Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Annli	cation Da	ta Shoot 37 CEE	ot 37 CED 1 76	Attorney Docket Number		r					
Application Data Sheet 37 CFR 1.76		1.70	Application Number								
Title of Invention											
bibliogra This doo	phic data arrang cument may be	eet is part of the provision ged in a format specified completed electronically ed and included in a pape	by the Un and subi	ited States Pa mitted to the 0	tent an	d Trademar	k Office as ou	utlined in 37	CFR 1.76.		
Secre	ecy Orde	r 37 CFR 5.2:									
		f the application associaper filers only. App									suant to
Inven	tor Infor	mation:									
Invent								R	emove		
Legal I	Name										
Prefix	Given Nan	ne	M	iddle Name)		Famil	y Name			Suffix
			0					<u> </u>			
	ence Inform	nation (Select One)		Residency			Residency	<u> </u>	re US Milita	ary Service)
City			State/	Province		Cou	ntry of Res	sidence			
Mailing	Address of	Inventor									
Addre		inventor.									
Addre											
City	33 2					State/P	rovince				
Postal Code				Cou	ntry i						
All Inventors Must Be Listed - Additional Inv				nventor Info			s may be		A .1.1		
generated within this form by selecting the Add button.											
Corre	sponder	nce Informatio	on:								
	•	omer Number or co		the Corres	pond	ence Info	ormation s	ection be	elow.		
		ation see 37 CFR 1									
☐ An	Address is	being provided fo	r the co	rresponde	nce l	nformatio	on of this a	applicatio	n.		
Custo	mer Numbe	r									
Email Address								Add I	Email	Remove	Email
Appli	ication Ir	nformation:									
Title o	f the Inventi	ion									
Attorn	Attorney Docket Number					Small I	Entity Stat	us Claime	ed 🗌		
Applic	ation Type										
Subjec	ct Matter										
Total N	Number of D	Drawing Sheets (if a	any)			Sugge	sted Figu	re for Pul	olication	(if any)	
ļ						1					

PTO/AIA/14 (01-22)
Approved for use through 05/31/2024. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76			Attorney D	ocket Number			
			Application Number				
Title of Invention							
Filing By Refe	erenc	 e:					
0 1			lication by r	oforonce unde	or 35 II S C 111(c) an	nd 37 CER 1 57	(a). Do not complete this section if
application papers incluprovided in the approp For the purposes of a fil	uding a sporiate section	ecification an on(s) below (i under 37 CFR	id any draw i.e., "Domes 1.53(b), the	rings are being tic Benefit/Nat description ar	filed. Any domestic cional Stage Informa and any drawings of t	c benefit or for ation" and "For the present ap	reign priority information must be reign Priority Information"). plication are replaced by this
reference to the previou							i-
Application number of filed application	f the prev	iously	Filing da	te (YYYY-MM-[DD)	Intelle	ectual Property Authority or Country
Publication I	nform	nation:				•	
Request Early	/ Publica	tion (Fee re	equired at	t time of Rec	uest 37 CFR 1.2	219)	
35 U.S.C. 122	2(b) and application	certify that on filed in a	the inver	ntion disclose	ed in the attache	d application	not be published under n has not and will not be the al agreement, that requires
this information in the	rmation see Applicate	should be po tion Data She er or comple	rovided fo eet does n	ot constitute a	a power of attorney lame section belo	in the applic	ney in the application. Providing ation (see 37 CFR 1.32). ctions are completed the customer
Please Select One	: (Custome	er Number	· Ous	Patent Practitione	er C Li	mited Recognition (37 CFR 11.9)
Customer Number							
	for the appropries from a ce require	pplicant to e PCT applic ed by 35 U.	either clai ation. Pro .S.C. 119	m benefit ur oviding bene (e) or 120, a	nder 35 U.S.C. 17 fit claim informat nd 37 CFR 1.78.	ion in the Ap	21, 365(c), or 386(c) or indicate oplication Data Sheet constitutes
Prior Application	Status						Remove
Application Nu	mber	C	ontinuity ⁻	Туре	Prior Applicati	on Number	Filing or 371(c) Date (YYYY-MM-DD)
Additional Domest by selecting the Ad			Stage Dat	ta may be g	enerated within t	his form	

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	
		Application Number	
Title of Invention			

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)¹ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove		
Application Number	Country	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)		
Additional Foreign Priority Data may be generated within this form by selecting the Add button.					

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March
16, 2013. NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	
Application Data Sheet 37 CFK 1.76	Application Number	
Title of Invention		
Authorization or Opt-Out of Auth	norization to Permit	Access:
When this Application Data Sheet is properly sig authority to permit a participating foreign intellect paragraph A in subsection 1 below) and the Euro application (see paragraph B in subsection 1 bel	tual property (IP) office acces opean Patent Office (EPO) ac	s to the instant application-as-filed (see
Should applicant choose not to provide an autho authorization by checking the corresponding box		
NOTE : This section of the Application Data She application. After the initial filing of an application authorization for access by a foreign IP office(s).	n, an Application Data Sheet	cannot be used to provide or rescind
A. Priority Document Exchange (PDX) - Unless undersigned hereby grants the USPTO authori (JPO), the Korean Intellectual Property Office (K China (SIPO), the World Intellectual Property Organization and its related bibliographic data, (2) any foreign instant application and its related bibliographic data, (2) any foreign instant application and its related bibliographic data, (1). B. Search Results from U.S. Application to E the undersigned hereby grants the USPTO authoresults from the instant patent application is filed. See 37 CFR 1.14(h)(2). The applicant is reminded that the EPO's Rule 1 copy of search results from the instant application the instant application.	es box A in subsection 2 (opt- ty to provide the European Pa IPO), the State Intellectual Pr ganization (WIPO), and any o Itilateral priority document exc application is filed, access to: n or domestic application to w ata, and (3) the date of filing of the portion of the provide the EPO access a European patent application 41(1) EPC (European Patent	cout of authorization) is checked, the atent Office (EPO), the Japan Patent Office roperty Office of the People's Republic of other foreign intellectual property office change agreement in which a foreign (1) the instant patent application-as-filed which priority or benefit is claimed by the of this Authorization. See 37 CFR 1.14(h) tion 2 (opt-out of authorization) is checked, cess to the bibliographic data and search in claiming priority to the instant patent.
A. Applicant DOES NOT authorize the US application-as-filed. If this box is checked, t	SPTO to permit a participating	foreign IP office access to the instant
any documents and information identified in B. Applicant DOES NOT authorize the US application. If this box is checked, the USP1 application.	subsection 1A above. PTO to transmit to the EPO a O will not be providing the El	any search results from the instant patent PO with search results from the instant
NOTE: Once the application has published or is application in accordance with 37 CFR 1.14.	otherwise publicly available,	the USPTO may provide access to the

Approved for use through 05/31/2024. OMB 0651-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data	Sheet 37 CFR 1.76	Attorney Docket Numb	er			
Application Data	Sheet 37 Crit 1.70	Application Number				
Title of Invention						
Applicant Infor	mation:					
Providing assignment in to have an assignment r		es not substitute for complian	nce with any requirement o	f part 3 of Title 37 of CFR		
Applicant 1						
The information to be pro 1.43; or the name and ad- who otherwise shows suff applicant under 37 CFR 1	vided in this section is the dress of the assignee, pers ficient proprietary interest i .46 (assignee, person to w	inventor or inventors under a name and address of the lega- son to whom the inventor is un the matter who is the applica- whom the inventor is obligated inventors, then the joint inventors.	al representative who is the nder an obligation to assign ant under 37 CFR 1.46. If the I to assign, or person who	e applicant under 37 CFR in the invention, or person the applicant is an otherwise shows sufficient		
○ Assignee	○ Assignee ○ Legal Representative under 35 U.S.C. 117 ○ Joint Inventor					
O Person to whom the ir	nventor is obligated to assign	n. Pe	rson who shows sufficient	proprietary interest		
If applicant is the legal	representative, indicate	the authority to file the pat	ent application, the inve	ntor is:		
Name of the Deceased	d or Legally Incapacitate	d Inventor:				
If the Applicant is an O	Organization check here					
Prefix	Given Name	Middle Name	Family Name	Suffix		
Mailing Address Info	ormation For Applicant	:				
Address 1						
Address 2						
City		State/Pr	ovince			
Country		Postal C	ode			
Phone Number		Fax Nun	nber			
Email Address		·	<u> </u>			
Additional Applicant Da	ata may be generated wi	thin this form by selecting	the Add button.			

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

PTO/AIA/14 (01-22)
Approved for use through 05/31/2024. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data	Sheet 37 CFR 1.76	Attorney Docket N	umber			
Application Data		Application Number	er			
Title of Invention						
Assignee 1						
application publication. An	signee information, includir assignee-applicant identifie t. For an assignee-applican ion.	ed in the "Applicant Info	ormation" section w	ill appear on the p	patent application	
If the Assignee or Non-	-Applicant Assignee is a	n Organization checl	k here.			
Prefix	Given Name	Middle Name	Family N	ame	Suffix	
Mailing Address Inforr	mation For Assignee in	cluding Non-Applic	ant Assignee:			
Address 1						
Address 2						
City		Sta	te/Province			
Country i		Postal Code				
Phone Number		Fax Number				
Email Address	Email Address					
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.						
Signature:						
NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c). This Application Data Sheet must be signed by a patent practitioner if one or more of the applicants is a juristic entity (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, all joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of all joint inventor-applicants. See 37 CFR 1.4(d) for the manner of making signatures and certifications.						
Signature			Date	(YYYY-MM-DD)		
First Name	Last Name		Regist	ration Number		
Additional Signature m	nay be generated within t	his form by selecting	the Add button.			

Approved for use through 05/31/2024. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Da	ta Sheet 37 CEP 1 76	Attorney Docket Number	
Application Data Sheet 37 CFR 1.76		Application Number	
Title of Invention			

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

- 1 The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
- 2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
- 3 A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
- 4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
- 5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.
- 6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
- 7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
- 8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
- 9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.