

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT6077947

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
YAHONG ROSA ZHENG	03/31/2020
WEIMIN DUAN	03/31/2020
CHENGSHAN XIAO	03/31/2020
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	THE CURATORS OF THE UNIVERSITY OF MISSOURI
<b>Street Address:</b>	316 UNIVERSITY HALL
<b>City:</b>	COLUMBIA
<b>State/Country:</b>	MISSOURI
<b>Postal Code:</b>	65211
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	16821816
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(816)421-5547
<i>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.</i>	
<b>Email:</b>	kblair@shb.com
<b>Correspondent Name:</b>	SHOOK HARDY & BACON LLP
<b>Address Line 1:</b>	2555 GRAND BOULEVARD
<b>Address Line 4:</b>	KANSAS CITY, MISSOURI 64108
<b>ATTORNEY DOCKET NUMBER:</b>	16445.340227
<b>NAME OF SUBMITTER:</b>	KATHERINE BLAIR
<b>SIGNATURE:</b>	/KATHERINE BLAIR/
<b>DATE SIGNED:</b>	04/24/2020
<b>Total Attachments: 7</b>	
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**PATENT**

**REEL: 052492 FRAME: 0564**

**ASSIGNMENT OF PATENT RIGHTS  
FROM INVENTORS TO UNIVERSITY**

**17MST016**

This Assignment of Patent Rights from Inventor to University Agreement ("Agreement") is entered into by and between **Yahong Rosa Zheng**, an individual having an address of 4141 Ross Road, Bethlehem, PA 18020 and, **Weimin Duan**, an individual having an address of 16916 Hutchins Landing, Unit 68, San Diego, CA 92127 and, **Chengshan Xiao**, an individual having an address of 4141 Ross Road, Bethlehem, PA 18020 ("Assignors") and **The Curators of the University of Missouri**, a public corporation of the State of Missouri having a principal place of business at 316 University Hall, Columbia, Missouri 65211, U.S.A. ("Assignee").

WHEREAS Assignors have contributed to the subject matter of the invention disclosed, described, and/or claimed in UM Invention Disclosure No. 17MST016 entitled Underwater Acoustic Wireless Communication: Single-Carrier Modulation Soft Direct-Adaptation Turbo Receiver ("Invention Disclosure Form") which is the subject of United States Patent Application Serial No. 16/821,816 filed on March 17, 2020 and entitled Improved Turbo Receivers for Multiple-Input Multiple-Output Underwater Acoustic Communications ("Patent Application"); and

WHEREAS, pursuant to Assignors' assignment obligations under the Assignee's Collected Rules and Regulations § 100.020, Assignors have an obligation to convey any and all rights that Assignors have or might have in the aforementioned invention and Patent Application; and

WHEREAS Assignors have assigned their rights in the invention and Patent Application pursuant to the Invention Disclosure Form; and

WHEREAS Assignors are willing to execute this notarized Agreement in order to confirm the assignment of rights in the Patent Application (and other rights as more fully set forth below) to Assignee.

NOW THEREFORE, in consideration of Assignors' past and continued employment with and use of Assignee's funds and facilities, Assignors' assignment obligations and royalty-sharing rights under the Collected Rules and Regulations § 100.020, the sum of USD \$1.00 in-hand paid, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

1. Assignment

Assignors hereby assign, transfer, and convey (and confirm any prior such conveyance as the case may be) to Assignee, and Assignee hereby accepts, Assignors' entire right, title and interest in and to:

- (a) the invention disclosed and/or claimed, in whole or in part, in the Patent Application and any and all improvements therein conceived or reduced to practice by each of Assignors in the course of and the general scope of each of Assignors' employment with Assignee (collectively the "Invention");
- (b) all patents and patent applications that have been or may hereafter be filed which are based on the Invention in any country, including the Patent Application and any provisional, non-provisional, divisional, continuation, continuation-in-part,

extension, renewal, re-examination, reissue, substitute, supplementary protection certificate, utility model, or similar legal protection based on the Invention ("Patents");

- (c) the right to claim priority to any of the Patents under the patent laws of the United States, the International Convention for the Protection of Industrial Property, or any other international agreement or laws of the country in which the Patents are filed, as may be applicable; and
- (d) all rights of action, powers, and benefits arising from ownership of the Patents, including the right to sue for past, present, and future infringement of the Patents, the right to collect royalties, fees, damages, and payments now or hereafter due or payable with respect to the Patents, the right to seek injunctive relief based on the Patents, and the right to pursue all causes of action and all enforcement rights relating to the Patents, whether known or unknown, currently pending or otherwise.

Assignors' rights assigned in (a)-(d) above are referred to collectively in this Agreement as the "Assigned Rights."

Assignors authorize and request the Director of the United States Patent and Trademark Office, and any corresponding entity, agency, or official of any other country whose duty it is to issue patents or similar legal protection, to issue the Patents to Assignee such that the Patents will be held by Assignee for its own use and benefit, for the full term for which the Patents are or may be granted.

## 2. Further Assurances

Upon the reasonable request of Assignee, Assignors agree to execute such documents and perform such acts as may be necessary to give full effect to the terms of this Agreement. Without limiting the generality of the foregoing, Assignors agree to execute any and all assignments and other documents that may be needed to record, vest, or perfect Assignee's right, title, and interest in and to the Assigned Rights as fully and entirely as the same would have been held and enjoyed by Assignors if this assignment had not been made. Assignors also agree to execute any and all declarations, oaths, specifications, and other documents requested by Assignee in connection with prosecution of the Patents. Assignors further agree to cooperate with and assist Assignee with respect to prosecution of the Patents, including communication to Assignee of any facts known to Assignors relating to the Invention and/or any prior art that may be material to patentability of the Invention. Assignors also agree that in the event any of the Patents become involved in an interference, derivation proceeding, re-examination, reissue, opposition, supplemental examination, inter partes review, post grant review, validity, or infringement proceeding or litigation, Assignors will cooperate with and assist Assignee in relation to the proceeding for the benefit of Assignee at Assignee's expense.

## 3. Representations and Warranties

Assignors represent and warrant to Assignee that:

- (a) Assignors have the full right and power to enter into and perform their obligations under this Agreement without being in breach of any obligations owed by Assignors to any third party;

- (b) The Assigned Rights are free and clear of any agreement, lien, charges, encumbrances, ownership claim, or other claim or right, either written, oral, or implied, which will impair, interfere or conflict with the rights herein assigned to Assignee; and
- (c) Assignors have not assigned, transferred, or otherwise conveyed and will not assign, transfer, or otherwise convey to any third party any right or license under or with respect to the Assigned Rights or execute any other agreement that is in conflict with this Agreement.

4. Attorney-In-Fact

Assignors hereby irrevocably appoint the President of Assignee, or the President's designee, as each of Assignors' attorney-in-fact with authority to execute for Assignors and on Assignors' behalf any and all assignments, applications, or other instruments and documents required to be executed by Assignors pursuant to this Agreement, if Assignors are unwilling or unable to execute same. This appointment shall be deemed to be a power coupled with an interest, and as such, is irrevocable.

5. Patent Application Information

Assignors hereby authorize Assignee or its attorneys to insert in this Assignment the serial number and filing date of the Patent Application when known.

6. Binding Agreement

The provisions of this Agreement are binding upon, and will inure to the benefit of, the parties hereto and their respective heirs, personal representatives, successors and permitted assigns.

7. Counterparts

This Agreement may be executed in any number of counterparts, including facsimile or scanned PDF documents. Each such counterpart, facsimile or scanned PDF document shall be deemed an original instrument, and all of such counterparts, together, shall constitute one and the same executed Agreement.

IN WITNESS WHEREOF, Assignors and Assignee have executed this Assignment Agreement as of the day and year written below.

[The rest of the page is intentionally left blank]

ASSIGNORS

By Yahong Rosa Zheng  
Yahong Rosa Zheng,

3/31/2020  
Date

STATE OF PENNSYLVANIA )  
COUNTY OF Northampton ) SS


On this \_\_\_\_\_ day of \_\_\_\_\_, 2020, before me, a Notary Public in and for the State and County aforesaid, personally appeared Yahong Rosa Zheng, to me known and known to me to be the person of that name who signed and sealed the foregoing instrument, and she acknowledged the same to be her free act and deed.

\_\_\_\_\_  
Notary Public

(SEAL)

My Commission Expires: \_\_\_\_\_

ASSIGNORS

By   
Weimin Duan

03/31/2020  
Date

STATE OF CALIFORNIA )  
 ) SS  
COUNTY OF \_\_\_\_\_ )

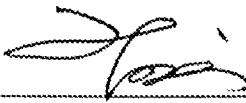
On this \_\_\_\_ day of \_\_\_\_\_, 2020, before me, a Notary Public in and for the State and County aforesaid, personally appeared Weimin Duan, to me known and known to me to be the person of that name who signed and sealed the foregoing instrument, and he acknowledged the same to be his free act and deed.

\_\_\_\_\_  
Notary Public

(SEAL)

My Commission Expires: \_\_\_\_\_

ASSIGNORS

By   
Chengshan Xiao

3/31/2020  
Date

STATE OF PENNSYLVANIA)  
COUNTY OF Northampton) SS

On this \_\_\_\_ day of \_\_\_\_\_, 2020, before me, a Notary Public in and for the State and County aforesaid, personally appeared Chengshan Xiao, to me known and known to me to be the person of that name who signed and sealed the foregoing instrument, and he acknowledged the same to be his free act and deed.

\_\_\_\_\_  
Notary Public

(SEAL)

My Commission Expires: \_\_\_\_\_



**THE CURATORS OF THE UNIVERSITY OF MISSOURI**

By John E. Woodson 4/24/2020  
John E. Woodson Date  
Interim Director – Technology Transfer and Economic Development

Delegated and Approved as to Legal Form

Mun Choi, President, University of Missouri System and Mohammad Dehghani, Chancellor, Missouri University of Science and Technology (dated April 20, 2020)

STATE OF MISSOURI     )  
  ) SS  
COUNTY OF PHELPS     )

On this \_\_\_\_ day of \_\_\_\_\_, 2020, before me, a Notary Public in and for the State and County aforesaid, personally appeared John E. Woodson, to me known and known to me to be the person of that name who signed and sealed the foregoing instrument, and he acknowledged the same to be his free act and deed on behalf of The Curators of the University of Missouri.

\_\_\_\_\_  
Notary Public

(SEAL)

My Commission Expires: \_\_\_\_\_