#### 507004661 12/02/2021

#### PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT7051499

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

#### **CONVEYING PARTY DATA**

Name	Execution Date
ZHENWEI DAI	11/09/2021
SHENGTAO ZHOU	11/09/2021
XILAOLIN FU	11/09/2021
YANJUN ZHANG	11/09/2021
ANLE ZHANG	11/09/2021
RUNQING YE	11/09/2021
JINJUN GUO	11/09/2021
ZHIGANG DU	11/09/2021

#### **RECEIVING PARTY DATA**

Name:	WUHAN CENTER, CHINA GEOLOGICAL SURVEY(CENTRAL SOUTH CHINA INNOVATION CENTER FOR GEOSCIENCES)
Street Address:	NO 69 GUANGGU BOULEVARD
Internal Address:	EAST LAKE HIGH-TECH DEVELOPMENT ZONE
City:	WUHAN
State/Country:	CHINA
Postal Code:	430000

#### **PROPERTY NUMBERS Total: 1**

Property Type	Number
Application Number:	17522934

#### **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.

Phone: 0909 436 5796

Email: jorlan@winstonip.cn

Correspondent Name: TRUE SHEPHERD, LLC

Address Line 1:516N. DIAMOND BAR BLVD., #310Address Line 4:DIAMOND BAR, CALIFORNIA 91765

ATTORNEY DOCKET NUMBER:	ZBZG1801UUS
NAME OF SUBMITTER:	ANDREW C. CHENG

PATENT 507004661 REEL: 058263 FRAME: 0084

SIGNATURE:	/Andrew C. Cheng, Reg. No. 60891/	
DATE SIGNED:	12/02/2021	
Total Attachments: 8		
source=05_30_ASGM_ZBZG1801UUS	#page1.tif	
source=05_30_ASGM_ZBZG1801UUS	#page2.tif	
source=05_30_ASGM_ZBZG1801UUS#page3.tif		
source=05_30_ASGM_ZBZG1801UUS	#page4.tif	
source=05_30_ASGM_ZBZG1801UUS	page5.tif	
source=05_30_ASGM_ZBZG1801UUS	#page6.tif	
source=05_30_ASGM_ZBZG1801UUS#page7.tif		
source=05_30_ASGM_ZBZG1801UUS	page8.tif	

PATENT REEL: 058263 FRAME: 0085

Attorney Docket Number	ZBZG1801L	JUS	
Title of Invention	HAFNIUM OXI METHOD THE		FECT TRANSISTOR AND MANUFACTURING
		m the original inventor or an original joint inver	ntor (referred to as ASSIGNOR below) of a claimed
WHEREAS	s,	Wuhan Center, China Geological Center for Geosciences)	Survey (Central South China Innovation
having a po	ostal address of	No 69 Guanggu Boulevard, East Wuhan, Hubei 430000, China	Lake High-tech Development Zone,
(referred to	as ASSIGNEE be	elow) desires to acquire the entire right, title, a	nd interest in and to the same in the United States;
ASSIGNOF said invendivision, co	R, by these prese tion and applicat	ents does sell, assign and transfer unto AS tion throughout the United States of Americ uation-in-part, reexamination, and reissue of sa	ipt and adequacy of which is hereby acknowledged, BIGNEE, the entire right, title, and interest in and to a, including any and all patents granted on any aid application, whether granted in an initial or
ASSIGNOR hereby agrees to execute any documents that legally may be required in connection with the filing, prosecution and maintenance of said application or any other patent applications in the United States for said invention, including additional documents that may be required to affirm the rights of ASSIGNEE in and to said invention and application, all without further consideration. ASSIGNOR also agrees, without further consideration and at ASSIGNEE's expense, to identify and communicate to ASSIGNEE at ASSIGNEE's request documents and information concerning the invention that are within ASSIGNOR's possession or control, and to provide further assurances and testimony on behalf of ASSIGNEE that lawfully may be required of ASSIGNOR in respect of the prosecution, maintenance and defense of any patent application or patent encompassed within the terms of this instrument. ASSIGNOR's obligations under this instrument shall extend to ASSIGNOR's heirs, executors, administrators and other legal representatives.			
ASSIGNOR hereby authorizes and requests the Commissioner of Patents and Trademarks to issue any and all patents referred to above to ASSIGNEE, as the ASSIGNEE of the entire right, title and interest in and to the same, for ASSIGNEE's sole use and behoof; and for the use and behoof of ASSIGNEE's legal representatives and successors, to the full end of the term for which such patent may be granted, as fully and entirely as the same would have been held by ASSIGNOR had this assignment and sale not been made.			
		es Practitioners associated with the Customer effect its recordal in the U.S. Patent and Trader	Number <b>75,866</b> to insert or complete any information mark Office and to record the same.
LEGAL N	AME OF ASSIGN	OR	
Assignor:	Zhenwei DAI		Date:_11/09/2021
	Zhenwei D	AI/	
Signature	:		

PAGE 1 OF 8

Attorney Docket Number	ZBZG1801U	JUS	
Title of Invention	HAFNIUM OXI METHOD THE		FECT TRANSISTOR AND MANUFACTURING
		m the original inventor or an original joint inver dentified by the title above.	itor (referred to as ASSIGNOR below) of a claimed
WHEREAS	,	Wuhan Center, China Geological Center for Geosciences)	Survey (Central South China Innovation
having a po	estal address of	No 69 Guanggu Boulevard, East I Wuhan, Hubei 430000, China	_ake High-tech Development Zone,
(referred to	as ASSIGNEE be	elow) desires to acquire the entire right, title, ar	nd interest in and to the same in the United States;
ASSIGNOF said invent division, co	R, by these prese tion and applicat	ents does sell, assign and transfer unto ASS tion throughout the United States of Americ uation-in-part, reexamination, and reissue of sa	ipt and adequacy of which is hereby acknowledged, SIGNEE, the entire right, title, and interest in and to a, including any and all patents granted on any aid application, whether granted in an initial or
prosecution additional d further conscommunica ASSIGNOF be required encompass	and maintenance locuments that ma sideration. ASSIG te to ASSIGNEE R's possession or of ASSIGNOR in ted within the term	ay be required to affirm the rights of ASSIGNEI NOR also agrees, without further consideration at ASSIGNEE's request documents and inform control, and to provide further assurances and respect of the prosecution, maintenance and	ations in the United States for said invention, including E in and to said invention and application, all without n and at ASSIGNEE's expense, to identify and nation concerning the invention that are within testimony on behalf of ASSIGNEE that lawfully may
referred to use and be which such	above to ASSIGN hoof; and for the i	IEE, as the ASSIGNEE of the entire right, title a use and behoof of ASSIGNEE's legal represen	Patents and Trademarks to issue any and all patents and interest in and to the same, for ASSIGNEE's sole tatives and successors, to the full end of the term for have been held by ASSIGNOR had this assignment
		es Practitioners associated with the Customer effect its recordal in the U.S. Patent and Trader	Number <b>75,866</b> to insert or complete any information mark Office and to record the same.
LEGAL N	AME OF ASSIGN	OR	
Assignor:	Shengtao ZF	łou	Date: 11/09/2021
Signature	/Shengtao Z	ZHOU/	
Jignature			

PAGE 2 OF 8

Attorney Docket Number	ZBZG1801L	JUS	
Title of Invention	HAFNIUM OXI METHOD THE		FECT TRANSISTOR AND MANUFACTURING
		m the original inventor or an original joint inver dentified by the title above.	ntor (referred to as ASSIGNOR below) of a claimed
WHEREAS	•	Wuhan Center, China Geological Center for Geosciences)	Survey (Central South China Innovation
having a po	ostal address of	•	Lake High-tech Development Zone,
(referred to	as ASSIGNEE be	elow) desires to acquire the entire right, title, ar	nd interest in and to the same in the United States;
ASSIGNOF said invent division, co	R, by these prese tion and applicat	ents does sell, assign and transfer unto ASS tion throughout the United States of Americ uation-in-part, reexamination, and reissue of sa	ipt and adequacy of which is hereby acknowledged, SIGNEE, the entire right, title, and interest in and to a, including any and all patents granted on any aid application, whether granted in an initial or
prosecution additional d further conscommunica ASSIGNOF be required encompass	and maintenance locuments that ma sideration. ASSIG te to ASSIGNEE S's possession or of ASSIGNOR in ted within the term	ay be required to affirm the rights of ASSIGNEI NOR also agrees, without further consideration at ASSIGNEE's request documents and inform control, and to provide further assurances and respect of the prosecution, maintenance and	ations in the United States for said invention, including E in and to said invention and application, all without n and at ASSIGNEE's expense, to identify and nation concerning the invention that are within testimony on behalf of ASSIGNEE that lawfully may
referred to use and be which such	above to ASSIGN hoof; and for the t	IEE, as the ASSIGNEE of the entire right, title a use and behoof of ASSIGNEE's legal represen	Patents and Trademarks to issue any and all patents and interest in and to the same, for ASSIGNEE's sole statives and successors, to the full end of the term for have been held by ASSIGNOR had this assignment
		es Practitioners associated with the Customer effect its recordal in the U.S. Patent and Trader	Number <b>75,866</b> to insert or complete any information mark Office and to record the same.
LEGAL N	AME OF ASSIGN	OR	
Assignor:	Xiaolin FU		Date: 11/09/2021
Signature	/Xiaolin FU/		

PAGE 3 OF 8

Attorney Docket Number	ZBZG1801U	JUS	
Title of Invention	HAFNIUM OXI METHOD THE		FECT TRANSISTOR AND MANUFACTURING
		m the original inventor or an original joint inver lentified by the title above.	ntor (referred to as ASSIGNOR below) of a claimed
WHEREAS	,	Wuhan Center, China Geological Center for Geosciences)	Survey (Central South China Innovation
having a po	ostal address of	No 69 Guanggu Boulevard, East I Wuhan, Hubei 430000, China	Lake High-tech Development Zone,
(referred to	as ASSIGNEE be	elow) desires to acquire the entire right, title, an	nd interest in and to the same in the United States;
ASSIGNOF said invent division, co	R, by these prese tion and applicat	ents does sell, assign and transfer unto ASS tion throughout the United States of Americ uation-in-part, reexamination, and reissue of sa	ipt and adequacy of which is hereby acknowledged, SIGNEE, the entire right, title, and interest in and to a, including any and all patents granted on any aid application, whether granted in an initial or
prosecution additional d further conscommunica ASSIGNOF be required encompass	and maintenance locuments that ma sideration. ASSIG te to ASSIGNEE R's possession or of ASSIGNOR in sed within the tern	ay be required to affirm the rights of ASSIGNEI NOR also agrees, without further consideration at ASSIGNEE's request documents and inform control, and to provide further assurances and respect of the prosecution, maintenance and	ations in the United States for said invention, including E in and to said invention and application, all without n and at ASSIGNEE's expense, to identify and nation concerning the invention that are within testimony on behalf of ASSIGNEE that lawfully may
referred to use and be which such	above to ASSIGN hoof; and for the i	IEE, as the ASSIGNEE of the entire right, title ause and behoof of ASSIGNEE's legal represen	Patents and Trademarks to issue any and all patents and interest in and to the same, for ASSIGNEE's sole statives and successors, to the full end of the term for have been held by ASSIGNOR had this assignment
		es Practitioners associated with the Customer effect its recordal in the U.S. Patent and Trader	Number <b>75,866</b> to insert or complete any information mark Office and to record the same.
LEGAL N	AME OF ASSIGN	OR	
Assignor:	Yanjun ZHA <b>l</b>	NG	Date:_11/09/2021
Signature	· /Yanjun ZH/	ANG/	
3/	-		

PAGE 4 OF 8

Attorney Docket Number	ZBZG1801U	JUS	
Title of Invention	HAFNIUM OXI METHOD THE		FFECT TRANSISTOR AND MANUFACTURING
		m the original inventor or an original joint inver	ntor (referred to as ASSIGNOR below) of a claimed
WHEREAS	,	Wuhan Center, China Geological Survey (Central South China Innovation Center for Geosciences)	
having a po	ostal address of	,	Lake High-tech Development Zone,
(referred to	as ASSIGNEE be	elow) desires to acquire the entire right, title, a	nd interest in and to the same in the United States;
ASSIGNOF said invent division, co	R, by these prese tion and applicat	ents does sell, assign and transfer unto AS tion throughout the United States of Americ uation-in-part, reexamination, and reissue of sa	eipt and adequacy of which is hereby acknowledged, SIGNEE, the entire right, title, and interest in and to ca, including any and all patents granted on any aid application, whether granted in an initial or
ASSIGNOR hereby agrees to execute any documents that legally may be required in connection with the filing, prosecution and maintenance of said application or any other patent applications in the United States for said invention, including additional documents that may be required to affirm the rights of ASSIGNEE in and to said invention and application, all without further consideration. ASSIGNOR also agrees, without further consideration and at ASSIGNEE's expense, to identify and communicate to ASSIGNEE at ASSIGNEE's request documents and information concerning the invention that are within ASSIGNOR's possession or control, and to provide further assurances and testimony on behalf of ASSIGNEE that lawfully may be required of ASSIGNOR in respect of the prosecution, maintenance and defense of any patent application or patent encompassed within the terms of this instrument. ASSIGNOR's obligations under this instrument shall extend to ASSIGNOR's heirs, executors, administrators and other legal representatives.			
ASSIGNOR hereby authorizes and requests the Commissioner of Patents and Trademarks to issue any and all patents referred to above to ASSIGNEE, as the ASSIGNEE of the entire right, title and interest in and to the same, for ASSIGNEE's sole use and behoof; and for the use and behoof of ASSIGNEE's legal representatives and successors, to the full end of the term for which such patent may be granted, as fully and entirely as the same would have been held by ASSIGNOR had this assignment and sale not been made.			
		es Practitioners associated with the Customer effect its recordal in the U.S. Patent and Trader	Number <b>75,866</b> to insert or complete any information mark Office and to record the same.
LEGAL N	AME OF ASSIGN	OR	
Assignor:	Anle ZHANG	i .	Date: 11/09/2021
Signature	: /Anle ZHAN	G/	
•			

PAGE 5 OF 8

Attorney Docket Number	ZBZG1801L	IUS
Title of Invention	HAFNIUM OXI METHOD THE	DE-BASED FERROELECTRIC FIELD EFFECT TRANSISTOR AND MANUFACTURING REOF
		m the original inventor or an original joint inventor (referred to as ASSIGNOR below) of a claimed entified by the title above.
WHEREAS	,	Wuhan Center, China Geological Survey (Central South China Innovation Center for Geosciences)
having a po	stal address of	No 69 Guanggu Boulevard, East Lake High-tech Development Zone, Wuhan, Hubei 430000, China
(referred to	as ASSIGNEE be	elow) desires to acquire the entire right, title, and interest in and to the same in the United States;
ASSIGNOF said invent division, co	R, by these prese tion and applicat	for good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, ents does sell, assign and transfer unto ASSIGNEE, the entire right, title, and interest in and to ion throughout the United States of America, including any and all patents granted on any unation-in-part, reexamination, and reissue of said application, whether granted in an initial or ereof.
prosecution additional d further conscommunica ASSIGNOF be required encompass	and maintenance ocuments that ma sideration. ASSIG te to ASSIGNEE c's possession or of ASSIGNOR in ed within the term	grees to execute any documents that legally may be required in connection with the filing, and of said application or any other patent applications in the United States for said invention, including as be required to affirm the rights of ASSIGNEE in and to said invention and application, all without NOR also agrees, without further consideration and at ASSIGNEE's expense, to identify and at ASSIGNEE's request documents and information concerning the invention that are within control, and to provide further assurances and testimony on behalf of ASSIGNEE that lawfully may respect of the prosecution, maintenance and defense of any patent application or patent as of this instrument. ASSIGNOR's obligations under this instrument shall extend to ASSIGNOR's observed and other legal representatives.
referred to use and be which such	above to ASSIGN hoof; and for the t	uthorizes and requests the Commissioner of Patents and Trademarks to issue any and all patents EE, as the ASSIGNEE of the entire right, title and interest in and to the same, for ASSIGNEE's sole use and behoof of ASSIGNEE's legal representatives and successors, to the full end of the term for anted, as fully and entirely as the same would have been held by ASSIGNOR had this assignment
		es Practitioners associated with the Customer Number <b>75,866</b> to insert or complete any information ffect its recordal in the U.S. Patent and Trademark Office and to record the same.
LEGAL N	AME OF ASSIGN	OR
Assignor:	Runqing YE	Date: 11/09/2021
Signature	/Runqing YE	Ε/

PAGE 6 OF 8

Attorney Docket Number	ZBZG1801UUS				
Title of Invention	HAFNIUM OXIDE-BASED FERROELECTRIC FIELD EFFECT TRANSISTOR AND MANUFACTURING METHOD THEREOF				
WHEREAS, I believe that I am the original inventor or an original joint inventor (referred to as ASSIGNOR below) of a claimed invention in the application identified by the title above.					
WHEREAS	,	Wuhan Center, China Geological Survey (Central South China Innova Center for Geosciences)			
having a postal address of		No 69 Guanggu Boulevard, East Lake High-tech Development Zone, Wuhan, Hubei 430000, China			
(referred to as ASSIGNEE below) desires to acquire the entire right, title, and interest in and to the same in the United States;					
NOW, THEREFORE, for good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, ASSIGNOR, by these presents does sell, assign and transfer unto ASSIGNEE, the entire right, title, and interest in and to said invention and application throughout the United States of America, including any and all patents granted on any division, continuation, continuation-in-part, reexamination, and reissue of said application, whether granted in an initial or supplemental examination thereof.					
ASSIGNOR hereby agrees to execute any documents that legally may be required in connection with the filing, prosecution and maintenance of said application or any other patent applications in the United States for said invention, including additional documents that may be required to affirm the rights of ASSIGNEE in and to said invention and application, all without further consideration. ASSIGNOR also agrees, without further consideration and at ASSIGNEE's expense, to identify and communicate to ASSIGNEE at ASSIGNEE's request documents and information concerning the invention that are within ASSIGNOR's possession or control, and to provide further assurances and testimony on behalf of ASSIGNEE that lawfully may be required of ASSIGNOR in respect of the prosecution, maintenance and defense of any patent application or patent encompassed within the terms of this instrument. ASSIGNOR's obligations under this instrument shall extend to ASSIGNOR's heirs, executors, administrators and other legal representatives.					
ASSIGNOR hereby authorizes and requests the Commissioner of Patents and Trademarks to issue any and all patents referred to above to ASSIGNEE, as the ASSIGNEE of the entire right, title and interest in and to the same, for ASSIGNEE's sole use and behoof; and for the use and behoof of ASSIGNEE's legal representatives and successors, to the full end of the term for which such patent may be granted, as fully and entirely as the same would have been held by ASSIGNOR had this assignment and sale not been made.					
ASSIGNOR authorizes Practitioners associated with the Customer Number <b>75,866</b> to insert or complete any information in this document needed to effect its recordal in the U.S. Patent and Trademark Office and to record the same.					
LEGAL N	AME OF ASSIGN	IOR			
Assignor:	Jinjun GUO		Date: 11/09/2021		
	. /Jinjun GUC	<b>)</b> /			
1					

PAGE 7 OF 8

Attorney Docket Number	ZBZG1801UUS				
Title of Invention	HAFNIUM OXIDE-BASED FERROELECTRIC FIELD EFFECT TRANSISTOR AND MANUFACTURIN METHOD THEREOF				
WHEREAS, I believe that I am the original inventor or an original joint inventor (referred to as ASSIGNOR below) of a claimed invention in the application identified by the title above.					
WHEREAS, having a postal address of		Wuhan Center, China Geological Survey (Central South China Innovation Center for Geosciences)			
		,	Lake High-tech Development Zone,		
(referred to as ASSIGNEE below) desires to acquire the entire right, title, and interest in and to the same in the United States;					
NOW, THEREFORE, for good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, ASSIGNOR, by these presents does sell, assign and transfer unto ASSIGNEE, the entire right, title, and interest in and to said invention and application throughout the United States of America, including any and all patents granted on any division, continuation, continuation-in-part, reexamination, and reissue of said application, whether granted in an initial or supplemental examination thereof.					
ASSIGNOR hereby agrees to execute any documents that legally may be required in connection with the filing, prosecution and maintenance of said application or any other patent applications in the United States for said invention, including additional documents that may be required to affirm the rights of ASSIGNEE in and to said invention and application, all without further consideration. ASSIGNOR also agrees, without further consideration and at ASSIGNEE's expense, to identify and communicate to ASSIGNEE at ASSIGNEE's request documents and information concerning the invention that are within ASSIGNOR's possession or control, and to provide further assurances and testimony on behalf of ASSIGNEE that lawfully may be required of ASSIGNOR in respect of the prosecution, maintenance and defense of any patent application or patent encompassed within the terms of this instrument. ASSIGNOR's obligations under this instrument shall extend to ASSIGNOR's heirs, executors, administrators and other legal representatives.					
ASSIGNOR hereby authorizes and requests the Commissioner of Patents and Trademarks to issue any and all patents referred to above to ASSIGNEE, as the ASSIGNEE of the entire right, title and interest in and to the same, for ASSIGNEE's sole use and behoof; and for the use and behoof of ASSIGNEE's legal representatives and successors, to the full end of the term for which such patent may be granted, as fully and entirely as the same would have been held by ASSIGNOR had this assignment and sale not been made.					
ASSIGNOR authorizes Practitioners associated with the Customer Number <b>75,866</b> to insert or complete any information in this document needed to effect its recordal in the U.S. Patent and Trademark Office and to record the same.					
LEGAL NAME OF ASSIGNOR					
Assignor: Zhigang DU			Date: 11/09/2021		
Signature	/Zhigang DL	J/			
19	-				

PAGE 8 OF 8

PATENT REEL: 058263 FRAME: 0093