

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT6220821

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
HSIANG H. LIU	07/24/2019
JAMES O HARDIN	07/24/2019
JON D. BERRIGAN	07/24/2019
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	GOVERNMENT OF THE UNITED STATES, AS REPRESENTED BY THE SECRETARY OF THE AIR FORCE
<b>Street Address:</b>	2240 B STREET
<b>Internal Address:</b>	BLDG 11, RM AFMCLO/JAZ
<b>City:</b>	WRIGHT-PATTERSON AFB
<b>State/Country:</b>	OHIO
<b>Postal Code:</b>	45433
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	16940421
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(937)255-3733
<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>Phone:</b>	937-904-5077
<b>Email:</b>	afmclo.jaz.1@us.af.mil
<b>Correspondent Name:</b>	DEPARTMENT OF THE AIR FORCE AFMCLO/JAZ
<b>Address Line 1:</b>	2240 B STREET
<b>Address Line 2:</b>	BUILDING 11
<b>Address Line 4:</b>	WRIGHT-PATTERSON AFB, OHIO 45433-7109
<b>ATTORNEY DOCKET NUMBER:</b>	AFD 1953
<b>NAME OF SUBMITTER:</b>	JAMES F. MCBRIDE
<b>SIGNATURE:</b>	/James F. McBride/
<b>DATE SIGNED:</b>	07/28/2020
<b>Total Attachments: 5</b>	
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source=AFD-1953\_Liu\_Signed\_Assignment#page2.tif  
source=AFD-1953\_Hardin\_Signed\_Assignment#page1.tif  
source=AFD-1953\_Hardin\_Signed\_Assignment#page2.tif  
source=AFD-1953 Berrigan\_Assignment\_Signed#page1.tif

**ASSIGNMENT  
(Contractor Inventor)**

WHEREAS, I, HSIANG H. LIU, while employed by UES, Inc. ("Contractor"), jointly made or contributed to an invention under contract/subcontract number FA8650-15-D-5405, as described in invention disclosure AFD 1953 entitled "3-D STRUCTURES HAVING HIGH TEMPERATURE STABILITY AND IMPROVED MICROPOROSITY," to be filed as an application for Letters Patent of the United States (Application Serial Number 16940421, filed 28 July 2020), and I hereby authorize and request Air Force Patent Counsel to insert here in the above

parentheses (Application Serial Number, filed) the filing date and application number of said application when known;

WHEREAS, The above-identified application for Letters Patent was made or authorized to be made by me;

WHEREAS, I believe that I am an original joint inventor of a claimed invention in the application;

WHEREAS, I hereby acknowledge that any willful false statement made in this Declaration/Assignment is punishable under 18 U.S.C. § 1001 by fine, imprisonment of not more than five (5) years, or both; and

WHEREAS, Contractor and/or I, HSIANG H. LIU, has indicated its intention to NOT elect title and NOT file an application for Letters Patent on the aforesaid invention.

NOW, THEREFORE, to all whom it may concern, be it known that in recognition of my obligation to the Government of the United States under the above contract and by agreement, or in consideration of the premises and other valuable consideration, I, HSIANG H. LIU, elect herein to:

HEREBY HAVE SOLD, ASSIGNED, AND TRANSFERRED, and by these presents do sell, assign, and transfer unto the Government of the United States as represented by the Secretary of the Air Force, my entire right, title, and interest, in and to the aforesaid invention described in the invention disclosure, all subsequent information to support that aforesaid invention, and the resulting application for Letters Patent of the United States including all Letters Patent issuing thereon, and any continuations, continuations-in-part, divisions, and reissues or extensions thereof; and all patent applications claiming priority resulting from the filing of the aforesaid application for patent in the United States in any jurisdiction throughout the world, subject to the reservation of any license to which Contractor and/or I, HSIANG H. LIU, may be entitled under the above contract;

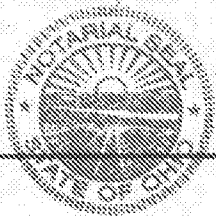
HEREBY AUTHORIZE AND REQUEST any official whose duty it is to issue patents, to issue any patent thereon to the Government of the United States, as represented by the Secretary of the Air Force, and his successors, as assignee of my entire right, title, and interest in and to the same, for the sole use for the full term or terms for which said patents and any continuations, continuations-in-part, divisions, and reissues or extensions thereof are, or may be, granted as fully and entirely as the same would have been held by me had this Assignment not been made; and

HEREBY AGREE to execute, and assist with executing, any and all applications for Letters Patent, to furnish all data and documents and to execute any papers which may be necessary or convenient for the preparation, filing, or prosecution of such applications, except it is understood that Contractor and/or I, HSIANG H. LIU, shall not be subject to any out-of-pocket expense relative to such action.

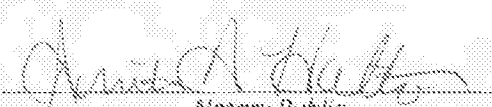
Contractor joins in and agrees to this assignment and, except for the reservation of any license under the above contract, relinquishes, and assigns to the Government of the United States, as represented by the Secretary of the Air Force its entire right, title, and interest throughout the world in and to such inventions, and further agrees to furnish to the Government of the United States, upon request, any available information and documents necessary for the timely preparation, filing, and prosecution of such applications, for Letters Patent.

  
HSIANG H. LIU

SUBSCRIBED AND ACKNOWLEDGED before me by HSIANG H. LIU this 24<sup>th</sup> day of July 2019, at the city of Dayton in the County of Montgomery and State of Ohio



ANITA A. HALTON  
Notary Public, State of Ohio  
My Commission Expires:

  
Notary Public

August 6, 2021

### CONTRACTOR CERTIFICATION

I certify that I am an Officer or Agent of Contractor herein, and that HSIANG H. LIU, who signed this assignment on behalf of Contractor, was an employee of said Contractor at the time of invention and was authorized to sign this assignment on his/her own behalf. Contractor, further, herein assigns its rights as the employer of HSIANG H. LIU to the Government of the United States as represented by the Secretary of the Air Force, consistent with our rights and obligations under contract and statute, subject to the reservation to Contractor of any license to which Contractor may be entitled under the above contract or statute. This assignment is duly signed below by Contractor's Officer or Agent for and on behalf of said Contractor by authority of its governing body, and is within the scope of the Officer's or Agent's corporate powers.

#### FOR CONTRACTOR

Contractor: UES, Inc.

By:   
(Signature of officer or agent)

Date: 7/29/19

Printed Name: Rick Weddle

Title: Director, Contracts

Business Address: 4401 DAYTON-XENIA RD DAYTON OH 45432

Business Phone: 937-426-6900 X113

**ASSIGNMENT  
(Contractor Inventor)**

WHEREAS, I, **JAMES O. HARDIN**, while employed by **UES, Inc.** ("Contractor"), jointly made or contributed to an invention under contract/subcontract number **FA8650-15-D-5405**, as described in invention disclosure **AFD 1953** entitled "**3-D STRUCTURES HAVING HIGH TEMPERATURE STABILITY AND IMPROVED MICROPOROSITY**," to be filed as an application for Letters Patent of the United States (Application Serial Number **16940421**), filed **28 July 2020**), and I hereby authorize and request Air Force Patent Counsel to insert here in the above

parentheses (Application Serial Number, filed) the filing date and application number of said application when known;

WHEREAS, The above-identified application for Letters Patent was made or authorized to be made by me;

WHEREAS, I believe that I am an original joint inventor of a claimed invention in the application;

WHEREAS, I hereby acknowledge that any willful false statement made in this Declaration/Assignment is punishable under 18 U.S.C. § 1001 by fine, imprisonment of not more than five (5) years, or both; and

WHEREAS, Contractor and/or I, **JAMES O. HARDIN**, has indicated its intention to **NOT** elect title and **NOT** file an application for Letters Patent on the aforesaid invention.

**NOW, THEREFORE**, to all whom it may concern, be it known that in recognition of my obligation to the Government of the United States under the above contract and by agreement, or in consideration of the premises and other valuable consideration, I, **JAMES O. HARDIN**, elect herein to:

**HEREBY HAVE SOLD, ASSIGNED, AND TRANSFERRED**, and by these presents do sell, assign, and transfer unto the Government of the United States as represented by the Secretary of the Air Force, my entire right, title, and interest, in and to the aforesaid invention described in the invention disclosure, all subsequent information to support that aforesaid invention, and the resulting application for Letters Patent of the United States including all Letters Patent issuing thereon, and any continuations, continuations-in-part, divisions, and reissues or extensions thereof; and all patent applications claiming priority resulting from the filing of the aforesaid application for patent in the United States in any jurisdiction throughout the world, subject to the reservation of any license to which Contractor and/or I, **JAMES O. HARDIN**, may be entitled under the above contract;

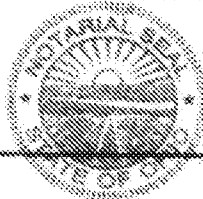
**HEREBY AUTHORIZE AND REQUEST** any official whose duty it is to issue patents, to issue any patent thereon to the Government of the United States, as represented by the Secretary of the Air Force, and his successors, as assignee of my entire right, title, and interest in and to the same, for the sole use for the full term or terms for which said patents and any continuations, continuations-in-part, divisions, and reissues or extensions thereof are, or may be, granted as fully and entirely as the same would have been held by me had this Assignment not been made; and

**HEREBY AGREE** to execute, and assist with executing, any and all applications for Letters Patent, to furnish all data and documents and to execute any papers which may be necessary or convenient for the preparation, filing, or prosecution of such applications, except it is understood that Contractor and/or I, **JAMES O. HARDIN**, shall not be subject to any out-of-pocket expense relative to such action.

Contractor joins in and agrees to this assignment and, except for the reservation of any license under the above contract, relinquishes, and assigns to the Government of the United States, as represented by the Secretary of the Air Force its entire right, title, and interest throughout the world in and to such inventions, and further agrees to furnish to the Government of the United States, upon request, any available information and documents necessary for the timely preparation, filing, and prosecution of such applications, for Letters Patent.

  
**JAMES O. HARDIN**

SUBSCRIBED AND ACKNOWLEDGED before me by **JAMES O. HARDIN** this 24<sup>th</sup> day of July 2019, at the city of Dayton in the County of Montgomery and State of Ohio.



**ANITA A. HALTON**  
Notary Public, State of Ohio  
My Commission Expires:

  
Notary Public

August 6, 2024

### CONTRACTOR CERTIFICATION

I certify that I am an Officer or Agent of Contractor herein, and that JAMES O. HARDIN, who signed this assignment on behalf of Contractor, was an employee of said Contractor at the time of invention and was authorized to sign this assignment on his/her own behalf. Contractor, further, herein assigns its rights as the employer of JAMES O. HARDIN to the Government of the United States as represented by the Secretary of the Air Force, consistent with our rights and obligations under contract and statute, subject to the reservation to Contractor of any license to which Contractor may be entitled under the above contract or statute. This assignment is duly signed below by Contractor's Officer or Agent for and on behalf of said Contractor by authority of its governing body, and is within the scope of the Officer's or Agent's corporate powers.

#### FOR CONTRACTOR

Contractor: UES, Inc.

By: 

(Signature of officer or agent)

Date: 7/29/19

Printed Name: Rick Weddle

Title: Director, Contracts

Business Address: 4401 DAYTON-XENIA RD DAYTON OH 45432

Business Phone: 937-426-6900 x113

PATENT

REEL: 053324 FRAME: 0370

**ASSIGNMENT**  
(Government Inventor)

WHEREAS, I, JOHN D. BERRIGAN, while employed by the Government of the United States, made or contributed to an invention described in invention disclosure AFD 1953 entitled "3-D STRUCTURES HAVING HIGH TEMPERATURE STABILITY AND IMPROVED MICROPOROSITY", to be filed as an application for Letters Patent of the United States (Application Serial Number 16940421), filed 28 July 2020, and I hereby authorize and request Air Force Patent Counsel to insert here in the above parentheses (Application Serial Number, filed) the filing date and application number of said application when known;

WHEREAS, The above-identified application for Letters Patent was made or authorized to be made by me;

WHEREAS, I believe that I am an original joint inventor of a claimed invention in the application;

WHEREAS, I hereby acknowledge that any willful false statement made in this Declaration/Assignment is punishable under 18 U.S.C. § 1001 by fine, imprisonment of not more than five (5) years, or both; and

WHEREAS, the conditions under which said invention was made are such as to entitle the Government of the United States as represented by the Secretary of the Air Force, under Paragraph 3(a) of Executive Order 10096, to the entire right, title, and interest therein, including foreign rights.

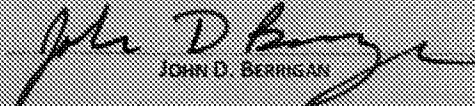
NOW, THEREFORE, to all whom it may concern, be it known that for and in consideration of the premises and other valuable considerations, I, JOHN D. BERRIGAN:

HEREBY HAVE SOLD, ASSIGNED, AND TRANSFERRED, and by these presents do sell, assign, and transfer unto the Government of the United States as represented by the Secretary of the Air Force, my entire right, title, and interest, in and to the aforesaid invention described in the invention disclosure, all subsequent information to support that aforesaid invention, and the resulting application for Letters Patent of the United States including all Letters Patent issuing thereon, and any continuations, continuations-in-part, divisions, and reissues or extensions thereof; and all priority resulting from the filing of the aforesaid application for patent in the United States;

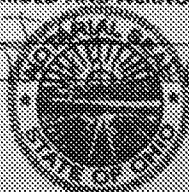
HEREBY AUTHORIZE AND REQUEST any official whose duty it is to issue patents, to issue any patent thereon to the Government of the United States, as represented by the Secretary of the Air Force, and his successors, as assignee of my entire right, title, and interest in and to the same, for the sole use for the full term or terms for which said patents and any continuations, continuations-in-part, divisions, and reissues or extensions thereof are, or may be, granted as fully and entirely as the same would have been held by me had this Assignment not been made;

HEREBY ALSO GRANT to the Government of the United States, as represented by the Secretary of the Air Force, the option to take the entire right, title, and interest in the invention or all applications for Letters Patent thereon in all countries or jurisdictions foreign to the United States in which the Government of the United States may file, or cause to be filed, applications for Letters Patent, without payment to me of any further consideration; provided, however, that this grant of an option to take foreign rights in the invention must be exercised by written notice to me within eight months of the first filing date of any application for United States Letters Patent covering the invention or within eight months from the declassification of the invention, whichever is later, and that all foreign rights not exercised under the option are left to me, subject to a nonexclusive, irrevocable, royalty-free license to the Government of the United States in any patent which may issue on said invention in any country or jurisdiction foreign to the United States, including the power to issue sublicenses for use on behalf of the Government of the United States and/or in furtherance of the foreign policies of the United States of America; and

HEREBY AGREE to execute any and all applications for Letters Patent, and to furnish all data and documents and to execute any papers which may be necessary or convenient for the preparation, filing, or prosecution of such applications, except it is understood that I shall not be subject to any out-of-pocket expense relative to such action.

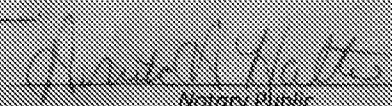
  
JOHN D. BERRIGAN

SUBSCRIBED AND ACKNOWLEDGED before me by JOHN D. BERRIGAN this 24th day of 2019 at the city of Doxton in the County of



ANITA L. WALTON  
Notary Public, State of Ohio  
My Commission Expires:

August 6, 2021

  
Notary Public