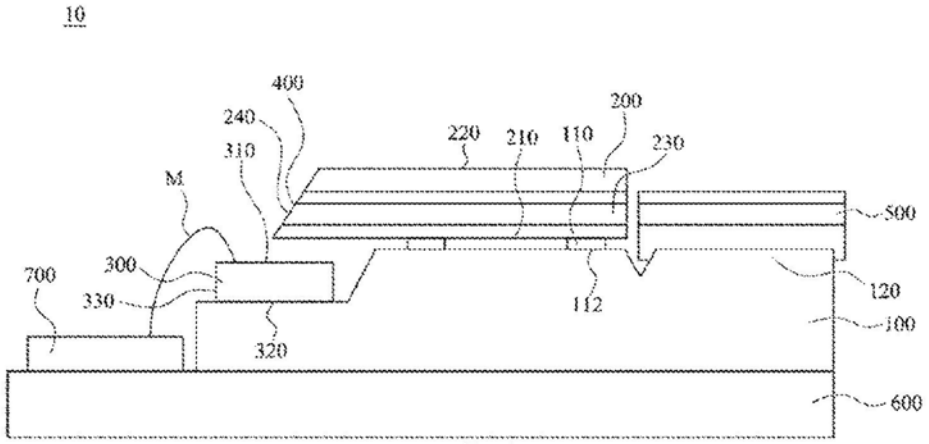


FIG. 1

Thus, Shen fails to disclose optoelectronic diodes and the light receiving chip being disposed directly on the same surface, as claimed. Nothing in Gao remedies the deficiencies of Shen.

For at least these reasons, the proposed combination of Shen and Gao fails to render claim 1, and the claims dependent therefrom, as obvious as the proposed combination fails to disclose or suggest each and every element.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the of the rejection of claims 1-3 and 6 under 35 U.S.C. § 103.

Claims 5 and 8 were rejected under 35 U.S.C. § 103 as being unpatentable over Shen and Pezeshki, and further in view of Gunn. Claim 7 was rejected under 35 U.S.C. § 103 as being unpatentable over Shen and Pezeshki, and further in view of Gao. Applicant respectfully requests reconsideration.

Claim 8 was amended similarly to claim 1 to clarify that the optoelectronic diodes and the light receiving chip are disposed directly on the same surface. Nothing in Gunn remedies the deficiencies of the proposed combination of Shen and Pezeshki discussed above with regard to independent claim 1. For at least these reasons, the proposed combination of Shen, Pezeshki and Gunn fails to render claim 8 obvious as the proposed combination fails to disclose or suggest each and every element.

Claims 5 and 7 depend from claim 1 and are allowable by virtue of their dependency. Nothing in Gao remedies the deficiencies of Shen and Pezeshki discussed above.

AOI_NDCal 4-24cv09041_ 00002124

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 5, 7 and 8 under 35 U.S.C. § 103.

Conclusion

The claims have been shown to be allowable over the prior art. Applicant believes that this paper is responsive to each and every ground of rejection cited by the Examiner in the Action dated April 13, 2017, and respectfully requests favorable action in this application. The examiner is invited to telephone the undersigned, Applicant's attorney of record, to facilitate advancement of the present application. Please apply any charges not covered, or any credits, to Deposit Account 50-1705 (Reference Number AOIC006).

Respectfully submitted,

GROSSMAN, TUCKER, PERREAULT & PFLEGER PLLC

Date: July 13, 2018

By: /Kenneth M. Thompson/
Kenneth M. Thompson
Reg. No. 72,001

55 S. Commercial Street
Manchester, NH 03101
Telephone: (603) 668-6560
Facsimile: (603) 668-2970

AOI_NDCal 4-24cv09041_ 00002125

Electronic Acknowledgement Receipt

EFS ID:	33174204
Application Number:	15432242
International Application Number:	
Confirmation Number:	2079
Title of Invention:	MULTI-CHANNEL PARALLEL OPTICAL RECEIVING DEVICE
First Named Inventor/Applicant Name:	Jian-Hong LUO
Customer Number:	27543
Filer:	Kenneth M. Thompson/April Davis
Filer Authorized By:	Kenneth M. Thompson
Attorney Docket Number:	AOIC006
Receipt Date:	13-JUL-2018
Filing Date:	14-FEB-2017
Time Stamp:	14:49:51
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	After Final Consideration Program Request	AfterFinal_Consideration_Request.pdf	226337 4a6e6d8b53d8d50d22c086dbbb881c8d9761849b	no	2
Warnings:					

AOI_NDCal 4-24cv09041_ 00002126

Information:					
2		Amendment_and_Reply_asfiled_071318.pdf	212198 2fa10eb80a01ee7fd0c08b51a13067ef3853b86c	yes	9

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response After Final Action	1	1
	Claims	2	4
	Applicant Arguments/Remarks Made in an Amendment	5	9

Warnings:	
Information:	
Total Files Size (in bytes):	438535

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

AOI_NDCal 4-24cv09041_ 00002127

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. 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 displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/432,242	Filing Date 02/14/2017	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $80 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $420 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT	07/13/2018	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 8	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0		x $460 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	SLIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	monique benjamin
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. 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 12 minutes to complete, including gathering, preparing, and submitting the completed application 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.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

AOI_NDCal 4-24cv09041_ 00002128

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/432,242	02/14/2017	Jian-Hong LUO	AOIC006	2079

27543 7590 07/24/2018
APPLIED OPTOELECTRONICS, INC.
13115 JESS PIRTLE BLVD.
SUGAR LAND, TX 77478

EXAMINER	
PETKOVSEK, DANIEL	

ART UNIT	PAPER NUMBER
2874	

NOTIFICATION DATE	DELIVERY MODE
07/24/2018	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

kinsella@ao-inc.com
docketing@gtpp.com
kcarroll@gtpp.com

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 15/432,242	**Applicant(s)** LUO ET AL.	
	Examiner Daniel Petkovsek	**Art Unit** 2874	**AIA (First Inventor to File) Status** Yes

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 13 July 2018 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☒ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:
   a) ☒ The period for reply expires *3* months from the mailing date of the final rejection.
   b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
   c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection. The current period for reply expires months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.
   Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANT'S FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☒ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.
   NOTE: *See Continuation Sheet*. (See 37 CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☒ For purposes of appeal, the proposed amendment(s): (a) ☒ will not be entered, or (b) ☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☐ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.
13. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
14. ☒ Other: Attached PTO-2323.

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:
    Claim(s) allowed: .
    Claim(s) objected to: .
    Claim(s) rejected: 1-3 and 5-8.
    Claim(s) withdrawn from consideration: .

/Daniel Petkovsek/
Primary Examiner, Art Unit 2874, July 16, 2018

Continuation of 3. NOTE: The narrowing amendments to independent claims 1 and 8, after the making of a final rejection mailed on April 13, 2018, would constitute further search and consideration of the relevant prior art. The subject matter and claim scope conditions of such an amendment cannot be reviewed and a search conducted within the guidelines of AFCP 2.0.

In order to enter the proposed amendment filed July 13, 2018, a timely RCE must be filed.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	15/432,242	Confirmation No. :	2079
Inventors	:	Jian-Hong Luo et al.		
Filed	:	February 14, 2017		
TC/A.U.	:	2874		
Examiner	:	Petkovsek		
Docket No.	:	AOIC006		
Customer No.	:	27,543		

DO NOT ENTER: /D.P/

07/16/2018

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AND REPLY UNDER 37 CFR § 1.113

Sir/Madame:

In response to the Office Action dated April 13, 2018, please amend the application as follows and consider the included remarks. A request for consideration under the After Final Consideration Pilot (AFCP) is also included herewith. Applicant is filing this amendment within the three-month statutory period for reply on or before July 13, 2018. Thus, Applicant believes that no extension of time is required. In the event that an additional extension is required, Applicant herewith petitions the Director of the United States Patent and Trademark Office for the necessary extension and authorizes the Director to charge Deposit Account 50-1705.

AOI_NDCal 4-24cv09041_ 00002132

AFCP 2.0 Decision	Application No.	Applicant(s)
	15/432,242	LUO ET AL.
	Examiner	Art Unit
	Daniel Petkovsek	2874

This is in response to the After Final Consideration Pilot request filed 13 July 2018.

1. **Improper Request** – The AFCP 2.0 request is improper for the following reason(s) and the after final amendment submitted with the request will be treated under pre-pilot procedure.

   ☐ An AFCP 2.0 request form PTO/SB/434 (or equivalent document) was not submitted.

   ☐ A non-broadening amendment to at least one independent claim was not submitted.

   ☐ A proper AFCP 2.0 request was submitted in response to the most recent final rejection.

   ☐ Other:

2. **Proper Request**

   A. After final amendment submitted with the request will not be treated under AFCP 2.0.
   The after final amendment cannot be reviewed and a search conducted within the guidelines of the pilot program.

   ☒ The after final amendment will be treated under pre-pilot procedure.

   B. Updated search and/or completed additional consideration.
   The examiner performed an updated search and/or completed additional consideration of the after final amendment within the time authorized for the pilot program. The result(s) of the updated search and/or completed additional consideration are:

   ☐ 1. All of the rejections in the most recent final Office action are overcome and a Notice of Allowance is issued herewith.

   ☐ 2. The after final amendment would not overcome all of the rejections in the most recent final Office action. See attached interview summary for further details.

   ☐ 3. The after final amendment was reviewed, and it raises a new issue(s). See attached interview summary for further details.

   ☐ 4. The after final amendment raises new issues, but would overcome all of the rejections in the most recent final Office action. A decision on determining allowability could not be made within the guidelines of the pilot. See attached interview summary for further details, including any newly discovered prior art.

   ☐ 5. Other:

   Examiner Note: Please attach an interview summary when necessary as described above.

To: kinsella@ao-inc.com,docketing@gtpp.com,kcarroll@gtpp.com
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 27543

Jul 24, 2018 04:25:19 AM

Dear PAIR Customer:

APPLIED OPTOELECTRONICS, INC.
13115 JESS PIRTLE BLVD.
SUGAR LAND, TX 77478
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 27543 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:
The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
15432242	CTAV	07/24/2018	AOIC006
	A.NE.AFCP.D	07/24/2018	AOIC006

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

PTO/SB/30EFS (07-14)
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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.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	15432242	Filing Date	2017-02-14	Docket Number (if applicable)	AOIC006	Art Unit	2874
First Named Inventor	LUO			Examiner Name	PETKOVSEK, DANIEL		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, to any international application that does not comply with the requirements of 35 U.S.C. 371, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV.

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☒ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☒ Other AMENDMENT FILED ON JULY 13, 2018

☐ Enclosed

☐ Amendment/Reply

☐ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 502121

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (07-14)
Approved for use through 07/31/2016. OMB 0651-0031
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.

Signature of Registered U.S. Patent Practitioner			
Signature	/Kenneth M. Thompson/	Date (YYYY-MM-DD)	2018-08-13
Name	Kenneth M. Thompson	Registration Number	72001

This collection of information is required by 37 CFR 1.114. 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 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application 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.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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 Cooperation Treaty.

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.

Electronic Patent Application Fee Transmittal

Application Number:	15432242
Filing Date:	14-Feb-2017
Title of Invention:	MULTI-CHANNEL PARALLEL OPTICAL RECEIVING DEVICE
First Named Inventor/Applicant Name:	Jian-Hong LUO
Filer:	Kenneth M. Thompson/April Davis
Attorney Docket Number:	AOIC006

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

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Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 1 month with $0 paid	1251	1	200	200
Miscellaneous:				
RCE- 1ST REQUEST	1801	1	1300	1300
		Total in USD ($)		**1500**

Electronic Acknowledgement Receipt

EFS ID:	33448722
Application Number:	15432242
International Application Number:	
Confirmation Number:	2079
Title of Invention:	MULTI-CHANNEL PARALLEL OPTICAL RECEIVING DEVICE
First Named Inventor/Applicant Name:	Jian-Hong LUO
Customer Number:	27543
Filer:	Kenneth M. Thompson/April Davis
Filer Authorized By:	Kenneth M. Thompson
Attorney Docket Number:	AOIC006
Receipt Date:	13-AUG-2018
Filing Date:	14-FEB-2017
Time Stamp:	14:27:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1500
RAM confirmation Number	081418INTEFSW14284400
Deposit Account	502121
Authorized User	April Davis

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

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37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	AOIC006_RCE_081318.pdf	1350139 5bf01630a440c5d914acd52eec6befa9263c3094	no	3
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32360 bda2676f00aeaeb7a554c2e9ddda7951c9dfb0a6	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1382499		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/432,242	Filing Date 02/14/2017	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $80 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $420 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT	08/13/2018	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 8	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0		x $460 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	SLIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	monique benjamin
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. 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 12 minutes to complete, including gathering, preparing, and submitting the completed application 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.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/432,242	02/14/2017	Jian-Hong LUO	AOIC006	2079

27543 7590 09/13/2018

APPLIED OPTOELECTRONICS, INC.
13115 JESS PIRTLE BLVD.
SUGAR LAND, TX 77478

EXAMINER	
PETKOVSEK, DANIEL	

ART UNIT	PAPER NUMBER
2874	

NOTIFICATION DATE	DELIVERY MODE
09/13/2018	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@gtpp.com
kcarroll@gtpp.com
kinsella@ao-inc.com

Office Action Summary	Application No. 15/432,242	Applicant(s) LUO et al.	
	Examiner Daniel Petkovsek	Art Unit 2874	AIA Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on the RCE filed August 13, 2018.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-3 and 5-8 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-3 and 5-8 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on April 24, 2017 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☑ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☑ All b)☐ Some** c)☐ None of the:

1.☑ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

This office action is in response to the RCE filed August 13, 2018 in order to enter the amendment filed on July 13, 2018. In accordance with this amendment, claims 1 and 8 have been amended.

Claims 1-3 and 5-8 are pending. Claims 1 and 8 are in independent form.

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 13, 2018 to enter the amendment July 13, 2018 has been entered.

Claim Rejections - 35 USC § 103

3. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of

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rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

4. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103 are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-3 and 6 are rejected under 35 U.S.C. 103 as being unpatentable over Shen et al. US 2016/0349451 A1, and further in view of Pezeshki et al. US 2017/0168252 A1.

Shen et al. US 2016/0349451 A1 teaches (ABS; Figures 1, 3, 5, 6; corresponding text, in particular paragraphs [0033] – [0045]; Claims) a multi-channel parallel optical receiving device (Fig. 1), comprising: a carrier 600 and a light receiving chip 700 disposed on the top surface of the carrier (*through* 100, still "on the top surface of 600";

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an optoelectronic diode receiver 300 disposed on a top surface of an end of the carrier (at *left* in Fig. 1), and the optoelectronic diode *electrically* connected to the light receiving chip via bonding wire M, wherein the optoelectronic diode an the light receiving chip are "disposed on" the same surface (300 through 100, but still meets "on" a surface); an optical fiber 500 (see [0044]; disclosing optical fiber(s) and/or lens(es)) connector disposed in another end (at *right* in Fig. 1) of the carrier; an arrayed waveguide grating (AWG) 200 further disposed on the top surface of the carrier, the AWG having a first end (*left* side of AWG), a middle (*mid* portion(s)), and a second end (*right* side of AWG) disposed opposite to the first end; and an input end of the arrayed waveguide grating connected to the optical fiber connector for receiving an optical signal from the optical fiber (500 coupled to 200), wherein the top surface of the carrier underlies the "middle" portion / area of the AWG (also note Shen shows positioning changes for placement of the AWG in differing embodiments) wherein the optical signals are divided (see Fig. 3 for division of optical signals) into multi-channel optical signals in parallel by the arrayed waveguide grating based on their wavelengths, the top surface defined by an output end of the arrayed waveguide grating is at a predetermined angle, causing the multi-channel optical signals reflected by the top surface to be reflected to an photosensitive surface of the optoelectronic diode arranged in parallel (down reflection at 400), wherein the predetermined angle of the top surface by the output end of the AWG is in a range of 41 to 46 degrees such that the top surface provides reflection (Figs. 1-2).

Regarding the amendment filed to claim 1 on **July 13, 2018** (RCE filed August 13, 2018), Shen et al. '451 does not **expressly** teach that the "optoelectronic diodes

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(diode receiver 300) and the light receiving chip (700) are disposed directly on the same surface." Shen teaches that 300 is formed on a surface of 100 while the electrically connected element 700, via wire M, is formed on a surface of 600.

However, based on the teachings and tenets of *KSR v. Teleflex*, 127 S.Ct. 1727 (2007), this minor *difference* in the prior art to Shen et al. '451 cannot be considered as a **patentable** distinction. A person having ordinary skill in the art at the time of the effective filing of the current application would have recognized this "distinction" as being minor and trivial, and requiring only common sense and nominal skill in the art to modify the primary reference to Shen et al. '451. Placing the opto-electrical elements 300 and 700 of Shen et al. '451 to be directly on the same surface, or to be on differing surfaces, but still nearby or adjacent to each other (for wire bonding through M) would merely have been obvious to try differences that do not impact the overall invention in a substantial or meaningful way. Such a minor change to the prior art of Shen et al. '451 would have been motivated as being an obvious matter of *design choice* to a person of ordinary skill in the art to use because Applicant has not disclosed that placing the opto-electrical components directly on the same surface provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Shen et al. '451 to perform equally well with the elements 300 and 700 placed directly on the same surface / substrate because these claim terms would have been easily recognized and integrated by a normally skilled artisan, but further would not impede or destroy the functionality of the electrically connected elements *in operation*. Therefore, it would have been an obvious matter of

design choice to modify Shen et al. '451 to obtain the invention as specified by amended independent claim 1. See *KSR v. Teleflex*, 127 S.Ct. 1727 (2007).

Further regarding independent claim 1, Shen et al. '451 does not *expressly* teach that the OE diode receiver is a plurality of OE diodes that are split into separate receiving portions.

Pezeshki et al. US 2017/0168252 A1 teaches (ABS; Figures 1-5, 10; corresponding text, in particular see paragraphs [0028] - [0061]; Claims, in particular see dependent claims 5, 11, 12, 23) a multi-channel parallel optical receiving device (Fig. 1), comprising: a carrier 101 and an light receiving chip (chip-on-board; other "chips" defined by Pezeshki; use with circuit board 103); a ***plurality*** **of optoelectronic diodes** (photodiodes; E/O conversion elements cited) disposed on a top surface of an end of the carrier (at *left* in Fig. 1), and the plurality of optoelectronic diodes *electrically* connected to the light receiving chip (inherent to operate); an optical fiber (inputs provided by optical fiber(s)) connector disposed in another end (at *right* in Fig. 1) of the carrier; an arrayed waveguide grating (PLC uses AWG's) further disposed on the top surface of the carrier; and an input end of the arrayed waveguide grating connected to the optical fiber connector for receiving an optical signal from the optical fiber (fibers are coupled to PLC (AWGs); wherein the optical signals are divided (MUX / DEMUX) into multi-channel optical signals in parallel by the arrayed waveguide grating based on their wavelengths, the top surface of an output end of the arrayed waveguide grating is at a predetermined angle, causing the multi-channel optical signals reflected by the top

surface to be reflected to an photosensitive surface of the plurality of optoelectronic diodes arranged in parallel (see Pezeshki '252 claim 23; and Fig. 7 paragraph [0045]).

Since Shen et al. '451 and Pezeshki '252 are both from the same field of endeavor, the purpose disclosed by Pezeshki '252 would have been recognized in the pertinent art of Shen et al. '451.

A person having ordinary skill in the art at the time the invention was made would have recognized the teaching of Pezeshki '252, to use a ***plurality*** of configured photodiodes or photoreceivers that are distinct or separate components, on chip, in the device of Shen et al. '451 to improve optical coupling efficiency, by having separation and distinctness of components to allow 1 to 1 coupling. Both prior art references teach using AWGs. See *KSR v. Teleflex*, 127 S.Ct. 1727 (2007). Claim 1 does not impute any **patentable** distinction when considering Shen further in view of Pezeshki.

Regarding dependent claims 2-3 and 6, Shen (claim 6) and/or Pezeshki (claims 2-3) teach such limitations, in that the plural OE photodetectors are on the same circuit board (claim 2), in an equal amount based on optical paths (claim 3), or in that optical lenses are used (claim 6; in 500 element [0044] Shen).

7. Claims 5 and 8 are rejected under 35 U.S.C. 103 as being unpatentable over Shen et al. US 2016/0349451 A1, further in view of Pezeshki et al. US 2017/0168252 A1, and further in view of Gunn, III et al. U.S.P. No. 7,162,124 B1.

Regarding independent claim 1, Shen et al. US 2016/0349451 A1, and further in view of Pezeshki et al. US 2017/0168252 A1 make obvious this claim. *See* the full

rejection in section (6) above. The analysis for the added features (amendment filed July 13, 2018) of **claim 8** are the same as claim 1 above.

Regarding **further dependent claim 5**, and independent **claim 8**, there is no exact teaching in Shen '451 and Pezeshki '252 to the predetermined angle of reflection to be "42 degrees." Shen '451 and Pezeshki '252 is *silent to* this 42 degree amount.

However, this range, starting with 40 to 45 degrees, and being in the exact degree of 42 degrees, is known in the optical coupling art. Gunn, III et al. U.S.P. No. 7,162,124 B1 teaches (ABS; Figs.; column 3, line 34 through column 4, line 14) an optical element coupling signals down into another optical device, and in particular in that these signals are coupled at 42 degrees (less than 43 degrees, to 41 degrees; see column 3, line 34 through column 4, line 14). This angled degree of reflection / coupling is known in the art, at the time of the effective filing of the current application.

Since Shen '451, Pezeshki '252 and Gunn III '124 are all from the same field of endeavor, the purpose disclosed by Gunn III '124 would have been recognized in the pertinent art of Shen '451 and Pezeshki '252.

A person having ordinary skill in the art at the time the invention was made would have recognized the teaching of Gunn III '124, to use optical coupling at a degree of reflection of 42 degrees (and between generally 40 and 45 degrees), in the device of Shen '451 and Pezeshki '252 to improve optical coupling efficiency and results. The Examiner notes that Shen '451 and Pezeshki '252 is *silent* to the exact degree of "42", as being somewhere between 40 and 45 degrees in operation. See *KSR v. Teleflex*, 127 S.Ct. 1727 (2007). Dependent claim 5, and independent claim 8, cannot be said to

impart any **patentable** distinction when reviewing the combined teachings of Shen '451 and Pezeshki '252 further in view of Gunn III '124.

8. Claim 7 is rejected under 35 U.S.C. 103 as being unpatentable over Shen et al. US 2016/0349451 A1, further in view of Pezeshki et al. US 2017/0168252 A1, and further in view of Gao et al. US 2003/0174964 A1.

Regarding independent claim 1, Shen et al. US 2016/0349451 A1, and further in view of Pezeshki et al. US 2017/0168252 A1 make obvious this claim. *See* the full rejection in section (6) above.

Regarding **dependent claim 7**, there is no *express* teaching in Shen '451 and Pezeshki '252 of using a graded index (GRIN) lens to improve optical coupling of the optical input fiber to the optical components on the receiving device.

Gao et al. US 2003/0174964 A1 teaches (ABS; Figure, including Fig. 2; paragraph [0023]; Claims) a lens coupling system that couples optical fiber(s) to optical waveguides on chip, in that optical lenses are used to improve optical coupling between the fiber(s) and the waveguide(s). Gao (para [0023]) teaches that using GRIN lenses improves optical coupling functionality by directly inputting optical signals without loss from this coupling connection. GRIN lenses are also known and commonly used in the art.

Since Shen '451, Pezeshki '252, and Gao '964 are both from the same field of endeavor, the purpose disclosed by Gao '964 would have been recognized in the pertinent art of Shen '451 and Pezeshki '252.

A person having ordinary skill in the art at the time the invention was made would have recognized the teaching of Gao '964, to use GRIN lenses to improve optical coupling between an optical fiber(s) and an optical waveguide(s) on a chip or substrate type configuration, in the device of Shen '451 and Pezeshki '252 to improve optical coupling efficiency. See *KSR v. Teleflex*, 127 S.Ct. 1727 (2007). Dependent claim 7 cannot be said to impart any **patentable** distinction when reviewing the combined teachings of Shen '451 and Pezeshki '252, and further in view of Gao.

9. Claims 1-3 and 6 are rejected under 35 U.S.C. 103 as being unpatentable over Gamache et al. U.S.P. No. 9,341,786 B1, and further in view of Shen et al. US 2016/0349451 A1.

Regarding independent claim 1, Gamache et al. U.S.P. No. 9,341,786 B1 teaches (ABS; Figures 1A, 1B, 2A, 2C, 6A, 6B, 7A, 7C; corresponding text, in particular column 4, line 50 through column 8, line 49; Claims) a multi-channel parallel optical receiving device (Figs. 1A, 1B, and 2C; specifics of AWG attachment in Figs. 6A and 6B), comprising: a carrier 102 (also 104 on top of 102) and a light receiving "chip" disposed on a top surface of the carrier (column 6, lines 18-25 discussed many "electrical" and "chip" functions in/on the carrier 102); a plurality of optoelectronic diodes (within 104; see column 4, lines 50-67) disposed on a top surface of an end of the carrier, and the plurality of optoelectronic diodes *electrically* connected to the light receiving chip (column 6, lines 18-25), wherein the optoelectronic diode and the light receiving chip are directly disposed on the same surface (at 102/104); an optical fiber connector 116 disposed in another end of the carrier (*left* in Fig. 1A); an

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arrayed waveguide grating 610A/610B (Figs. 6A and 6B interchangeable optical sub-elements) further disposed on the top surface of the carrier, the AWG having a first end (*right* side of AWG), a middle (*mid* portion(s)), and a second end (*left* side of AWG) disposed opposite to the first end; and an input end of the arrayed waveguide grating connected to the optical fiber connector for receiving an optical signal from the optical fiber (fibers are coupled to PLC (AWG's) at *left*), wherein the top surface of the carrier underlies the "middle" portion / area of the AWG; and wherein the optical signals are divided (MUX / DEMUX) into multi-channel optical signals in parallel by the arrayed waveguide grating based on their wavelengths, the top surface defined by an output end of the arrayed waveguide grating is at a predetermined angle, causing the multi-channel optical signals reflected by the top surface to be reflected to an photosensitive surface of the plurality of optoelectronic diodes arranged in parallel, wherein the predetermined angle of the top surface defined by the output end of the AWG is in a range of 41 to 46 degrees such that the top surface provides the reflection (the "top surface" of the AWG in Figs. 6A and 6B causes light to be reflected toward the photo-diodes. The light detecting and converting elements of Gamache et al. '786 are located directly on the same surface because they are integrated into a single chip. The Examiner notes that the claim term "*light receiving* chip" may be confusing because no "light" appears to be "received" by this chip. However, Applicant's may be their own lexicographer and this "chip" is most closely associated with TIA components.

Regarding the amendment to independent claim 1 on July 13, 2018 (entered by RCE dated August 13, 2018), Gamache et al. '786 does not *expressly* teach that the

light detecting and converting elements are "separate and distinct" components (OE diode(s) and OE light receiving chip) that are electrically coupled together via *wire* bonding. Note Applicant's remarks on pages 5-7 (filed July 13, 2018) regarding Gamache et al. '786.

However, while these arguments are persuasive that Gamache et al. '786 does not meet the strict literal requirements for **anticipation** under 35 U.S.C. 102, such an amendment does not overcome the Examiner's requirement and necessity to consider the claims, *as a whole and as arranged*, under 35 U.S.C. 103 for obviousness.

Shen et al. US 2016/0349451 A1 teaches (ABS; Figs. 1, 5, 7; Claims) teaches embodiments in which two *separate* opto-electronic components (300 and 700 connected by M) are used, and are electrically coupled together by a bonding wire, instead of the ***single chip*** configuration of Gamache et al. '786. Configurations such as shown in Shen et al. '451 are common and ubiquitous in the prior art of integrated opto-electronic device on a substrate or printed circuit board, because they are known to allow *segmentation* and differentiation of two distinct elements, so that all elements need not necessarily be integrated into one single chip. For example, a skilled artisan would recognized that two different standalone elements may be used because then one of them could be replaced without replacing the ***entire*** single chip.

Since Gamache et al. '786 and Shen et al. '451 are both from the same field of endeavor, the purpose disclosed by Shen et al. '451 would have been recognized in the pertinent art of Gamache et al. '786.

A person having ordinary skill in the art at the time of the effective filing of the current application would have recognized the teaching of Shen et al. '451, to use two

separate components, those connected electrically by a bonding wire, in the device of Gamache et al. '786, to replace the single integrated chip configuration for the purpose and motivation of making modifications and swapping parts easier and more efficient (than changing the entire single chip for maintenance). Accordingly, independent claim 1 cannot be said to impart any **patentable** distinction over the combination of Gamache et al. '786 and further in view of Shen et al. '451.

Regarding claim 2, the OE diodes can be disposed on a / the *same* circuit board during optical and electrical integration in Gamache (as shown in Figs. 1A and 1B).

Regarding claim 3, when optical signals are split in the AWG, a corresponding number of light wave transmission signals can propagate to an equal amount of OE diodes by a path corresponding thereto in Gamache Figs. 6A and 6B.

Regarding claim 6, lenses (microlens array(s)) are shown in operation of some embodiments of Gamache to couple between optical fiber(s) and the corresponding element during optical operation, and would have been recognized in operation of the AWG to improve optical coupling performance as needed.

10. Claims 5 and 8 are rejected under 35 U.S.C. 103 as being unpatentable over Gamache et al. U.S.P. No. 9,341,786 B1 and further in view of Shen et al. US 2016/0349451 A1 relating to base independent claim 1, and further in view of Gunn, III et al. U.S.P. No. 7,162,124 B1.

Regarding independent claim 1, Gamache et al. U.S.P. No. 9,341,786 B1 and further in view of Shen et al. US 2016/0349451 A1 make obvious this claim. *See* the full

rejection in section (9) above. The analysis for the added features (amendment filed July 13, 2018) of ***claim 8*** are the same as claim 1 above.

Regarding further dependent claim 5, and independent claim 8, there is no exact teaching in Gamache et al. '786 and/or Shen et al. '451 to the predetermined angle of reflection to be "42 degrees." Gamache is *silent to* this 42 degree amount.

However, this range, starting with 40 to 45 degrees, and being in the exact degree of 42 degrees, is known in the optical coupling art. Gunn, III et al. U.S.P. No. 7,162,124 B1 teaches (ABS; Figs.; column 3, line 34 through column 4, line 14) an optical element coupling signals down into another optical device, and in particular in that these signals are coupled at 42 degrees (less than 43 degrees, to 41 degrees; see column 3, line 34 through column 4, line 14). This angled degree of reflection / coupling is known in the art, at the time of the effective filing of the current application.

Since Gamache et al. '786, Shen et al. '451 and Gunn III '124 are both from the same field of endeavor, the purpose disclosed by Gunn III '124 would have been recognized in the pertinent art of Gamache et al. '786 and Shen et al. '451.

A person having ordinary skill in the art at the time the invention was made would have recognized the teaching of Gunn III '124, to use optical coupling at a degree of reflection of 42 degrees (and between generally 40 and 45 degrees), in the device of Gamache et al. '786 and Shen et al. '451 to improve optical coupling efficiency and results. The Examiner notes that Gamache et al. '786 and Shen et al. '451 are *silent* to the exact degree of "42", as being somewhere between 40 and 45 degrees in operation. See *KSR v. Teleflex*, 127 S.Ct. 1727 (2007). Dependent claim 5, and independent

claim 8, cannot be said to impart any **patentable** distinction when reviewing the combined teachings of Gamache and Shen, and then Gunn III '124.

11. Claim 7 is rejected under 35 U.S.C. 103 as being unpatentable over Gamache et al. U.S.P. No. 9,341,786 B1 and further in view of Shen et al. US 2016/0349451 A1 relating to base independent claim 1, and further in view of Gao et al. US 2003/0174964 A1.

Regarding independent claim 1, Gamache et al. U.S.P. No. 9,341,786 B1 and further in view of Shen et al. US 2016/0349451 A1 make obvious this claim. *See* the full rejection in section (9) above.

Regarding **dependent claim 7**, there is no *express* teaching in Gamache et al. '786 and Shen et al. '451 for using a graded index (GRIN) lens to improve optical coupling of the optical input fiber to the optical components on the receiving device.

Gao et al. US 2003/0174964 A1 teaches (ABS; Figure, including Fig. 2; paragraph [0023]; Claims) a lens coupling system that couples optical fiber(s) to optical waveguides on chip, in that optical lenses are used to improve optical coupling between the fiber(s) and the waveguide(s). Gao (para [0023]) teaches that using GRIN lenses improves optical coupling functionality by directly inputting optical signals without loss from this coupling connection. GRIN lenses are also known and commonly used in the art.

Since Gamache et al. '786, Shen et al. '451, and Gao '964 are both from the same field of endeavor, the purpose disclosed by Gao '964 would have been recognized in the pertinent art of Gamache et al. '786 and Shen et al. '451.

A person having ordinary skill in the art at the time the invention was made would have recognized the teaching of Gao '964, to use GRIN lenses to improve optical coupling between an optical fiber(s) and an optical waveguide(s) on a chip or substrate type configuration, in the device of Gamache et al. '786 and Shen et al. '451 to improve optical coupling efficiency. See *KSR v. Teleflex*, 127 S.Ct. 1727 (2007). Dependent claim 7 cannot be said to impart any **patentable** distinction when reviewing the combined teachings of Gamache and Shen, and further in view of Gao.

Response to Arguments

12. Applicant's arguments (page 5) regarding the Ho et al. '819 reference is persuasive. All rejections to Ho et al. '819 are *withdrawn*, as the Examiner agrees that this reference is not applicable prior art based on 35 U.S.C. 102(a)(2).

13. Applicant's arguments (pages 5-8) filed July 13, 2018 (entered by RCE filed August 13, 2018) have been fully considered but they are *moot*. Applicant's amendments filed ***July 13, 2018*** have necessitated further search and consideration of prior art, and of case law (*KSR* obviousness tenets of 35 U.S.C. 103).

14. The minor changes made to independent claims 1 and 8 (amendment filed July 13, 2018) do not create a **patentable** distinction, and in particular such a distinction that would serve to overcome the *common sense* and *obvious-to-try* tenets of KSR v. Teleflex. The Examiner has presented a *prima facie* case for obviousness above. Both *primary* references of Shen et al. '451 and Gamache et al. '786 are maintained with

obviousness rejections (35 U.S.C. 103), but the grounds of these rejections has shifted due to Applicant's *amendments* to the claims. Shen et al. '451 and Gamache et al. '786 use *secondary* references, and also case law under *KSR*, in order to complete each *prima facie* cases for obviousness under 35 U.S.C. 103.

Inventorship

15. This application currently names joint inventors. In considering patentability of the claims the examiner presumes that the subject matter of the various claims was commonly owned as of the effective filing date of the claimed invention(s) absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and effective filing dates of each claim that was not commonly owned as of the effective filing date of the later invention in order for the examiner to consider the applicability of 35 U.S.C. 102(b)(2)(C) for any potential 35 U.S.C. 102(a)(2) prior art against the later invention.

Conclusion

16. Because Applicant filed a timely RCE on August 13, 2018, in order to enter the proposed amendment filed July 13, 2018, this action is made ***NON-FINAL***.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Petkovsek whose telephone number is (571)272-4174. The examiner can normally be reached on M-F 7:30 - 6 PM.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Uyen-Chau Le can be reached on (571) 272-2397. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel Petkovsek/
Primary Examiner, Art Unit 2874
September 7, 2018

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/432,242	LUO et al.
	Examiner	Art Unit
	Daniel Petkovsek	2874

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	08/18/2017	03/29/2018	09/07/2018						
	1	✓	✓	✓						
	2	✓	✓	✓						
	3	✓	✓	✓						
	4	✓	-	-						
	5	✓	✓	✓						
	6	✓	✓	✓						
	7	✓	✓	✓						
	8		✓	✓						

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/432,242	LUO et al.
	Examiner	Art Unit
	Daniel Petkovsek	2874

CPC - Searched*		
Symbol	Date	Examiner
G02B 6/12019, 6/32, 6/4214, 6/4249	09/06/2018	DJP

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Refreshed pertinent EAST searches	09/06/2018	DJP
Analyzed amendment and remarks filed July 13, 2018	09/07/2018	DJP
Conducted further EAST searches	09/07/2018	DJP

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L4	19	(US-20010055444-$ or US-20150029572-$ or US-20160149662-$ or US-20040022490-$ or US-20020181890-$ or US-20170168252-$ or US-20160349451-$ or US-20150311669-$ or US-20040161186-$ or US-20170336582-$ or US-20170307819-$ or US-20110142395-$).did. or (US-6945708-$ or US-9341786-$ or US-7162124-$ or US-9484482-$ or US-9057844-$).did. or (US-20170168252-$ or US-20160349451-$).did.	US-PGPUB; USPAT; DERWENT	OR	ON	2018/09/07 13:04
L3	0	(15/162623).APP.	USPAT; USOCR	OR	ON	2018/09/07 13:04
L2	1	("2016/0349451").URPN.	USPAT	OR	ON	2018/09/07 13:03
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S125	1	("9341786").PN.	US-PGPUB; USPAT; USOCR; JPO	OR	OFF	2018/09/06 17:51
S124	15	S123 and (angl$3 degree$4)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2018/09/06 17:51
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S120	4	S119 and (degree$3 near2 ("41" "42" "43"))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2018/09/06 17:51
S119	62	("20020106156" | "20020146054" | "20030010904" | "20030081902" | "20040202428" | "20040240788" | "5488681" | "5657407" | "5724463" | "6136611" | "6289144" | "6697411").PN. OR ("7162124").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/06 17:51
S118	16	("20030067676" | "20080138013" | "20110142395" | "20150087092" | "7162124" | "7366380" | "7900836" | "8064745" | "8213751" | "8317411" | "8615149" | "8639073" | "9054489").PN. OR ("9341786").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/06 17:51
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S115	1	("7532783").PN.	US-PGPUB; USPAT; USOCR; JPO	OR	OFF	2018/09/06 17:51
S114	7	(("20030174964") or ("20040161186") or ("20160149662") or ("20160349451") or ("20170168252") or ("20150249501") or ("20170307819")).PN.	US-PGPUB; USPAT; USOCR;	OR	OFF	2018/09/06 17:51

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S113	6	(("5617234") or ("7376308") or ("8831433") or ("7058263") or ("7532783") or ("7941053")).PN.	US-PGPUB; USPAT; USOCR; JPO	OR	OFF	2018/09/06 17:51
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S109	0	("2017/0336582").URPN.	USPAT	OR	ON	2018/09/06 17:51
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S104	13	(US-20010055444-$ or US-20150029572-$ or US-20160149662-$ or US-20040022490-$ or US-20020181890-$ or US-20170168252-$ or US-20160349451-$ or US-20150311669-$ or US-20040161186-$).did. or (US-6945708-$ or US-9341786-$).did. or (US-20170168252-$ or US-20160349451-$).did.	US-PGPUB; USPAT; DERWENT	OR	ON	2018/09/06 17:51
S103	3	(luo$2 jiang$2 nie$2 ding$2).in. and (parallel$4 with receiv$4 with optic$4) and ("AWG" (array$3 near2 waveguid$3 near3 grating$3))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2018/09/06 17:51
S102	106	S101 and (("AWG" (array$3 near2 waveguid$3 near3 grating$4)) with (reflect$4 mirror$4) with (detect$4 diod$4 photo-detect$4 photodetect$4	US-PGPUB; USPAT; USOCR;	OR	ON	2018/09/06 17:51

		photo-diod$4 photodiod$4 receiv$4))	EPO; JPO; DERWENT			
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S100	1	(10/368195).APP.	USPAT; USOCR	OR	ON	2018/09/06 17:51
S99	5	("2004/0161186").URPN.	USPAT	OR	ON	2018/09/06 17:51
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S94	0	(15/162623).APP.	USPAT; USOCR	OR	ON	2018/09/06 17:51
S93	0	(15/373991).APP.	USPAT; USOCR	OR	ON	2018/09/06 17:51
S92	1	("2017/0168252").URPN.	USPAT	OR	ON	2018/09/06 17:51
S91	48	G02B6/4214.cpc. and G02B6/12019.cpc.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2018/09/06 17:51
S90	3	("2016/0149662").URPN.	USPAT	OR	ON	2018/09/06 17:51
S89	1	(14/621273).APP.	USPAT; USOCR	OR	ON	2018/09/06 17:51
S88	12	("20010055444" | "6490395").PN. OR ("6760521").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/06 17:51
S87	15	petkovsek$2.xa,xp. and (fiber$4 with ("AWG" or (array$3 near3 grating$3)))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2018/09/06 17:51
S86	112	coupl$4 same ("AWG" (array$2 near2 waveguid$3 near2 grating$4)) same (optic$4 near9 fiber$4) same connector$4	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2018/09/06 17:51

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S84	1	("20160349451").PN.	US-PGPUB; USPAT; USOCR; JPO	OR	OFF	2018/09/06 17:51
S83	13	(US-20010055444-$ or US-20150029572-$ or US-20160149662-$ or US-20040022490-$ or US-20020181890-$ or US-20170168252-$ or US-20160349451-$ or US-20150311669-$ or US-20040161186-$).did. or (US-6945708-$ or US-9341786-$).did. or (US-20170168252-$ or US-20160349451-$).did.	US-PGPUB; USPAT; DERWENT	OR	ON	2018/09/06 17:51
S82	3	(luo$2 jiang$2 nie$2 ding$2).in. and (parallel$4 with receiv$4 with optic$4) and ("AWG" (array$3 near2 waveguid$3 near3 grating$3))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2018/09/06 17:51
S81	106	S80 and (("AWG" (array$3 near2 waveguid$3 near3 grating$4)) with (reflect$4 mirror$4) with (detect$4 diod$4 photo-detect$4 photodetect$4 photo-diod$4 photodiod$4 receiv$4))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2018/09/06 17:51
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S79	1	(10/368195).APP.	USPAT; USOCR	OR	ON	2018/09/06 17:51
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S73	0	(15/162623).APP.	USPAT; USOCR	OR	ON	2018/09/06 17:51
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S71	1	("2017/0168252").URPN.	USPAT	OR	ON	2018/09/06 17:51
S70	48	G02B6/4214.cpc. and G02B6/12019.cpc.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2018/09/06 17:51
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S67	12	("20010055444" | "6490395").PN. OR ("6760521").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2018/09/06 17:51
S66	15	petkovsek$2.xa,xp. and (fiber$4 with ("AWG" or (array$3 near3 grating$3)))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2018/09/06 17:51
S65	112	coupl$4 same ("AWG" (array$2 near2 waveguid$3 near2 grating$4)) same (optic$4 near9 fiber$4) same connector$4	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2018/09/06 17:51
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EAST Search History (Interference)

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9/7/2018 1:04:40 PM
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Cc: PAIR_eOfficeAction@uspto.gov
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Application	Document	Mailroom Date	Attorney Docket No.
15432242	CTNF	09/13/2018	AOIC006

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UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	15/432,242	Confirmation No. :	2079

Inventors	:	Jian-Hong Luo et al.
Filed	:	February 14, 2017
TC/A.U.	:	2874
Examiner	:	Petkovsek
Docket No.	:	AOIC006
Customer No.	:	27,543

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY UNDER 37 CFR § 1.111 AND INTERVIEW SUMMARY

Sir/Madame:

This reply is in response to the Office Action dated September 13, 2018. Applicant is filing this amendment within the three-month statutory period for reply on or before December 13, 2018. Thus, Applicant believes that no extension of time is required. In the event that an additional extension is required, Applicant herewith petitions the Director of the United States Patent and Trademark Office for the necessary extension and authorizes the Director to charge Deposit Account 50-1705.

AOI_NDCal 4-24cv09041_ 00002171

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15432242
Filing Date	2017-02-14
First Named Inventor	LUO, Jian Hong
Art Unit	2874
Examiner Name	Petkovsek, Daniel
Attorney Docket Number	AOIC006

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	9557500	B1	2017-01-31	LUO ET AL	

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U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20170187462	A1	2017-06-29	LUO ET AL	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15432242
	Filing Date	2017-02-14
	First Named Inventor	LUO, Jian Hong
	Art Unit	2874
	Examiner Name	Petkovsek, Daniel
	Attorney Docket Number	AOIC006

	1	

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15432242
	Filing Date	2017-02-14
	First Named Inventor	LUO, Jian Hong
	Art Unit	2874
	Examiner Name	Petkovsek, Daniel
	Attorney Docket Number	AOIC006

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Kenneth M. Thompson/	Date (YYYY-MM-DD)	2018-12-13
Name/Print	Kenneth M. Thompson	Registration Number	72001

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour to complete, including gathering, preparing and submitting the completed application 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.**

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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 Cooperation Treaty.

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.

Electronic Patent Application Fee Transmittal

Application Number:	15432242
Filing Date:	14-Feb-2017
Title of Invention:	MULTI-CHANNEL PARALLEL OPTICAL RECEIVING DEVICE
First Named Inventor/Applicant Name:	Jian-Hong LUO
Filer:	Kenneth M. Thompson/April Davis
Attorney Docket Number:	AOIC006

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

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Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	1806	1	240	240
		Total in USD ($)		**240**

AOI_NDCal 4-24cv09041_ 00002177

Electronic Acknowledgement Receipt

EFS ID:	34577515
Application Number:	15432242
International Application Number:	
Confirmation Number:	2079
Title of Invention:	MULTI-CHANNEL PARALLEL OPTICAL RECEIVING DEVICE
First Named Inventor/Applicant Name:	Jian-Hong LUO
Customer Number:	27543
Filer:	Kenneth M. Thompson/April Davis
Filer Authorized By:	Kenneth M. Thompson
Attorney Docket Number:	AOIC006
Receipt Date:	13-DEC-2018
Filing Date:	14-FEB-2017
Time Stamp:	14:34:18
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$240
RAM confirmation Number	121418INTEFSW14350300
Deposit Account	501705
Authorized User	April Davis

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

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37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		AOIC006_Response_asfiled_121318.pdf	133821 f3b70ed626e338414cc334294d13d9cd9a03c061	yes	10

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Applicant Arguments/Remarks Made in an Amendment	5	10
	Claims	2	4
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1

Warnings:

Information:

2	Information Disclosure Statement (IDS) Form (SB08)	AOIC006_IDS.pdf	612176 b81f64fd9b13df618d62e2576ac6ab34f18e9cae	no	4

Warnings:

Information:

3	Fee Worksheet (SB06)	fee-info.pdf	30624 56d7aa57c705d8fa237803c7a069dcbacabfa2c8	no	2

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Information:

Total Files Size (in bytes):	776621

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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REMARKS

Please reconsider the application in view of the above amendments and the following remarks.

Status of the Claims

Claims 1-3 and 5-8 stand rejected. No claims are amended herein, and no claims are cancelled. No new claims are added at this time. Accordingly, claims 1-3 and 5-8 remain pending for examination.

Interview Summary

Applicant thanks Examiner Petkovsek for his time and courtesy during a telephone interview conducted on December 12, 2018 with Applicant's undersigned Representative. The purpose of the interview was to discuss the outstanding rejections of the claims under 35 U.S.C. 103, and in particular, Applicant respectfully asserted that the Office Action failed to put forward a valid prima facie case of obviousness, as discussed further below. No agreement was reached.

Rejections under 35 U.S.C. § 103

Claims 1-3 and 6 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Pat. Pub. No. 2016/0349451 (Shen) in view of U.S. Pat. Pub. No. 2017/0168252 (Pezeshki). Claims 5 and 8 were rejected under 35 U.S.C. § 103 as being unpatentable over Shen, Pezeshki and further in view of U.S. Pat. No. 7,162,124 (Gunn). Claim 7 was rejected under 35 U.S.C. § 103 as being unpatentable over Chen, Pezeshki, and further in view of U.S. Pat. Pub. No. 2003/0174964 (Gao). Applicant respectfully requests reconsideration.

Applicant previously amended the claims in a response dated July 13, 2018 to clarify that, *inter alia*, "the optoelectronic diodes and the light receiving chip are disposed *directly* on the same surface."

The Office Action agrees with Applicant that Shen fails to teach or suggest such a feature, but in effort to remedy this deficiency, the Office Action asserts that it would have been an obvious design choice to one of ordinary skill in the art to place the light receiving chip 700 and diode receiver 300 of Shen directly on the same surface (See FIG. 1 of Shen provided below). *See Office Action; page 5*. Further, the Office Action asserts that, in relevant part:

> Such a minor change to the prior art of Shen et al. '451 would have been motivated as being an obvious matter of *design choice* to a person of

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