506289267 10/05/2020

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT6336015

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
OSKAR PAINTER	10/20/2019
JIE LUO	06/05/2019
MICHAEL T. FANG	06/03/2019
ALP SIPAHIGIL	06/10/2019
PAUL B. DIETERLE	05/30/2019
MAHMOUD KALAEE	07/08/2019
JOHANNES M. FINK	06/05/2019
ANDREW J. KELLER	07/31/2019
GREGORY MACCABE	06/21/2019
HENGJIANG REN	07/05/2019
JUSTIN D. COHEN	09/04/2020

RECEIVING PARTY DATA

Name:	California Institute of Technology
Street Address:	1200 East California Blvd.
City:	Pasadena
State/Country:	CA
Postal Code:	91125

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	16293457

CORRESPONDENCE DATA

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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.

Email: mward@kilpatricktownsend.com

Correspondent Name: MATTHEW WARD

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Address Line 4: WALNUT CREEK, CALIFORNIA 94596

ATTORNEY DOCKET NUMBER: 086544-022420US-1128308

PATENT REEL: 053983 FRAME: 0142

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NAME OF SUBMITTER:	MATTHEW WARD
SIGNATURE:	/Matthew Ward/
DATE SIGNED:	10/05/2020
Total Attachments: 12	
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Caltech ref.: CIT 7981

ASSIGNMENT

(Patent Application)

We, the undersigned, have invented certain inventions and improvements disclosed in a utility (provisional or non-provisional) or design patent application entitled

"TECHNIQUES FOR BIDIRECTIONAL TRANSDUCTION OF QUANTUM LEVEL SIGNALS BETWEEN OPTICAL AND MICROWAVE FREQUENCIES USING A COMMON ACOUSTIC INTERMEDIARY."

the specification of which is provided with this Assignment and identified by the Attorney Docket No. above. (Serial No. 16/293,457, filed on March 5, 2019).

For good and valuable consideration, the receipt and sufficiency of which we acknowledge, we:

- 1. Agree to assign, transfer, convey, and sell, hereby assign, transfer, convey, and sell and have assigned, transferred, conveyed, and sold to California Institute of Technology, having a principal place of business at 1200 E. California Blvd., M/C 210-85, Pasadena, CA 91125 ("Assignee"), the entire right, title, and interest in and to:
 - (a) all intellectual property (including, without limitation, any innovation, information, invention, discovery, product, process, work or design) disclosed, embodied, shown, or claimed in the above-referenced patent application, implicitly or explicitly;
 - (b) the above-referenced patent application, and all applications based in whole or in part upon the above-referenced patent application, including, without limitation, all applications that are a provisional, non-provisional, design, divisional, continuation, continuation-in-part, registration, utility model, industrial design, reissue, renewal, substitute, extension, reexamination, post-grant review, inter partes review, supplemental examination or non-U.S. patent application or application for other rights based in whole or in part on the above-referenced patent application;
 - (c) the right to claim priority to the above-referenced patent application, and any and all applications referenced in subsection (b); and
 - (d) all patents (including, without limitation, all U.S. and non-U.S. patents, registrations, utility models, industrial designs, design patents, counterparts, continuations, continuations-in-part, divisionals, reissues, renewals, substitutes, extensions, reexaminations, post-grant reviews, inter partes reviews and supplemental examinations) that are granted or issued upon, or that claim priority to, any and all applications described in (b) of this paragraph or that disclose or claim intellectual property described in (a) of this paragraph, in whole or in part; and

TECHNIQUES FOR BIDIRECTIONAL TRANSDUCTION OF QUANTUM LEVEL SIGNALS BETWEEN OPTICAL AND MICROWAVE FREQUENCIES USING A COMMON ACOUSTIC INTERMEDIARY

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- (e) all claims for damages by reason of past infringement of any rights under the applications or patents described in (a), (b) or (c) of this paragraph (including provisional rights to reasonable royalties pursuant to 35 U.S.C. §154(d)) and the right to sue for and collect such damages and royalties for Assignee's own use.
- 2. Authorize and request the U.S. Patent and Trademark Office or any other U.S. or non-U.S. agency to issue to the Assignee any and all patent(s), or other rights or documents, resulting from the intellectual property, patent application(s) and patents described in paragraph 1 of this Assignment.
- 3. Agree to sign all papers and documents, including without limitation, applications, declarations, oaths and petitions, and, at the Assignee's expense, perform any other acts that are necessary in connection with prosecution of patent application(s) or intellectual property described in paragraph 1 of this Assignment and the enforcement of patent(s) or other rights resulting from such patent application(s) or intellectual property.
- 4. Agree that the terms, covenants, and conditions of this Assignment shall inure to the benefit of the Assignee, its successors, assigns and other legal representative, and shall be binding upon us, as well as our heirs, legal representatives, and assigns.
- 5. Promise and affirm that we have not entered, and will not enter, into any assignment, contract, or understanding that conflicts with this Assignment.
- 6. Authorize Kilpatrick Townsend & Stockton to insert above the application number and filing date of the above-described patent application when known.

Signed on the dates indicated beside our signatures.

Signature:	Oske Pas	Date:	10.20.2019
	Oskar Painter		
Signature:		Date:	
	Jie Luo		
Signature:		Date:	
	Michael T. Fang		

TECHNIQUES FOR BIDIRECTIONAL TRANSDUCTION OF QUANTUM LEVEL SIGNALS BETWEEN OPTICAL AND MICROWAVE FREQUENCIES USING A COMMON ACOUSTIC INTERMEDIARY

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Signed on the dates indicated beside our signatures.

Signature:		Date: _	
	Oskar Painter		
Signature:	Jie Luo	Date: _	June 5, 2019
Signature:		Date: _	
	Michael T. Fang		

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Signed on the dates indicated beside our signatures.

Signature:		Date:	
	Oskar Painter		
Signature:		Date:	
	Jie Luo		
Signature:	My	Date:	6/3/2019
	Michael T. Fang		•

ASSIGNMENT TECHNIQUES FOR BIDIRECTIONAL TRANSDUCTION OF QUANTUM LEVEL SIGNALS BETWEEN OPTICAL AND MICROWAVE FREQUENCIES USING A COMMON ACOUSTIC INTERMEDIARY Attorney Docket No. 086544-1128308-022420US

Signature:	Alp Sipahigil	Date: <u>66/(0/20</u> (
Signature:	Paul B. Dieterle	Date:
Signature:	Mahmoud Kalaee	Date:
Signature:	Johannes M. Fink	Date:
Signature:	Andrew J. Keller	Date:
Signature:	Gregory MacCabe	Date:
Signature:	Ren Hengjiang	Date:
	Justin D. Cohen	Date:

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TECHNIQUES FOR BIDIRECTIONAL TRANSDUCTION OF QUANTUM LEVEL SIGNALS BETWEEN OPTICAL AND MICROWAVE FREQUENCIES USING A COMMON ACOUSTIC INTERMEDIARY

Attorney Docket No. 086544-1128308-022420US Page 3 of 3

Signature:		Date:	
	Alp Sipahigil		
Signature:	Paul B. Dieterle	Date:	05/30/19
Signature:	Mahmoud Kalaee	Date:	
Signature:	Johannes M. Fink	Date:	
Signature:	Andrew J. Keller	Date:	
Signature:	Gregory MacCabe	Date:	
Signature:	Ren Hengjiang	Date:	
Signature:	Justin D. Cohen	Date:	

TECHNIQUES FOR BIDIRECTIONAL TRANSDUCTION OF QUANTUM LEVEL SIGNALS BETWEEN OPTICAL AND MICROWAVE FREQUENCIES USING A COMMON ACOUSTIC INTERMEDIARY

Attorney Docket No. 086544-1128308-022420US Page 3 of 3

Signature:		Date:
	Alp Sipahigil	
Signature:	Paul B. Dieterle	Date:
Signature:	Mahmoud Kalaee	Date: <u>0716812019</u>
Signature:	Johannes M. Fink	Date:
Signature:	Andrew J. Keller	Date:
Signature:	Gregory MacCabe	Date:
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	Mahmoud Kalaee	
Signature:	Johannes M. Fink	Date: //we 5 201,
	Andrew J. Keller	Date:
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	Paul B. Dieterle		
Signature:		Date:	
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Signature:		Date:	
	Johannes M. Fink		
Signature:	anhu & Keller	Date:	7/31/2019
	Andrew J. Keller		
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Signature:		Date:	
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	Johannes M. Fink		
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	Andrew J. Keller		
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Signature:	Gregory MacCabe	Date:	06/21/2019
	Gregory Waccabe		
Signature:		Date:	
C	Ren Hengjiang		
Signature:		Date:	
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Signature:	Hengjiang Ren	Date: 07/05/2019
Signature:	Justin D. Cohen	Date:

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	Date:	
Andrew J. Keller		
Gregory MacCabe	Date:	
	D.	
Ren Hengjiang	Date: _	
pu a	Date:	9/4/2020
Justin D. Cohen		
	Alp Sipahigil Paul B. Dieterle Mahmoud Kalaee Johannes M. Fink Andrew J. Keller Gregory MacCabe Ren Hengjiang M. A.	Alp Sipahigil

PATENT REEL: 053983 FRAME: 0155

RECORDED: 10/05/2020

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