing Date: May 21, 2018

Inventors: Richard Lueptow; Paul B Umbanhowar; Yi Fan

Title of U.S. Patent Application: Devices for and Methods of Forming Segregated Layers from Mixtures

of Granular Materials

ASSIGNEE ACCEPTANCE: Northwestern University:

On behalf of Northwestern University, Assignee, the authorized signatory below, hereby confirms Assignee's acceptance of all rights, privileges, titles and interests conveyed by this Assignment.

Printed Name

Lolitz Buckingham, Invention Specialist or

Heather Fletcher, Manager of INVO Docketing & Compliance

Department: Innovation and New Ventures Office (INVO)

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