#### 506535491 03/03/2021

### PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT6582267

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

#### **CONVEYING PARTY DATA**

Name	Execution Date
ABHIJIT DUTTA	02/26/2021
MICHAEL BRANDON GRIFFIN	03/03/2021
MAARIT KRISTIINA IISA	02/26/2021
CALVIN MUKARAKATE	02/26/2021
MARK R. NIMLOS	02/26/2021
JOSHUA A. SCHAIDLE	02/26/2021
ANDREW NOLAN WILSON	03/03/2021
MATTHEW MAURICE YUNG	03/03/2021

### **RECEIVING PARTY DATA**

Name:	ALLIANCE FOR SUSTAINABLE ENERGY, LLC	
Street Address:	15013 DENVER WEST PARKWAY	
City:	GOLDEN	
State/Country:	COLORADO	
Postal Code:	80401	

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

Property Type	Number
Application Number:	17191370

#### **CORRESPONDENCE DATA**

(303)384-7499 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: 3033847571

Email: ipdocketing@nrel.gov

ALLIANCE FOR SUSTAINABLE ENERGY, LLC **Correspondent Name:** 

Address Line 1: 15013 DENVER WEST PARKWAY Address Line 4: GOLDEN, COLORADO 80401

ATTORNEY DOCKET NUMBER:	NREL 20-07
NAME OF SUBMITTER:	NANCY RONZONE
SIGNATURE:	/Nancy Ronzone/

**PATENT** REEL: 055483 FRAME: 0646

506535491

DATE SIGNED:	03/03/2021	
	This document serves as an Oath/Declaration (37 CFR 1.63).	
Total Attachments: 8		
source=20-07_Combined_Assignment_	and_Declaration_DUTTA#page1.tif	
source=20-07_Combined_Assignment_and_Declaration_GRIFFIN#page1.tif		
source=20-07_Combined_Assignment_and_Declaration_IISA#page1.tif		
source=20-07_Combined_Assignment_and_Declaration_MUKARAKATE#page1.tif		
source=20-07_Combined_Assignment_and_Declaration_NIMLOS#page1.tif		
source=20-07_Combined_Assignment_and_Declaration_SCHAIDLE#page1.tif		
source=20-07_Combined_Assignment_and_Declaration_WILSON#page1.tif		
source=20-07_Combined_Assignment_	and_Declaration_YUNG#page1.tif	

PATENT REEL: 055483 FRAME: 0647

# ASSIGNMENT AND DECLARATION UNDER 37 C.F.R. § 1.63 (For Use with Signed Application Data Sheet)

(For Use with Signed Ap	plication Data Sneet)
Title of Invention: MATERIALS AND METHODS FOR IMPROVED PYRO	LYSIS PROCESSING
This assignment and declaration are directed to (check one):  the application identified above by the attorney docket not perform the performance of the application Number of the performance of the perfo	
ASSIGN	MENT
For good and valuable consideration, the receipt and sufficiency inventor I have sold and assigned, and by these presents hereby	y of which are hereby acknowledged, as a below-named
Name of Assignee: Alliance for Sustainable Energy, LL	C
Address of Assignee: 15013 Denver West Parkway, Golde	n, CO 80401
(hereinafter ASSIGNEE) all my right, title and interest in and to embodiment thereof, in the United States and all foreign countr and all countries of the world and through the Patent Cooperation including any and all applications claiming priority thereto such and all patents granted in the United States and all countries of said invention, including any and all reissues or extensions ther successors, or assigns to the full end of the term or terms for when entirely as would have been held and enjoyed by me had this A	ries, including applications for patents in the United States on Treaty and/or the European Patent Convention, in as divisions or continuations thereof, and in and to any the world that may issue on any such applications or for each, to be held and enjoyed by said ASSIGNEE, its mich any and all such patents may be granted as fully and
I hereby authorize and request the Director of the U.S. Patent at the United States to said ASSIGNEE, its successors, or assigns	
I warrant and covenant that I have the full and unencumbered reand that I have not executed and will not execute any document	
I further covenant and agree that I will communicate to said AS all information known to me relating to said invention or patent make all rightful oaths, testify in any legal proceedings, and per by said ASSIGNEE, its successors, legal representatives, or assincluding divisions and continuations thereof and to any and all reissues or extensions, in said ASSIGNEE, its successors, or as representatives, or assigns in obtaining, reissuing, or enforcing	t application and that I will execute and deliver any papers, rform all other lawful acts deemed necessary or desirable signs to perfect title to said invention, to said application I patents that may be granted therefor or thereon, including signs, or to assist said ASSIGNEE, its successors, legal
<b>DECLARATION</b>	
As a below named inventor, I hereby declare that:	
The above-identified application was made or authorized to be	made by me.
I believe that I am the original inventor or an original joint inve	entor of a claimed invention in the application.
I hereby acknowledge that any willful false statement made in to or imprisonment of not more than five (5) years, or both.	this declaration is punishable under 18 U.S.C. 1001 by fine
Signature: 466 Mula	February 26, 2021

Inventor: Abhijit DUTTA

**PATENT REEL: 055483 FRAME: 0648** 

# ASSIGNMENT AND DECLARATION UNDER 37 C.F.R. § 1.63

(For Use with Signed Application Data Sheet)	
Title of Invention: MATERIALS AND METHODS FOR IMPROVED PYROLYSIS PROCESSING	
This assignment and declaration are directed to (check one):  the application identified above by the attorney docket no. and title of invention  PCT International Application Number	
<u>ASSIGNMENT</u>	
For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, as a below-named inventor I have sold and assigned, and by these presents hereby sell and assign, unto:	
Name of Assignee: Alliance for Sustainable Energy, LLC	
Address of Assignee: 15013 Denver West Parkway, Golden, CO 80401	
(hereinafter ASSIGNEE) all my right, title and interest in and to the above-identified invention in any form or embodiment thereof, in the United States and all foreign countries, including applications for patents in the United State and all countries of the world and through the Patent Cooperation Treaty and/or the European Patent Convention, including any and all applications claiming priority thereto such as divisions or continuations thereof, and in and to any and all patents granted in the United States and all countries of the world that may issue on any such applications or for said invention, including any and all reissues or extensions thereof, to be held and enjoyed by said ASSIGNEE, its successors, or assigns to the full end of the term or terms for which any and all such patents may be granted as fully and entirely as would have been held and enjoyed by me had this Assignment not been made.	
I hereby authorize and request the Director of the U.S. Patent and Trademark Office to issue any and all Letters Patent of the United States to said ASSIGNEE, its successors, or assigns in accordance herewith.	of
I warrant and covenant that I have the full and unencumbered right to sell and assign the interests herein sold and assign and that I have not executed and will not execute any document or instrument in conflict herewith.	.ed
I further covenant and agree that I will communicate to said ASSIGNEE, its successors, legal representatives, or assigns all information known to me relating to said invention or patent application and that I will execute and deliver any pape make all rightful oaths, testify in any legal proceedings, and perform all other lawful acts deemed necessary or desirable by said ASSIGNEE, its successors, legal representatives, or assigns to perfect title to said invention, to said application including divisions and continuations thereof and to any and all patents that may be granted therefor or thereon, including reissues or extensions, in said ASSIGNEE, its successors, or assigns, or to assist said ASSIGNEE, its successors, legal representatives, or assigns in obtaining, reissuing, or enforcing patents for said invention.	rs,
DECLARATION	
As a below named inventor, I hereby declare that:	
The above-identified application was made or authorized to be made by me.	
I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.	
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fi or imprisonment of not more than five (5) years, or both.	ne

Signature:

Inventor: Michael Brandon GRIFFIN

**PATENT REEL: 055483 FRAME: 0649** 

3/3/21

# ASSIGNMENT AND DECLARATION UNDER 37 C.F.R. § 1.63 (For Use with Signed Application Data Sheet)

(For Use with Signed Application Data Sheet)		
Title of Invention: MATERIALS AND METHODS FOR IMPROVED PYROLYSIS PROCESSING		
This assignment and declaration are directed to (check one):  the application identified above by the attorney docket no. and title of invention  PCT International Application Number, filed  United States Application No, filed		
<u>ASSIGNMENT</u>		
For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, as a below-named inventor I have sold and assigned, and by these presents hereby sell and assign, unto:		
Name of Assignee: Alliance for Sustainable Energy, LLC		
Address of Assignee: 15013 Denver West Parkway, Golden, CO 80401		
(hereinafter ASSIGNEE) all my right, title and interest in and to the above-identified invention in any form or embodiment thereof, in the United States and all foreign countries, including applications for patents in the United States and all countries of the world and through the Patent Cooperation Treaty and/or the European Patent Convention, including any and all applications claiming priority thereto such as divisions or continuations thereof, and in and to any and all patents granted in the United States and all countries of the world that may issue on any such applications or for said invention, including any and all reissues or extensions thereof, to be held and enjoyed by said ASSIGNEE, its successors, or assigns to the full end of the term or terms for which any and all such patents may be granted as fully and entirely as would have been held and enjoyed by me had this Assignment not been made.		
I hereby authorize and request the Director of the U.S. Patent and Trademark Office to issue any and all Letters Patent of the United States to said ASSIGNEE, its successors, or assigns in accordance herewith.		
I warrant and covenant that I have the full and unencumbered right to sell and assign the interests herein sold and assigned and that I have not executed and will not execute any document or instrument in conflict herewith.		
I further covenant and agree that I will communicate to said ASSIGNEE, its successors, legal representatives, or assigns all information known to me relating to said invention or patent application and that I will execute and deliver any papers, make all rightful oaths, testify in any legal proceedings, and perform all other lawful acts deemed necessary or desirable by said ASSIGNEE, its successors, legal representatives, or assigns to perfect title to said invention, to said application including divisions and continuations thereof and to any and all patents that may be granted therefor or thereon, including reissues or extensions, in said ASSIGNEE, its successors, or assigns, or to assist said ASSIGNEE, its successors, legal representatives, or assigns in obtaining, reissuing, or enforcing patents for said invention.		
<b>DECLARATION</b>		
As a below named inventor, I hereby declare that:		
The above-identified application was made or authorized to be made by me.		
I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.		
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.		

/Maarit Kristiina Iisa/

Signature:

Inventor: Maarit Kristiina IISA

**PATENT REEL: 055483 FRAME: 0650** 

February 26, 2021

NREL 20-07 Worldwide Rights

## ASSIGNMENT AND DECLARATION UNDER 37 C.F.R. § 1.63

(For Use with Signed Application Data Sheet)

Title of Invention: MATERIALS AND M	IETHODS FOR IMPROVED PYRO	LYSIS PROCESSING
the application in	claration are directed to (check one): dentified above by the attorney docket r al Application Number, filed	o. and title of invention, filed
	ASSIGN	<u>MENT</u>
	consideration, the receipt and sufficience assigned, and by these presents hereby	y of which are hereby acknowledged, as a below-named sell and assign, unto:
Name of Assignee:	Alliance for Sustainable Energy, LL	C
Address of Assignee:	15013 Denver West Parkway, Golde	n, CO 80401
embodiment thereof, in and all countries of the including any and all ar and all patents granted is said invention, includin successors, or assigns to	the United States and all foreign countries world and through the Patent Cooperational polications claiming priority thereto such the United States and all countries of g any and all reissues or extensions there	to the above-identified invention in any form or ites, including applications for patents in the United States on Treaty and/or the European Patent Convention, in as divisions or continuations thereof, and in and to any the world that may issue on any such applications or for eof, to be held and enjoyed by said ASSIGNEE, its nich any and all such patents may be granted as fully and ssignment not been made.
	request the Director of the U.S. Patent a ASSIGNEE, its successors, or assigns	nd Trademark Office to issue any and all Letters Patent of in accordance herewith.
	that I have the full and unencumbered ruted and will not execute any documen	ight to sell and assign the interests herein sold and assigned tor instrument in conflict herewith.
all information known to make all rightful oaths, by said ASSIGNEE, its including divisions and reissues or extensions, it	o me relating to said invention or paten testify in any legal proceedings, and pe successors, legal representatives, or ass continuations thereof and to any and al	SIGNEE, its successors, legal representatives, or assigns application and that I will execute and deliver any papers, afform all other lawful acts deemed necessary or desirable signs to perfect title to said invention, to said application patents that may be granted therefor or thereon, including signs, or to assist said ASSIGNEE, its successors, legal patents for said invention.
<b>DECLARATION</b>		
As a below named inve	ntor, I hereby declare that:	
The above-identified ap	plication was made or authorized to be	made by me.
I believe that I am the o	riginal inventor or an original joint inve	ntor of a claimed invention in the application.
•	hat any willful false statement made in more than five (5) years, or both.	this declaration is punishable under 18 U.S.C. 1001 by fine
Signature: 7	NCalvin	2/26/2021

Inventor: Calvin MUKARAKATE

PATENT REEL: 055483 FRAME: 0651

NREL 20-07 Worldwide Rights

## ASSIGNMENT AND DECLARATION UNDER 37 C.F.R. § 1.63

(For Use with Signed Application Data Sheet)

		,
Title of Invention: MATERIALS AND M	METHODS FOR IMPROV	ED PYROLYSIS PROCESSING
the application i		eck one): ey docket no. and title of invention, filed
	<u> 4</u>	ASSIGNMENT
		I sufficiency of which are hereby acknowledged, as a below-named ents hereby sell and assign, unto:
Name of Assignee:	Alliance for Sustainable I	Cnergy, LLC
Address of Assignee:	15013 Denver West Parky	way, Golden, CO 80401
embodiment thereof, in and all countries of the including any and all ap and all patents granted said invention, includin successors, or assigns to	world and through the Paten pplications claiming priority in the United States and all c ag any and all reissues or extro the full end of the term or the	rest in and to the above-identified invention in any form or reign countries, including applications for patents in the United States to Cooperation Treaty and/or the European Patent Convention, thereto such as divisions or continuations thereof, and in and to any countries of the world that may issue on any such applications or for ensions thereof, to be held and enjoyed by said ASSIGNEE, its erms for which any and all such patents may be granted as fully and a had this Assignment not been made.
		S. Patent and Trademark Office to issue any and all Letters Patent of , or assigns in accordance herewith.
		cumbered right to sell and assign the interests herein sold and assigned y document or instrument in conflict herewith.
all information known make all rightful oaths, by said ASSIGNEE, its including divisions and reissues or extensions,	to me relating to said inventi- testify in any legal proceedi successors, legal representa continuations thereof and to in said ASSIGNEE, its successions	e to said ASSIGNEE, its successors, legal representatives, or assigns on or patent application and that I will execute and deliver any papers, and perform all other lawful acts deemed necessary or desirable tives, or assigns to perfect title to said invention, to said application any and all patents that may be granted therefor or thereon, including essors, or assigns, or to assist said ASSIGNEE, its successors, legal renforcing patents for said invention.
DECLARATION	Ī	
As a below named inve	entor, I hereby declare that:	
The above-identified ap	oplication was made or author	rized to be made by me.
I believe that I am the o	original inventor or an origin	al joint inventor of a claimed invention in the application.
	that any willful false stateme more than five (5) years, or	nt made in this declaration is punishable under 18 U.S.C. 1001 by fine both.
Signature: Mark	R Nimlos	2/26.2021

Inventor: Mark R. NIMLOS

PATENT REEL: 055483 FRAME: 0652

# ASSIGNMENT AND DECLARATION UNDER 37 C.F.R. § 1.63

(For Use with Signed Application Data Sheet)
Title of Invention: MATERIALS AND METHODS FOR IMPROVED PYROLYSIS PROCESSING
This assignment and declaration are directed to (check one):    the application identified above by the attorney docket no. and title of invention   PCT International Application Number, filed   United States Application No, filed
ASSIGNMENT
For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, as a below-named inventor I have sold and assigned, and by these presents hereby sell and assign, unto:
Name of Assignee: Alliance for Sustainable Energy, LLC
Address of Assignee: 15013 Denver West Parkway, Golden, CO 80401
(hereinafter ASSIGNEE) all my right, title and interest in and to the above-identified invention in any form or embodiment thereof, in the United States and all foreign countries, including applications for patents in the United States and all countries of the world and through the Patent Cooperation Treaty and/or the European Patent Convention, including any and all applications claiming priority thereto such as divisions or continuations thereof, and in and to any and all patents granted in the United States and all countries of the world that may issue on any such applications or for said invention, including any and all reissues or extensions thereof, to be held and enjoyed by said ASSIGNEE, its successors, or assigns to the full end of the term or terms for which any and all such patents may be granted as fully and entirely as would have been held and enjoyed by me had this Assignment not been made.
I hereby authorize and request the Director of the U.S. Patent and Trademark Office to issue any and all Letters Patent of the United States to said ASSIGNEE, its successors, or assigns in accordance herewith.
I warrant and covenant that I have the full and unencumbered right to sell and assign the interests herein sold and assigned and that I have not executed and will not execute any document or instrument in conflict herewith.
I further covenant and agree that I will communicate to said ASSIGNEE, its successors, legal representatives, or assigns all information known to me relating to said invention or patent application and that I will execute and deliver any papers make all rightful oaths, testify in any legal proceedings, and perform all other lawful acts deemed necessary or desirable by said ASSIGNEE, its successors, legal representatives, or assigns to perfect title to said invention, to said application including divisions and continuations thereof and to any and all patents that may be granted therefor or thereon, including reissues or extensions, in said ASSIGNEE, its successors, or assigns, or to assist said ASSIGNEE, its successors, legal representatives, or assigns in obtaining, reissuing, or enforcing patents for said invention.
<b>DECLARATION</b>
As a below named inventor, I hereby declare that:
The above-identified application was made or authorized to be made by me.
I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by find or imprisonment of not more than five (5) years, or both.
Signature: Joshua A. Schaidle 2/26/2021 Inventor: Joshua A. SCHAIDLE DATE
Inventor: Joshua & SCHAIDLE DATE

**PATENT REEL: 055483 FRAME: 0653** 

## ASSIGNMENT AND DECLARATION UNDER 37 C.F.R. § 1.63

(For Use with Signed Application Data Sheet)

Title of Invention	m:		
MATERIALS A	ND METHODS FOR	IMPROVED PYRO	DLYSIS PROCESSING

This a	ssignment and declaration are directed to	(check one):	
$\boxtimes$	the application identified above by the a	tomey docket no, and title	of invention
	PCT International Application Number	, filed	
	United States Application No.	filed	<del>,</del>
		· · · · · · · · · · · · · · · · · · ·	************

### ASSIGNMENT

For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, as a below-named inventor I have sold and assigned, and by these presents hereby sell and assign, unto:

Name of Assignee:

Alliance for Sustainable Energy, LLC

Address of Assignee: 15013 Denver West Parkway, Golden, CO 80401

(hereinafter ASSIGNEE) all my right, title and interest in and to the above-identified invention in any form or embodiment thereof, in the United States and all foreign countries, including applications for patents in the United States and all countries of the world and through the Patent Cooperation Treaty and/or the European Patent Convention, including any and all applications claiming priority thereto such as divisions or continuations thereof, and in and to any and all patents granted in the United States and all countries of the world that may issue on any such applications or for said invention, including any and all reissues or extensions thereof, to be held and enjoyed by said ASSIGNEE, its successors, or assigns to the full end of the term or terms for which any and all such patents may be granted as fully and entirely as would have been held and enjoyed by me had this Assignment not been made.

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I warrant and covenant that I have the full and unencumbered right to sell and assign the interests herein sold and assigned and that I have not executed and will not execute any document or instrument in conflict herewith.

I further covenant and agree that I will communicate to said ASSIGNEE, its successors, legal representatives, or assigns all information known to me relating to said invention or patent application and that I will execute and deliver any papers. make all rightful oaths, testify in any legal proceedings, and perform all other lawful acts deemed necessary or desirable by said ASSIGNEE, its successors, legal representatives, or assigns to perfect title to said invention, to said application including divisions and continuations thereof and to any and all patents that may be granted therefor or thereon, including reissues or extensions, in said ASSIGNEE, its successors, or assigns, or to assist said ASSIGNEE, its successors, legal representatives, or assigns in obtaining, reissuing, or enforcing patents for said invention.

### DECLARATION

As a below named inventor. I hereby declare that:

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

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

		v. v. v
Signature:	C start	3/3/21
Inventor:	Andrew Nolan WILSON	DATE

**PATENT** REEL: 055483 FRAME: 0654

# ASSIGNMENT AND DECLARATION UNDER 37 C.F.R. § 1.63 (For Use with Signed Application Data Sheet)

(For Use with Signed Ap	plication Data Sneet)			
Title of Invention: MATERIALS AND METHODS FOR IMPROVED PYROI	LYSIS PROCESSING			
This assignment and declaration are directed to (check one):  the application identified above by the attorney docket not perform PCT International Application Number				
ASSIGNMENT				
For good and valuable consideration, the receipt and sufficiency inventor I have sold and assigned, and by these presents hereby				
Name of Assignee: Alliance for Sustainable Energy, LL	C			
Address of Assignee: 15013 Denver West Parkway, Golden	n, CO 80401			
(hereinafter ASSIGNEE) all my right, title and interest in and to embodiment thereof, in the United States and all foreign country and all countries of the world and through the Patent Cooperation including any and all applications claiming priority thereto such and all patents granted in the United States and all countries of said invention, including any and all reissues or extensions there successors, or assigns to the full end of the term or terms for whe entirely as would have been held and enjoyed by me had this Assignment.	ies, including applications for patents in the United States on Treaty and/or the European Patent Convention, as divisions or continuations thereof, and in and to any the world that may issue on any such applications or for eof, to be held and enjoyed by said ASSIGNEE, its nich any and all such patents may be granted as fully and			
I hereby authorize and request the Director of the U.S. Patent are the United States to said ASSIGNEE, its successors, or assigns				
I warrant and covenant that I have the full and unencumbered ri and that I have not executed and will not execute any document				
I further covenant and agree that I will communicate to said AS all information known to me relating to said invention or patent make all rightful oaths, testify in any legal proceedings, and per by said ASSIGNEE, its successors, legal representatives, or ass including divisions and continuations thereof and to any and all reissues or extensions, in said ASSIGNEE, its successors, or ass representatives, or assigns in obtaining, reissuing, or enforcing particular and the said and the said assigns are presentatives.	application and that I will execute and deliver any papers, form all other lawful acts deemed necessary or desirable igns to perfect title to said invention, to said application patents that may be granted therefor or thereon, including signs, or to assist said ASSIGNEE, its successors, legal			
<b>DECLARATION</b>				
As a below named inventor, I hereby declare that:				
The above-identified application was made or authorized to be	made by me.			
I believe that I am the original inventor or an original joint inventor	ntor of a claimed invention in the application.			
I hereby acknowledge that any willful false statement made in to or imprisonment of not more than five (5) years, or both.	his declaration is punishable under 18 U.S.C. 1001 by fine			
Signature: Matthew Matrice YUNG  Matthew Matrice YUNG	03/03/2021			
Inventor: Matthew Matrice YUNG	DATE			

RECORDED: 03/03/2021

**PATENT REEL: 055483 FRAME: 0655**