UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-Q

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended September 30, 2019

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to .

Commission File Number 001-33155

IPG PHOTONICS CORPORATION
(Exact name of registrant as specified in its charter)

Delaware	**04-3444218**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**
50 Old Webster Road, Oxford, Massachusetts	**01540**
(Address of principal executive offices)	**(Zip code)**

(508) 373-1100
(Registrant's telephone number, including area code)

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data file required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large Accelerated Filer	☒	Accelerated Filer	☐
Non-Accelerated Filer	☐	Smaller Reporting Company	☐
Emerging Growth Company	☐		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock, par value $0.0001 per share	IPGP	Nasdaq Global Select Market

As of November 4, 2019, there were 53,070,044 shares of the registrant's common stock outstanding.

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PART I-FINANCIAL INFORMATION

ITEM 1. UNAUDITED INTERIM FINANCIAL STATEMENTS

IPG PHOTONICS CORPORATION
CONDENSED CONSOLIDATED BALANCE SHEETS

	September 30, 2019	December 31, 2018
	(In thousands, except share and per share data)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 580,329	$ 544,358
Short-term investments	498,508	500,432
Accounts receivable, net	252,926	255,509
Inventories	417,163	403,579
Prepaid income taxes	50,693	43,782
Prepaid expenses and other current assets	65,896	57,764
Total current assets	1,865,515	1,805,424
Deferred income taxes, net	23,415	19,165
Goodwill	109,954	100,722
Intangible assets, net	85,561	87,139
Property, plant and equipment, net	596,138	543,068
Other assets	50,321	18,932
Total assets	$ 2,730,904	$ 2,574,450
LIABILITIES AND EQUITY		
Current liabilities:		
Current portion of long-term debt	$ 3,722	$ 3,671
Accounts payable	30,466	36,302
Accrued expenses and other current liabilities	151,431	154,640
Income taxes payable	19,944	51,161
Total current liabilities	205,563	245,774
Deferred income taxes and other long-term liabilities	105,772	80,734
Long-term debt, net of current portion	38,909	41,707
Total liabilities	350,244	368,215
Commitments and contingencies (Note 12)		
IPG Photonics Corporation equity:		
Common stock, $0.0001 par value, 175,000,000 shares authorized; 54,662,933 and 53,035,843 shares issued and outstanding, respectively, at September 30, 2019; 54,371,701 and 52,941,607 shares issued and outstanding, respectively, at December 31, 2018	5	5
Treasury stock, at cost, 1,627,090 and 1,430,094 shares held at September 30, 2019 and December 31, 2018, respectively.	(250,919)	(224,998)
Additional paid-in capital	772,152	744,937
Retained earnings	2,033,184	1,848,500
Accumulated other comprehensive loss	(174,311)	(162,896)
Total IPG Photonics Corporation equity	2,380,111	2,205,548
Non-controlling interests	549	687
Total equity	2,380,660	2,206,235
Total liabilities and equity	$ 2,730,904	$ 2,574,450

See notes to condensed consolidated financial statements.

IPG PHOTONICS CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF INCOME

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
	(In thousands, except per share data)			
Net sales	$ 329,138	$ 356,346	$ 1,007,954	$ 1,129,823
Cost of sales	176,280	161,162	525,948	496,303
Gross profit	152,858	195,184	482,006	633,520
Operating expenses:				
Sales and marketing	18,969	13,479	58,907	41,531
Research and development	32,160	30,909	99,528	91,268
General and administrative	26,776	25,245	82,526	74,857
Loss (gain) on foreign exchange	808	1,688	7,495	(1,489)
Total operating expenses	78,713	71,321	248,456	206,167
Operating income	74,145	123,863	233,550	427,353
Other income, net:				
Interest income, net	3,734	3,884	11,737	4,925
Other (expense) income, net	(520)	423	129	1,252
Total other income	3,214	4,307	11,866	6,177
Income before provision for income taxes	77,359	128,170	245,416	433,530
Provision for income taxes	(20,232)	(27,418)	(60,852)	(104,827)
Net income	57,127	100,752	184,564	328,703
Less: net (loss) income attributable to non-controlling interests	(126)	235	(120)	235
Net income attributable to IPG Photonics Corporation	$ 57,253	$ 100,517	$ 184,684	$ 328,468
Net income attributable to IPG Photonics Corporation per share:				
Basic	$ 1.08	$ 1.88	$ 3.48	$ 6.12
Diluted	$ 1.07	$ 1.84	$ 3.43	$ 5.97
Weighted average shares outstanding:				
Basic	52,928	53,571	53,073	53,677
Diluted	53,622	54,696	53,864	54,995

See notes to condensed consolidated financial statements.

IPG PHOTONICS CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
	(In thousands)			
Net income	$ 57,127	$ 100,752	$ 184,564	$ 328,703
Other comprehensive income, net of tax:				
Translation adjustments	(30,371)	(15,047)	(11,413)	(67,072)
Unrealized gain (loss) on derivatives	3	(5)	(2)	(3)
Effect of adopted accounting standards	—	—	—	10
Total other comprehensive loss	(30,368)	(15,052)	(11,415)	(67,065)
Comprehensive income	26,759	85,700	173,149	261,638
Comprehensive (loss) income attributable to non-controlling interests	(165)	196	(138)	196
Comprehensive income attributable to IPG Photonics Corporation	$ 26,924	$ 85,504	$ 173,287	$ 261,442

See notes to condensed consolidated financial statements.

IPG PHOTONICS CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS

	Nine Months Ended September 30,	
	2019	2018
	(In thousands)	
Cash flows from operating activities:		
Net income	$ 184,564	$ 328,703
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	72,531	58,894
Deferred income taxes	(4,214)	2,954
Stock-based compensation	25,571	21,443
Unrealized loss (gain) on foreign currency transactions	7,033	(1,779)
Other	854	(1,936)
Provisions for inventory, warranty & bad debt	38,748	30,582
Changes in assets and liabilities that (used) provided cash:		
Accounts receivable	(7,562)	(26,058)
Inventories	(51,032)	(122,051)
Prepaid expenses and other assets	11,087	(4,925)
Accounts payable	(8,137)	(1,319)
Accrued expenses and other liabilities	(26,113)	(20,095)
Income and other taxes payable	(49,748)	15,838
Net cash provided by operating activities	193,582	280,251
Cash flows from investing activities:		
Purchases of and deposits on property, plant and equipment	(107,540)	(133,355)
Proceeds from sales of property, plant and equipment	348	755
Purchases of short-term and long-term investments	(557,674)	(566,498)
Proceeds from short-term investments	568,501	286,346
Acquisitions of businesses, net of cash acquired	(15,115)	(4,423)
Other	243	307
Net cash used in investing activities	(111,237)	(416,868)
Cash flows from financing activities:		
Proceeds from line-of-credit facilities	15	255
Payments on line-of-credit facilities	(15)	(255)
Principal payments on long-term borrowings	(2,747)	(2,696)
Proceeds from issuance of common stock under employee stock option and purchase plans less payments for taxes related to net share settlement of equity awards	1,644	12,115
Cash contributed by non-controlling interests	—	378
Purchase of treasury stock, at cost	(25,921)	(111,926)
Net cash used in financing activities	(27,024)	(102,129)
Effect of changes in exchange rates on cash, cash equivalents and restricted cash	(16,561)	(23,548)
Net increase (decrease) in cash, cash equivalents and restricted cash	38,760	(262,294)
Cash and cash equivalents — Beginning of period	544,358	909,900
Cash, cash equivalents and restricted cash — End of period (Note 2)	$ 583,118	$ 647,606
Supplemental disclosure of cash flow information:		
Cash paid for interest	$ 1,655	$ 2,402
Cash paid for income taxes	$ 97,172	$ 94,801
Non-cash transactions:		
Demonstration units transferred from inventory to other assets	$ 8,892	$ 3,787
Inventory transferred to machinery and equipment	$ 8,250	$ 2,114
Changes in accounts payable related to property, plant and equipment	$ 2,721	$ (3,337)
Leased assets obtained in exchange for new operating lease liabilities	$ 11,944	$ —

See notes to condensed consolidated financial statements.

IPG PHOTONICS CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF EQUITY

Three Months Ended September 30,

	Common Stock		Treasury Stock						
(In thousands, except share data)	**Shares**	**Amount**	**Shares**	**Amount**	**Additional Paid In Capital**	**Retained Earnings**	**Accumulated Other Comprehensive (Loss) Income**	**Non-controlling Interest**	**Total Stockholders' Equity**
Balance, June 30, 2019	**53,182,910**	**$ 5**	**(1,446,470)**	**$ (227,282)**	**$ 761,936**	**$ 1,975,931**	**$ (143,943)**	**$ 714**	**$ 2,367,361**
Exercise of stock options and vesting of RSU's and PSU's	33,553	—	—	—	1,676	—	—	—	1,676
Purchased common stock	(180,620)	—	(180,620)	(23,637)	—	—	—	—	(23,637)
Stock-based compensation	—	—	—	—	8,540	—	—	—	8,540
Net income	—	—	—	—	—	57,253	—	(126)	57,127
Foreign currency translation adjustments	—	—	—	—	—	—	(30,371)	(39)	(30,410)
Unrealized gain on derivatives, net of tax	—	—	—	—	—	—	3	—	3
Balance, September 30, 2019	**53,035,843**	**$ 5**	**(1,627,090)**	**$ (250,919)**	**$ 772,152**	**$ 2,033,184**	**$ (174,311)**	**$ 549**	**$ 2,380,660**
Balance, June 30, 2018	**53,724,445**	**$ 5**	**(592,847)**	**$ (99,997)**	**$ 729,082**	**$ 1,672,424**	**$ (129,357)**	**$ —**	**$ 2,172,157**
Exercise of stock options and vesting of RSU's and PSU's	45,287	—	—	—	1,484	—	—	—	1,484
Purchased common stock	(371,228)	—	(371,228)	(60,862)	—	—	—	—	(60,862)
Stock-based compensation	—	—	—	—	7,719	—	—	—	7,719
Net income	—	—	—	—	—	100,517	—	235	100,752
Foreign currency translation adjustments	—	—	—	—	—	—	(15,047)	(39)	(15,086)
Unrealized gain on derivatives, net of tax	—	—	—	—	—	—	(5)	—	(5)
Non-controlling interest of acquired company	—	—	—	—	—	—	—	649	649
Balance, September 30, 2018	**53,398,504**	**$ 5**	**(964,075)**	**$ (160,859)**	**$ 738,285**	**$ 1,772,941**	**$ (144,409)**	**$ 845**	**$ 2,206,808**

Nine Months Ended September 30,

	Common Stock		Treasury Stock						
(In thousands, except share data)	**Shares**	**Amount**	**Shares**	**Amount**	**Additional Paid In Capital**	**Retained Earnings**	**Accumulated Other Comprehensive (Loss) Income**	**Non-controlling Interest**	**Total Stockholders' Equity**
Balance, January 1, 2019	**52,941,607**	**$ 5**	**(1,430,094)**	**$ (224,998)**	**$ 744,937**	**$ 1,848,500**	**$ (162,896)**	**$ 687**	**$ 2,206,235**
Exercise of stock options and vesting of RSU's and PSU's	259,749	—	—	—	(2,321)	—	—	—	(2,321)
Common stock issued under employee stock purchase plan	31,483	—	—	—	3,965	—	—	—	3,965
Purchased common stock	(196,996)	—	(196,996)	(25,921)	—	—	—	—	(25,921)
Stock-based compensation	—	—	—	—	25,571	—	—	—	25,571
Net income	—	—	—	—	—	184,684	—	(120)	184,564
Foreign currency translation adjustments	—	—	—	—	—	—	(11,413)	(18)	(11,431)
Unrealized loss on derivatives, net of tax	—	—	—	—	—	—	(2)	—	(2)
Balance, September 30, 2019	**53,035,843**	**$ 5**	**(1,627,090)**	**$ (250,919)**	**$ 772,152**	**$ 2,033,184**	**$ (174,311)**	**$ 549**	**$ 2,380,660**
Balance, January 1, 2018	**53,629,439**	**$ 5**	**(378,269)**	**$ (48,933)**	**$ 704,727**	**$ 1,443,867**	**$ (77,344)**	**$ —**	**$ 2,022,322**
Exercise of stock options and vesting of RSU's and PSU's	342,673	—	—	—	9,827	—	—	—	9,827
Common stock issued under employee stock purchase plan	12,198	—	—	—	2,288	—	—	—	2,288
Purchased common stock	(585,806)	—	(585,806)	(111,926)	—	—	—	—	(111,926)
Stock-based compensation	—	—	—	—	21,443	—	—	—	21,443
Recently adopted accounting standards	—	—	—	—	—	606	10	—	616
Non-controlling interest of acquired company	—	—	—	—	—	—	—	649	649
Net income	—	—	—	—	—	328,468	—	235	328,703
Foreign currency translation adjustments	—	—	—	—	—	—	(67,072)	(39)	(67,111)
Unrealized gain on derivatives, net of tax	—	—	—	—	—	—	(3)	—	(3)
Balance, September 30, 2018	**53,398,504**	**$ 5**	**(964,075)**	**$ (160,859)**	**$ 738,285**	**$ 1,772,941**	**$ (144,409)**	**$ 845**	**$ 2,206,808**

See notes to condensed consolidated financial statements.

IPG PHOTONICS CORPORATION
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(In thousands, except share and per share data)

1. BASIS OF PRESENTATION AND SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation — The accompanying unaudited condensed consolidated financial statements have been prepared by IPG Photonics Corporation, or "IPG", "its" or the "Company". Certain information and footnote disclosures normally included in financial statements prepared in accordance with accounting principles generally accepted in the United States of America have been condensed or omitted pursuant to the rules and regulations of the Securities and Exchange Commission ("SEC"). The condensed consolidated financial statements include the Company's accounts and those of its subsidiaries. All intercompany balances have been eliminated in consolidation. These condensed consolidated financial statements should be read in conjunction with the consolidated financial statements and notes thereto in the Company's Annual Report on Form 10-K for the year ended December 31, 2018.

In the opinion of the Company's management, the financial information for the interim periods presented reflects all adjustments necessary for a fair presentation of the Company's financial position, results of operations and cash flows. The results reported in these condensed consolidated financial statements are not necessarily indicative of results that may be expected for the entire year.

In accordance with Accounting Standards Codification ("ASC") 842, "Leases," ("ASC 842" or the "new lease standard"), the following significant accounting policy has been adopted as of January 1, 2019.

Leases — The Company determines if an arrangement is a lease at inception. Operating leases are included in other assets, other current liabilities, and other long-term liabilities on our condensed consolidated balance sheets.

Right of use ("ROU") assets and lease liabilities are recognized based on the present value of the future minimum lease payments over the lease term at commencement date. As most of the Company's leases do not provide an implicit rate, IPG uses its incremental borrowing rate based on the information available at commencement date in determining the present value of future payments. The ROU assets also include any lease payments made and initial direct costs incurred and exclude lease incentives. Lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise that option. Lease expense for minimum lease payments is recognized on a straight-line basis over the lease term. Leases with an initial term of 12 months or less are not recorded on the balance sheet; the Company recognizes lease expense for these leases on a straight-line basis over the lease term. The Company has lease agreements with lease and non-lease components, which are accounted for as a single lease component.

Reclassifications — Certain prior year amounts have been reclassified to conform with current period presentation. These reclassifications had no effect on the reported results of operations.

The Company has evaluated subsequent events through the time of filing this Quarterly Report on Form 10-Q with the SEC.

2. RECENT ACCOUNTING PRONOUNCEMENTS

Adopted Pronouncements —

In February 2016, the Financial Accounting Standards Board ("FASB") issued a new standard related to leases to increase transparency and comparability among organizations by requiring the recognition of ROU assets and lease liabilities on the balance sheet. Most prominent among the changes in the standard is the recognition of ROU assets and lease liabilities by lessees for those leases classified as operating leases. The Company adopted ASC 842, as of January 1, 2019, using the modified retrospective approach as of the date of adoption. Under this approach, comparative periods have not been restated. In addition, IPG elected the package of three practical expedients permitted under the transition guidance within the new standard, which among other things, allowed for the carry forward of the historical lease classification.

IPG PHOTONICS CORPORATION
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (Continued)
(In thousands, except share and per share data)

The cumulative effect of the changes made to the Company's condensed consolidated January 1, 2019 balance sheet for the adoption of ASC 842 related to operating leases was as follows:

	Balance at December 31, 2018	Adoption of ASC 842	Balance at January 1, 2019
Balance Sheet			
Prepaid expenses and other current assets	$ 57,764	$ (324)	$ 57,440
Other assets	18,932	19,463	38,395
Accrued expenses and other current liabilities	154,640	5,292	159,932
Deferred income taxes and other long-term liabilities	80,734	13,847	94,581

In the first quarter of 2018, the Company adopted FASB ASU No. 2016-18, "Statement of Cash Flows (Topic 230): Restricted Cash" ("ASU 2016-18"), which enhances and clarifies the guidance on the classification and presentation of restricted cash in the statement of cash flows and requires additional disclosure about restricted cash balances. The Company considers cash to be restricted when withdrawal or general use is legally restricted. The Company records restricted cash in other assets on the condensed consolidated balance sheets and determines classification based on the expected duration of the restriction.

The reconciliation of the Company's cash and cash equivalents in the condensed consolidated balance sheets to cash, cash equivalents and restricted cash in the condensed consolidated statement of cash flows is as follows:

	Balance at September 30, 2019
Cash and cash equivalents	$ 580,329
Restricted cash included in other assets	2,789
Cash, cash equivalents and restricted cash	$ 583,118

Other Pronouncements Currently Under Evaluation —

In June 2016, the FASB issued ASU No. 2016-13, "Measurement of Credit Losses on Financial Instruments" ("ASU 2016-13"), which adds an impairment model (known as the current expected credit loss ("CECL") model) that is based on expected losses rather than incurred losses. Under the new guidance, an entity recognizes as an allowance its estimate of expected credit losses, which the FASB believes will result in more timely recognition of such losses. The ASU is also intended to reduce the complexity by decreasing the number of credit impairment models that entities use to account for debt instruments. ASU 2016-03, along with its subsequent clarifications, is effective for fiscal years beginning after December 15, 2019. The Company does not expect this standard will have a material impact to net income.

3. REVENUE FROM CONTRACTS WITH CUSTOMERS

The following tables represent a disaggregation of revenue from contracts with customers:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Sales by Application				
Materials processing	$ 306,260	$ 334,498	$ 952,936	$ 1,065,712
Other applications	22,878	21,848	55,018	64,111
Total	$ 329,138	$ 356,346	$ 1,007,954	$ 1,129,823

IPG PHOTONICS CORPORATION
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS - (Continued)
(In thousands, except share and per share data)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Sales by Product				
High Power Continuous Wave ("CW") Lasers	$ 184,924	$ 227,462	$ 577,354	$ 724,111
Medium and Low Power CW Lasers	11,891	19,101	42,904	75,472
Pulsed Lasers	33,850	35,408	106,100	115,243
Quasi-Continuous Wave ("QCW") Lasers	12,479	18,276	42,612	54,568
Laser and Non-Laser Systems	32,929	14,701	104,943	37,600
Other Revenue including Amplifiers, Service, Parts, Accessories and Change in Deferred Revenue	53,065	41,398	134,041	122,829
Total	$ 329,138	$ 356,346	$ 1,007,954	$ 1,129,823
Sales by Geography				
North America	$ 71,000	$ 53,762	$ 199,947	$ 140,704
Europe:				
Germany	17,204	21,714	59,487	86,939
Other including Eastern Europe/CIS	62,196	66,392	192,527	225,717
Asia and Australia:				
China	121,290	158,853	399,246	511,852
Japan	21,859	21,871	54,879	60,927
Other	28,877	31,953	89,544	99,476
Rest of World	6,712	1,801	12,324	4,208
Total	$ 329,138	$ 356,346	$ 1,007,954	$ 1,129,823
Timing of Revenue Recognition				
Goods and services transferred at a point in time	$ 310,324	$ 355,191	$ 944,454	$ 1,126,285
Goods and services transferred over time	18,814	1,155	63,500	3,538
Total	$ 329,138	$ 356,346	$ 1,007,954	$ 1,129,823

One of our customers accounted for 9% and 13% of our net sales for the nine months ended September 30, 2019 and 2018, respectively. The same customer accounted for 29% and 25% of our net accounts receivable as of September 30, 2019 and December 31, 2018, respectively.

The Company enters into contracts to sell lasers and spare parts, for which revenue is generally recognized upon shipment or delivery, depending on the terms of the contract. The Company also provides installation services and extended warranties. The Company frequently receives consideration from a customer prior to transferring goods to the customer under the terms of a sales contract. The Company records customer deposits related to these prepayments, which represent a contract liability. The Company also records deferred revenue related to installation services when consideration is received before the services have been performed. The Company recognizes customer deposits and deferred revenue as net sales after control of the goods or services has been transferred to the customer and all revenue recognition criteria are met. The Company bills customers for extended warranties upon entering into the agreement with the customer, resulting in deferred revenue. The timing of customer payments on contracts for the sale of customized robotic systems generally differs from the timing of revenue recognized, resulting in contract assets and liabilities. Contract assets are included within prepaid expense and other current assets on the condensed consolidated balance sheets. Contract liabilities are included within accrued expenses and other current liabilities on the condensed consolidated balance sheets.

(In thousands, except share and per share data)

The following table reflects the changes in the Company's contract assets and liabilities for the nine months ended September 30, 2019 and 2018:

	September 30, 2019	January 1, 2019	Change	September 30, 2018	January 1, 2018	Change
Contract assets						
Contract assets	$ 10,606	$ 10,102	$ 504	$ —	$ —	$ —
Contract liabilities						
Contract liabilities - current	49,358	52,606	(3,248)	48,274	46,508	1,766
Contract liabilities - long-term	1,677	1,413	264	1,374	182	1,192

During the three months ended September 30, 2019 and September 30, 2018 the Company recognized revenue of $4,534 and $3,355, respectively, that was included in contract liabilities at the beginning of each period. During the nine months ended September 30, 2019 and September 30, 2018, the Company recognized revenue of $40,786 and $38,885, respectively, that was included in contract liabilities at the beginning of each period.

The Company has elected the practical expedient in ASC 606-10-50-14, whereby the performance obligations for contracts with an original expected duration of one year or less are not disclosed. The following table represents the Company's remaining performance obligations from contracts that are recognized over time as of September 30, 2019:

	Remaining Performance Obligations						
	2019 [(a)]	2020	2021	2022	2023	2024 and thereafter	Total
Revenue expected to be recognized for extended warranty agreements	$ 1,432	$ 3,395	$ 545	$ 297	$ 120	$ 14	$ 5,803
Revenue to be earned over time from contracts to sell robotic systems	16,061	6,659	—	—	—	—	22,720
Total	$ 17,493	$ 10,054	$ 545	$ 297	$ 120	$ 14	$ 28,523

(a) For the three-month period beginning October 1, 2019.

4. FAIR VALUE MEASUREMENTS

The Company's financial instruments consist of cash equivalents, short-term and long-term investments, accounts receivable, auction rate securities, accounts payable, drawings on revolving lines of credit, long-term debt, interest rate swaps and contingent purchase consideration.

The valuation techniques used to measure fair value are based upon observable and unobservable inputs. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect internal market assumptions. These two types of inputs create the following fair value hierarchy: Level 1, defined as observable inputs such as quoted prices for identical instruments in active markets; Level 2, defined as inputs other than quoted prices in active markets that are either directly or indirectly observable; and Level 3, defined as unobservable inputs for which little or no market data exists, therefore requiring an entity to develop its own assumptions.

The carrying amounts of money market fund deposits, term deposits, accounts receivable, accounts payable and drawings on revolving lines of credit are considered reasonable estimates of their fair market value due to the short maturity of most of these instruments or as a result of the competitive market interest rates which have been negotiated. The Company's bond securities are reported at fair value based upon quoted prices for instruments with identical terms in active markets. The Company's commercial paper securities reported at fair value are based upon model-driven valuations in which all significant inputs are observable or can be derived from or corroborated by observable market data for substantially the full term of the asset or liability, and are therefore classified as Level 2. At September 30, 2019 and December 31, 2018, the Company's long-term notes consisted of a variable rate note and a fixed rate note, and the book value is considered a reasonable estimate of fair market value.

(In thousands, except share and per share data)

The following table presents fair value information related to the Company's assets and liabilities measured at amortized cost on the condensed consolidated balance sheets with the exception of the interest rate swap, which is measured at fair value:

	Fair Value Measurements at September 30, 2019			
	Total	Level 1	Level 2	Level 3
Assets				
Cash equivalents:				
Money market fund deposits and term deposits	$ 123,243	$ 123,243	$ —	$ —
Commercial paper	56,831	—	56,831	—
Short-term investments:				
U.S. Treasury and agency obligations	20,971	20,971	—	—
Corporate bonds	270,911	270,911	—	—
Non-U.S. government bonds	3,000	—	3,000	—
Commercial paper	197,453	—	197,453	—
Certificate of deposit	6,498	6,498	—	—
Long-term investments and other assets:				
Auction rate securities	590	—	—	590
Interest rate swap	32	—	32	—
Total	$ 679,529	$ 421,623	$ 257,316	$ 590
Liabilities				
Long-term debt	$ 42,631	$ —	$ 42,631	$ —
Contingent purchase consideration	297	—	—	297
Total	$ 42,928	$ —	$ 42,631	$ 297

	Fair Value Measurements at December 31, 2018			
	Total	Level 1	Level 2	Level 3
Assets				
Cash equivalents:				
Money market fund deposits and term deposits	$ 180,965	$ 180,965	$ —	$ —
U.S. Treasury and agency obligations	6,495	6,495	—	—
Commercial paper	78,948	—	78,948	—
Short-term investments:				
U.S. Treasury and agency obligations	116,800	116,800	—	—
Corporate bonds	227,009	227,009	—	—
Commercial paper	156,321	—	156,321	—
Long-term investments and other assets:				
Corporate bonds	3,859	3,859	—	—
Auction rate securities	847	—	—	847
Interest rate swaps	31	—	31	—
Total	$ 771,275	$ 535,128	$ 235,300	$ 847
Liabilities				
Long-term debt	$ 45,378	$ —	$ 45,378	$ —
Contingent purchase consideration	898	—	—	898
Total	$ 46,276	$ —	$ 45,378	$ 898

The fair value of the short-term investments considered held-to-maturity as of September 30, 2019 and December 31, 2018 was $498,833 and $500,130, respectively, which include an unrealized gain of $325 and unrealized loss of $302, respectively, as compared to the book value recorded on the condensed consolidated balance sheets for the same periods. There were no long-term investments considered held-to-maturity as of September 30, 2019. The fair value of the long-term investments considered held-to-maturity as of December 31, 2018 was $3,859, which represents the book value recorded within other assets on the condensed consolidated balance sheets for the same period. There were no impairments for the investments considered held-to-maturity at September 30, 2019 and December 31, 2018.

(In thousands, except share and per share data)

The Company entered into an interest rate swap that is designated as a cash flow hedge associated with a new long-term note issued during the second quarter of 2016 that will terminate with the long-term note in May 2023. The fair value at September 30, 2019 for the interest rate swap considered pricing models whose inputs are observable for the securities held by the Company.

Auction rate securities and contingent consideration are measured at fair value on a recurring basis using significant unobservable inputs (Level 3). The fair value of the auction rate securities was determined using prices observed in inactive markets with limited observable data for the securities held by the Company. The auction rate securities are considered available-for-sale securities. They had a cost basis of $590 and $847 at September 30, 2019 and December 31, 2018, respectively. There were no impairments for the investments considered available-for-sale during the quarters ended September 30, 2019 and 2018.

The fair value of contingent consideration was determined using an income approach at the respective business combination date and at the reporting date. That approach is based on significant inputs that are not observable in the market and include key assumptions such as assessing the probability of meeting certain milestones required to earn the contingent consideration.

The following table presents information about the Company's movement in Level 3 assets and liabilities measured at fair value:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Auction rate securities				
Balance, beginning of period	$ 852	$ 1,174	$ 847	$ 1,016
Redemptions	(264)	(207)	(264)	(207)
Change in fair value and accretion	2	—	7	158
Balance, end of period	$ 590	$ 967	$ 590	$ 967
Contingent purchase consideration				
Balance, beginning of period	$ 300	$ 902	$ 898	$ 902
Cash payments	—	—	(632)	—
Foreign exchange adjustment	(3)	—	31	—
Balance, end of period	$ 297	$ 902	$ 297	$ 902

The following table presents the effective maturity dates of held-to-maturity and available-for-sale debt investments as of September 30, 2019 and December 31, 2018:

	September 30, 2019		December 31, 2018	
	Book Value	Fair Value	Book Value	Fair Value
Investment maturity				
Held-to-maturity:				
Less than 1 year	$ 498,508	$ 498,833	$ 585,875	$ 585,573
1 through 5 years	—	—	3,859	3,859
Total	$ 498,508	$ 498,833	$ 589,734	$ 589,432
Available-for-sale:				
Greater than 5 years	$ 590	$ 590	$ 847	$ 847

(In thousands, except share and per share data)

5. INVENTORIES

Inventories consist of the following:

	September 30, 2019	December 31, 2018
Components and raw materials	$ 235,276	$ 233,594
Work-in-process	49,744	66,498
Finished components and devices	132,143	103,487
Total	$ 417,163	$ 403,579

The Company recorded inventory provisions totaling $7,303 and $3,076 for the three months ended September 30, 2019 and 2018, respectively, and $19,952 and $9,930 for the nine months ended September 30, 2019 and 2018, respectively. These provisions relate to the recoverability of the value of inventories due to technological changes and excess quantities. These provisions are reported as a reduction to components and raw materials and finished components and devices.

6. GOODWILL AND INTANGIBLES

The following table sets forth the changes in the carrying amount of goodwill for the nine months ended September 30, 2019:

	Amount
Balance at January 1	$ 100,722
Goodwill arising from acquisition	9,426
Adjustment to goodwill during measurement period	448
Foreign exchange adjustment	(642)
Balance at September 30	$ 109,954

During the fourth quarter of 2018, the Company acquired 100% of the membership units of Genesis Systems Group, LLC ("Genesis"). During the first quarter of 2019, the working capital adjustment to the purchase price was finalized resulting in an increase in the purchase price of $448. The additional purchase price was allocated entirely to goodwill.

During the first quarter of 2019, the Company acquired the submarine networks division (SND) of Padtec SA, a communications equipment company based in Brazil. SND is a provider of submarine networking technology and systems. The Company paid $19,560 to acquire SND, which represents the fair value on that date. Of the purchase price, $1,956 ($1,801 at September 30, 2019) was held back for potential post-closing adjustments related to government approval of licenses. This balance is included within accrued expenses and other liabilities on the condensed consolidated balance sheets. In addition, $2,934 ($2,789 at September 30, 2019) was held back in a restricted bank account for potential post-closing adjustments related to indemnities provided by the seller. This balance related to restricted cash is included within other assets, and the liability related to the amount due to the sellers if the indemnities are satisfied is included within deferred income taxes and other long-term liabilities on the condensed consolidated balance sheets. Any excess of the acquisition consideration over the fair value of assets acquired and liabilities assumed is allocated to goodwill, which amounted to $9,426. The Company is assessing the deductibility of the goodwill for tax purposes. As a result of the acquisition, the Company recorded intangible assets of $4,825 related to production know-how with a weighted-average useful life of 6 years and $4,825 related to customer relationships with a weighted-average life of 6 years.

The purchase price allocations included in the Company's condensed consolidated financial statements are not complete. They represent the preliminary fair value estimates as of September 30, 2019 and are subject to subsequent adjustment as the Company obtains additional information during the measurement period and finalizes its fair value estimates. Any subsequent adjustments to these fair value estimates occurring during the measurement period will result in changes to the amounts and allocations recorded.

(In thousands, except share and per share data)

Intangible assets, subject to amortization, consisted of the following:

	September 30, 2019				December 31, 2018			
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Weighted-Average Lives	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Weighted-Average Lives
Customer relationships	$ 62,241	$ (10,963)	$ 51,278	10 years	$ 57,849	$ (6,427)	$ 51,422	11 years
Technology, trademark and tradename	41,350	(14,779)	26,571	7 years	41,184	(10,474)	30,710	7 years
Production know-how	13,581	(7,469)	6,112	7 years	9,211	(6,212)	2,999	7 years
Patents	8,036	(6,436)	1,600	8 years	8,036	(6,028)	2,008	8 years
Total	$ 125,208	$ (39,647)	$ 85,561		$ 116,280	$ (29,141)	$ 87,139	

Amortization expense for the three months ended September 30, 2019 and 2018 was $3,617 and $1,982, respectively. Amortization expense for the nine months ended September 30, 2019 and 2018 was $10,581 and $5,821, respectively. The estimated future amortization expense for intangibles for the remainder of 2019 and subsequent years is as follows:

2019 [(a)]	2020	2021	2022	2023	Thereafter	Total
$ 3,586	$ 13,562	13,197	$ 12,280	$ 11,350	$ 31,586	$ 85,561

(a) For the three-month period beginning October 1, 2019.

7. LEASES

The Company leases certain warehouses, office spaces, land, vehicles and equipment under operating lease agreements. The remaining terms of these leases range from less than 1 year to 46 years. The operating lease expense for the three and nine months ended September 30, 2019 was $2,168 and $6,632, respectively. The cash paid for amounts included in the measurement of lease liabilities included in the operating cash flows from operating leases was $1,679 and $5,121 for the three and nine months ended September 30, 2019, respectively. The Company does not have any finance lease arrangements.

The Company's operating lease assets and lease liabilities consist of the following as of September 30, 2019:

Account	Classification	Amount
Right-of-use assets	Other assets	$ 26,304
Short-term lease liabilities	Accrued expenses and other liabilities	5,315
Long-term lease liabilities	Deferred income taxes and other long-term liabilities	21,153
Total lease liabilities		$ 26,468

The table below presents the future minimum lease payments to be made under non-cancelable operating leases as of December 31, 2018:

Years ending December 31,	
2019	$ 6,314
2020	4,603
2021	3,358
2022	2,596
2023	2,078
Thereafter	11,340
Total	$ 30,289

(In thousands, except share and per share data)

The table below presents the maturities of operating lease liabilities as of September 30, 2019:

2019 [(a)]	$	1,617
2020		5,683
2021		4,562
2022		3,452
2023		2,880
Thereafter		12,472
Total future minimum lease payments		30,666
Less: imputed interest		(4,198)
Present value of lease liabilities	$	26,468

(a) For the three-month period beginning October 1, 2019.

Other information relevant to the Company's operating leases consist of the following as of September 30, 2019:

Weighted-average remaining lease term	9 years
Weighted-average discount rate	3.61 %

8. ACCRUED EXPENSES AND OTHER LIABILITIES

Accrued expenses and other liabilities consist of the following:

	September 30, 2019		December 31, 2018	
Accrued compensation	$	57,939	$	60,107
Contract liabilities		49,358		52,606
Current portion of accrued warranty		23,802		23,106
Short-term lease liabilities		5,315		—
Other		15,017		18,821
Total	$	151,431	$	154,640

9. PRODUCT WARRANTIES

The Company typically provides 1 to 3 years parts and service warranties on lasers, laser and non-laser systems, and amplifiers. Most of the Company's sales offices provide support to customers in their respective geographic areas. Warranty reserves have generally been sufficient to cover product warranty repair and replacement costs.

The following table summarizes product warranty accrual activity recorded during the nine months ended September 30, 2019 and 2018.

	2019		2018	
Balance at January 1	$	51,422	$	47,517
Provision for warranty accrual		16,916		19,050
Warranty claims		(17,399)		(13,827)
Foreign currency translation		(1,077)		(1,057)
Balance at September 30	$	49,862	$	51,683

Accrued warranty reported in the accompanying condensed consolidated financial statements as of September 30, 2019 and December 31, 2018 consisted of $23,802 and $23,106 in accrued expenses and other liabilities, respectively, and $26,060 and $28,316 in other long-term liabilities, respectively.

(In thousands, except share and per share data)

10. FINANCING ARRANGEMENTS

The Company's borrowings under existing financing arrangements consist of the following:

	September 30, 2019	December 31, 2018
Long-term notes	$ 42,631	$ 45,378
Less: current portion	(3,722)	(3,671)
Total long-term debt	$ 38,909	$ 41,707

At September 30, 2019, the Company has an unsecured long-term note with an outstanding principal balance of $19,891, of which, $1,188 is the current portion. The interest on this unsecured long-term note is variable at 1.2% above LIBOR and is fixed using an interest rate swap at 2.9% per annum. The unsecured long-term note matures in May 2023, at which time the outstanding principal balance will be $15,438. Also at September 30, 2019, the Company has another long-term note that is secured by its corporate aircraft with an outstanding principal balance of $22,740, of which, $2,534 is the current portion. The interest on this collateralized long-term note is fixed at 2.7% per annum. The collateralized long-term note matures in July 2022, at which time the outstanding principal balance will be $15,375.

The Company maintains a $50,000 line-of-credit and a €50,000 ($54,581) line-of-credit, both of which are available to certain foreign subsidiaries and allow for borrowings in the local currencies of those subsidiaries. It also maintains a €2,000 ($2,183) overdraft facility. At September 30, 2019 and December 31, 2018, there were no amounts drawn on the U.S. line-of-credit, and there were $1,116 and $930, respectively, of guarantees issued against the facility which reduce the amount of the facility available to draw. At September 30, 2019 and December 31, 2018, there were no amounts drawn on the Euro line-of-credit, and there were $1,579 and $1,166, respectively, of guarantees issued against those facilities which reduce the amount available to draw. At September 30, 2019 and December 31, 2018, there were no amounts drawn on the Euro overdraft facility. After providing for the guarantees used, the total unused lines-of-credit and overdraft facilities are $104,069 at September 30, 2019.

11. DERIVATIVE FINANCIAL INSTRUMENTS

The Company's only outstanding derivative financial instrument is an interest rate swap that is classified as a cash flow hedge of its variable rate debt. The fair value amounts in the condensed consolidated balance sheets were:

Notional Amounts (1)		Other Assets	
September 30, 2019	December 31, 2018	September 30, 2019	December 31, 2018
$ 19,891	$ 20,781	$ 32	$ 31

(1) Notional amounts represent the gross contract/notional amount of the derivatives outstanding.

The derivative gains and losses in the condensed consolidated financial statements for the three and nine months ended September 30, 2019 and 2018, related to the Company's current and previous interest rate swap contracts were as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Effective portion recognized in other comprehensive income, pretax:				
Interest rate swap	$ 4	$ (5)	$ 1	$ (3)

12. COMMITMENTS AND CONTINGENCIES

From time to time, the Company may be involved in disputes and legal proceedings in the ordinary course of its business. These proceedings may include allegations of infringement of intellectual property, commercial disputes and employment matters. As of September 30, 2019 and through the filing date of these condensed consolidated financial statements, the Company has no legal proceedings ongoing that management estimates could have a material effect on the Company's condensed consolidated financial statements.

(In thousands, except share and per share data)

13. INCOME TAXES

The effective tax rates for the three months ended September 30, 2019 and 2018 were 26.2% and 21.4%, respectively. For the nine months ended September 30, 2019 and 2018, the effective tax rates were 24.8% and 24.2%, respectively.

There were discrete tax benefits of $5,443 and $660 for the three months ended September 30, 2019 and 2018, respectively. The discrete benefits for the three months ended September 30, 2019 include $229 related to excess equity-based compensation deductions and $5,326 for return to provision adjustments. The discrete benefits for the three months ended September 30, 2018 include $1,026 related to excess equity-based compensation and $4,247 for return to provision adjustments. The benefits for the three months ended September 30, 2018 were offset by discrete detriments of $2,195 related to prepaid income taxes on profit in inventory provided as of December 31, 2017 at a U.S. Federal Tax Rate of 35% that flowed through consolidated earnings in 2018 and $3,046 related to a valuation allowance reflected primarily for state tax credits that exceed state income taxes in specific states.

For the nine months ended September 30, 2019 and 2018, the discrete tax benefits were $8,357 and $5,178, respectively. The discrete benefits for the nine months ended September 30, 2019 include $4,271 related to excess equity-based compensation deductions and $5,293 for return to provision adjustments. The discrete benefits for the nine months ended September 30, 2018 include $10,920 related to excess equity-based compensation and $4,001 related to provision to return adjustments. The benefits for the nine months ended September 30, 2018 were offset by discrete detriments of $6,584 related to prepaid income taxes on profit in inventory provided as of December 31, 2017 at a U.S. Federal Tax Rate of 35% that flowed through consolidated earnings in 2018 and $3,046 related to a valuation allowance reflected primarily for state tax credits that exceed state income taxes in specific states.

In addition to the discrete items above, the effective tax rate for the three months ended September 30, 2018 benefited from certain tax adjustments made in accordance with SAB 118. SAB 118 provided guidance on accounting for the tax effects of the Tax Cuts and Jobs Act and allowed a measurement period of up to one year from enactment to complete the accounting under ASC 740. The Company reduced its annual effective rate because of changes in the Global Intangible Low Taxed Income ("GILTI") tax calculation resulting from newly proposed regulations issued by the Treasury. The impact reduced the estimated tax expense for the nine months ended September 30, 2018 by $7,939, of which $4,747 had been reflected in tax expense as of June 30, 2018.

The Company accounts for its uncertain tax positions in accordance with the accounting standards for income taxes. The Company continues to classify interest and penalties related to unrecognized tax benefits as a component of the provision for income taxes. The following is a summary of the activity of the Company's unrecognized tax benefits for nine months ended September 30, 2019 and 2018:

	2019	2018
Balance at January 1,	$ 11,206	$ 10,370
Change in prior period positions	—	(1,067)
Additions for tax positions in current period	3,342	1,012
Foreign currency translation	(84)	(771)
Balance at September 30,	$ 14,464	$ 9,544

Substantially all of the liability for uncertain tax benefits related to various federal, state and foreign income tax matters would benefit the Company's effective tax rate, if recognized.

(In thousands, except share and per share data)

14. NET INCOME ATTRIBUTABLE TO IPG PHOTONICS CORPORATION PER SHARE

The following table sets forth the computation of diluted net income attributable to IPG Photonics Corporation per share:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Net income attributable to IPG Photonics Corporation	$ 57,253	$ 100,517	$ 184,684	$ 328,468
Net income attributable to common stockholders	57,253	100,517	184,684	328,468
Weighted average shares	52,928	53,571	53,073	53,677
Dilutive effect of common stock equivalents	694	1,125	791	1,318
Diluted weighted average common shares	53,622	54,696	53,864	54,995
Basic net income attributable to IPG Photonics Corporation per share	$ 1.08	$ 1.88	$ 3.48	$ 6.12
Basic net income attributable to common stockholders	$ 1.08	$ 1.88	$ 3.48	$ 6.12
Diluted net income attributable to IPG Photonics Corporation per share	$ 1.07	$ 1.84	$ 3.43	$ 5.97
Diluted net income attributable to common stockholders	$ 1.07	$ 1.84	$ 3.43	$ 5.97

For the three months ended September 30, 2019 and 2018, respectively, the computation of diluted weighted average common shares excludes 975,700 and 349,700 common stock equivalents because the effect of including them would be anti-dilutive. The shares excluded for the three months ended September 30, 2019 and 2018, respectively are comprised of 167,200 and 73,600 restricted stock units ("RSUs") and 45,500 and 17,300 performance stock units ("PSUs"), and 763,000 and 258,800 non-qualified stock options, respectively. For the nine months ended September 30, 2019 and 2018, respectively, the computation of diluted weighted average common shares excludes 768,000 and 256,500 common stock equivalents because the effect of including them would be anti-dilutive. The shares excluded for the nine months ended September 30, 2019 and 2018, respectively are comprised of 149,200 and 54,800 restricted stock units ("RSUs") and 40,800 and 14,000 performance stock units ("PSUs"), and 578,000 and 187,700 non-qualified stock options, respectively.

On February 12, 2019, the Company announced that its board of directors authorized a new anti-dilutive stock repurchase program (the "2019 Program") following the completion of its $125,000 repurchase program (the "2018 Program") authorized in July 2018. Under the 2019 Program, IPG is authorized to repurchase shares of common stock in an amount not to exceed the lesser of (a) the number of shares issued to employees and directors under the Company's various employee and director equity compensation and employee stock purchase plans from January 1, 2019 through December 31, 2020 and (b) $125,000, exclusive of any fees, commissions or other expenses. Share repurchases will be made periodically in open market transactions using the Company's working capital, and are subject to market conditions, legal requirements and other factors. The 2019 Program authorization does not obligate the Company to repurchase any dollar amount or number of its shares, and repurchases may be commenced or suspended from time to time without prior notice.

For the three months ended September 30, 2019, the Company repurchased 180,620 shares of common stock under the 2019 Program with an average price of $130.87 per share in the open market. The impact on the reduction of weighted average shares for the three months ended September 30, 2019 was 125,538 shares. For the nine months ended September 30, 2019, the Company repurchased 196,000 shares of common stock under the 2019 Program with an average price of $132.25 per share in the open market. The impact on the reduction of weighted average shares for the nine months ended September 30, 2019 was 48,080 shares. As of September 30, 2019 the remaining amount authorized under the 2019 Program is up to $99,000, but may be less depending upon the equity compensation and employee stock purchase plan dilution during the 2019 Program. For the three months ended September 30, 2018, the Company repurchased 371,228 shares of its common stock under the 2018 Program with an average price of $163.95 per share in the open market. The impact on the reduction of weighted average shares for the three months ended September 30, 2018 was 119,911 shares. For the nine months ended September 30, 2018, the Company repurchased 585,806 shares of its common stock with an average price of $191.06 per share in the open market. The impact on the reduction of weighted average shares for the nine months ended September 30, 2018 was 177,159 shares.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

You should read the following discussion in conjunction with our condensed consolidated financial statements and related notes included elsewhere in this Quarterly Report on Form 10-Q. This discussion contains forward looking statements that are based on management's current expectations, estimates and projections about our business and operations. Our actual results may differ materially from those currently anticipated and expressed in such forward-looking statements. See "Cautionary Statement Regarding Forward-Looking Statements."

Overview

We develop and manufacture a broad line of high-performance fiber lasers, fiber amplifiers and diode lasers that are used in numerous applications, primarily in materials processing. In addition, we offer laser and non-laser based systems for certain markets and applications. We sell our products globally to original equipment manufacturers ("OEMs"), system integrators and end users. We market our products internationally primarily through our direct sales force.

We are vertically integrated such that we design and manufacture most of the key components used in our finished products, from semiconductor diodes to optical fiber preforms, finished fiber lasers and amplifiers. We also manufacture certain complementary products used with our lasers, including optical delivery cables, fiber couplers, beam switches, optical processing heads and chillers.

Factors and Trends That Affect Our Operations and Financial Results

In reading our financial statements, you should be aware of the following factors and trends that our management believes are important in understanding our financial performance.

Net sales. We derive net sales primarily from the sale of fiber lasers and amplifiers. We also sell diode lasers, communications systems, laser and non-laser systems and complementary products. We sell our products through our direct sales organization and our network of distributors and sales representatives, as well as system integrators. We sell our products to OEMs that supply materials processing laser systems, communications systems, medical laser systems and other laser systems for advanced applications to end users. We also sell our products to end users that build their own systems, which incorporate our products or use our products as an energy or light source. Our scientists and engineers work closely with OEMs, systems integrators and end users to analyze their system requirements and match appropriate fiber laser or amplifier specifications. Our sales cycle varies substantially, ranging from a period of a few weeks to as long as one year or more, but is typically several months.

Sales of our products are, in general, recognized upon shipment, provided that no obligations remain and collection of the receivable is reasonably assured. Our sales typically are made on a purchase order basis rather than through long-term purchase commitments. Revenue from sales of customized robotic systems is recognized over time.

We develop our products to standard specifications and use a common set of components within our product architectures. Our major products are based upon a common technology platform. We continually enhance these and other products by improving their components and developing new components and new product designs.

The average selling prices of our products generally decrease as the products mature. These decreases result from factors such as increased competition, decreased manufacturing costs and increases in unit volumes, the introduction of new products and market share considerations. We may also reduce selling prices in order to penetrate new markets and applications. Furthermore, we negotiate discounted selling prices from time to time with certain customers that place high unit volume orders.

The secular shift to fiber laser technology in large materials processing applications, such as cutting applications, had a positive effect on our sales trends in the past such that our sales trends were often better than other capital equipment manufacturers in both positive and negative economic cycles. As the secular shift to fiber laser technology matures in such applications, our sales trends are more susceptible to economic cycles which affect other capital equipment manufacturers.

Gross margin. Our total gross margin in any period can be significantly affected by total net sales in any period, by product mix, by sales mix between OEM customers who purchase devices from us in high unit volumes and other customers, by mix of sales in different geographies, by competitive factors and by other factors such as changes in foreign exchange rates relative to the U.S. Dollar, some of which are not under our control.

Historically, we have been able to offset decreasing average selling prices with reductions in the cost of our components, subassemblies and finished products that has enabled us either to maintain or increase gross margin. However, recent reductions in average selling price have been greater than the decrease in component and manufacturing costs which has resulted in a decrease in gross margin. The decrease in average selling prices over the last year has exceeded the historical average and has primarily been driven by increasing competition in the materials processing market. Further cost reductions, which may not be achieved, will be necessary in order for gross margin to increase.

Our gross margin can be significantly affected by product mix. Within each of our product categories, the gross margin is generally higher for devices with greater average power. These higher power products often have better performance, more difficult specifications to attain and fewer competing products in the marketplace. Higher power lasers also use a greater number of optical components, improving absorption of fixed overhead costs and enabling economies of scale in manufacturing. The gross margin for certain specialty products may be higher because there are fewer or sometimes no equivalent competing products. Customers that purchase devices in greater unit volumes generally receive lower prices per device than customers that purchase fewer units. These lower selling prices to high unit volume customers may be partially offset by the improved absorption of fixed overhead costs associated with larger product volumes, which drive economies of scale in manufacturing. Finally, gross margin on systems and communication components can be lower than margins for our laser and amplifier sources, depending on the configuration, volume and competitive forces, among other factors.

The mix of sales between OEM customers and other customers can affect gross margin because we provide sales price discounts on products based on the number of units ordered. As the number of OEM customers increase and the number of units ordered increases, the average sales price per unit will be reduced. We expect that the impact of reduced sales price per unit will be offset by the manufacturing efficiency provided by high unit volume orders, but the timing and extent of achieving these efficiencies may not always match the mix of sales in any given time period or be realized at all.

Fluctuations in foreign exchange rates can affect gross margin. Generally, when the U.S. Dollar weakens as compared to the Euro, Chinese Yuan or other foreign currencies in which our product is sold, it will benefit gross margin. When the U.S. dollar strengthens as compared to foreign currencies in which our product is sold, it will be a detriment to gross margin.

We also regularly review our inventory for items that are slow-moving, have been rendered obsolete or determined to be excess. Any provision for such slow-moving, obsolete or excess inventory affects our gross margins. For example, we recorded provisions for slow-moving, obsolete or excess inventory totaling $7.3 million and $3.1 million for the three months ended September 30, 2019 and 2018, respectively, and $20.0 million and $9.9 million for the nine months ended September 30, 2019 and 2018, respectively.

Selling and general and administrative expenses. In the past, the company has invested in selling and general and administrative costs in order to support continued growth in the company. As the secular shift to fiber laser technology matures, our sales growth becomes more susceptible to the cyclical trends typical of capital equipment manufacturers. Accordingly, our future management of and investments in selling and general and administrative expenses will also be influenced by these trends, although we may still invest in selling or general and administrative functions to support certain initiatives even in economic down cycles. Certain general and administrative expenses are not related to the level of sales and may vary quarter to quarter based primarily upon the level of acquisitions and litigation.

Research and development expenses. We plan to continue to invest in research and development to improve our existing components and products and develop new components, products, systems and applications technology. We believe that these investments will sustain our position as a leader in the fiber laser industry and will support development of new products that can address new markets and growth opportunities. The amount of research and development expense we incur may vary from period to period.

Cost reduction program. During the fourth quarter IPG will begin implementing a cost reduction program in response to continued global macroeconomic, competitive and geopolitical headwinds. The Company expects to reduce annualized manufacturing and operating expenses by approximately $30 million, with the full impact being achieved as it exits the fourth quarter of fiscal 2019. As part of this program the Company will reduce global headcount by more than 300 positions and decrease other direct labor costs and expenses. IPG has implemented a hiring freeze and expects limited replacement of workforce attrition to result in further headcount reductions. IPG also anticipates consolidating a small number of facilities over time. These actions will result in restructuring charges of approximately $1 million primarily attributable to termination benefits, most of which will be recorded in the fourth quarter of 2019.

Long-lived assets impairments. We review our intangible assets for impairment when events or changes in circumstances indicate the carrying value may not be recoverable. Goodwill is required to be tested for impairment at least annually. Negative industry or economic trends, including reduced estimates of future cash flows, disruptions to our business, slower growth rates, lack of growth in our relevant business units or differences in the estimated product acceptance rates could lead to impairment charges against our long-lived assets, including goodwill and other intangible assets.

Our valuation methodology for assessing impairment requires management to make significant judgments and assumptions based on historical experience and to rely heavily on projections of future operating performance at many points during the analysis. Also, the process of evaluating the potential impairment of goodwill is subjective. We operate in a highly competitive environment and projections of future operating results and cash flows may vary significantly from actual results. If our analysis indicates potential impairment to goodwill in one or more of our reporting units, we may be required to record additional charges to earnings in our financial statements, which could negatively affect our results of operations.

In particular, the telecommunications market continues to experience rapid changes in technology and competitive environment. IPG will perform its annual assessment of goodwill impairment, which occurs in the fourth quarter each year. Management is currently in the process of updating forecasts and completing strategic reviews related to its business units that have goodwill and other long-lived assets. While this process is not yet complete, the Company currently expects that impairment charges will be recorded in the fourth quarter, primarily related to the telecommunications business. The goodwill and other long-lived assets within the telecommunications business that are subject to assessment total approximately $60 million. The magnitude of any impairment charges depend on and are sensitive to our long term forecast models and assumptions used in the valuation process.

Foreign exchange. Because we are a U.S. based company doing business globally, we have both translational and transactional exposure to fluctuations in foreign currency exchange rates. Changes in the relative exchange rate between the U.S. dollar and the foreign currencies in which our subsidiaries operate directly affects our sales, costs and earnings. Differences in the relative exchange rates between where we sell our products and where we incur manufacturing and other operating costs (primarily in the U.S., Germany and Russia) also affects our costs and earnings. Certain currencies experiencing significant exchange rate fluctuations like the Euro, the Russian Ruble, the Japanese Yen and Chinese Yuan have had and could have an additional significant impact on our sales, costs and earnings. Our ability to adjust the foreign currency selling prices of products in response to changes in exchange rates is limited and may not offset the impact of the changes in exchange rates on the translated value of sales or costs. In addition, if we increase the selling price of our products in local currencies, this could have a negative impact on the demand for our products.

Major customers. While we have historically depended on a few customers for a large percentage of our annual net sales, the composition of this group can change from year to year. Net sales derived from our five largest customers as a percentage of our net sales was 23% for the nine months ended September 30, 2019 and 26%, 28% and 22% for the full years 2018, 2017 and 2016, respectively. One of our customers accounted for 9% and 13% of our net sales for the nine months ended September 30, 2019 and 2018, respectively. The same customer accounted for 29% and 25% of our net accounts receivable as of September 30, 2019 and December 31, 2018, respectively. We seek to add new customers and to expand our relationships with existing customers. We anticipate that the composition of our significant customers will continue to change. If any of our significant customers substantially reduced their purchases from us, our results would be adversely affected.

Results of Operations for the three months ended September 30, 2019 compared to the three months ended September 30, 2018

Net sales. Net sales decreased by $27.2 million, or 7.6%, to $329.1 million for the three months ended September 30, 2019 from $356.3 million for the three months ended September 30, 2018.

	Three Months Ended September 30,					
	2019		2018		Change	
Sales by Application		% of Total		% of Total		
Materials processing	$ 306,260	93.0 %	$ 334,497	93.9 %	$ (28,237)	(8.4)%
Other applications	22,878	7.0 %	21,849	6.1 %	1,029	4.7 %
Total	$ 329,138	100.0 %	$ 356,346	100.0 %	$ (27,208)	(7.6)%

Sales by Product

High Power Continuous Wave ("CW") Lasers	$ 184,924	56.2 %	$ 227,462	63.8 %	$ (42,538)	(18.7)%
Medium and Low Power CW Lasers	11,891	3.6 %	19,101	5.4 %	(7,210)	(37.7)%
Pulsed Lasers	33,850	10.3 %	35,408	9.9 %	(1,558)	(4.4)%
Quasi-Continuous Wave ("QCW") Lasers	12,479	3.8 %	18,276	5.1 %	(5,797)	(31.7)%
Laser and Non-Laser Systems	32,929	10.0 %	14,701	4.1 %	18,228	124.0 %
Other Revenue including Amplifiers, Service, Parts, Accessories and Change in Deferred Revenue	53,065	16.1 %	41,398	11.7 %	11,667	28.2 %
Total	$ 329,138	100.0 %	$ 356,346	100.0 %	$ (27,208)	(7.6)%

Materials processing

Sales for materials processing applications decreased due to lower sales from high power lasers, medium power lasers, QCW lasers, and pulsed lasers offset by increased revenue from laser and non-laser systems.

- The decline in high power lasers related to the decrease in sales of cutting and welding. Within cutting applications, decreased sales were driven by lower average selling prices and decreased sales to Asia and Europe. The decrease in sales of high power lasers used in welding applications was driven by decreased sales of welding applications into the traditional automotive industry as well as a decrease in average selling prices.
- The decrease in medium and low power sales related to weakness in laser sintering for metal-based additive manufacturing and fine cutting applications. The reduced revenue in fine cutting applications was due in part to the ongoing transition to kilowatt scale high power lasers for these applications.
- The decrease in pulsed laser sales was due to the decline in the average selling price of low power pulsed products and ultra-violet pulsed lasers, which were largely offset by the growth in high power pulsed products and green pulsed lasers.
- QCW laser sales decreased due to lower demand for fine processing and consumer electronics applications.
- The increase in laser and non-laser systems sales was largely due to the acquisition of Genesis and partially driven by growth in macro-systems for welding and cutting applications.
- The increase in other revenue within the Sales by Product chart above was driven by growth in service sales and accessories.

Other Applications

Sales from other applications increased due to a sales increase in medical sales related to surgical applications largely offset by a decrease in sales to telecom. Telecom sales decreased due to the decreased demand for transceivers.

Cost of sales and gross margin. Cost of sales increased by $15.1 million, or 9.4%, to $176.3 million for the three months ended September 30, 2019 from $161.2 million for the three months ended September 30, 2018. Our gross margin decreased to 46.4% for the three months ended September 30, 2019 from 54.8% for the three months ended September 30, 2018. Gross margin decreased mainly due to a decrease in average selling prices and higher inventory provisions as compared to the third quarter of 2018. In addition, gross margin was impacted by an increase in unabsorbed manufacturing expense as a percentage of revenue in the third quarter of 2019 versus the year ago period. Product mix also reduced gross margins because the systems sold by Genesis, a business that we acquired in December 2018, have a lower gross margin than the core laser business. The acquisition of Genesis reduced gross margin by 1.7% for the three months ended September 30, 2019.

Sales and marketing expense. Sales and marketing expense increased by $5.5 million, or 40.7%, to $19.0 million for the three months ended September 30, 2019 compared with $13.5 million for the three months ended September 30, 2018. The majority of this change was a result of additional sales and marketing expenses of new acquisitions, including Genesis, as well as increases in salaries and benefits and depreciation. As a percentage of sales, sales and marketing expense increased to 5.8% of sales for the three months ended September 30, 2019 from 3.8% for the three months ended September 30, 2018.

Research and development expense. Research and development expense increased by $1.3 million, or 4.2%, to $32.2 million for the three months ended September 30, 2019, compared to $30.9 million for the three months ended September 30, 2018. This change was primarily a result of increases in personnel and R&D materials, partially offset by reductions in contractor expense. Research and development continues to focus on developing new products, enhancing performance of existing components, improving production processes and developing manufacturing of new components such as crystals and refining production processes to improve manufacturing yields and productivity. New products include lasers that operate at different wavelengths such as UV, visible and mid-IR, lasers with ultrafast pulses, laser based systems for material processing, projection, display and medical as well as accessories such as welding and cutting heads. In addition to new products, research and development is focused on enhancing the performance of our existing products by improving their electrical efficiency and increasing their average power. As a percentage of sales, research and development expense increased to 9.8% for the three months ended September 30, 2019 from 8.7% for the three months ended September 30, 2018.

General and administrative expense. General and administrative expense increased by $1.6 million, or 6.3%, to $26.8 million for the three months ended September 30, 2019 from $25.2 million for the three months ended September 30, 2018. This change was primarily a result of the acquisition of Genesis as well as increases in salaries, partially offset by reductions in bad debt expense. As a percentage of sales, general and administrative expense increased to 8.1% for the three months ended September 30, 2019 from 7.1% for the three months ended September 30, 2018.

Effect of exchange rates on net sales, gross profit and operating expenses. We estimate that, if exchange rates relative to the U.S. Dollar had been the same as one year ago, which were on average Euro 0.86, Russian Ruble 66, Japanese Yen 111 and Chinese Yuan 6.81, respectively, we would have expected net sales to be $7.9 million higher, gross profit to be $4.2 million higher and total operating expenses to be $0.3 million higher.

Loss (gain) on foreign exchange. We incurred a foreign exchange loss of $0.8 million for the three months ended September 30, 2019 as compared to a $1.7 million loss for the three months ended September 30, 2018. The foreign exchange loss for the three months ended September 30, 2019 was primarily attributable to depreciation of the Chinese Yuan and the Brazilian Real, partially offset by a gain attributable to the depreciation of the Russian Ruble and the Euro as compared to the U.S. Dollar. The foreign exchange loss for the three months ended September 30, 2018 was primarily attributable to the depreciation of the Chinese Yuan offset by a gain attributable to depreciation of the Russian Ruble as compared to the U.S. Dollar.

Provision for income taxes. Provision for income taxes was $20.2 million for the three months ended September 30, 2019 compared to $27.4 million for the three months ended September 30, 2018. The effective tax rates were 26.2% and 21.4% for the three months ended September 30, 2019 and 2018. There were net discrete tax benefits of $5.4 million and $0.7 million for the three months ended September 30, 2019 and 2018, respectively. The increase in the effective rate in 2019 is due in part to an increase in the forecasted share of profits earned in countries with higher tax rates in 2019 and in part due to a reduction in the 2018 annual effective rate, as allowed by SAB 118, due to an adjustment in the third quarter related to new regulations published in September 2018 regarding the U.S. taxation of foreign earnings under the Global Intangible Low Taxed Income tax provisions of the Tax Cuts and Jobs Act of 2017.

Net income attributable to IPG Photonics Corporation. Net income attributable to IPG Photonics Corporation decreased by $43.2 million to $57.3 million for the three months ended September 30, 2019 compared to $100.5 million for the three months ended September 30, 2018. Net income attributable to IPG Photonics Corporation as a percentage of our net sales decreased by 10.8 percentage points to 17.4% for the three months ended September 30, 2019 from 28.2% for the three months ended September 30, 2018 due to the factors described above.

Results of Operations for the nine months ended September 30, 2019 compared to the nine months ended September 30, 2018

Net sales. Net sales decreased by $121.8 million, or 10.8%, to $1,008.0 million for the nine months ended September 30, 2019 from $1,129.8 million for the nine months ended September 30, 2018.

	Nine Months Ended September 30,				Change	
	2019		2018			
Sales by Application		% of Total		% of Total		
Materials processing	$ 952,936	94.5 %	$ 1,065,712	94.3 %	$ (112,776)	(10.6)%
Other applications	55,018	5.5 %	64,111	5.7 %	(9,093)	(14.2)%
Total	$ 1,007,954	100.0 %	$ 1,129,823	100.0 %	$ (121,869)	(10.8)%

Sales by Product

High Power Continuous Wave ("CW") Lasers	$ 577,354	57.3 %	$ 724,111	64.1 %	$ (146,757)	(20.3)%
Medium and Low Power CW Lasers	42,904	4.3 %	75,472	6.7 %	(32,568)	(43.2)%
Pulsed Lasers	106,100	10.5 %	115,243	10.2 %	(9,143)	(7.9)%
Quasi-Continuous Wave ("QCW") Lasers	42,612	4.2 %	54,568	4.8 %	(11,956)	(21.9)%
Laser and Non-Laser Systems	104,943	10.4 %	37,600	3.3 %	67,343	179.1 %
Other Revenue including Amplifiers, Service, Parts, Accessories and Change in Deferred Revenue	134,041	13.3 %	122,829	10.9 %	11,212	9.1 %
Total	$ 1,007,954	100.0 %	$ 1,129,823	100.0 %	$ (121,869)	(10.8)%

Materials processing

Sales for materials processing applications decreased due to lower sales of high power lasers, medium power lasers, QCW lasers, and pulsed lasers, offset partially by increased revenue from laser and non-laser systems.

- The decline in high power lasers related to the decrease in sales of cutting, laser sintering, and welding applications. Within cutting applications, decreased sales were driven by lower average selling prices and weaker demand in China and Europe. The decrease in sales of high power lasers used in welding applications was driven by decreased sales of welding applications into the traditional automotive industry as well as a decrease in average selling prices. Within the laser sintering business, decreased sales were driven by weaker sales in Western Europe.
- The decrease in medium and low power sales related to weakness in fine cutting applications and laser sintering for metal-based additive manufacturing. The reduced revenue in fine cutting applications was due in part to the ongoing transition to kilowatt scale high power lasers for these applications.
- QCW laser sales decreased due to lower demand for consumer electronics and drilling applications.
- The decrease in pulsed laser sales was due to the decline in the average selling price of low power and ultra-violet pulsed products, which were largely offset by the growth in green and ultrafast pulsed lasers.
- The increase in laser and non-laser systems sales was largely due to the acquisition of Genesis and partially driven by growth in macro-systems for welding and cutting applications.
- Other Revenue sales increased compared to last year due to the increased sales of parts, service, and accessories.

Other Applications

Sales from other applications decreased due to sales declines in government, semiconductor, scientific, and telecom, partially offset by slight growth in the instrument and medical markets. Within advanced applications, government sales decreased largely primarily due to a decrease in sales for directed energy applications. Telecom sales decreased due to the lower sales of transceivers and amplifiers.

Cost of sales and gross margin. Cost of sales increased by $29.6 million, or 6.0%, to $525.9 million for the nine months ended September 30, 2019 from $496.3 million for the nine months ended September 30, 2018. Our gross margin decreased to 47.8% for the nine months ended September 30, 2019 from 56.1% for the nine months ended September 30, 2018. Gross margin decreased mainly due a decrease in average selling prices and higher inventory provisions as compared to the nine months ended September 30, 2018. In addition, gross margin was impacted by lower absorption of manufacturing expenses in the first three quarters of 2019 versus the year ago period. Product mix also reduced gross margins because the systems sold by Genesis, a business that we acquired in December 2018, have a lower gross margin than the core laser business. The acquisition of Genesis reduced gross margin by 2.0% for the nine months ended September 30, 2019.

Sales and marketing expense. Sales and marketing expense increased by $17.4 million, or 41.9%, to $58.9 million for the nine months ended September 30, 2019 from $41.5 million for the nine months ended September 30, 2018, primarily as a result of sales and marketing expenses for new acquisitions, including Genesis, as well as increases in salaries and benefits, depreciation and other selling expenses. As a percentage of sales, sales and marketing expense increased to 5.8% of sales for the nine months ended September 30, 2019 from 3.7% for the nine months ended September 30, 2018.

Research and development expense. Research and development expense increased by $8.2 million, or 9.0%, to $99.5 million for the nine months ended September 30, 2019, compared to $91.3 million for the nine months ended September 30, 2018, primarily as a result of an increase in expenses related to personnel, materials used for research and development projects, consultants, outside processing, leasing, information systems, and depreciation, partially offset by reductions in contractor expense. Research and development continues to focus on developing new products, enhancing performance of existing components, improving production processes and developing manufacturing of new components such as crystals and refining production processes to improve manufacturing yields and productivity. New products include lasers that operate at different wavelengths such as UV, visible and mid-IR, lasers with ultrafast pulses, laser based systems for material processing, projection, display and medical as well as accessories such as welding and cutting heads. In addition to new products, research and development is focused on enhancing the performance of our existing products by improving their electrical efficiency and increasing their average power. As a percentage of sales, research and development expense increased to 9.9% for the nine months ended September 30, 2019 from 8.1% for the nine months ended September 30, 2018.

General and administrative expense. General and administrative expense increased by $7.6 million, or 10.1%, to $82.5 million for the nine months ended September 30, 2019 from $74.9 million for the nine months ended September 30, 2018, primarily as a result of the acquisition of Genesis and increased expenses for personnel, information technology, depreciation and insurance. As a percentage of sales, general and administrative expense increased to 8.2% for the nine months ended September 30, 2019 from 6.6% for the nine months ended September 30, 2018.

Effect of exchange rates on net sales, gross profit and operating expenses. We estimate that, if exchange rates relative to the U.S. Dollar had been the same as one year ago, which were on average Euro 0.84, Russian Ruble 61, Japanese Yen 110 and Chinese Yuan 6.52, respectively, we would have expected net sales for the nine months ended September 30, 2019 to be $40.8 million higher, gross profit to be $22.3 million higher and total operating expenses would have been $4.6 million higher.

(Gain) Loss on foreign exchange. We incurred a foreign exchange loss of $7.5 million for the nine months ended September 30, 2019 as compared to a gain of $1.5 million for the nine months ended September 30, 2018. The loss for the nine months ended September 30, 2019 was primarily attributable to appreciation of the Russian Ruble, the depreciation of the Chinese Yuan and the Brazilian Real, partially offset by a gain attributable to depreciation of the Euro as compared to the U.S. Dollar. The gain for the nine months ended September 30, 2018 was primarily attributable to depreciation of the Euro and Russian Ruble compared to the U.S. Dollar, which was partially offset by a loss attributable to depreciation of the Chinese Yuan.

Provision for income taxes. Provision for income taxes was $60.9 million for the nine months ended September 30, 2019 compared to $104.8 million for the nine months ended September 30, 2018, representing an effective tax rate of 24.8% and 24.2% for the nine months ended September 30, 2019 and 2018, respectively. For the nine months ended September 30, 2019 and 2018, the net discrete tax benefits were $8.4 million and $5.2 million, respectively.

Net income attributable to IPG Photonics Corporation. Net income attributable to IPG Photonics Corporation decreased by $143.8 million to $184.7 million for the nine months ended September 30, 2019 compared to $328.5 million for the nine months ended September 30, 2018. Net income attributable to IPG Photonics Corporation as a percentage of our net sales decreased by 10.8 percentage points to 18.3% for the nine months ended September 30, 2019 from 29.1% for the nine months ended September 30, 2018 due to the factors described above.

Liquidity and Capital Resources

Our principal sources of liquidity as of September 30, 2019 consisted of cash and cash equivalents of $580.3 million, short-term investments of $498.5 million, unused credit lines and overdraft facilities of $104.1 million and other working capital (excluding cash and cash equivalents and short-term investments) of $581.1 million. This compares to cash and cash equivalents of $544.4 million, short-term investments of $500.4 million, unused credit lines and overdraft facilities of $107.4 million and other working capital (excluding cash and cash equivalents and short-term investments) of $514.9 million as of December 31, 2018. The decrease in cash and cash equivalents of $35.9 million relates primarily to cash used in investing activities of $111.2 million and cash used in financing activities of $27.0 million, offset by cash provided by operating activities of $193.6 million. In addition, the effect of exchange rates decreased cash and cash equivalents by $16.6 million.

Short-term investments at September 30, 2019, consist of liquid investments including U.S. government and government agency notes, corporate notes, non-U.S. government notes, commercial paper and certificates of deposit with original maturities of greater than three months but less than one year. We also hold long-term investments, included in other assets on the condensed consolidated balance sheets, which consist of auction rate securities totaling $0.6 million.

Our long-term debt consists of two long-term notes with a combined total outstanding balance at September 30, 2019 of $42.6 million of which $3.7 million is the current portion. We have an unsecured long-term note with an outstanding principal balance at September 30, 2019 of $19.9 million, of which $1.2 million is the current portion. The interest on this unsecured long-term note is variable at 1.2% above LIBOR and is fixed using an interest rate swap at 2.9% per annum. The unsecured long-term note matures in May 2023, at which time the outstanding principal balance will be $15.4 million. We have another long-term note that is secured by our corporate aircraft with an outstanding principal balance of $22.7 million, of which $2.5 million is the current portion. The interest on this collateralized long-term note is fixed at 2.7% per annum. The collateralized long-term note matures in July 2022, at which time the outstanding principal balance will be $15.4 million.

We believe that our existing cash and cash equivalents, short-term investments, our cash flows from operations and our existing lines of credit provide us with the financial flexibility to meet our liquidity and capital needs, as well as to complete certain acquisitions of businesses and technologies. We intend to continue to pursue acquisition opportunities based upon market conditions and the strategic importance and valuation of the target company. We may consider issuing debt or equity to finance acquisitions depending on the timing and size of the acquisition. Our future long-term capital requirements will depend on many factors including our level of sales, the impact of the economic environment on our sales growth, the timing and extent of spending to support development efforts, the expansion of the global sales and marketing activities, government regulation including trade sanctions, the timing and introductions of new products, the need to ensure access to adequate manufacturing capacity and the continuing market acceptance of our products.

The following table details our line-of-credit facilities as of September 30, 2019:

Description	Total Facility	Interest Rate	Maturity	Security
U.S. Revolving Line of Credit (1)	$50.0 million	LIBOR plus 0.80% to 1.20%, depending on our performance	April 2020	Unsecured
Euro Credit Facility (Germany) (2)	Euro 50.0 million ($54.6 million)	Euribor plus 0.75% or EONIA plus 1.00%	July 2020	Unsecured, guaranteed by parent company and German subsidiary
Other Euro Facility (3)	Euro 2.0 million ($2.2 million)	Euribor plus 0.89% to 1.78%	May 2020	Common pool of assets of Italian subsidiary

(1) This facility is available to certain foreign subsidiaries in their respective local currencies. At September 30, 2019, there were no amounts drawn on this line, however, there were $1.1 million of guarantees issued against the line which reduces total availability.
(2) This facility is also available to certain foreign subsidiaries in their respective local currencies. At September 30, 2019, there were no drawings on this facility, however, there were $1.6 million of guarantees issued against the line which reduces total availability.
(3) At September 30, 2019, there were no drawings. This facility renews annually.

Our largest committed credit lines are with Bank of America N.A. and Deutsche Bank AG in the amounts of $50.0 million and $54.6 million (or 50 million Euro as described above), respectively, and neither of them is syndicated.

We are required to meet certain financial covenants associated with our U.S. revolving line of credit and long-term debt facility. These covenants, tested quarterly, include a debt service coverage ratio and a funded debt to earnings before interest, taxes, depreciation and amortization ("EBITDA") ratio. The debt service coverage covenant requires that we maintain a trailing twelve-month ratio of cash flow to debt service that is at least 1.5:1. Debt service is defined as required principal and interest payments during the period. Debt service in the calculation is decreased by our cash held in the U.S.A. in excess of $50 million up to a maximum of $250 million. Cash flow is defined as EBITDA less unfunded capital expenditures. The funded debt to EBITDA covenant requires that the sum of all indebtedness for borrowed money on a consolidated basis be less than three times our trailing twelve months EBITDA. We were in compliance with all such financial covenants as of and for the three months ended September 30, 2019.

The financial covenants in our loan documents may cause us to not make or to delay investments and actions that we might otherwise undertake because of limits on capital expenditures and amounts that we can borrow or lease. In the event that we do not comply with any one of these covenants, we would be in default under the loan agreement or loan agreements, which may result in acceleration of the debt, cross-defaults on other debt or a reduction in available liquidity, any of which could harm our results of operations and financial condition.

Operating activities. Net cash provided by operating activities decreased by $86.7 million to $193.6 million for the nine months ended September 30, 2019 from $280.3 million for the nine months ended September 30, 2018. Our largest working capital items are inventory and accounts receivable. Items such as accounts payable to third parties, prepaid expenses and other current assets and accrued expenses and other liabilities are not as significant as our working capital investment in accounts receivable and inventory because of the amount of value added within IPG due to our vertically integrated structure. Accruals and payables for personnel costs including bonuses and income and other taxes payable are largely dependent on the timing of payments for those items. The decreased cash flow from operating activities for the nine months ended September 30, 2019 primarily resulted from:

- A decrease of $113.8 million in cash provided by net income after adding back non-cash charges to $325.1 million for the nine months ended September 30, 2019 as compared to $438.9 million for the same period in 2018;
- An increase in cash used by income taxes. Cash used by income and other taxes payable was $49.7 million for the nine months ended September 30, 2019 as compared to cash provided by income and other taxes payable of $15.8 million for the same period in 2018 due to timing of tax payments in Germany; partially offset by
- A decrease in the cash used for inventory of $51.0 million for the nine months ended September 30, 2019 as compared to $122.1 million for the same period in 2018.
- A decrease in the cash used by accounts receivable of $7.6 million for the nine months ended September 30, 2019 as compared to $26.1 million for the same period in 2018;

Given our vertical integration, rigorous and time-consuming testing procedures for both internally manufactured and externally purchased components and the lead time required to manufacture components used in our finished products, the rate at which we turn inventory has historically been comparatively low when compared to our cost of sales. Also, our historic growth rates required investment in inventories to support future sales and enable us to quote short delivery times to our customers, providing what we believe is a competitive advantage. Furthermore, if there was a disruption to the manufacturing capacity of any of our key technologies, our inventories of components should enable us to continue to build finished products for a period of time. We believe that we will continue to maintain a relatively high level of inventory compared to our cost of sales. As a result, we expect to have a significant amount of working capital invested in inventory. A reduction in our level of net sales or the rate of growth of our net sales from their current levels would mean that the rate at which we are able to convert our inventory into cash would decrease.

Investing activities. Net cash used in investing activities was $111.2 million for the nine months ended September 30, 2019 as compared to cash used in investing activities of $416.9 million in 2018. The cash used in investing activities in 2019 related to $107.5 million of capital expenditures, $15.1 million for acquisition of business, partially offset by $10.8 million of net proceeds from short-term investments. The cash used in investing activities in 2018 related to $133.4 million of capital expenditures, $280.2 million of net purchases of short-term and long-term investments and $4.4 million for acquisition of business.

We expect to incur less than $150 million in 2019 in capital expenditures. Capital expenditures include investments in facilities and equipment to add capacity in selected countries, add redundancy in specialized manufacturing and support our research and development efforts. The timing and extent of any capital expenditures in and between periods can have a significant effect on our cash flow. If we obtain financing for certain projects, our cash expenditures would be reduced in the year of expenditure. Many of the capital expenditure projects that we undertake have long lead times and are difficult to cancel or defer to a later period.

Financing activities. Net cash used in financing activities was $27.0 million for the nine months ended September 30, 2019 as compared to net cash used of $102.1 million in 2018. The cash used in financing activities in 2019 was primarily related to the purchase of treasury stock of $25.9 million and $2.7 million of principal payments on our long-term borrowings. The cash used in financing activities in 2018 was primarily related to the purchase of treasury stock of $111.9 million, partially offset by proceeds of $12.1 million from the exercise of stock options net of amounts disbursed in relation to shares withheld to cover employee income taxes due upon the vesting and release of restricted stock units.

Cautionary Statement Regarding Forward-Looking Statements

This Quarterly Report on Form 10-Q contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, and we intend that such forward-looking statements be subject to the safe harbors created thereby. For this purpose, any statements contained in this Quarterly Report on Form 10-Q except for historical information are forward-looking statements. Without limiting the generality of the foregoing, words such as "may," "will," "expect," "believe," "anticipate," "intend," "could," "estimate," or "continue" or the negative or other variations thereof or comparable terminology are intended to identify forward-looking statements. In addition, any statements that refer to projections of our future financial performance, trends in our businesses, or other characterizations of future events or circumstances are forward-looking statements.

The forward-looking statements included herein are based on current expectations of our management based on available information and involve a number of risks and uncertainties, all of which are difficult or impossible to accurately predict and many of which are beyond our control. As such, our actual results may differ significantly from those expressed in any forward-looking statements. Factors that may cause or contribute to such differences include, but are not limited to, those discussed in more detail in Item 1, "Business" of Part I of our Annual Report on Form 10-K for the year ended December 31, 2018 and Item 1A, "Risk Factors" of Part II on our Quarterly Report Form 10-Q for the quarter ended June 30, 2019. Readers should carefully review these risks, as well as the additional risks described in other documents we file from time to time with the Securities and Exchange Commission. In light of the significant risks and uncertainties inherent in the forward-looking information included herein, the inclusion of such information should not be regarded as a representation by us or any other person that such results will be achieved, and readers are cautioned not to rely on such forward-looking information. We undertake no obligation to revise the forward-looking statements contained herein to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events.

Recent Accounting Pronouncements

See Note 2 in the Notes to Condensed Consolidated Financial Statements for a full description of recent accounting pronouncements, including the respective dates of adoption or expected adoption and effects on our condensed consolidated financial statements contained in Item 1 of this Quarterly Report.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to market risk in the ordinary course of business, which consists primarily of interest rate risk associated with our cash and cash equivalents and our debt and foreign exchange rate risk.

Interest rate risk. Certain interest rates are variable and fluctuate with current market conditions. Our investments have limited exposure to market risk. We maintain a portfolio of cash, cash equivalents and short-term investments, consisting primarily of bank deposits, money market funds, certificates of deposit, commercial paper, corporate bonds and government and agency securities. None of these investments have a maturity date in excess of one year. Because of the short-term nature of these instruments, a sudden change in market interest rates would not be expected to have a material impact on our financial condition or results of operations. We also have long-term investments in auction rate securities with maturities greater than 5 years. Given the modest amount of our long-term investments of $0.6 million and the fact that we expect to hold these investments to maturity, we do not believe that a 10% change in market interest rates would have a material impact on our financial position or results of operations.

We are also exposed to market risk as a result of increases or decreases in the amount of interest expense we must pay on our bank debt and borrowings on our bank credit facilities. Our interest obligations on our long-term debt are fixed either by the underlying agreement or by means of an interest rate swap agreement. Although our U.S. revolving line of credit and our Euro credit facility have variable rates, we do not believe that a 10% change in market interest rates would have a material impact on our financial position or results of operations.

Exchange rates. Due to our international operations, a significant portion of our net sales, cost of sales and operating expenses are denominated in currencies other than the U.S. Dollar, principally the Euro, the Russian Ruble, the Chinese Yuan and the Japanese Yen. As a result, our international operations give rise to transactional market risk associated with exchange rate movements of the U.S. Dollar, the Euro, the Russian Ruble, the Chinese Yuan and the Japanese Yen. The loss on foreign exchange transactions totaled $0.8 million for the three months ended September 30, 2019 compared to a loss of $1.7 million for the three months ended September 30, 2018. Management attempts to minimize these exposures by partially or fully off-setting foreign currency denominated assets and liabilities at our subsidiaries that operate in different functional currencies. The effectiveness of this strategy can be limited by the volume of underlying transactions at various subsidiaries and by our ability to accelerate or delay inter-company cash settlements. As a result, we are unable to create a perfect offset of the foreign currency denominated assets and liabilities. At September 30, 2019, our material foreign currency exposure is net U.S. Dollar denominated assets at subsidiaries where the Euro or the Russian Ruble is the functional currency and U.S. Dollar denominated liabilities where the Chinese Yuan is the functional currency. The U.S. Dollar denominated assets are comprised of cash, third party receivables and inter-company receivables. The U.S. Dollar denominated liabilities are comprised of inter-company payables. A 5% change in the relative exchange rate of the U.S. Dollar to the Euro as of September 30, 2019 applied to the net U.S. Dollar asset balances, would result in a foreign exchange gain of $6.3 million if the U.S. Dollar appreciated and a $6.3 million foreign exchange loss if the U.S. Dollar depreciated. A 5% change in the relative exchange rate of the U.S. Dollar to the Chinese Yuan as of September 30, 2019 applied to the net U.S. Dollar liabilities balances, would result in a foreign exchange loss of $7.4 million if the U.S. Dollar appreciated and a $7.4 million foreign exchange gain if the U.S. Dollar depreciated.

In addition, we are exposed to foreign currency translation risk for those subsidiaries whose functional currency is not the U.S. Dollar as changes in the value of their functional currency relative to the U.S. Dollar can adversely affect the translated amounts of our revenue, expenses, net income, assets and liabilities. This can, in turn, affect the reported value and relative growth of sales and net income from one period to the next. In addition, changes in the translated value of assets and liabilities due to changes in functional currency exchange rates relative to the U.S. Dollar result in foreign currency translation adjustments that are a component of other comprehensive income or loss.

Foreign currency derivative instruments can also be used to hedge exposures and reduce the risks of certain foreign currency transactions; however, these instruments provide only limited protection and can carry significant cost. We have no foreign currency derivative instruments as of September 30, 2019. We will continue to analyze our exposure to currency exchange rate fluctuations and may engage in financial hedging techniques in the future to attempt to minimize the effect of these potential fluctuations. Exchange rate fluctuations may adversely affect our financial results in the future.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Under the supervision of our chief executive officer and our chief financial officer, our management has evaluated the effectiveness of the design and operation of our "disclosure controls and procedures" (as defined in Rules 13a-15(e) and 15d-15(e) promulgated under the Securities Exchange Act of 1934, as amended (the "Exchange Act")), as of the end of the period covered by this Quarterly Report on Form 10-Q (the "Evaluation Date"). Based upon that evaluation, our chief executive officer and our chief financial officer have concluded that, as of the Evaluation Date, our disclosure controls and procedures are effective.

Changes in Internal Controls

There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) promulgated under the Exchange Act) that occurred during the last fiscal quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II—OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

From time to time, we are party to various legal proceedings and other disputes incidental to our business. There have been no material developments to those proceedings reported in our Annual Report on Form 10-K for the year ended December 31, 2018.

ITEM 1A. RISK FACTORS

In addition to the other information set forth in this report, you should carefully consider the factors discussed in Part II, "Item 1A. Risk Factors" in our Quarterly Report on Form 10-Q for the period ended June 30, 2019, which could materially affect our business, financial condition or future results. The risks described in our Annual Report on Form 10-K and Quarterly Reports on Form 10-Q are not the only risks facing our Company. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially adversely affect our business, financial condition and/or operating results.

ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

The following table reflects issuer purchases of equity securities for three months ended September 30, 2019:

Date	Total Number of Shares (or Units) Purchased		Average Price Paid per Share (or Unit)	Total Number of Shares (or Units) Purchased as Part of Publicly Announced Plans or Programs	Maximum Number (or Approximate Dollar Value) of Shares (or Units) that May Yet Be Purchased Under the Plans or Programs
July 1, 2019 — July 31, 2019	97,807	(1), (2)	$ 139.88	—	$ 109,072
August 1, 2019 — August 31, 2019	84,524	(1), (2)	120.23	—	99,079
September 1, 2019 — September 30, 2019	—	(1), (2)	—	—	99,079
Total	182,331		$ 130.77	—	$ 99,079

(1) In 2012, our Board of Directors approved "withhold to cover" as a tax payment method for vesting of restricted stock awards for certain employees. Pursuant to the "withhold to cover" method, we withheld from such employees the shares noted in the table above to cover tax withholding related to the vesting of their awards. For the three months ended September 30, 2019 a total of 1,711 shares were withheld at an average price of $120.58.

(2) On February 12, 2019, we announced that our Board of Directors authorized a new anti-dilutive stock repurchase program (the "2019 Program") following the completion of our $125 million repurchase program authorized in July 2018. Under the 2019 Program, we are authorized to repurchase shares of common stock in an amount not to exceed the lesser of (a) the number of shares issued to employees and directors under the Company's various employee and director equity compensation and employee stock purchase plans from January 1, 2019 through December 31, 2020 and (b) $125 million, exclusive of any fees, commissions or other expenses. Share repurchases may be made periodically in open-market transactions using the Company's working capital, and are subject to market conditions, legal requirements and other factors. The 2019 Program authorization does not obligate us to repurchase any dollar amount or number of our shares, and repurchases may be commenced or suspended from time to time without prior notice. We repurchased 180,620 shares in the third quarter of 2019 under the 2019 Program.

ITEM 3. DEFAULTS UPON SENIOR SECURITIES

None.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

ITEM 5. OTHER INFORMATION

None.

ITEM 6. EXHIBITS

(a) Exhibits

Exhibit No.	Description
31.1	Certification of Chief Executive Officer pursuant to Rule 13a-14(a)
31.2	Certification of Chief Financial Officer pursuant to Rule 13a-14(a)
32	Certification of Chief Executive Officer and Chief Financial Officer pursuant to Section 1350
101.INS	Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document
101.SCH	XBRL Taxonomy Extension Schema
101.CAL	XBRL Taxonomy Extension Calculation Linkbase
101.LAB	XBRL Taxonomy Extension Label Linkbase
101.PRE	XBRL Taxonomy Extension Presentation Linkbase
101.DEF	XBRL Taxonomy Extension Definition Linkbase
104	Cover Page Interactive Data File (formatted as inline XBRL and contained in Exhibit 101)

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this Report to be signed on its behalf by the undersigned thereunto duly authorized.

IPG PHOTONICS CORPORATION

Date: November 5, 2019	By:	/s/ Valentin P. Gapontsev
		Valentin P. Gapontsev Chairman and Chief Executive Officer (Principal Executive Officer)
Date: November 5, 2019	By:	/s/ Timothy P.V. Mammen
		Timothy P.V. Mammen Senior Vice President and Chief Financial Officer (Principal Financial Officer)

Exhibit 31.1

Certification of Chief Executive Officer

Pursuant to Rule 13a – 14(a) or Rule 15d – 14(a) of the Securities Exchange Act of 1934

I, Valentin P. Gapontsev, certify that:

1. I have reviewed this quarterly report on Form 10-Q of IPG Photonics Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be signed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 5, 2019

By: /s/ Valentin P. Gapontsev

Valentin P. Gapontsev

Chairman and Chief Executive Officer (Principal Executive Officer)

Exhibit 31.2

Certification of Chief Financial Officer

Pursuant to Rule 13a – 14(a) or Rule 15d – 14(a) of the Securities Exchange Act of 1934

I, Timothy P.V. Mammen, certify that:

1. I have reviewed this quarterly report on Form 10-Q of IPG Photonics Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 5, 2019

By: /s/ Timothy P.V. Mammen

Timothy P.V. Mammen

Vice President and Chief Financial Officer (Principal Financial Officer)

Exhibit 32

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the filing of the Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2019 (the "Report") by IPG Photonics Corporation (the "Company"), Valentin P. Gapontsev, as the Chief Executive Officer of the Company, and Timothy P.V. Mammen, as the Chief Financial Officer of the Company, each hereby certifies pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of his knowledge:

1 the Report fully complies with the requirements of Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934; and

2 the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 5, 2019

/s/ Valentin P. Gapontsev

Valentin P. Gapontsev
Chairman and Chief Executive Officer

/s/ Timothy P.V. Mammen

Timothy P.V. Mammen
Vice President and Chief Financial Officer

A signed original of this written statement required by 18 U.S.C. Section 1350 has been provided to IPG Photonics Corporation and will be retained by IPG Photonics Corporation and furnished to the Securities and Exchange Commission or its staff upon request.