Form 11-K

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

ANNUAL REPORT

Pursuant to Section 15(d) of the
Securities Exchange Act of 1934

For the year ended December 31, 2002

Commission File Number 1-5828

THE SAVINGS PLAN
FOR AFFILIATES
(Full title of the plan)

CARPENTER TECHNOLOGY CORPORATION
(Name of issuer of the securities held
pursuant to the plan)

2 Meridian Drive
Treeview Corporate Center
Wyomissing, Pennsylvania 19610
(Address of principal executive
office of the issuer)

Financial Statements and Exhibits

(a) Financial Statements

The financial statements filed as part of this report are listed in the Index to Financial Statements included herein.

(b) Exhibits

23 Consent of Independent Accountants

99.1 Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350

99.2 Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350

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THE SAVINGS PLAN FOR AFFILIATES
INDEX TO FINANCIAL STATEMENTS

FORM 11-K ANNUAL REPORT

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Report of Independent Auditors

To the Participants and Administrator of the Savings Plan for Affiliates:

In our opinion, the accompanying statements of net assets available for benefits and the related statements of changes in net assets available for benefits present fairly, in all material respects, the net assets available for benefits of the Savings Plan for Affiliates (the "Plan") at December 31, 2002 and 2001, and the changes in net assets available for benefits for the years then ended in conformity with accounting principles generally accepted in the United States of America. These financial statements are the responsibility of the Plan's management; our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits of these statements in accordance with auditing standards generally accepted in the United States of America, which require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

As discussed in Note 1, effective December 31, 2002, the Plan was merged with and into the Savings Plan of Carpenter Technology Corporation.

June 13, 2003 /s/ PricewaterhouseCoopers LLP

THE SAVINGS PLAN FOR AFFILIATES

STATEMENTS OF NET ASSETS AVAILABLE FOR BENEFITS
as of December 31, 2002 and 2001
(dollars in thousands)

ASSETS	2002	2001
Investments, at fair value	$ -	$9,175
Receivables:		
Investment income receivable	-	9
Contributions - salary deferral	-	26
Contributions - company	-	23
Total receivables	-	58
Total assets	-	9,233
LIABILITIES		
Accrued administration expenses	-	23
Total liabilities	-	23
Net assets available for benefits	$ -	$9,210

The accompanying notes are an integral part of these financial statements.

THE SAVINGS PLAN FOR AFFILIATES

STATEMENTS OF CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS
for the years ended December 31, 2002 and 2001
(dollars in thousands)

	2002	2001
Additions to net assets attributed to:		
Investment income:		

Dividends	$ 139	$ 181
Interest	33	41
Net depreciation in fair value of investments	(1,386)	(667)
	(1,214)	(445)
Contributions:		
Salary deferral	734	914
Company	602	763
Rollover	3	56
	1,339	1,733
Total additions	125	1,288
Deductions from net assets attributed to:		
Benefits paid to participants	1,241	1,233
Administrative expenses	43	75
Transfer to Savings Plan of Carpenter Technology Corp.	8,051	-
Total deductions	9,335	1,308
Net (decrease)	(9,210)	(20)
Net assets available for benefits:		
Beginning of year	9,210	9,230
End of year	$ -	$9,210

The accompanying notes are an integral part of these financial statements.

THE SAVINGS PLAN FOR AFFILIATES

NOTES TO FINANCIAL STATEMENTS

1. Description of Plan:

The following description of the Savings Plan for Affiliates (the "Plan") provides only general information. A more comprehensive description of the Plan's provisions can be found in the Plan document, which is available to participants upon request from Carpenter Technology Corporation or any participating affiliate (collectively referred to as the "Company").

General:

The Plan is a defined contribution plan which covers substantially all domestic employees of Certech, Inc., Carpenter Advanced Ceramics, Inc. (Crafts Technology and Z-Tech Divisions), Parmatech Corporation, Rathbone Precision Metals and Shalmet Corporation (except for salaried exempt employees who, effective July 1, 2001, became participants in the Savings Plan of Carpenter Technology Corporation), all of which are affiliates of Carpenter Technology Corporation, who have attained the age of 21 years and have completed at least one year of service of at least 1,000 hours. Plan participation commences on the first day of the month following attainment of eligibility requirements. The Plan is subject to the provisions of the Employee Retirement Income Security Act of 1974 ("ERISA"), as amended.

Plan Merger:

Effective December 31, 2002, the Plan merged with and into the Savings Plan of Carpenter Technology Corporation ("Savings Plan"). Pursuant to the merger, participants with assets having a fair market value of $8,051,000 at the time of the merger became part of the Savings Plan. The Plan's participants underwent changes to their benefits under the Savings Plan. For additional information regarding these changes, participants should refer to the Plan document for the Savings Plan.

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Contributions:

Each year, participants may contribute up to 17 percent of annual compensation on a pretax basis (known as salary deferral contributions), as defined by the Plan. Participants who are age 50 or older may make "catch-up contributions," which are additional pretax contributions. Participants may also contribute amounts representing distributions from other qualified plans (known as rollover contributions). The Company contributes an amount equal to two percent of each employee's total compensation for each pay period, and provides a matching contribution equal to 50 percent of the portion of the participant's salary deferral which does not exceed four percent of the participant's total compensation for each pay period (collectively known as company contributions). Contributions are subject to certain limitations.

Participant Accounts:

The following four accounts are maintained for each participant and are credited with the applicable contributions, earnings on funds invested, forfeitures of terminated participants' nonvested accounts, and are charged with an allocation of Plan administrative expenses. The contributions to these accounts are participant directed:

- Employer Qualified Non-Elective Contribution Account - credited with company non-matching contributions

- Employer Matching Account - credited with company matching contributions

- Employee 401(K) Account - credited with salary deferral contributions

- Rollover Monies Account - credited with rollover contributions

Vesting:

Qualified non-elective contributions, salary deferral contributions, rollover monies, and the Plan earnings thereon, are 100 percent vested and nonforfeitable. Vesting in the Company's matching contributions is based upon years of continuous service, and a participant is 100 percent vested after three years of service, contingent upon

completing at least 1,000 hours of service for each Plan year.

Investment Funds:

The Plan maintains eleven investment funds. Each participant may designate separately the investment fund or funds in which the accounts are to be invested.

Participant Loans:

Loans may be made to participants in an amount equal to 50 percent of the value of the vested interest in his or her account or $50,000, whichever is less. The minimum amount of the loan shall be $1,000. Interest is charged at a rate which is 1% over the published prime rate for commercial lenders at the time the loan is initiated. Loan repayments are required for each pay period over a period not to exceed five years. A participant may have only one loan outstanding at any time.

Forfeited Accounts:

Forfeitures during the year of the Company's matching contributions are held in an account in the Vista Premier U.S. Government Money Market Fund until allocated at each year end to all eligible participants in proportion to each such participant's compensation for the plan year. Forfeitures were $10,000 and $7,000 in 2002 and 2001, respectively, and the balance in the forfeiture account was zero at December 31, 2002 and December 31, 2001.

Benefits Paid to Participants:

Benefits paid to participants include distributions and withdrawals. Participants are entitled to a distribution equal to the value of the vested interest in his or her account upon separation from service, occurrence of a total and permanent or qualifying disability, or after the age of 59-1/2. Upon separation, a participant may elect to defer such distribution, provided the account balance is at least $5,000. The distribution of benefits to all separated participants must begin no later than April 1 of the year after the participant retires or, in the case of a 5% owner of Carpenter Technology Corporation common stock, the date of separation. Upon attainment of age 59-1/2, participants may make withdrawals from any accounts which are 100 percent vested without limitation. Hardship withdrawals, subject to certain restrictions, are permitted from any accounts which are 100 percent vested. Benefits paid to participants are in cash except those which consist of investments in the Carpenter Technology Stock Fund, which can be made in shares of Carpenter Technology Corporation common stock or cash, at the participant's option. Payments will be paid out in a lump sum or under a variety of annuity forms available for election by the participant.

Administrative Expenses:

Independent accountants' fees are paid by the Company. All other fees are paid by the Plan.

Plan Termination:

The Company has the right under the Plan to discontinue or change its contributions at any time and to terminate the Plan subject to the provisions of ERISA and any contractual obligations. In the event of termination or partial termination of the Plan, or discontinuance of contributions by the Company, the rights of all participants to amounts credited to their accounts shall be nonforfeitable.

2. Summary of Significant Accounting Policies:

A. The financial statements of the Plan are prepared under the accrual method of accounting.

B. The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, and changes therein, and disclosure of contingent assets and liabilities. Actual results could differ from those estimates.

C. The Plan's investments are stated at fair value. Quoted market prices are used to value investments. Shares of registered investment companies are valued at quoted market prices, which generally represent the net asset values of shares held by the Plan at year end. Participant loans are valued at their outstanding

balances, which approximates fair value. Purchases and sales of investments are recorded on a trade-date basis. Gain or loss on sales of investments is based on average cost. Dividend income is recorded on the ex-dividend date. Income from other investments is recorded as earned on an accrual basis.

D. The net appreciation (depreciation) in the fair value of investments in the statement of changes in net assets available for benefits consists of the realized gains or losses and unrealized appreciation (depreciation) on investments.

E. Benefits are recorded when paid.

F. Investments are exposed to various risks, such as interest rate, market and credit risks. Due to the level of risk associated with certain investments and the level of uncertainty related to changes in the value of investments, it is reasonably possible that changes in these risks in the near term could materially affect the amounts reported in the statement of net assets available for benefits and the statement of changes in net assets available for benefits.

3. Investments:

The following presents investments that represent 5 percent or more of the Plan's net assets.

	(in thousands) at December 31 2002	2001
Mutual Funds:		
Investment Company of America Fund	$ -	$1,993
Federated Mid-Cap Fund	$ -	$1,677
PNC Investment Contract Fund	$ -	$1,493
BlackRock Intermediate Government Bond Fund	$ -	$ 877
BlackRock Balanced Fund	$ -	$ 868
Carpenter Technology Corporation common stock	$ -	$1,139
Loan Fund	$ -	$ 474

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The Plan's investments, including gains and losses on investments bought and sold, as well as held during the year, (depreciated) in value by ($1,386,000) and ($667,000) in 2002 and 2001, respectively, as follows:

	(in thousands) 2002	2001
Mutual funds	$ (849)	$ (388)
Common stock	(537)	(279)
	$(1,386)	$ (667)

4. Tax Status:

The Internal Revenue Service has determined and informed the Company by letter dated December 20, 1999, that the Plan and related trust as of January 28, 1999 are designed in accordance with applicable sections of the Internal Revenue Code (IRC). Although the Plan has been amended since receiving the determination letter, the Plan administrator believes that the Plan is designed and is currently being operated in compliance with the applicable requirements of the IRC.

5. Related Party Transactions:

Certain Plan investments are shares of mutual funds managed by PNC. PNC is the trustee as defined by the Plan and, therefore, these transactions qualify as party-in-interest. Fees paid by the Plan for the investment management services of PNC for the years ended December 31, 2002 and 2001 were $43,000 and $75,000, respectively.

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SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, Carpenter Technology Corporation has duly caused this annual report to be signed on its behalf by the undersigned thereunto duly authorized.

THE SAVINGS PLAN FOR AFFILIATES
(Name of Plan)

Date: June 30, 2003

By /s/ Terrence E. Geremski
Terrence E. Geremski
Senior Vice President -
Finance and
Chief Financial Officer

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EXHIBIT INDEX

Exhibit Number	
23	Consent of Independent Accountants
99.1	Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350
99.2	Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350

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1,661

Income taxes payable

943

860

Deferred tax liability

179

179

Other long-term liabilities

512

521

Total liabilities

56,319

47,316

Commitments and contingencies (Note 9)

Stockholders' equity:

Preferred stock, $0.001 par value; 3,000,000 shares authorized;

no shares issued or outstanding

—

—

Common stock, $0.001 par value, 47,000,000 shares authorized: 24,066,368

and 24,628,722, respectively, issued and outstanding

24

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Additional paid-in capital

237,378

255,368

Retained earnings

43,811

9,113

Accumulated other comprehensive loss

(2,729

)

(2,124

)

Total stockholders’ equity

278,484

262,383

Total liabilities and stockholders’ equity

$

334,803

$

309,699

See Notes to Condensed Consolidated Financial Statements

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NANOMETRICS INCORPORATED

CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS

(In thousands except per share amounts)

(Unaudited)

	Three Months Ended		Six Months Ended	
	June 30, 2018	July 1, 2017	June 30, 2018	July 1, 2017
Net revenues:				
Products	$76,704	$53,576	$147,723	$101,751
Service	11,900	10,851	23,194	21,990
Total net revenues	88,604	64,427	170,917	123,741
Costs of net revenues:				
Cost of products	31,235	25,337	59,828	50,815
Cost of service	6,443	5,417	12,597	10,754
Amortization of intangible assets	35	52	70	104
Total costs of net revenues	37,713	30,806	72,495	61,673
Gross profit	50,891	33,621	98,422	62,068
Operating expenses:				
Research and development	12,491	9,139	22,693	17,833
Selling	10,151	7,239	19,175	15,177
General and administrative	7,465	6,591	15,206	12,898
Total operating expenses	30,107	22,969	57,074	45,908
Income from operations	20,784	10,652	41,348	16,160
Other income (expense):				
Interest income	1	3	4	4
Interest expense	(49)	(19)	(145)	(59)
Other income (expense), net	(166)	274	186	271
Total other income (expense), net	(214)	258	45	216
Income before income taxes	20,570	10,910	41,393	16,376
Provision for income taxes	2,895	2,622	7,337	2,736
Net income	$17,675	$8,288	$34,056	$13,640
Net income per share:				
Basic	$0.74	$0.33	$1.42	$0.54
Diluted	$0.72	$0.32	$1.39	$0.53
Weighted average shares used in per share calculation:				
Basic	23,953	25,307	24,008	25,220
Diluted	24,442	25,906	24,488	25,880

See Notes to Condensed Consolidated Financial Statements

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NANOMETRICS INCORPORATED

CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(In thousands)

(Unaudited)

	Three Months Ended		Six Months Ended	
	June 30, 2018	July 1, 2017	June 30, 2018	July 1, 2017
Net income	$17,675	$8,288	$34,056	$13,640
Other comprehensive income:				
Change in foreign currency translation adjustment	(2,555)	761	(568)	2,706
Net change in unrealized gains (losses) on available-for-sale investments	52	(8)	(37)	(17)
Other comprehensive income (loss):	(2,503)	753	(605)	2,689
Comprehensive income	$15,172	$9,041	$33,451	$16,329

See Notes to Condensed Consolidated Financial Statements

NANOMETRICS INCORPORATED

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS

(In thousands)

(Unaudited)

	Six Months Ended	
	June 30, 2018	July 1, 2017
Cash flows from operating activities:		
Net income	$34,056	$13,640
Reconciliation of net income to net cash provided by operating activities:		
Depreciation and amortization	3,326	3,552
Stock-based compensation	5,017	4,327
Disposal of fixed assets	51	98
Inventory write-down	269	1,015
Deferred income taxes	4,320	798
Changes in assets and liabilities:		
Accounts receivable	7,193	(4,720)
Inventories	(1,722)	(8,726)
Inventories-delivered systems	(322)	783
Prepaid expenses and other	(3,422)	(947)
Accounts payable, accrued and other liabilities	7,204	(1,885)
Deferred revenue	2,464	1,837
Income taxes payable	537	486
Net cash provided by operating activities	58,971	10,258
Cash flows from investing activities:		
Payments to acquire certain assets	(2,000)	(2,000)
Sales of marketable securities	18,507	27,391
Maturities of marketable securities	17,345	40,923
Purchases of marketable securities	(16,320)	(78,787)
Purchases of property, plant and equipment	(1,761)	(1,536)
Net cash provided by (used in) investing activities	15,771	(14,009)
Cash flows from financing activities:		
Proceeds from sale of shares under employee stock option plans and purchase plan	2,709	2,865
Taxes paid on net issuance of stock awards	(2,731)	(3,392)
Repurchases of common stock under share repurchase plans	(22,987)	-
Net cash used in financing activities	(23,009)	(527)
Effect of exchange rate changes on cash and cash equivalents	(431)	(430)
Net increase (decrease) in cash and cash equivalents	51,302	(4,708)
Cash and cash equivalents, beginning of period	34,899	47,062

Cash and cash equivalents, end of period	$86,201	$42,354
Supplemental disclosure of non-cash investing activities:		
Transfer of property, plant and equipment to inventory	$218	$1,531
Transfer of inventory to property, plant and equipment	$291	$980
Property, plant and equipment included in accounts payable, accrued and other liabilities	$555	$355

See Notes to Condensed Consolidated Financial Statements

NANOMETRICS INCORPORATED

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

(Unaudited)

Note 1. Nature of Business, Basis of Presentation and Significant Accounting Policies

Description of Business – Nanometrics Incorporated ("Nanometrics" or the "Company") and its wholly-owned subsidiaries design, manufacture, market, sell and support optical critical dimension ("OCD"), thin film and overlay dimension metrology and inspection systems used primarily in the manufacturing of semiconductors, solar photovoltaics ("solar PV") and high-brightness LEDs ("HB-LED"), as well as by customers in the silicon wafer and data storage industries. Nanometrics' metrology systems precisely measure a wide range of film types deposited on substrates during manufacturing to control manufacturing processes and increase production yields in the fabrication of integrated circuits. The Company's OCD technology is a patented critical dimension measurement technology that is used to precisely determine the dimensions on the semiconductor wafer that directly control the resulting performance of the integrated circuit devices. The thin film metrology systems use a broad spectrum of wavelengths, high-sensitivity optics, proprietary software, and patented technology to measure the thickness and uniformity of films deposited on silicon and other substrates as well as their chemical composition. The overlay metrology systems are used to measure the overlay accuracy of successive layers of semiconductor patterns on wafers in the photolithography process. Nanometrics' inspection systems are used to find defects on patterned and unpatterned wafers at nearly every stage of the semiconductor production flow. The corporate headquarters of Nanometrics is located in Milpitas, California.

Basis of Presentation – The accompanying condensed consolidated financial statements ("financial statements") have been prepared on a consistent basis with the audited consolidated financial statements as of December 30, 2017, and include all normal recurring adjustments necessary to fairly state the information set forth therein. All significant intercompany accounts and transactions have been eliminated in consolidation.

The financial statements have been prepared in accordance with the regulations of the United States Securities and Exchange Commission ("SEC") for interim periods in accordance with S-X Article 10, and, therefore, omit certain information and footnote disclosure necessary to present the statements in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP"). The operating results for interim periods are not necessarily indicative of the operating results that may be expected for the entire year. These financial statements should be read in conjunction with the audited consolidated financial statements and notes thereto for the fiscal year ended December 30, 2017, which were included in the Company's Annual Report on Form 10-K filed with the SEC on February 26, 2018.

Fiscal Period – The Company uses a 52/53 week fiscal year ending on the last Saturday of the calendar year. All references to the quarter refer to Nanometrics' fiscal quarter. The fiscal quarters reported herein are 13 week periods.

Use of Estimates – The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reported period. Actual results could differ materially from those estimates. Estimates are used for, but not limited to, revenue recognition, the provision for doubtful accounts, the provision for excess, obsolete, or slow-moving inventories, valuation of intangible and long-lived assets, warranty accruals, income taxes, valuation of stock-based compensation, and contingencies.

Changes to Significant Accounting Policies

Except for the changes below, the Company has consistently applied the accounting policies to all periods presented in these financial statements.

The Company adopted the new accounting standard Topic 606, Revenue from Contracts with Customers and all the related amendments using the modified retrospective method of transition. As a result, the Company has changed its accounting policy for revenue recognition as detailed below. We adopted the new standard during the first quarter of 2018 for all contracts not substantially completed at the date of adoption, and the Company expects all new contracts will be governed by the new standard.

Revenue Recognition – The Company derives revenue from the sale of process control metrology and inspection systems and related upgrades (“product revenue”) as well as spare part sales, billable service and service contracts (together “service revenue”). Upgrades are system software and hardware performance upgrades that extend the features and functionality of a product. Upgrades are included in product revenue, which consists of sales of complete, advanced process control metrology and inspection systems (the “system(s)”). Nanometrics’ systems consist of hardware and software components that function together to deliver the essential functionality of the system. Arrangements for sales of systems and upgrades often include defined customer-specified acceptance criteria.

The Company recognizes revenue when control of a good or service has transferred to a customer. The amount of revenue recognized reflects the amount which Nanometrics expects to be entitled to in exchange for the transfer of the goods or services in a contract with a customer. Revenue excludes amounts collected on behalf of third parties including taxes assessed by governmental authorities that are both imposed on and concurrent with a specific revenue producing transaction. Shipping and handling costs associated with outbound freight both before and after control over a product has transferred to a customer are accounted for as a fulfillment cost and are included in cost of revenues. Nanometrics records revenue on a gross basis, rather than net, as it acts as the principle in all of its contractual arrangements and not as an agent.

Nanometrics follows a 5-Step process to evaluate its contracts with customers to determine the amount and timing of revenue recognition.

Nanometrics first identifies whether a legally enforceable contract with a customer exists. A legally enforceable contract creates enforceable rights and obligations on both parties. Nanometrics evaluates the following criteria in its evaluation and if all criteria are not met, a contract does not exist and any revenue that otherwise would be recorded because a good or service had been transferred to a customer is deferred until such time that a contract exists: (1) both Nanometrics and the customer have approved the contract and are committed to perform, (2) Nanometrics can identify each party's rights regarding the goods or services to be transferred, (3) Nanometrics can identify the payment terms for the goods or services to be delivered, (4) the contract has commercial substance, and (5) it is probable that Nanometrics will collect substantially all of the consideration to which it will be entitled in exchange for the goods or services that will be transferred to the customer. Historically, the Company has not experienced Customer payment defaults that would lead us to conclude that we don't have a contract under the new standard. Nanometrics evidences all its contracts in writing and the identification of the contract may include (1) reference to a master agreement that governs for multiple years, (2) a Volume Purchase Agreement that generally governs for 12 months and is negotiated with the larger customers to establish pricing for a committed volume of business, or (3) purchase orders which often govern the purchase of a single system or service item.

Once the contract has been identified, Nanometrics evaluates the promises in the contract to identify performance obligations. Many of the contracts include more than one performance obligation – for example the delivery of a system generally includes the promise to install the system in the customer's facility. Additionally, a contract could include the purchase of multiple systems or the purchase of a system and an upgrade. Promises in contracts which do not result in the transfer of a good or service are not performance obligations, as well as those promises that are administrative in nature, or are immaterial in the context of the contract. Generally, Nanometrics performance obligations can be categorized as (1) systems – including refurbished systems, (2) installation obligations, (3) hardware upgrades, (4) non-operating system software options / upgrades, (5) spare parts, (6) service contracts, (7) billable services and (8) other miscellaneous service items.

Once the performance obligations in the contract have been identified, Nanometrics estimates the transaction price of the contract. The estimate includes amounts that are fixed as well as those that can vary based on contractual terms (eg., performance bonuses/penalties, amounts payable to customers, rebates, prompt payment discounts, etc.) These variable consideration items are rare as most Nanometrics contracts include only fixed amounts. It is expected that estimates of variable consideration will be immaterial for Nanometrics and would occur if customers did not meet their contractual purchase commitments and Nanometrics is entitled to recover additional contract consideration.

Once the transaction price of the contract has been identified, Nanometrics allocates the transaction price to the identified performance obligations. This is done on a relative selling price basis using standalone selling prices ("SSP"). For most performance obligations, Nanometrics does not have observable SSP's as they are not regularly sold on a standalone basis however if a performance obligation does have an observable SSP it is used for allocation purposes (e.g. spares parts are sold using a standard price list and often sold separately). Without observable SSP's, Nanometrics estimates the SSP using a methodology which maximizes the use of observable inputs – namely a cost plus gross margin approach.

Lastly, Nanometrics records the amount allocated to each performance obligation as revenue when control of that good or service has transferred to the customer. Nanometrics first evaluates whether a good or service is transferred over time, and if it is not, then it is recorded at a point in time. For service contracts, Nanometrics records revenue based on its measurement of progress, and the best method to determine this is the percentage of the stand-ready obligation that is completed to date as this best reflects the value of the service transferred to the customer. All other items at Nanometrics are recorded at a point in time other than the service contracts with customers. The timing of satisfaction of the performance obligation to payment is dependent upon the negotiated payment terms but generally occurs within 30 to 60 days. Nanometrics evaluates the following indicators to determine the point in time at which control transfers to the Customer, and may apply judgment in this evaluation: (1) whether Nanometrics has a present right to payment, (2) whether the customer has legal title, (3) whether the customer has physical possession, (4) whether the customer has significant risks and rewards of ownership, and (5) whether customer acceptance is a formality (i.e., whether customer acceptance of the tool is reasonably assured). Typically, for new product introductions, Nanometrics defers revenue recognition until formal customer acceptance is received from the customer. In almost all other situations, there is little or no significant judgment applied by Nanometrics in determining if control of a good or service has transferred to a customer. Additionally, for system shipments to Japan, revenue is deferred because typical contractual terms indicate that payment is not due, and title does not transfer until customer acceptance occurs.

The Company warrants its products against defects in manufacturing. Upon recognition of product revenue, this assurance-type warranty is recorded as a liability for anticipated warranty costs. On occasion, customers request a warranty period longer than the Company's standard warranty. In those instances, in which extended warranty services are separately quoted to the customer or if the warranty includes services beyond just an assurance that the product will work as intended, an additional performance obligation is created, and the associated revenue is deferred and recognized as service revenue ratably over the term of the extended warranty period. The portion of service contracts and extended warranty services agreements that are uncompleted at the end of any reporting period are included in deferred revenue.

Frequently, the Company delivers products and various services in a single transaction. The Company's deliverables consist of tools, installation, upgrades, billable services, spare parts, and service contracts. The Company's typical multi-element arrangements include a sale of one or multiple tools that include installation and standard warranty. Other arrangements consist of a sale of tools bundled with service elements or delivery of different types of services. The Company's tools, upgrades, and spare parts are generally delivered to customers within a period of up to six months from order date. Installation is usually performed soon after delivery of the tool. The portion of revenue associated with installation is deferred based on relative selling price and that revenue is recognized upon completion of the installation and receipt of final acceptance. Billable services are billed on a time and materials basis and performed as requested by customers. Under service contract arrangements, services are provided as needed over the fixed arrangement term, with terms normally up to twelve months. The Company does not grant its customers a general right of return or any refund terms and may impose a penalty on orders cancelled prior to the scheduled shipment date. Consideration received from customers for cancelled orders is rare as orders are typically not cancelled once placed.

When performance obligations are not transferred to a customer at the end of a reporting period, the amount allocated to those performance obligations is deferred until control of these performance obligations is transferred to the customer. If performance obligations cannot be accounted for as separate units of accounting, the entire arrangement is accounted for as a single unit of accounting and revenue is deferred until all elements are delivered and all revenue recognition requirements are met. These liabilities arising from contracts with customers are reported as Deferred Revenue in the consolidated balance sheet. The amount of revenue recognized in the three months ended June 30, 2018 that was included in the contract liability balance as of the beginning of the quarter was $3.3 million. Generally, all contracts have expected durations of one year or less. Accordingly, Nanometrics applies the practical expedient allowed for in U.S. GAAP and does not disclose information about remaining performance obligations that have original expected durations of one year or less.

Nanometrics incurs costs related to the acquisition of its contract with customers in the form of sales commissions. Sales commissions are paid to the internal direct sales team as well as to third-party representatives, and distributors. Contractual agreements with each of these parties outline commissions structures and rates to be paid. Generally speaking, the contracts are all individual procurement decisions by the customers and are not for significant periods of time, nor do they include renewal provisions. As such, most of the contracts have an economic life of significantly less than a year, although some volume purchase agreements might extend beyond 12 months (the capitalization and amortization of commission costs for contracts that extend beyond one year is immaterial for Nanometrics). Accordingly, the Company expense these contract acquisition costs in accordance with the practical expedient outlined in U.S. GAAP when the underlying contract asset is less than one year.

Nanometrics does not incur any costs to fulfill the contracts with customers that is not already reported in compliance with another applicable standard (for example, inventory or plant, property and equipment). Given the nature of the systems, the Company does not have costs which are separately identifiable to just a particular contract (for example, dedicated labs).

Nanometrics records accounts receivable when revenue has been recorded and the amount due from the customer is reasonably assured and unconditionally due. In certain situations, Nanometrics may record revenue because goods or services have been transferred to the customer, but the amount is not unconditionally due. In these situations, a contract asset is reflected in the consolidated balance sheet (Unbilled A/R). This amount is subsequently reported as accounts receivable when the condition that made the amount conditional is resolved (for example, when the final installation obligation is completed, and Nanometrics has recorded revenue for the delivery of the system in an amount larger than what has been invoiced). The balance of contract assets included in the Accounts Receivable at June 30, 2018 was $4.5 million. The opening balance of contract assets was $4.4 million and $4.3 million for the three and six month periods ended June 30, 2018, respectively, reflecting no significant change during either period.

Note 2. New Accounting Pronouncements

Recently Adopted Accounting Standards

In October 2016, the Financial Accounting Standards Board (the "FASB") issued an accounting standard update which requires the recognition of the income tax consequences of an intra-entity transfer of an asset, other than inventory, when the transfer occurs. The Company adopted this standard in the first quarter of fiscal 2018 using a modified retrospective approach. The adoption did not have a material impact on the financial statements.

In August 2016, the FASB issued an accounting standard which addresses eight specific cash flow classification issues. This update is effective for public companies for fiscal years beginning after December 15, 2017 and interim periods within those fiscal years. Early adoption is permitted, including in an interim period. The standard is to be applied through a retrospective transition method to each period presented. If it is impracticable to apply retrospectively for some of the issues, the amendments for those issues would be applied prospectively as of the earliest date practicable. The adoption of this guidance did not have an impact on the Company's consolidated statement of cash flows.

In May 2014, the FASB issued an accounting standard update which requires an entity to recognize the amount of revenue to which it expects to be entitled to for transferring promised goods or services to customers. The Company adopted Topic 606 Revenue from Contracts with Customers with a date of initial application of December 31, 2017. The Company applied Topic 606 using the modified retrospective method by recognizing the cumulative effect of initially applying Topic 606 as an adjustment to the opening balance of equity at December 31, 2017. This method was chosen due to the Company's inability to review all necessary contract information to adopt the standard using the full retrospective methods. Both methods are allowed per U.S. GAAP. Therefore, the comparative information has not been adjusted and continues to be reported under Topic 605.

The following tables summarize the impacts of Topic 606 adoption on the Company's financial statements for the three and six months ended June 30, 2018(in thousands, except per share data):

	Three Months Ended June 30, 2018			Six Months Ended June 30, 2018		
	As Reported	Balances Without Adoption of ASC 606	Effect of Change Higher/(Lower)	As Reported	Balances Without Adoption of ASC 606	Effect of Change Higher/(Lower)
Net Revenue	$88,604	$89,153	$ (549)	$170,917	$167,190	$ 3,727
Net Income	$17,675	$18,291	$ (616)	$34,056	$31,611	$ 2,445
Net income per share:						
Basic	$0.74	$0.76	$ (0.03)	$1.42	$1.32	$ 0.10
Diluted	$0.72	$0.75	$ (0.03)	$1.39	$1.29	$ 0.10

Recently Issued Accounting Standards

In June 2018, the FASB issued an accounting standard update which simplifies the accounting for nonemployee share-based payment transactions. The accounting for share-based payments to nonemployees and employees will be substantially aligned because of this update. The standard is effective for public companies for fiscal years beginning after December 15, 2018, including interim periods within that fiscal year. Early adoption is permitted, but no earlier than an entity’s adoption date of Topic 606. The adoption of this guidance is not expected to have a significant impact on the Company’s consolidated results of operations or consolidated statement of cash flows.

In January 2017, the FASB issued an accounting standard update which simplifies the subsequent measurement of goodwill and removes step 2 from the goodwill impairment test. Instead, an entity should record an impairment charge based on excess of a reporting unit’s carrying amount over its fair value. The standard is effective for public companies for fiscal years beginning after December 15, 2019. Early adoption is permitted for interim or annual goodwill impairment tests performed on testing dates after January 1, 2017. The adoption of this guidance is not expected to have a significant impact on the Company’s consolidated financial condition and results of operations.

In June 2016, the FASB issued an accounting standard which requires measurement and timely recognition of expected credit losses for financial assets. The update is effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. Early adoption is permitted as of the fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. The standard is to be applied through a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is effective. The Company is currently evaluating the effect of this update on its consolidated financial condition and results of operations.

In February 2016, the FASB issued an accounting standard update which requires lessees to record a right-of-use asset and a corresponding lease liability on the balance sheet (with the exception of short-term leases). For lessees, leases will continue to be classified as either operating or financing in the income statement. The standard is effective for public companies for annual reporting periods beginning after December 15, 2018, including interim periods within those fiscal years. Early adoption is permitted. This standard is required to be applied with a modified retrospective transition approach. The Company generally does not finance purchases of equipment or other capital, but does lease some equipment and facilities. The Company is currently evaluating the impact of this standard on its consolidated financial statements and related disclosures but anticipates most its existing operating lease commitments will be recognized as operating lease liabilities and right-of-use assets.

Note 3. Fair Value Measurements and Disclosures

The Company determines the fair values of its financial instruments based on the fair value hierarchy established in FASB Accounting Standards Codification (“ASC”) 820, Fair Value Measurement, which requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. The classification of a financial asset or liability within the hierarchy is based upon the lowest level input that is significant to the fair value measurement. The fair value hierarchy prioritizes the inputs into the following three levels that may be used to measure fair value:

Level 1 — Quoted prices in active markets for identical assets or liabilities.

Level 2 — Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets and liabilities in active markets or inputs that are observable for the asset or liability, either directly or indirectly through market corroboration, for substantially the full term of the financial instrument.

Level 3 — Unobservable inputs that are supported by little or no market activity and are significant to the fair value of the assets or liabilities. Such unobservable inputs include an estimated discount rate used in the Company’s discounted present value analysis of future cash flows, which reflects the Company’s estimate of debt with similar terms in the current credit markets. As there is currently minimal activity in such markets, the actual rate could be materially different.

Fair value is defined as the price that would be received upon the sale of an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The standard assumes that the transaction to sell the asset or transfer the liability occurs in the principal or most advantageous market for the asset or liability and establishes that the fair value of an asset or liability shall be determined based on the assumptions that market participants would use in pricing the asset or liability.

The following tables present the Company’s assets and liabilities measured at estimated fair value on a recurring basis, excluding accrued interest components, categorized in accordance with the fair value hierarchy (in thousands), as of the following dates:

	June 30, 2018 Fair Value Measurements Using Input Types				December 30, 2017 Fair Value Measurements Using Input Types			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Assets:								
Cash equivalents:								
Money market funds	$9,563	$—	$ —	$9,563	$256	$—	$ —	$256
Commercial paper and Certificates of deposit	—	5,980	—	5,980	—	—	—	—
Marketable securities:								
U.S. Government agency debt securities	—	1,499	—	1,499	—	1,495	—	1,495
Certificates of deposits	—	9,000	—	9,000	—	14,497	—	14,497
Commercial paper	—	4,974	—	4,974	—	7,949	—	7,949
Corporate debt securities	—	36,677	—	36,677	—	47,968	—	47,968
Asset-backed Securities	—	10,352	—	10,352	—	10,221	—	10,221
Total marketable securities	$—	$62,502	$ —	$62,502	$—	$82,130	$ —	$82,130
Total[(1)]	$9,563	$68,482	$ —	$78,045	$256	$82,130	$ —	$82,386

(1) Excludes $70.7 million and $34.6 million held in operating accounts as of June 30, 2018 and December 30, 2017, respectively. See “Note 4. Cash and Investments” of the Notes to Condensed Consolidated Financial Statements for more information.

The fair values of the marketable securities that are classified as Level 1 in the table above were derived from quoted market prices for identical assets or liabilities in active markets that the Company has the ability to access. The fair value of marketable securities that are classified as Level 2 in the table above were derived from non-binding market consensus prices that were corroborated by observable market data, quoted market prices for similar instruments, or pricing models, such as discounted cash flow techniques with all significant inputs derived from or corroborated by observable market data. There were no transfers of instruments between Level 1, Level 2 and Level 3 during the financial periods presented.

Derivatives

The Company uses foreign currency exchange forward contracts to mitigate variability in gains and losses generated from the re-measurement of certain monetary assets and liabilities denominated in foreign currencies. These derivatives are carried at fair value with changes recorded in other income (expense), net in the condensed consolidated statements of operations. Changes in the fair value of these derivatives are largely offset by re-measurement of the underlying assets and liabilities. The derivatives have maturities of approximately 30 days.

The settlement of forward foreign currency contracts included in the three months ended June 30, 2018 and July 1, 2017 was a loss of $0.7 million and a loss of $0.3 million, respectively. The settlement of forward exchange contracts included in the six months ended June 30, 2018 and July 1, 2017 was a loss of $1.7 million and a gain of $0.7 million, respectively These are included in other income (expense), net, in the condensed consolidated statements of operations.

The following table presents the notional amounts and fair values of the Company's outstanding derivative instruments in U.S. Dollar equivalent as of the following dates (in millions):

	June 30, 2018			December 30, 2017		
		Fair Value			Fair Value	
	Notional Amount	Asset	Liability	Notional Amount	Asset	Liability
Undesignated Hedges:						
Forward Foreign Currency Contracts						
Purchase	$13.7	$—	$ —	$27.5	$—	$ 0.1
Sell	$24.9	$—	$ —	$16.8	$0.1	$ —

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Note 4. Cash and Investments

The following tables present cash, cash equivalents, and available-for-sale investments as of the following dates (in thousands):

	June 30, 2018			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Market Value
Cash	$ 70,657	$ —	$ —	$ 70,657
Cash equivalents:				
Money market funds	9,563	—	—	9,563
Commerical paper and Certificates of deposit	5,980	—	—	5,980
Marketable securities:				
U.S. Government agency securities	1,500	—	(1)	1,499
Certificates of deposit	8,999	1	—	9,000
Commercial paper	4,974	—	—	4,974
Corporate debt securities	36,807	—	(130)	36,677
Asset-backed securities	10,383	—	(31)	10,352
Total cash, cash equivalents, and marketable securities	$ 148,863	$ 1	$ (162)	$ 148,702

	December 30, 2017			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Market Value
Cash	$ 34,643	$ —	$ —	$ 34,643
Cash equivalents:				
Money market funds	256	—	—	256
Marketable securities:				
U.S. Government agency securities	1,500	—	(5)	1,495
Certificates of deposits	14,498	—	(1)	14,497
Commercial paper	7,952	—	(3)	7,949
Corporate debt securities	48,073	—	(105)	47,968
Asset-backed securities	10,240	—	(19)	10,221
Total cash, cash equivalents, and marketable securities	$ 117,162	$ —	$ (133)	$ 117,029

Available-for-sale marketable securities, readily convertible to cash, with maturity dates of 90 days or less are classified as cash equivalents, while those with maturity dates greater than 90 days are classified as marketable securities within short-term assets. All marketable securities as of June 30, 2018 and December 30, 2017, were available-for-sale and reported at fair value based on the estimated or quoted market prices as of the balance sheet date.

Realized gains and losses on sale of securities are recorded in other income (expense), net, in the Company's condensed consolidated statement of operations. For the three and six months ended June 30, 2018 and July 1, 2017, net realized gains and losses were not material.

Unrealized gains or losses, net of tax effect, are recorded in accumulated other comprehensive income (loss) within stockholders' equity. Both the gross unrealized gains and gross unrealized losses for the three and six months ended June 30, 2018 and July 1, 2017 were not material, and no marketable securities had other than temporary impairment.

All marketable securities as of June 30, 2018 and December 30, 2017, had maturity dates of less than 39 and 24 months, respectively.

Note 5. Accounts Receivable

The Company maintains arrangements under which eligible accounts receivable in Japan are sold without recourse to unrelated third-party financial institutions. These receivables were not included in the condensed consolidated balance sheets as the criteria for sale treatment had been met. The Company pays administrative fees as well as interest ranging from 0.62% to 1.68% based on the anticipated length of time between the date the sale is consummated and the expected collection date of the receivables sold.

The Company sold $11.6 million and $4.2 million of receivables during the three months ended June 30, 2018 and July 1, 2017, respectively, and $33.5 and $9.4 million of receivables during the six months ended June 30, 2018 and July 1, 2017, respectively. There were no amounts due from such third party financial institutions at June 30, 2018 and December 30, 2017.

Note 6. Financial Statement Components

The following tables provide details of selected financial statement components as of the following dates (in thousands):

	At June 30, 2018	December 30, 2017
Inventories:		
Raw materials and sub-assemblies	$29,880	$ 32,187
Work in process	17,655	13,498
Finished goods	6,703	7,175
Inventories	54,238	52,860
Inventories-delivered systems	1,855	1,534
Total inventories	$56,093	$ 54,394
Property, plant and equipment, net:[1]		
Land	$15,571	$ 15,573
Building and improvements	21,195	20,880
Machinery and equipment	40,235	36,380
Furniture and fixtures	2,461	2,420
Software	9,806	9,558
Capital in progress	1,108	4,418
Total property, plant and equipment, gross	90,376	89,229
Accumulated depreciation and amortization	(47,326)	(44,419)
Total property, plant and equipment, net	$43,050	$ 44,810

[1] Total depreciation and amortization expense was $1.6 million and $1.6 million for the three months ended June 30, 2018 and July 1, 2017, respectively, and $3.3 million and $3.4 million for the six months ended June 30, 2018 and July 1, 2017, respectively.

Other Current Liabilities:		
Accrued warranty	$4,906	$ 4,863
Accrued taxes	1,926	813
Accrued professional services	496	534
Other	1,180	1,039
Total other current liabilities	$8,508	$ 7,249

Components of Accumulated Other Comprehensive Income (Loss)

	Foreign Currency Translations	Defined Benefit Pension Plans	Unrealized Income (Loss) on Investment	Accumulated Other Comprehensive Income (Loss)
Balance as of December 30, 2017	$ (1,647)	$ (387)	$ (90)	$ (2,124)
Current period change	(568)	—	(37)	(605)
Balance as of June 30, 2018	$ (2,215)	$ (387)	$ (127)	$ (2,729)

The items above, except for unrealized income (loss) on investment, did not impact the Company's income tax provision. The amounts reclassified from each component of accumulated other comprehensive income (loss) into income statement line items were insignificant.

Note 7. Goodwill and Intangible Assets

The following table summarizes the activity in the Company's goodwill during the six months ended June 30, 2018:

	(in thousands)
Balance as of December 30, 2017	$ 10,232
Foreign currency movements	379
Balance as of June 30, 2018	$ 10,611

Finite-lived intangible assets are recorded at cost, less accumulated amortization. Finite-lived intangible assets as of June 30, 2018 and December 30, 2017 consisted of the following (in thousands):

	June 30, 2018		
	Adjusted cost	Accumulated amortization	Net carrying amount
Developed technology	$20,887	$ (16,751)	$ 4,136
Customer relationships	9,438	(9,438)	—
Brand names	1,927	(1,927)	—
Patented technology	2,252	(2,252)	—
Trademark	80	(80)	—
Total	$34,584	$ (30,448)	$ 4,136

	December 30, 2017		
	Adjusted cost	Accumulated amortization	Net carrying amount
Developed technology	$18,887	$ (16,681)	$ 2,206
Customer relationships	9,438	(9,438)	—
Brand names	1,927	(1,927)	—
Patented technology	2,252	(2,252)	—
Trademark	80	(80)	—
Total	$32,584	$ (30,378)	$ 2,206

The amortization of finite-lived intangibles is computed using the straight-line method. Estimated lives of finite-lived intangibles range from two to ten years. The total amortization expense for the three months ended June 30, 2018 and July 1, 2017 was $35.0 thousand and $52.0 thousand, respectively, and $70.0 thousand and $104.0 thousand for the six months ended June 30, 2018 and July 1, 2017, respectively.

There were no impairment charges related to intangible assets recorded during the six months ended June 30, 2018 and July 1, 2017.

The estimated future amortization expense of finite intangible assets as of June 30, 2018 is as follows (in thousands):

Fiscal Years	Amounts
2018 (remaining six months)	70
2019	209
2020	571
2021	571
2022	571
Thereafter	2,144
Total future amortization expense	$ 4,136

Note 8. Warranties

The Company generally sells its products with a 12 months repair or replacement warranty from the date of acceptance or shipment date. The Company accrues estimated future warranty costs based upon the historical relationship of warranty costs to the cost of products sold. The estimated future warranty obligations related to product sales are recorded in the period in which the related revenue is recognized. The estimated future warranty obligations are affected by the warranty periods, sales volumes, product failure rates, material usage, and labor and replacement costs incurred in correcting a product failure. If actual product failure rates, material usage, labor or replacement costs were to differ from the Company's estimates, revisions to the estimated warranty obligations would be required. For new product introductions where limited or no historical information exists, the Company may use warranty information from other previous product introductions to guide it in estimating its warranty accrual.

Components of the warranty accrual, which were included in the accompanying condensed consolidated balance sheets with other current liabilities, were as follows (in thousands):

	Three Months Ended		Six Months Ended	
	June 30, 2018	July 1, 2017	June 30, 2018	July 1, 2017
Balance as of beginning of period	$4,643	$ 4,244	$4,863	$ 3,838
Accruals for warranties issued during period	1,450	1,411	2,895	2,780
Settlements during the period	(1,187)	(1,053)	(2,852)	(2,016)
Balance as of end of period	$4,906	$ 4,602	$4,906	$ 4,602

Note 9. Commitments and Contingencies

Intellectual Property Indemnification Obligations – The Company will, from time to time, in the normal course of business, agree to indemnify certain customers, vendors or others against third party claims that the Company's products, when used for their intended purpose(s), or the Company's intellectual property, infringe the intellectual property rights of such third parties or other claims made against parties with whom it enters into contractual relationships. It is not possible to determine the maximum potential amount of liability under these indemnification obligations due to the limited history of prior indemnification claims and the unique facts and circumstances that are likely to be involved in each particular claim. Historically, the Company has not made payments under these obligations and believes that the estimated fair value of these agreements is immaterial. Accordingly, no liabilities have been recorded for these obligations in the accompanying condensed consolidated balance sheets as of June 30, 2018 and December 30, 2017.

Legal Proceedings - From time to time, the Company is subject to various legal proceedings or claims arising in the ordinary course of business.

On August 2, 2017, the Company was named as defendant in a complaint filed in New Hampshire Superior Court ("Complaint"). The Complaint, brought by Optical Solutions, Inc. ("OSI"), alleges claims arising from a purported exclusive purchase contract between OSI and the Company pertaining to certain product. On September 18, 2017, the

Company removed the action to the United States District Court for the District of New Hampshire. On September 25, 2017, the Company moved to transfer the Complaint to the Northern District of California and to dismiss all claims in the Complaint for lack of personal jurisdiction and for failure to state a claim. On September 27, 2017, OSI filed a motion to remand. On January 31, 2018, the District Court of New Hampshire denied OSI's motion to remand. On May 29, 2018, the District Court of New Hampshire issued an order granting the Company's motion to transfer the Complaint to the District Court for the Northern District of California and denying the Company's motion to dismiss the Complaint without prejudice. On June 14, 2018, the matter was consolidated with the Company's complaint against OSI. Pursuant to orders of the Northern District of California, OSI must file an amended complaint on or before August 6, 2018, and trial has been set for May 16, 2022. The Company intends to file a motion to dismiss OSI's Amended Complaint.

The Company records a provision for a loss when it believes that it is both probable that a loss has been incurred and the amount can be reasonably estimated. Based on current information, the Company believes it does not have any probable and reasonably estimable losses related to any current legal proceedings and claims. Although it is difficult to predict the outcome of legal proceedings, the Company believes that any liability that may ultimately arise from the resolution of these ordinary course matters will not have a material adverse effect on the business, financial condition and results of operations.

Note 10. Net Income Per Share

The Company presents both basic and diluted net income per share on the face of its condensed consolidated statements of operations. Basic net income per share excludes the effect of potentially dilutive shares and is computed by dividing net income by the weighted-average number of shares of common stock outstanding for the period. Diluted net income per share is computed using the weighted-average number of shares of common stock outstanding for the period plus the effect of all dilutive securities representing potential shares of common stock outstanding during the period.

A reconciliation of the share denominator of the basic and diluted net income per share computations for three and six months ended June 30, 2018 and July 1, 2017 is as follows (in thousands):

	Three Month Ended		Six Months Ended	
	June 30, 2018	July 1, 2017	June 30, 2018	July 1, 2017
Weighted average common shares outstanding used in basic net income (loss) per share calculation	23,953	25,307	24,008	25,220
Potential dilutive common stock equivalents, using treasury stock method	489	599	480	660
Weighted average shares used in diluted net income (loss) per share calculation	24,442	25,906	24,488	25,880

Note 11. Stockholders' Equity and Stock-Based Compensation

Options and Employee Stock Purchase Plan ("ESPP") Awards

The fair value of each option and ESPP award is estimated on the grant date using the Black-Scholes valuation model and the assumptions noted in the following table. The expected lives of options granted were calculated using the simplified method allowed by the Staff Accounting Bulletin No. 107, Share-Based Payment. The risk-free rates were based on the U.S Treasury rates in effect during the corresponding period of grant. The expected volatility was based on the historical volatility of the Company's stock price. The dividend yield reflects that the Company has not paid any cash dividends since inception and does not intend to pay any cash dividends in the foreseeable future.

	Six Months Ended	
	June 30, 2018	July 1, 2017
Employee Stock Purchase Plan:		
Expected life	0.5 years	0.5 years
Volatility	27.2%	35.2%

Risk free interest rate	1.61%	0.65%
Dividends	—	—

No stock options were awarded during the six months ended June 30, 2018 and July 1, 2017.

A summary of activity of stock options during the six months ended June 30, 2018 is as follows:

	Number of Shares Outstanding (Options)	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (Years)	Aggregate Intrinsic Value (in Thousands)
Options				
Outstanding at December 30, 2017	216,326	$ 16.82	1.76	$ 4,405
Exercised	(72,602)	16.57		
Cancelled	—	—		
Outstanding at June 30, 2018	143,724	16.94	1.28	2,654
Exercisable at June 30, 2018	143,724	$ 16.94	1.28	$ 2,654

The aggregate intrinsic value in the above table represents the total pretax intrinsic value, based on the Company's closing stock price of $35.41 as of June 29, 2018, the last trading day of the quarter, which would have been received by the option holders had all option holders exercised their options as of that date. The total intrinsic value of options exercised during the three months ended June 30, 2018 and July 1, 2017 was $0.6 million and $0.6 million, respectively, and during the six months ended June 30, 2018 and July 1, 2017 was $1.1 million and $1.5 million, respectively.

Restricted Stock Units ("RSUs")

Time-based RSUs are valued using the market value of the Company's common stock on the date of grant, assuming no expectation of dividends paid.

A summary of activity for RSUs during the six months ended June 30, 2018 is as follows:

Summary of activity for RSUs	Number of RSUs	Weighted Average Fair Value
Outstanding RSUs as of December 30, 2017	790,299	$ 22.46
Granted	387,089	36.57
Released	(288,145)	20.62
Cancelled	(110,294)	24.50
Outstanding RSUs as of June 30, 2018	778,949	$ 29.86

Market-Based Performance Stock Units ("PSUs")

In addition to granting RSUs that vest on the passage of time only, the Company granted PSUs to certain executives. The PSUs vest in three tranches over one, two and three years based on the relative performance of the Company's stock during those periods, compared to a peer group over the same period. If target stock price performance is achieved, 66.7% of the shares of the Company's stock subject to the PSUs will vest and up to a maximum of 100% of the shares subject to the PSUs will vest if the maximum stock price performance is achieved for each tranche.

A summary of activity for PSUs for the six months ended June 30, 2018 is as follows:

Summary of activity for PSUs	Number of PSUs	Weighted Average Fair Value
Outstanding PSUs as of December 30, 2017	129,950	$15.60
Granted	63,133	24.54
Released	(47,929)	12.14
Cancelled	(32,991)	25.92
Outstanding PSUs as of June 30, 2018	112,163	$19.25

The preceding table reflects the maximum awards that can be achieved upon full vesting.

Valuation of PSUs

On the date of grant, the Company estimated the fair value of PSUs using a Monte Carlo simulation model. The assumptions for the valuation of PSUs are summarized as follows:

	2018 Award	2017 Award
Grant Date Fair Value Per Share	$20.73-$25.18	$ 26.75
Weighted-average assumptions/inputs:		
Expected Dividend	—	—
Range of risk-free interest rates	2.39%-2.63%	1.40%
Range of expected volatilities for peer group	22%-66%	23%-62%

Stock-based Compensation Expense

Stock-based compensation expense for all share-based payment awards made to the Company's employees and directors pursuant to the employee stock option and employee stock purchase plans by function were as follows (in thousands):

	Three Months Ended		Six Months Ended	
	June 30, 2018	July 1, 2017	June 30, 2018	July 1, 2017
Cost of products	$133	$215	$231	$412
Cost of service	186	157	341	302
Research and development	506	355	983	754
Selling	737	528	1,270	1,067
General and administrative	1,117	908	2,192	1,792
Total stock-based compensation expense related to employee stock options and employee stock purchases	$2,679	$2,163	$5,017	$4,327

Note 12. Income Taxes

The Company accounts for income taxes under the provisions of ASC 740, Accounting for Income Taxes. The Company adjusts its effective tax rate each quarter to be consistent with the estimated annual effective tax rate. The Company also records the tax effect of unusual or infrequently occurring discrete items, including changes in judgment about valuation allowances and effects of changes in tax laws or tax rates, in the interim period in which they occur. The Company's effective tax rate reflects the impact of a portion of its earnings being taxed in foreign jurisdictions as well as a valuation allowance maintained on certain deferred tax assets.

The Company's tax provision takes into account the changes in the tax laws under Tax Cuts and Jobs Act (the "Act" or "TCJA"), signed into law on December 22, 2017, including the reduction of the federal corporate tax rate from 35% to 21%. Other components of the Act are accounted for based on the Company's interpretation of the most current guidance available and are subject to revisions as the Company completes its analysis of the Act, collects and prepares necessary data, and interprets any additional guidance issued by the U.S. Treasury Department, Internal Revenue Service ("IRS"), FASB, and other standard-setting and regulatory bodies. The Company's accounting for the tax effects of the Act will be completed during the measurement period, which should not extend beyond one year from the enactment date.

The provision for income taxes consists of the following (in thousands):

	Three Months Ended	Six Months Ended

	June 30, 2018	July 1, 2017	June 30, 2018	July 1, 2017
Provision for income taxes	$2,895	$2,622	$7,337	$2,736

The Company recorded a tax provision of $2.9 million and $2.6 million for the three months ended June 30, 2018 and July 1, 2017, respectively. The increase in the tax provision for 2018 from 2017 was primarily related to the Company's increased profitability for the three months ending June 30, 2018, offset by less U.S. tax required on foreign earnings under the TCJA.

The Company recorded a tax provision of $7.3 million and $2.7 million for the six months ended June 30, 2018 and July 1, 2017, respectively. The increase in the tax provision for 2018 from 2017 was primarily related to the Company's increased profitability and less U.S. tax required on foreign earnings under the TCJA for the six months ended June 30, 2018, a one-time benefit for an entity classification change, and a higher tax benefit associated with the settlement of equity options/awards for the six months ended June 30, 2017.

The Company continues to maintain a valuation allowance against its California and Switzerland deferred tax assets as a result of uncertainties regarding the realization of the assets due to cumulative losses and uncertainty of future taxable income. The Company will continue to assess the realizability of the deferred tax assets in each of the applicable jurisdictions and maintain the valuation allowances until sufficient positive evidence exists to support a reversal. In the event the Company determines that the deferred tax assets are realizable, an adjustment to the valuation allowance will be reflected in the tax provision for the period such determination is made.

The Company is subject to taxation in the U.S. and various states including California, and foreign jurisdictions including Korea, Japan, Taiwan, China, Singapore, Germany, U.K., France, and Israel. Due to tax attribute carry-forwards, the Company is subject to examination for tax years 2003 forward for U.S. tax purposes. The Company is also subject to examination in various states for tax years 2002 forward. The Company is subject to examination for tax years 2010 forward for various foreign jurisdictions.

The Company accrues interest and penalties related to unrecognized tax benefits in its provision for income taxes. The total amount of penalties and interest were not material as of June 30, 2018 and July 1, 2017. During the next twelve months, the Company anticipates increases in its unrecognized tax benefits of approximately $0.5 million.

Note 13. Segment, Geographic, Product and Significant Customer Information

The Company has one operating segment, which is the sale, design, manufacture, marketing and support of optical critical dimension and thin film systems. The following tables summarize total net revenues and long-lived assets (excluding intangible assets) attributed to significant countries (in thousands):

	Three Months Ended		Six Months Ended	
	June 30, 2018	July 1, 2017	June 30, 2018	July 1, 2017
Total net revenues:				
South Korea	$30,980	$31,500	$68,798	$50,119
Japan	15,017	9,267	28,396	12,620
United States	7,392	8,297	14,130	21,870
China	28,333	7,330	36,375	14,017
Taiwan	1,974	4,878	3,034	16,711
Singapore	2,380	963	14,535	2,454
Other	2,528	2,192	5,649	5,950
Total net revenues	$88,604	$64,427	$170,917	$123,741

	June 30, 2018	December 30, 2017
Long-lived tangible assets:		
United States	$41,851	$ 43,427
International	1,199	1,383
Total long-lived tangible assets	$43,050	$ 44,810

With respect to customer concentration, Samsung Electronics Co. Ltd., Yangtze Memory Technologies Co. Ltd., Intel Corporation, and Toshiba Corporation each accounted for more than 10% of total sales for the three months ended June 30, 2018, and Samsung Electronics Co. Ltd., SK Hynix, Toshiba Corporation, Yangtze Memory Technologies CO. Ltd., Micron Technology, Inc., and Intel Corporation each accounted for more than 10% of total sales for the six months ended June 30, 2018. Samsung Electronics Co. Ltd., SK Hynix, and Toshiba Corporation each accounted for more than 10% of total sales for the three months ended July 1, 2017, and Samsung Electronics Co. Ltd., SK Hynix, Taiwan Semiconductor Manufacturing Company Limited, and Intel Corporation each accounted for more than 10% of total sales for the six months ended July 1, 2017.

With respect to accounts receivable concentration, Toshiba Corporation, Yangtze Memory Technologies Co. Ltd., Intel Corporation, and Samsung Electronics Co. Ltd. each accounted for more than 10% of total accounts receivable as of June 30, 2018. Samsung Electronics Co. Ltd., Micron Technology, Inc., and Toshiba Corporation each accounted for more than 10% of total accounts receivable as of December 30, 2017.

Note 14: Subsequent Event

In connection with the June 25, 2018 departure from Nanometrics of Johnathan H. Chou, Nanometrics' former Chief Financial Officer, on July 11, 2018, Nanometrics and Mr. Chou entered into a separation and release agreement. Pursuant to the separation and release agreement, Nanometrics agreed to pay Mr. Chou a severance payment of $150,000.00 and to pay COBRA premiums for Mr. Chou and his covered dependents until June 30, 2019. These severance arrangements supersede Mr. Chou's general severance benefits and change in control severance benefits agreement.

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

This Quarterly Report on Form 10-Q contains forward-looking statements that involve risks and uncertainties. The statements contained in this document that are not purely historical are forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, including, without limitation, statements regarding future periods, financial results, revenues, margins, growth, customers, tax rates, product performance, and the impact of accounting rules on our business and the future implications of our statements regarding goals, strategy, and similar terms. We may identify these statements by the use of words such as “anticipate,” “believe,” “continue,” “could,” “expect,” “m “might,” “project,” “will,” and other similar expressions. All forward-looking statements included in this document are based on information available to us on the date hereof, and we assume no obligation to update any such forward-looking statements, except as may otherwise be required by law.

Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain risks, uncertainties and changes in circumstances, many of which may be difficult to predict or beyond our control, including those factors referenced in this document, and in Part I, Item 1A, Risk Factors, in our Annual Report on Form 10-K for the fiscal year ended December 30, 2017, filed with the Securities and Exchange Commission (“SEC”) on February 26, 2018 (our “Annual Report”). In particular, our results could vary significantly based on: changes in customer and industry spending; rate and extent of changes in product mix; adoption of new products; timing of orders, shipments, and acceptance of products; our ability to secure volume supply agreements; and general economic conditions. In evaluating our business, investors should carefully consider these factors in addition to any other risks and uncertainties set forth elsewhere. The occurrence of the events described in the risk factors of our Annual Report and elsewhere in this report as well as other risks and uncertainties could materially and adversely affect our business, operating results and financial condition. While management believes that the discussion and analysis in this report is adequate for a fair presentation of the information presented, we recommend that you read this discussion and analysis in conjunction with (i) our audited consolidated financial statements and notes thereto for the fiscal year ended December 30, 2017, which were included in our Annual Report, (ii) the section captioned “Risk Factors” in our Annual Report, and (iii) our other filings with the SEC.

Overview

Together with our subsidiaries, we are an innovator in the field of metrology systems, inspection systems and advanced analytics for semiconductor manufacturing and other industries. Our systems and solutions are designed to precisely monitor optical critical dimensions, film thickness, and other parameters that are necessary to control the manufacturing process, identify defects, and detect manufacturing equipment anomalies that can affect production yields and device performance.

Principal factors that impact our revenue growth include capital expenditures by manufacturers of semiconductors to increase capacity and to enable their development of new technologies, and our ability to improve market share. The increasing complexity of the manufacturing processes for semiconductors is an important factor in the demand for our innovative metrology systems. Our strategy is to continue to innovate organically as well as to evaluate strategic acquisitions to address business challenges and opportunities.

Our revenues are derived primarily from product and software sales but are also derived from customer service, upgrades and software for the installed base of our products. For the six months ended June 30, 2018, we derived 86% of our total net revenues from product, upgrade and software sales, and 14% of our total net revenues from services.

Nanometrics Products

We offer a diverse line of systems to address the broad range of process control requirements of the semiconductor manufacturing industry. In addition, we believe that our product development and engineering expertise, as well as strategic acquisitions will enable us to develop and offer advanced process control solutions that, in the future, should address industry advancement and trends.

Automated Systems

Our automated systems primarily consist of fully automated metrology systems that are employed in semiconductor production environments. The Atlas® III, Atlas II+, and Atlas XP+ represent our line of high-performance metrology systems providing optical critical dimension ("OCD"®), thin film metrology and wafer stress for transistor and interconnect metrology applications. The thin film and OCD technology is supported by our suite of solutions including our NanoDiffract® software, SpectraProbe™ software, and NanoGen™ scalable computing engine that enables visualization, modeling, and analysis of complex structures. The UniFire™ system measures multiple parameters at any given process step in the advanced packaging process flow for critical dimension, overlay, and topography applications, and has recently added inspection capabilities for both front-end of line patterned wafer and advanced packaging related applications.

Integrated Systems

Our integrated metrology ("IM") systems are installed directly onto wafer processing equipment to provide near real-time measurements for improved process control and maximum throughput. Our IM systems are sold directly to end user customers. The IMPULSE®+ and IMPULSE represent our latest metrology platform for OCD, and thin film metrology, and have been successfully qualified on numerous independent Wafer Fabrication Equipment Suppliers' platforms. Our NanoCD suite of solutions is sold in conjunction with our IMPULSE systems. Our Trajectory® system provides in-line measurement of layers in thin film thickness and composition in semiconductor applications and is qualified in production with major device makers.

Software

NanoDiffract® is a modeling, visualization and analysis software that takes signals from the automated and integrated metrology systems providing critical dimension, thickness, and optical properties from in-line measurements. The software has an intuitive three-dimensional modeling interface to provide visualization of today's advanced and complex semiconductor devices. There are proprietary fitting algorithms in NanoDiffract that enable very accurate and very fast calculations for signal processing for high fidelity model based measurements.

SpectraProbe™ is a model-less fitting engine that enables fast time to solution for in-line excursion detection and control. SpectraProbe complements the high-fidelity modeling of NanoDiffract with a simple machine learning interface for rapid recipe deployment. SpectraProbe expands the types of structures that can be used for metrology and control including in-die and on-device areas. Both analysis packages are supported by the automated and integrated systems, can be deployed in run-time environments and support off-line processing as part of a factory control solution when deployed on NanoCentral and NanoGen servers.

NanoGen is an enterprise scale computing hardware system that is deployed to run the computing intensive analysis software. NanoGen leverages commercial server chips and networking architecture and is optimized to support the workload of NanoDiffract analysis. NanoCentral is a fab based networking and server system providing connectivity and compute support to SpectraProbe and connected measurement systems including Atlas and Impulse products.

Materials Characterization

Our materials characterization products include systems that are used to monitor the physical, optical, electrical and material characteristics of discrete electronic industry, opto-electronic, HB-LED (high brightness LEDs), solar PV (solar photovoltaics), compound semiconductor, strained silicon and silicon-on-insulator ("SOI") devices, including composition, crystal structure, layer thickness, dopant concentration, contamination and electron mobility.

The RPMBlue™ is our photoluminescence mapping system designed specifically for the HB-LED market, and is complemented by the RPMBlue-FS, enabling a breadth of research and development configurability. We sell Fourier-Transform Infrared ("FTIR") automated and manual systems in the QS2200/3300 and QS1200 respectively for substitute quality and epitaxial thickness metrology. The NanoSpec® line, including the NanoSpec II, supports thin film measurement across all applications in both low volume production and research applications.

We are continually working to strengthen our competitive position by developing new technologies and products in our market segment. We have expanded our product offerings to address growing applications within the semiconductor manufacturing and adjacent industries. In pursuit of our goals, we have:

- Introduced new products, applications, and upgrades in every core product line and primary market served;
- Diversified our product line and served markets through acquisitions;

- Continued development of new measurement and inspection technologies for advanced fabrication processes and packaging.

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Important Themes and Significant Trends

The semiconductor equipment industry is characterized by new manufacturing processes (node) coming to market every two to three years. At every new node in the semiconductor industry, our customers drive the need for metrology as a major component of device manufacturing. These trends include:

- Proliferation of Optical Critical Dimension Metrology across Fabrication Processes. Device dimensions must be carefully controlled during each step of processing. These patterned structures are measured at many subsequent production steps including Chemical Mechanical Polishing, Etch, and Thin Film processing, all driving broader OCD adoption. Our proprietary OCD systems can provide the critical process control of these circuit dimensions that is necessary for successful manufacturing of these state-of-the-art devices. Nanometrics OCD technology is broadly adopted across 3D-NAND, DRAM, and logic semiconductor manufacturing processes.
- Proliferation of 3D Transistor Architectures. Our end customers continue to improve device density and performance by scaling front-end-of-line transistor architectures. Many of these designs, including FinFET transistors, have buried features and high aspect ratio stacked features that enable improved performance and density. The advanced designs require additional process control to manage the complex shapes and materials properties, driving additional applications of our systems.
- Proliferation of High-Density 3D-NAND. Our end customers have migrated to multi (many) layered high aspect ratio 3D-NAND devices. Many stacks of NAND cells are formed in parallel. These 3D-NAND architecture enables cost effective density scaling, removing the burden of density from lithography to deposition and etch processes. These devices require additional process control of deposition stacks, planarization processes, and critical high aspect ratio etch processes. Nanometrics thin films and OCD technologies are adopted across the 3D-NAND process including the periphery CMOS processing, NAND cell formation, and Interconnect of the devices.
- Adoption of New Types of Thin Film Materials. The need for ever increasing device circuit speed coupled with lower power consumption has pushed semiconductor device manufacturers to new materials and processing methods with single atom/sub nanometer control over these processes.
- Need for Improved Process Control to Drive Process Efficiencies. Competitive forces influencing semiconductor device manufacturers, such as price-cutting, shorter product life cycles and time to market, place pressure on manufacturers to rapidly achieve production efficiency. Device manufacturers are using our integrated and automated systems, as well as advanced metrology algorithms and analytics throughout the fabrication process to ensure that manufacturing processes scale rapidly, are accurate and can be repeated on a consistent basis.

Critical Accounting Policies and Estimates

The preparation of our financial statements conforms to accounting principles generally accepted in the United States of America, which requires management to make estimates and judgments in applying our accounting policies that have an important impact on our reported amounts of assets, liabilities, revenue, expenses and related disclosures at the date of our financial statements. On an ongoing basis, management evaluates its estimates including those related to bad debts, inventory valuations, warranty obligations, impairment and income taxes. Management bases its estimates and judgments on historical experience and on various other factors that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from management's estimates.

Except for the changes noted below, there were no significant changes in our critical accounting policies during the six months ended June 30, 2018. Please refer to Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," in our Annual Report for a complete discussion of our critical accounting policies.

Change in Revenue Recognition Standard (Adoption of ASU 2014-09) - We adopted the new accounting standard ASC 606 and related amendments in the first quarter of fiscal 2018 using the modified retrospective transition method. As such, we recognized the cumulative effect of initially applying the new revenue standard as an adjustment to the opening balance of retained earnings. Please refer to Note 1. Nature of Business, Basis of Presentation and Significant Accounting Policies" for further discussion of this change.

Recent Accounting Pronouncements

See Note 2 of the Unaudited Condensed Consolidated Financial Statements for a description of recent accounting pronouncements, including the respective dates of adoption and effects or anticipated effects on our results of operations and financial condition.

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Results of Operations

Net Revenues

Our net revenues comprised the following product lines (in thousands, except percentages):

	Three Months Ended				Six Months Ended			
	June 30, 2018	July 1, 2017	Change		June 30, 2018	July 1, 2017	Change	
Automated systems	$54,436	$38,739	$15,697	40.5%	$103,155	$73,407	$29,748	40.5%
Integrated systems	14,097	10,404	3,693	35.5%	29,454	19,879	9,575	48.2%
Materials characterization systems	8,171	4,433	3,738	84.3%	15,114	8,465	6,649	78.5%
Total product revenue	76,704	53,576	23,128	43.2%	147,723	101,751	45,972	45.2%
Service	11,900	10,851	1,049	9.7 %	23,194	21,990	1,204	5.5 %
Total net revenues	$88,604	$64,427	$24,177	37.5%	$170,917	$123,741	$47,176	38.1%

Capital spending by our customers is dependent on the timing of new semiconductor fabrication plants, capacity expansion within existing plants, and the adoption of modern technology for current and future manufacturing needs. Results may vary significantly based on changes in any of these factors. For the three months ended June 30, 2018, total net revenues increased by $24.2 million relative to the comparable period in fiscal 2017. The increase was comprised of a $23.1 million increase in product revenue and a $1.0 million increase in service revenue compared to the same prior year period. For the six months ended June 30, 2018, total net revenues increased by $47.2 million relative to the comparable period in fiscal 2017. The increase resulted from a $46.0 million increase in product revenue and a $1.2 million increase in service revenue compared to the same prior year period.

A significant portion of the world's semiconductor manufacturing capacity is in Asia, and a substantial portion of our revenues continue to be generated in that region. Although sales to customers within individual countries of that region will vary from time to time, we expect that a substantial portion of our revenues will continue to be generated in Asia.

Gross margin

Our gross margin breakdown was as follows:

	Three Months Ended		Six Months Ended	
	June 30, 2018	July 1, 2017	June 30, 2018	July 1, 2017
Products	59.2%	52.6 %	59.5%	50.0 %
Service	45.9%	50.1 %	45.7%	51.1 %

The calculation of product gross margin includes both cost of products and amortization of intangibles.

The gross margin on product revenue increased to 59.2% in the three months ended June 30, 2018 from 52.6% in the three months ended July 1, 2017. The increase was due to a favorable product and customer mix, improved installation cycle times and lower warranty costs. The gross margin on our services business decreased to 45.9% in the three months ended June 30, 2018 from 50.1% in the three months ended July 1, 2017. The decrease was due to lower service labor utilization.

The gross margin on product revenue increased to 59.5% in the six months ended June 30, 2018 from 50.0% in the six months ended July 1, 2017. The increase was due to a favorable product and customer mix, improved installation cycle times and lower warranty costs. The gross margin on our services business decreased to 45.7% in the six months ended June 30, 2018 from 51.1% in the six months ended July 1, 2017. The decrease was due to lower service labor utilization.

Operating expenses

Our operating expenses comprised the following categories (in thousands, except percentages):

	Three Months Ended				Six Months Ended			
	June 30, 2018	July 1, 2017	Change		June 30, 2018	July 1, 2017	Change	
Research and development	$12,491	$9,139	$3,352	36.7%	$22,693	$17,833	$4,860	27.3%
Selling	10,151	7,239	2,912	40.2%	19,175	15,177	3,998	26.3%
General and administrative	7,465	6,591	874	13.3%	15,206	12,898	2,308	17.9%
Total operating expenses	$30,107	$22,969	$7,138	31.1%	$57,074	$45,908	$11,166	24.3%

Research and development

Investments in research and development personnel and associated projects are part of our strategy to ensure our products remain competitive and meet customers' needs. For the three months ended June 30, 2018, research and development costs increased by $3.4 million, or 36.7%, compared to the same period in 2017. The increase was driven by additional headcount and higher variable compensation costs.

For the six months ended June 30, 2018 research and development costs increased by $4.9 million, or 27.3%, compared to the same period in 2017. The increase was driven by additional headcount and higher variable compensation costs.

Selling

Selling expenses for the three months ended June 30, 2018 increased by $2.9 million, or 40.2% compared to the same period in 2017. The increase was driven by additional headcount, higher variable compensation costs and higher travel related expenses. For the six months ended June 30, 2018 selling expenses increased by $4.0 million, or 26.3%, compared to the same period in 2017. The increase was driven by additional headcount, higher variable compensation costs and higher travel related expenses.

General and administrative

General and administrative expenses increased by $0.9 million, or 13.3%, in the three months ended June 30, 2018 compared to the same period in 2017. The increase was primarily due to executive transition and search costs, higher variable compensation costs and higher professional services fees. For the six months ended June 30, 2018 general and administrative expenses increased by $2.3 million, or 17.9%, compared to the same period in 2017. The increase was primarily due to executive transition and search costs, higher variable compensation costs and higher professional service fees.

Other income (expense), net.

Our other income (expense), net, consisted of the following items (in thousands, except percentages):

	Three Months Ended June 30, 2018	July 1, 2017	Change		Six Months Ended June 30, 2018	July 1, 2017	Change	
Interest Income	$ 1	$ 3	$ (2)	-66.7 %	$ 4	$ 4	$ -	0.0 %
Interest Expense	(49)	(19)	(30)	157.9 %	(145)	(59)	(86)	145.8 %
Interest income (expense), net	(48)	(16)	(32)	200.0 %	(141)	(55)	(86)	156.4 %
Net gains on investments	314	300	14	4.7 %	583	565	18	3.2 %
Other gains (losses), net	(480)	(26)	(454)	1746.2 %	(397)	(294)	(103)	35.0 %
Other income (loss), net	(166)	274	(440)	-160.6 %	186	271	(85)	-31.4 %
Total other income (expense), net	$ (214)	$ 258	$ (472)	-182.9 %	$ 45	$ 216	$ (171)	-79.2 %

Other income (expense), net, decreased by $0.5 million in the three months ended June 30, 2018 relative to the comparable period in 2017. The change was principally due to unfavorable foreign exchange net gains and losses. For the six months ended June 30, 2018 other income (expense), net, decreased by $0.2 million compared to the same period in 2017. The change was primarily due to unfavorable foreign exchange net gains and losses and interest expense.

Provision for income taxes

We recorded a tax provision of $2.9 million and $2.6 million for the three months ended June 30, 2018 and July 1, 2017, respectively. The increase in the tax provision for 2018 from 2017 was primarily related to our increased profitability for the three months ended June 30, 2018, offset by less U.S. tax required on foreign earnings under the TCJA.

We recorded a tax provision of $7.3 million and $2.7 million for the six months ended June 30, 2018 and July 1, 2017, respectively. The increase in the tax provision for 2018 from 2017 was primarily related to our increased profitability and less tax required on foreign earnings under the TCJA for the six months ended June 30, 2018, a one-time benefit for an entity classification change, and a higher tax benefit associated with the settlement of equity options/awards for the six months ended June 30, 2017.

Our provision for income taxes for the three and six months ended June 30, 2018 of $2.9 million and $7.3 million, respectively, reflects an effective tax rate of 14.1% and 17.7%, respectively. The tax rate for the three and six months ended June 30, 2018 differs from the Federal statutory rate of 21.0% primarily due to foreign income being subject to tax at higher rates, state income taxes, non-deductible equity compensation, offset by Foreign and R&D Tax credits and tax benefits associated with the settlement of equity options/awards.

As of June 30, 2018, we continue to maintain a valuation allowance against our California and Switzerland deferred tax assets as a result of uncertainties regarding the realization of the asset due to cumulative losses and uncertainty of future taxable income. We will continue to assess the realizability of the deferred tax assets in each of the applicable jurisdictions and maintain the valuation allowances until sufficient positive evidence exists to support a reversal. In the event we determine that the deferred tax assets are realizable, an adjustment to the valuation allowance will be reflected in the tax provision for the period such determination is made.

We are subject to taxation in the U.S. and various states including California, and foreign jurisdictions including Korea, Japan, Taiwan, China, Singapore, U.K., Germany, France, and Israel. Due to tax attribute carry-forwards, we are subject to examination for tax years 2003 forward for U.S. tax purposes. We are also subject to examination in various states for tax years 2002 forward. We are subject to examination for tax years 2010 forward for various foreign jurisdictions.

We accrue interest and penalties related to unrecognized tax benefits in our provision for income taxes. The total amount of penalties and interest were not material as of June 30, 2018 and July 1, 2017. During the next twelve months, we anticipate increases in our unrecognized tax benefits of approximately $0.5 million.

Liquidity and Capital Resources

Our principal sources of liquidity are cash and cash equivalents, and marketable securities, and cash flow generated from our operations. Our liquidity is affected by many factors, including those that relate to our specific operations and those that relate to the uncertainties of global and regional economies and the sectors of the semiconductor industry in which we operate in. Although our cash requirements will fluctuate based on the timing and extent of these factors, we believe our existing cash, cash equivalents and marketable securities, combined with cash currently projected to be generated from our operations, will be sufficient to satisfy our working capital needs, capital asset purchases, outstanding commitments and other liquidity requirements associated with our existing operations over the next twelve months.

The following tables present selected financial information and statistics as of June 30, 2018 and December 30, 2017 and for the six months ended June 30, 2018 and July 1, 2017 (in millions):

	As of June 30, 2018	December 30, 2017
Cash, cash equivalents and marketable securities	$148.7	$ 117.0
Working capital	$216.2	$ 196.0

	June 30, 2018	July 1, 2017
Cash provided by operating activities	$59.0	$10.3
Cash provided by (used in) investing activities	$15.8	$(14.0)
Cash used in financing activities	$(23.0)	$(0.5)

Cash, cash equivalents and marketable securities totaled $148.7 million at June 30, 2018, which reflects an increase of $31.7 million from December 30, 2017. Of our total cash, cash equivalents and marketable securities at June 30, 2018, approximately $14.3 million were held by foreign subsidiaries, a portion of which would have to be repatriated to the United States. We continuously evaluate if there is a need to repatriate these funds. We believe our existing cash, cash equivalents and marketable securities will be

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sufficient to satisfy our working capital needs, capital asset purchases, outstanding commitments and other liquidity requirements associated with our existing operations over the next twelve months.

Working capital was $216.2 million at June 30, 2018, which reflects an increase of $20.2 million when compared to $196.0 million at December 30, 2017. This is primarily due to increases in cash and cash equivalents, inventories, inventories-delivered systems, and prepaid expenses and other asset balances, offset in part by a decrease in marketable securities and increases in accounts payable, accrued payroll and related expenses, deferred revenue, income taxes payable, and other current liabilities.

Cash provided by operating activities during the six months ended June 30, 2018 was $59.0 million, consisting primarily of net income of $34.1 million, adjusted for non-cash items of $13.0 million, and $11.9 million of net cash inflows related to changes in operating assets and liabilities. The changes in operating assets and liabilities are generally driven by the timing of our customer payments for accounts receivable and the timing of inventory purchases and the associated vendor payments for accounts payable. We expect that cash provided by operating activities may fluctuate in future periods due to several factors, including variations in our operating results, accounts receivable collections performance, inventory and supply chain management, vendor payment initiatives, tax benefits or charges from stock-based compensation, and the timing and amount of compensation and other payments. Cash provided by investing activities of $15.8 million during the six months ended June 30, 2018 consisted primarily of sales and maturities of marketable securities of $35.9 million, partially offset by $16.3 million of purchases of marketable securities and payments for acquisition of property, plant and equipment and certain assets of $3.8 million. Cash used in financing activities of $23.0 million during the six months ended June 30, 2018 consisted primarily of $23.0 million of common stock repurchases and $2.7 million cash paid for taxes on net issuance of stock awards, partially offset by proceeds from the issuance of common stock from the employee stock purchase program and the exercise of stock options of $2.7 million.

Cash provided by operating activities during the six months ended July 1, 2017 was $10.3 million, consisting primarily of net income of $13.6 million, adjusted for non-cash items of $9.8 million, partially offset by $13.2 million of net cash outflows related to changes in operating assets and liabilities. The changes in operating assets and liabilities is generally driven by the timing of our customer payments for accounts receivable and timing of our vendor payments in accounts payable. Cash used in investing activities of $14.0 million during the six months ended July 1, 2017 consisted primarily of $78.8 million purchases of marketable securities and payments for acquisition of property, plant and equipment and certain assets of $3.5 million, net of sales and maturities of marketable securities of $68.3 million. Cash used in financing activities of $0.5 million during the six months ended July 1, 2017 consisted primarily of $3.4 million cash paid for taxes on net issuance of stock awards, partially offset by proceeds from the issuance of common stock from the employee stock purchase program and the exercise of stock options of $2.9 million.

Repurchases of Common Stock

On November 15, 2017 our Board of Directors authorized the repurchase of up to $50.0 million of our common stock. This plan is referred to as the Stock Repurchase Plan. Stock repurchases under the Stock Repurchase Plan may be made through open market and privately negotiated transactions at times and in such amounts as management deems appropriate. The timing and actual number of shares repurchased is dependent on a variety of factors including price, corporate and regulatory requirements and other market conditions.

Shares repurchased and retired in the three months ended March 31, 2018 under the Stock Repurchase Plan, with the associated cost of repurchase and amount available for repurchase are as follows (in thousands, except number of shares and weighted average price per share):

	Three months ended March 31, 2018
Number of shares of common stock repurchased	896,187
Weighted average price per share	$25.65
Total cost of repurchase	$22,987
Amount available for repurchase at end of period	$—

During the three months ended March 31, 2018, the Stock Repurchase Plan was completed and we repurchased 896,187 shares at an average purchase price of $25.65 per share for a total of $23.0 million.

Off-Balance Sheet Arrangements

As of June 30, 2018, we had no off-balance sheet arrangements or obligations.

Contractual Obligations

There have been no material changes outside the ordinary course of our business from those reported in our Annual Report on Form 10-K for the fiscal year ended December 30, 2017, filed with the SEC on February 26, 2018.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK
Our exposure to market risk does not differ materially from that discussed in our Annual Report on Form 10-K for the fiscal year ended December 30, 2017, filed with the SEC on February 26, 2018. However, we cannot give any assurance as to the effect that future changes in interest rates or foreign currency rates will have on our consolidated balance sheet, results of operations or cash flows.

Foreign Currency Risk

Our exposure to foreign currency exchange rate fluctuations arises in part from intercompany balances in which costs are charged between our U.S. headquarters and our foreign subsidiaries. On our consolidated balance sheet these intercompany balances are eliminated and thus no consolidated balances are associated with these intercompany balances; however, since each foreign entity's functional currency is generally its respective local currency, there is exposure to foreign exchange risk on a consolidated basis for transactions not denominated in each foreign entity’s functional currencies. Intercompany balances are denominated primarily in U.S. dollars and, to a lesser extent, other local currencies.

To manage the level of exposure to the risk of foreign currency exchange rate fluctuations, we enter into foreign currency forward exchange contracts to protect against currency exchange risks associated with existing assets and liabilities. A foreign currency forward exchange contract acts as a hedge by increasing in value when underlying assets decrease in value or underlying liabilities increase in value due to changes in foreign exchange rates. Conversely, a foreign currency forward exchange contract decreases in value when underlying assets increase in value or underlying liabilities decrease in value due to changes in foreign exchange rates. These forward contracts are not designated as accounting hedges, so the unrealized gains and losses are recognized in other income (expense), net, in advance of the actual foreign currency cash flows with the fair value of these forward contracts being recorded as accrued liabilities or other current assets.

We do not use forward contracts for trading purposes. Our forward contracts generally have maturities of 30 days or less. We enter into foreign currency forward exchange contracts based on estimated future asset and liability exposures, and the effectiveness of our hedging program depends on our ability to estimate these future asset and liability exposures. Recognized gains and losses with respect to our current hedging activities will ultimately depend on how accurately we are able to match the amount of foreign currency forward exchange contracts with actual underlying asset and liability exposures.

We actively monitor our foreign currency risks, but there is no guarantee that our foreign currency hedging activities will substantially offset the impact of fluctuations in currency exchange rates on our results of operations, cash flows and financial position. See “Note 3, Fair Value Measurement and Disclosures” in the Notes to Consolidated Financial Statements for more information regarding our derivatives and hedging activities.

Interest Rate Risk

Our exposure to market risk resulting from changes in interest rates relates primarily to our investment portfolio. As of June 30, 2018 and December 30, 2017, we held $62.5 million and $82.1 million, respectively, in marketable securities. The fair value of our marketable securities could be adversely impacted due to a rise in interest rates. A hypothetical immediate and consistent increase in interest rates by 100 basis points from levels as of June 30, 2018, the fair value of our marketable securities would have declined by $0.4 million. Securities with longer maturities are subject to a greater interest rate risk than those with shorter maturities and as of June 30, 2018 and December 30, 2017, the average duration of our portfolio was less than nine months. We do not hold securities for trading purposes.

ITEM 4.CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management evaluated, with the participation of our Chief Executive Officer (“CEO”), and our Chief Financial Officer (“CFO”), the effectiveness of our disclosure controls and procedures as of the end of the period covered by this Quarterly Report on Form 10-Q. Based on the evaluation, our CEO and CFO concluded that as of June 30, 2018, our disclosure controls and procedures were effective to ensure that information we are required to disclose in reports that we file or submit under the Securities Exchange Act of 1934 were (i) recorded, processed, summarized and reported within the time periods specified in SEC rules and forms and (ii) accumulated and reported to our management, including our Chief Executive Officer and Chief Financial Officer, to allow timely discussions regarding required disclosures.

Changes in Internal Control over Financial Reporting

During the quarter ended June 30, 2018, there were no changes in our internal controls over financial reporting that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitations on Effectiveness of Controls

Our management, including our CEO and CFO, has designed our disclosure controls and procedures and our internal control over financial reporting to provide reasonable assurances that the controls’ objectives will be met. However, management does not expect that disclosure controls and procedures or our internal control over financial reporting will prevent or detect all error and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system’s objectives will be met. The design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Further, because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, within Nanometrics have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty and that breakdowns can occur because of simple error or mistake. Controls can also be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the controls. The design of any system of controls is based in part on certain assumptions about the likelihood of future events, and there can be no assurance that any system’s design will succeed in achieving its stated goals under all potential future conditions. Projections of any evaluation of a system’s control effectiveness into future periods are subject to risks. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with policies or procedures.

PART II — OTHER INFORMATION

ITEM 1 LEGAL PROCEEDINGS

The information set forth under Note 9. Commitments and Contingencies of Notes to Consolidated Financial Statements in Part I, Item 1 of this Quarterly Report on Form 10-Q is incorporated herein by reference.

ITEM 1A. RISK FACTORS

Investing in our securities involves a high degree of risk. In assessing these risks, you should carefully consider the information included in this report, including our financial statements and the related notes thereto. You should carefully review and consider all of the risk factors set forth in Part l, “Item 1A. Risk Factors” in our Annual Report on Form 10-K for the fiscal year ended December 30, 2017, filed with the SEC on February 26, 2018.

The risks described in our Annual Report on Form 10-K are not the only ones we face. Additional risks and uncertainties that are not currently known to us or that we currently believe are immaterial may also impair our business operations. Our business, operating results and financial conditions could be materially harmed by any of these risks. The trading price of our common stock could decline due to any of these risks and investors may lose all or part of their investment.

There have been no material changes in our risk factors from those discussed in our Annual Report on Form 10-K for the fiscal year ended December 30, 2017.

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

Recent Sales of Unregistered Securities

None.

Issuer Purchases of Equity Securities

None.

ITEM 6. EXHIBITS

The following exhibits are filed, furnished or incorporated by reference with this Quarterly Report on Form 10-Q:

Exhibit No.	Description
3.(i)	Certificate of Incorporation
3.1(1)	Certificate of Incorporation of the Registrant
3.(ii)	Bylaws
3.2 (2)	Bylaws of the Registrant
4	Instruments Defining the Rights of Security Holders, Including Indentures
4.1	Reference is made to Exhibits 3.1 and 3.2
10	Material Contracts
10.1 (3)	Separation Agreement between Registrant and S. Mark Borowicz, dated January 8, 2018.
10.1 (4)	Independent Contractor Agreement between Registrant and S. Mark Borowicz, dated January 8 2018.
10.1 (5)^	Separation Agreement between Registrant and Jonathan Chou, dated June 25, 2018
31	Rule 13a-14(a)/15d-14(a) Certifications
31.1^	Certification of Pierre-Yves Lesaicherre, principal executive officer of the Registrant, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2^	Certification of Greg Swyt, principal financial officer and controller of the Registrant, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32	Section 1350 Certifications
32.1*	Certification of Pierre-Yves Lesaicherre, principal executive officer of the Registrant, and Greg Swyt, principal financial officer and controller of the Registrant pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101*	The following financial statements, formatted in XBRL: (i) Condensed Consolidated Balance Sheets at June 30, 2018, and December 30, 2017, (ii) Condensed Consolidated Statements of Operations for the three and three months ended June 30, 2018 and July 1, 2017, (iii) Condensed Consolidated Statements of Cash Flows for the six months ended June 30, 2018 and July 1, 2017, and (v) Notes to Unaudited Condensed Consolidated Financial Statements.
101.INS	XBRL Instance Document

101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

(1) Incorporated by reference to Exhibit 3.1 filed with the Registrant's Current Report on Form 8-K (File No. 000-13470) filed with the SEC on October 5, 2006.

(2) Incorporated by reference to Exhibit 3.1 filed with the Registrant's Current Report on Form 8-K (File No. 000-13470) filed with the SEC on April 12, 2012.

(3) Incorporated by reference to Exhibit 10.21 filed with the Registrant's Annual Report on Form 10-K (File No. 000-13470) filed with the SEC on February 26, 2018.

(4) Incorporated by reference to Exhibit 10.22 filed with the Registrant's Annual Report on Form 10-K (File No. 000-13470) filed with the SEC on February 26, 2018.

^Filed herewith.
*Furnished herewith
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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.

NANOMETRICS INCORPORATED
(Registrant)

By: /S/ GREG SWYT
Greg Swyt
Vice President, Finance
(Principal Financial Officer and Controller)

Dated: August 1, 2018

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