Inrad Optics, Inc.
Form 10-K
April 01, 2019

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D. C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended: December 31, 2018

OR

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

For the transition period from to

Commission file number: 0-11668

Inrad Optics, Inc.

(Exact name of registrant as specified in its charter)

New Jersey	**22-2003247**
State or other jurisdiction of incorporation or organization	(I. R. S. Employer Identification No.)
181 Legrand Avenue, Northvale, NJ	**07647**
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code **201-767-1910**

Securities registered pursuant to Section 12(b) of the Act: **None**

Title of each class	Name of each exchange on which registered	N/A

Securities registered pursuant to section 12(g) of the Act:

Common stock, par value $.01 Per Share

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes o. No x.

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes o. No x.

Note – Checking the box above will not relieve any registrant required to file reports pursuant to Section 13 or 15(d) of the Exchange Act from their obligations under those Sections.

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes x No o

Indicate by check mark whether the registrant has submitted electronically every Interactive Data file required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes x No o

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. x

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated file, or a smaller reporting company. See definition of large accelerated filer, accelerated filer and smaller reporting company in Rule 12b2 of the Exchange Act. (Check one):

Large accelerated filer o Accelerated filer o Non-accelerated filer x Smaller reporting company x Emerging growth compar

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

YesoNox

State the aggregate market value of the voting and non-voting common equity held by non-affiliates computed by reference to the price at which the common equity was last sold, or the average bid and asked price of such common equity, as of the last business day of the registrant’s most recently completed second fiscal quarter. $9,489,437. (For purposes of determining this amount, only directors, executive officers and shareholders with voting power of 10% or more of our stock have been deemed affiliates.)

Indicate the number of shares outstanding of each of the registrant’s classes of common stock, as of the latest practicable date.

Common Shares outstanding as of March 26, 2019 – 13,632,388 shares

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive Proxy Statement for the 2019 Annual Meeting of Shareholders, to be filed with the Commission not later than 120 days after the close of the registrant’s fiscal year, have been incorporated by reference, in whole or in part, into Part III Items 10, 11, 12, 13 and 14 of this Annual Report on Form 10-K.

Inrad Optics, Inc.

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PART 1

Caution Regarding Forward Looking Statements

This Annual Report contains forward-looking statements as that term is defined in the federal securities laws. The Company wishes to insure that any forward-looking statements are accompanied by meaningful cautionary statements in order to comply with the terms of the safe harbor provided by the Private Securities Litigation Reform Act of 1995. The events described in the forward-looking statements contained in this Annual Report may not occur. Generally, these statements relate to business plans or strategies, projected or anticipated benefits or other consequences of the Company’s plans or strategies, or projections involving anticipated revenues, earnings, or other aspects of the Company’s operating results. The words “may”, “will”, “expect”, “believe”, “anticipate”, “project”, “plan”, “intend”, “estimate “continue”, and their opposites and similar expressions are intended to identify forward-looking statements. The Company cautions you that these statements are not guarantees of future performance or events and are subject to a number of uncertainties, risks, and other influences, many of which are beyond the Company’s control, that may influence the accuracy of the statements and the projections upon which the statements are based. Factors that may cause or contribute to such differences include, but are not limited to, those discussed in more detail in Item 1 (Business) and Item 1A (Risk Factors) of Part I and Item 7 (Management’s Discussion and Analysis of Financial Condition and Results of Operations) of Part II of this Annual Report on Form 10-K. Any one or more of these uncertainties, risks, and other influences could materially affect the Company’s results of operations and whether forward-looking statements made by the Company ultimately prove to be accurate. Readers are further cautioned that the Company’s financial results can vary from quarter to quarter, and the financial results for any period may not necessarily be indicative of future results. The foregoing is not intended to be an exhaustive list of all factors that could cause actual results to differ materially from those expressed in forward-looking statements made by the Company. The Company’s actual results, performance and achievements could differ materially from those expressed or implied in these forward-looking statements. The Company undertakes no obligation to publicly update or revise any forward looking statements, whether from new information, future events, or otherwise, except as otherwise required by law.

Item 1. Business

Inrad Optics, Inc. (the “Company”, “Inrad”, or “we”), was incorporated in New Jersey in 1973. The Company develops, manufactures and markets products and services for use in photonics industry sectors via three distinct but complementary product areas - “Crystals and Devices”, “Custom Optics” and “Metal Optics.”

The Company is a vertically integrated manufacturer specializing in crystal-based optical components and devices, custom optical components from both glass and metal, and precision optical and opto-mechanical assemblies. Manufacturing capabilities include solution and high temperature crystal growth, extensive optical fabrication capabilities including precision diamond turning and the ability to handle large substrates, optical coatings, as well as in-process metrology.

Inrad Optics' customers include leading corporations in the defense, aerospace, laser systems, process control and metrology sectors of the photonics industry, as well as the U.S. Government, National Laboratories and universities worldwide.

Administrative, engineering and manufacturing operations are in a 42,000 square foot building located in Northvale, New Jersey.

The products produced by Inrad Optics, Inc. fall into two main categories: Optical Components and Laser Devices/Instrumentation.

The Optical Components category is heavily focused on custom optics manufacturing. The Company specializes in high-end precision components and sub-assemblies. It develops, manufactures and delivers precision custom optics and thin film optical coating services through its Custom and Metal Optics operations. Glass, metal, and crystal substrates are processed using complex processes and techniques to manufacture components, deposit optical thin films, and assemble sub-components used in advanced photonic systems. The majority of custom optical components and optical coating services supplied are used in defense and aerospace electro-optical systems, inspection, laser, medical and process control systems..

The Laser Devices/Instrumentation category includes the growth and fabrication of crystalline materials with electro-optic (EO) and non-linear optical properties for use in both standard and custom products. This category also includes crystal based devices and associated instrumentation. The majority of crystals, crystal components and laser devices are used in laser systems, defense and security EO systems, medical lasers and research and development applications by engineers within corporations, Scientific / R&D.

The following table summarizes the Company's net sales by product categories during the past two years. Laser Devices/Instrumentation includes all non-linear and electro-optical crystal components.

	Years Ended December 31,			
	2018		2017	
Category (In thousands)	**Net Sales**	**%**	**Net Sales**	**%**
Optical Components	$9,939	86.5	$8,363	84.8
Laser Devices /Instrumentation	1,550	13.5	1,496	15.2
Total	$11,489	100	$9,859	100

Products Manufactured by the Company

Optical Components

a) Custom Optics and Optical Coating Services

Manufacturing of high-performance custom optics is a major product area for Inrad Optics and is addressed in the marketplace by the Company's Custom and Metal Optics product lines.

The Custom Optics product line focuses on products manufactured to specific customer requirements. It specializes in the manufacture of optical components, optical coatings (ultra-violet wavelengths through infra-red wavelengths) and subassemblies for the aerospace, industrial medical marketplace and military. Planar, prismatic and spherical components are fabricated from glass and synthetic crystals, including fused silica, germanium, magnesium fluoride, quartz, silicon, zinc selenide, and zinc sulfide. Components consist of cavity optics for lasers, lenses, mirrors, polarizing optics, prisms, wave plates, , x-ray mirrors, and x-ray monochromators.

Most optical components and sub-assemblies require thin film coatings on their surfaces. Depending on the design, optical coatings can refract, reflect and transmit specific wavelengths. The Custom Optics optical coating specialties include anti-reflective high laser damage resistance, highly reflective, infra-red, polarizing, and coating to complex multi-wavelength requirements on a wide range of substrate materials. Coating deposition process technologies employed included electron beam, ion and plasma assisted deposition systems and thermal.

The Metal Optics product line is a fully integrated precision metal optics and optical assembly operation which employs high precision diamond machining, polishing, and plating of aluminum, AlBeMet™, beryllium and stainless steel. The Metal Optics product line offers opto-mechanical design and assembly services as part of its manufactured deliverables and can support prototyping through production of arc-second accuracy polygons, diamond machined precision aspheric, large and small metal mirrors, low RMS surface finish polished mirrors, planar mirrors, reflective porro prisms, and thermally stable optical mirrors. Plating specialties include void-free gold and electroless nickel.

b) UV Filter Optical Components

This product line consists of crystals and crystal devices including UV filter materials of both patented and proprietary materials with unique transmission and absorption characteristics. These materials are used in critical applications in defense systems such as missile warning sensors. Such materials include nickel sulfate and other proprietary materials.

Laser Devices/Instrumentation

This product line consists of crystal-based products that are used in, or alongside, laser systems. Developing growth processes for high quality synthetic crystals is a core competency of the Crystals and Devices manufacturing team. These crystals are embedded in our value added devices and instrumentation products manufactured in our Northvale facility and include crystals for wavelength conversion, modulation and polarization, Pockels' cells, and wavelength conversion instruments. In addition to the filter materials used in the UV Filter Optical components described above, current materials produced beta barium borate (BBO), lithium niobate, potassium dideuterium phosphate, potassium dihydrogen phosphate, stilbene and zinc germanium diphosphide,. Applications for these materials include defense, homeland security, industrial processing lasers and surgical lasers.

The Crystals and Devices team is also engaged in ongoing R & D efforts to develop new materials for evolving applications. Some of the major products produced for the photonics marketplace include:

a) Crystal Components

The Company grows and fabricates electro-optic and nonlinear crystal devices for altering the intensity, polarization or wavelength of a laser beam. Other crystal components, produced as part of the Crystals and Devices product line, are used in laser research in commercial laser systems and in detection of fast neutrons.

b) Pockels’ Cells and Drivers

A line of Pockels’ cells and associated electronics is manufactured for sale in multiple market sectors. Pockels’ cells are devices that include one or more crystal components and are used in applications that require fast switching of the polarization direction of a beam of light. These uses include Q-switching of laser cavities to generate pulsed laser light, coupling light into and out from regenerative amplifiers, and light intensity modulation. These devices are sold to medical and industrial laser original equipment manufacturers, research institutes and laser system design engineers.

Sales by Market

The photonics industry serves a broad, fragmented and expanding set of markets. As technologies are discovered, developed and commercialized, the applications for photonic systems and devices, and the components embedded within those devices, grow across traditional market boundaries. While a significant part of the Company’s business remains firmly in the defense and aerospace markets, other markets served include original equipment manufacturers (OEM) in the medical and industrial laser market, and OEM customers in the metrology and process control market, university research institutes and national labs worldwide. Scanning, detection and imaging technologies for homeland security and health care markets are beginning to provide opportunities for the Company and these new sectors are expected to continue to account for potential future growth and demand for our products and capabilities.

In 2018 and 2017 the Company’s product sales were made to customers in the following market areas:

	Years Ended December 31,	
	2018	2017

Market (In thousands)	Net Sales	%	Net Sales	%
Defense/Aerospace	$2,585	22.5	$3,138	31.8
Process control & metrology	5,891	51.3	4,244	43.0
Laser systems	1,550	13.5	1,030	10.5
Scientific / R&D	1,463	12.7	1,447	14.7
Total	$11,489	100	$ 9, 859	100

Defense and Aerospace

This market consists of sales to OEM defense electro-optical systems and subsystems manufacturers, manufacturers of non-military satellite-based electro-optical systems and subsystems, and direct sales to governments where the products have the same end-use.

End-use applications for the Company's products in the defense and aerospace sector include military laser systems, military electro-optical systems, satellite-based systems, and missile warning sensors and systems that protect aircraft. The dollar volume of shipments of product within this sector depends in large measure on the U.S. Defense Department budget and its priorities, that of foreign governments, the timing of their release of contracts to their prime equipment and systems contractors, and the timing of competitive awards from this customer community to the Company.

Defense/Aerospace sales represented approximately 22.5% and 31.8% of sales in 2018 and 2017, respectively. Sales decreased by approximately $553,000 or 17.6% from 2017. The decrease in 2018 is primarily due to a reduction of shipments to a few defense customers compared to the previous year.

The Company believes that the defense and aerospace sector will continue to represent a significant market for the Company's products and offers an ongoing opportunity for growth given the Company's capabilities in specialty crystal, glass and metal precision optics.

Process Control and Metrology

This market consists of capital equipment manufacturers whose products are used in the areas of manufacturing process and control, optics-based metrology, quality assurance, and inventory and product control. Examples of applications for such equipment include semiconductor fabrication and testing and inventory management and distribution systems control.

Sales in the Process Control and Metrology (PC&M) market increased by $1,647,000 or 38.8% in 2018 compared to 2017 and represented 51.3% of sales compared to 43.0% in the prior year. The increase in 2018 sales is a result of an increase in demand from the semiconductor capital equipment market. An increase in bookings in late 2017 and early 2018 to two OEM customers resulted in an increase in shipments in 2018.

The Company believes that the optical and x-ray inspection segment of the semiconductor industry offers continued growth opportunities which match its capabilities in precision optics, crystal products, and monochromators.

Laser Systems

This market consists principally of customers who are OEM manufacturers of industrial, medical, and R&D lasers which the Company serves as an OEM supplier of standard and custom optical components and laser accessories, as well as a number of smaller customers in other markets that the Company does not list separately.

Sales in this market were 13.5% of sales in 2018 compared to 10.5% in 2017. This represented an increase of $520,000 or 50.4% from the prior year. A majority of the increase was a result of two new customers one domestic and one international as compared to the previous year.

Scientific / R&D

These sales consist of product sales directly to researchers at various educational and research institutions and through distributors into that market. Sales to customers within the Scientific / R&D market consist primarily of the Company's legacy systems, Pockels' cells and related repairs. Sales in 2018 increased by $16,000, or 1.1% and as a percentage of total sales to 12.7% compared to 14.7% in 2017. This was primarily attributable to increased business in 2018 from one National Lab and one research contract.

Major Customers

The Company’s sales have historically been concentrated within a small number of customers, although the top customers have varied from year to year.

In 2018, the Company’s sales to its top three customers accounted for 44.6% of sales. This included sales to a major OEM that manufactures process control and metrology equipment for the semiconductor industry. These customers represented 22.3% of total sales during the year.

Two other customers included a US based defense contractor of electro-optical systems for US and foreign governments and a foreign owned OEM manufacturer of process control and metrology equipment whose sales represented 12.9% and 9.4% of sales, respectively.

The same three customers represented 14.4%, 14.8%, and 5.6% of sales in 2017, respectively.

Sales to the Company’s top five customers represented approximately 56.1% and 45.1% of sales, in 2018 and 2017, respectively. All these customers are OEM manufacturers either within the defense, process control and metrology or laser systems sector.

Export Sales

The Company’s export sales are primarily to customers in Europe, Israel, and Asia and amounted to approximately 40%, and 32.5% of product sales in 2018 and 2017, respectively.

Long-Term Contracts

Certain of the Company’s agreements with customers provide for periodic deliveries at fixed prices over a long period of time. In such cases, the Company negotiates to obtain firm price commitments, as well as cash advances from its customers for the purchase of the materials necessary to fulfill the order.

Marketing and Business Development

The Company markets its products domestically, through the coordinated efforts of the sales, marketing and customer service teams.

The Company has moved towards a strategy of utilizing these combined sales and marketing resources for cross-selling all products across all business lines. This strategy is well suited to the diverse and fragmented markets that utilize photonic technologies.

Independent sales agents are used in major non-U.S. markets, including Canada, the United Kingdom, the European Union, Israel, and Japan.

Sales and marketing efforts are coordinated by the Vice President, Sales and Marketing, to promote our product lines through various means including participation in trade shows, internet based marketing, media and non-media advertising and promotion and management of international sales representatives and distributors.

Backlog

The Company's order backlog at December 31, 2018 was $6,480,000. The Company's order backlog as of December 31, 2017 was $6,512,000.

We anticipate shipping a substantial majority of the present backlog during fiscal year 2019. However, our backlog at any given date may consist of orders with delivery schedules that extend beyond 12 months into the future.

Competition

Within each product category in which the Company's business units are active, there is competition.

Changes in the photonics industry have had an effect on suppliers of custom optics. As end users have introduced products requiring large volumes of optical components, suppliers have responded either by staying small and carving out niche product areas, or by ramping up manufacturing capacity and modernizing their manufacturing methods to meet higher volume production rates. Additionally, the availability of an increasingly large variety of inventoried inexpensive catalog optics has led some OEM manufacturers to “design in” these low-cost solutions rather than utilizing custom designed and manufactured products.

Competition for the Company’s crystal devices and instrumentation is more limited and the Company’s laser devices are considered to be high quality and generally offer a combination of features not available elsewhere. As a result of the Company’s in-house crystal growth capability, this area of the business is highly vertically integrated, providing a competitive advantage over other suppliers.

For crystal products, the market is highly competitive. Many of the Company’s competitors who supply non-linear optical crystals are located overseas, and can offer significantly reduced pricing for some crystal materials. On many occasions, the quality of the crystal component drives the ultimate performance of the component or instrument into which it is installed. Quality and technical support are considered to be valuable attributes for a crystal supplier by some, but not all, OEM customers.

Our metal optics product line has several key competitors who are larger and better equipped to compete on high volume work. There are also several large and small competitors who compete with our products on large form factor optics. The Company has made recent inroads within this competitive landscape, and is building brand awareness in the marketplace.

Although price is a principal factor in many product categories, competition is also based on product design, performance, customer confidence, quality, delivery, and customer service. Based on its performance to date, the Company believes that it can continue to compete successfully, although no assurances can be given in this regard.

Employees

As of the close of business on March 25, 2019, the Company had 58 full-time employees.

Patents and Licenses

The Company mainly relies on its manufacturing and technological expertise, know-how and trade secrets in addition to its patents, to maintain its competitive position in the industry. The Company takes precautionary and protective measures to safeguard its technical design and manufacturing processes. The Company executes nondisclosure agreements with its employees and, where appropriate, with its customers, suppliers and other associates.

Regulation

Foreign sales of certain of the Company's products to certain countries may require export licenses from the United States Department of Commerce. Such licenses are obtained when required. All requested export licenses of Inrad Optics products have been granted or deemed not-required.

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International Traffic in Arms Regulations ("ITAR") governs much of the Company's domestic defense sector business, and the Company is capable of handling its customers' technical information under these regulations. Inrad Optics, Inc. is registered with the Directorate of Defense Trade Controls, and utilizes a supplier base of similarly registered companies.

There are no other federal regulations or any unusual state regulations that directly affect the sale of the Company's products other than those environmental compliance regulations that generally affect companies engaged in manufacturing operations in New Jersey.

Availability of Reports

Our principal executive offices are located at 181 Legrand Avenue, Northvale, N.J. 07647 which also houses our manufacturing operations. Our telephone number is 201-767-1910 and our corporate website address is www.inradoptics.com. We include our website address in this annual report on Form 10-K only as an inactive textual reference and do not intend it to be an active link to our website. The information on our website is not incorporated by reference in this annual report on Form 10-K.

Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to such reports, as well as other documents we file with the Securities and Exchange Commission, are available free of charge on our web site at www.inradoptics.com as soon as reasonably practicable after such reports are electronically filed with, or furnished to, the Securities and Exchange Commission ("SEC") (www.sec.gov). We will also provide electronic or paper copies of such reports free of charge, upon request made to our Corporate Secretary.

Item 1A. Risk Factors

The Company cautions investors that its performance (and, therefore, any forward looking statement) is subject to risks and uncertainties. The risks described below are not the only ones we face, but those we currently consider to be material. There may be other risks which we now consider immaterial, or which are unknown or unpredictable, with respect to our business, the markets in which we operate, our competition, the regulatory environment or otherwise that could have a material adverse effect on our business, financial condition and results of operation.

a) The Company has history of losses

While we had net income for the fiscal year December 31, 2018 of $0.7 million, we had net loss of $0.6 million, and $0.6 million, for 2017, and 2016 respectively. Our history of losses had; an adverse effect on our working capital, total assets and shareholders' equity. We are unable to predict, with certainty, whether we will continue to be profitable after 2018 and our inability to achieve and sustain profitability may negatively affect our business, financial condition, results of operations and cash flows.

b) The Company may need to raise additional capital to repay indebtedness and to fund our operations

We may need to raise additional financing to repay our outstanding indebtedness of approximately $2.8 million, as well as, to fund our current level of operations. Additional financing, which is not in place at this time, may be from the sale of equity or convertible or other debt securities in a public or private offering, or from an additional credit facility. We may be unable to raise sufficient additional capital on favorable terms, if at all, to supply the working capital needs of our existing operations or to expand our business.

c) The Company has exposure to Government Markets

Sales to customers in the defense industry represent a significant part of our business. These customers in turn generally contract with government agencies. Most governmental programs are subject to funding approval through congressional appropriations which can be modified or terminated without warning upon the determination of a legislative or administrative body. Appropriations can also be affected by legislation that addresses larger budgetary issues of the U.S. Government which could reduce available funding for most federal agencies, including the Department of Defense. It is difficult to assess how this may impact our defense industry customers and the business we do with them in the future. The loss or failure to obtain certain contracts or a loss of a major government customer could have a material adverse effect on our business, results of operations or financial condition.

d) The Company's revenues are concentrated in its largest customer accounts

For the year ended December 31, 2018, five customer accounts represented approximately 56% of total revenues and two of these customers each accounted for more than 10% of revenues. We are a supplier of custom manufactured components to OEM customers, and have a number of large customers in both the commercial and defense markets, but the relative size and identity of our largest customers change year to year. In the short term, the loss of any of these large customer accounts or a decline in demand in the markets which they represent could have a material adverse effect on our business, results of operations, and financial condition.

e) The Company depends on, but may not succeed in, developing and acquiring new products and processes

To meet the Company's strategic objectives, the Company needs to continue to develop new processes, improve existing processes, and manufacture and market new products. As a result, the Company may continue to make investments in process development and additions to its product portfolio. There can be no assurance that the Company will be able to develop and introduce new products or enhancements to its existing products and processes in a way that achieves market acceptance or other pertinent targeted results. The Company also cannot be sure that it will have the human or financial resources to pursue or succeed in such activities.

f) The Company's stock price may fluctuate widely

The Company's stock is thinly traded. Many factors, including, but not limited to, future announcements concerning the Company, its competitors or customers, as well as quarterly variations in operating results, announcements of technological innovations, seasonal or other variations in anticipated or actual results of operations, changes in earnings estimates by analysts or reports regarding the Company's industries in the financial press or investment advisory publications, could cause the market price of the Company's stock to fluctuate substantially. In addition, the Company's stock price may fluctuate widely for reasons which may be unrelated to operating results. These fluctuations, as well as general economic, political and market conditions such as recessions, military conflicts, or market or related declines, may materially affect the market price of the Company's common stock. In addition, any information concerning the Company, including projections of future operating results, appearing in investment advisory publications or on-line bulletin boards or otherwise emanating from a source other than the Company could in the future contribute to volatility in the market price of the Company's common stock.

g) The Company's business success depends on its ability to recruit and retain key personnel

The Company depends on the expertise, experience, and continuing services of certain scientists, engineers, production and management personnel, and on the Company's ability to recruit additional personnel. There is competition for the services of these personnel, and there is no assurance that the Company will be able to retain or attract the personnel necessary for its success, despite the Company's efforts to do so. The loss of the services of the Company's key personnel could have a material adverse effect on its business, results of operations, or financial condition.

h) Many of the Company's customers are in cyclical industries

The Company's business is significantly dependent on the demand its customers experience for their products. Many of their end users are in industries that historically have experienced a cyclical demand for their products. The industries include, but are not limited to, the defense electro-optics industry and the manufacturers of process control capital equipment for the semiconductor tools industry. As a result, demand for the Company's products are subject to cyclical fluctuations, and this could have a material adverse effect on our business, results of operations, or financial condition.

i) The Company's manufacturing processes require products from limited sources of supply

The Company utilizes many relatively uncommon materials and compounds to manufacture its products. Many of the materials have long lead times and the Company's suppliers could fail to deliver sufficient quantities of these necessary materials on a timely basis, or deliver contaminated or inferior quality materials, or markedly increase their prices. Any such actions could have an adverse effect on the Company's business, despite the Company's efforts to secure long term commitments from its suppliers. Adverse results might include reducing the Company's ability to meet commitments to its customers, compromising the Company's relationship with its customers, adversely affecting the Company's ability to meet expanding demand for its products, or causing the Company's financial results to deteriorate.

j) The Company faces competition

The Company encounters substantial competition from other companies positioned to serve the same market sectors. Some competitors may have financial, technical, capacity, marketing or other resources more extensive than ours, or may be able to respond more quickly than the Company to new or emerging technologies and other competitive pressures. Some competitors have manufacturing operations in low-cost labor regions such as the Far East and Eastern Europe and can offer products at lower prices than the Company. The Company may not be successful in winning orders against the Company's present or future competitors, and competition may have a material adverse effect on our business, results of operations or financial condition.

k) The Company may not be able to fully protect its intellectual property

The Company currently holds one patent for a material applicable to an important product, but does not in general rely on patents to protect its products or manufacturing processes. The Company generally relies on a combination of trade secrets and employee non-compete and nondisclosure agreements to protect its intellectual property rights. There can be no assurance that the steps the Company takes will be adequate to prevent misappropriation of the Company's technology. In addition, there can be no assurance that, in the future, third parties will not assert infringement claims against the Company. Asserting the Company's rights or defending against third-party claims could involve substantial expense, thus materially and adversely affecting the Company's business, results of operations or financial condition.

l) <u>Data Breach and breakdown of information and communication technologies</u>

In the course of our business, we collect and store sensitive data, including intellectual property. We could be subject to service outages or breaches of security systems which may result in disruption, unauthorized access, misappropriation, or corruption of this information. Security breaches of our network or data, including physical or electronic break-ins, vendor service outages, computer viruses, attacks by hackers or similar breaches can create system disruptions, shutdowns, or unauthorized disclosure of confidential information. Although we have not experienced an incident, if we are unable to prevent such security or privacy breaches, our operations would be disrupted or we could suffer, financial loss, property damage, reputational damage, or regulatory penalties because of lost or misappropriated information.

Item 1B. Unresolved Staff Comments

None

Item 2. Properties

Administrative, engineering and manufacturing operations are housed in a 41,935 square foot building located in Northvale, New Jersey. The lease for the Northvale facility was renewed for a term of two years from June 1, 2015 to May 31, 2017 along with an option to renew the lease for two additional one year terms running through May 31, 2019, at substantially the same terms. The Company has exercised its option to renew the Northvale lease for an additional one year term running through May 31, 2018. The Company intends to have a new lease agreement for the Northvale facility prior to May, 31, 2019.We believe that our existing facility is adequate to meet current and future projected production needs.

Item 3. Legal Proceedings

We are not party to any legal proceedings as of the date hereof.

Item 4. Mine Safety Disclosures

Not Applicable

PART II

Item 5. Market for Registrant's Common Equity and Related Stockholder Matters

a) Market Information

The Company's Common Stock, with a par value of $0.01 per share, is traded on the OTC Pink Sheets under the symbol INRD.

The following table sets forth the range of high and low closing prices for the Company's Common Stock in each fiscal quarter from the quarter ended March 31, 2017 through the quarter ended December 31, 2018, as reported by the OTC Pink Sheets. Such over-the-counter quotations reflect inter-dealer prices, without retail mark-up, mark-down or commission and may not necessarily represent actual transactions.

	Price High	Low
Quarter ended December 31, 2018	$1.34	$.70
Quarter ended September 30, 2018	1.04	.85
Quarter ended June 30, 2018	1.10	.85
Quarter ended March 31, 2018	1.34	.70
Quarter ended December 31, 2017	1.40	1.05
Quarter ended September 30, 2017	1.45	.61
Quarter ended June 30, 2017	.90	.53
Quarter ended March 31, 2017	.70	.51

As of March 22, 2019 the Company's closing stock price was $1.40 per share.

b) Shareholders

As of March 20, 2019, there were approximately 119 shareholders of record of our Common Stock based upon the Shareholders' Listing provided by the Company's Transfer Agent. As of the same date, the Company estimates that there are an additional 240 beneficial shareholders.

c) Dividends

The Company has not historically paid cash dividends. Payment of cash dividends is at the discretion of the Company's Board of Directors and depends, among other factors, upon the earnings, capital requirements, operations and financial condition of the Company. The Company does not anticipate paying cash dividends in the foreseeable future.

d) Recent Sales of Unregistered Securities

There have been no sales of unregistered securities during the past year.

Item 6. Selected Financial Data

The following data is qualified in its entirety by the financial statements presented elsewhere in this Annual Report on Form 10-K.

	As of December 31, or For the Year Ended December 31,				
	2018	2017	2016	2015	2014
Revenues	$11,488,727	$9,859,201	$9,766,525	$10,492,229	$9,726,145
Net (loss) income	706,608	(682,531)	(605,085)	(478,935)	(2,514,851)
Earnings (loss) per share					
Basic (loss) earnings per share	0.05	(0.05)	(0.05)	(0.04)	(0.21)
Diluted (loss) earnings per share	0.05	(0.05)	(0.05)	(0.04)	(0.21)
Weighted average shares					
Basic	13,561,207	13,357,622	12,926,471	12,570,867	12,221,734

Diluted	13,930,708	13,357,622	12,926,471	12,570,867	12,221,734
Total assets	6,932,425	6,542,505	6,734,632	7,074,989	7,396,415
Long-term obligations	2,744,781	2,757,738	2,770,722	2,878,906	3,048,747
Shareholders' equity	2,566,742	1,685,447	2,182,098	2,622,028	2,995,647

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operation

The following discussion and analysis should be read in conjunction with the Company's consolidated financial statements and the notes thereto presented elsewhere herein. The discussion of results should not be construed to imply any conclusion that such results will necessarily continue in the future.

Critical Accounting Policies

The Company's significant accounting policies are described in Note 1 of the Consolidated Financial Statements that were prepared in accordance with accounting principles generally accepted in the United States of America. In preparing the Company's financial statements, the Company made estimates and judgments that affect the results of its operations and the value of assets and liabilities the Company reports. The Company's actual results may differ from these estimates.

The Company believes that the following summarizes critical accounting policies that require significant judgments and estimates in the preparation of the Company's consolidated financial statements.

Revenue Recognition

The Company adopted the provisions of ASU 2014-09 on January 1, 2018, using the modified retrospective approach. Revenue from the Company's sales continue to generally be recognized either when products are shipped (i.e. point in time) or under certain long-term government contracts, as the Company transfers control of the product or service to its customers (i.e. over time), which approximates the previously used percentage-of-completion method of accounting. As such, the adoption of ASU 2014-09 had no material impact to the Company's financial position or results of operations.

Inventory

Inventories are stated at the lower of cost (first-in, first-out method) or net realizable value. Cost of manufactured goods includes material, labor and overhead.

The Company records a reserve for slow moving inventory as a charge against earnings for all products identified as surplus, slow moving or discontinued. Excess work-in-process costs are charged against earnings whenever estimated costs-of-completion exceed unbilled revenues.

Stock-based compensation

Stock based compensation expense is estimated at the grant date based on the fair value of the award. The Company estimates the fair value of stock options granted using the Black-Scholes option pricing model. The fair value of restricted stock units granted is estimated based on the closing market price of the Company's common stock on the date of the grant. The fair value of these awards, adjusted for estimated forfeitures, is amortized over the requisite service period of the award, which is generally the vesting period.

Income Taxes

Deferred income taxes are provided on the asset and liability method whereby deferred tax assets are recognized for deductible temporary differences and operating loss and tax credit carry forwards and deferred tax liabilities are recognized for taxable temporary differences. Temporary differences are the differences between the amounts of assets and liabilities recorded for income tax and financial reporting purposes. Deferred tax assets are reduced by a valuation allowance when, in the opinion of management, it is more likely than not that some portion or all of the deferred tax assets will not be realized. Deferred tax assets and liabilities are adjusted for the effects of changes in tax laws and rates on the date of enactment.

The Company recognizes the financial statement benefit of an uncertain tax position only after determining that the relevant tax authority would more likely than not sustain the position. For tax positions meeting the more likely than not threshold, the amount recognized in the financial statements is the largest benefit that has a greater than 50 percent likelihood of being realized upon ultimate settlement with the relevant tax authority.

The Company classifies interest and penalties related to income taxes as income tax expense in its Consolidated Financial Statements.

Results of Operations

The following table sets forth, for the past two years, the percentage relationship of statement of operations categories to total revenues.

	Years ended December 31,			
	2018		2017	
Revenues:				
Product sales	100.0	%	100.0	%
Costs and expenses:				
Cost of goods sold	73.0	%	80.5	%
Gross profit margin	27.0	%	19.5	%
Selling, general and administrative expenses	19.4	%	24.5	%
Operating (loss) income	7.5	%	(5.0	)%
Net (loss) income	6.1	%	(6.9	)%

Revenues

Sales were $11,489,000 in 2018, an increase of 16.5%, or $1,630,000 compared to $9,859,000 in 2017.

Sales to the defense and aerospace market decreased 17.6% to $2,585,000 from $3,138,000 in 2017 representing 22.5% and 31.8% of total sales, respectively. This primarily reflects a decrease in sales to a number of existing defense customers partially offset by sales increases to two large defense customers.

Sales in the process control and metrology market increased to $5,891,000 in 2018 from $4,244,000 in 2017, up $1,637,000 or 38.5%. These sales represented 51.3% and 43.0%, of total sales, respectively. The increase in 2018 is mainly the result of higher demand from one OEM customer in the semi-conductor business partially offset by a decrease in sales to other customers in this market.

The Company serves as an OEM supplier of standard and custom optical components and laser accessories within the non-military laser industry. Sales to this and related markets were $1,550,000 in 2018 and $1,030,000 in 2017. Overall, sales of laser devices and related products represented 13.5% of total sales in 2018, up $411,000 or 36.1%. The increase in 2018 is mainly the result of higher demand from customers who manufactures laser components and sub-systems.

Sales to customers within the Scientific / R&D market increased in 2018 to $1,463,000 from $1,447,000 in 2017, up 1.1%, mainly due to an increase in orders from one national laboratory customer and research contract. As a percentage of total sales, this market represented 12.7% and 14.7% of total sales in 2018 and 2017, respectively.

Bookings

The Company booked new orders totaling approximately $11.2 million in 2018, an increase of $1.1 million or 10.9% from $10.1 million in 2017, as a result of an increase in orders for the Company’s crystal and devices and metal optics product lines.

The Company’s backlog as of December 31, 2018 was $6.4 million compared to $6.5 million as of December 31, 2017.

Cost of Goods Sold and Gross Profit Margin

Cost of goods sold as a percentage of sales decreased to 73.0% in 2018 compared to 80.5% for the year ended December 31, 2017down by 7.5%. In 2018, cost of goods sold was $8,387,000 compared to $7,937,000 in 2017 an increase of approximately $451,000 or 5.7%.

The increase in cost of goods sold in 2018 was mainly attributable to an increase in cost related to sales as sales increased and sales mix changed.

Selling, General and Administrative Expenses

Selling, general and administrative expenses ("SG&A") were $2,234,000 in 2018 compared to $2,417,000 in 2017, a decrease of $183,000 or 7.6%. The decrease partially reflects reductions in SG&A salaries, wages and associated benefits of approximately $73,000 due to the timing of personnel changes in 2018 compared to 2017 offset by an increase in sales and marketing expenses primarily due to increased activity in trade shows in 2018 compared to 2017.

As a percentage of sales, SG&A was 19.4% of sales in 2018 compared to 24.5% in 2017, primarily due to higher sales in 2018.

Operating Income (Loss)

The Company had an operating income of $867,000 in 2018, compared to an operating loss of $494,000 in 2017.

Other Income and Expenses

Net interest expense was $159,000 in 2018 a slight decreased from $161,000 in 2017.

In addition, the Company recorded a loss of $2,000 in 2018 compare to $52,000 in 2017 as part of transactions which included the exchange of precious metals.

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Income Taxes

In 2018 and 2017, the Company did not record a current provision for either state tax or federal alternative minimum tax due to carry forward losses incurred in prior years for both income tax and financial reporting purposes.

Net Income (Loss)

As a result of the foregoing, in 2018, the Company recorded a net income of $707,000 compared to a net loss of $683,000 in 2017. mainly due to the increase in sales described above.

Liquidity and Capital Resources

The Company's primary source of liquidity is cash and cash equivalents and on-going collection of our accounts receivable. The Company's major uses of cash in the past three years have been for operating expenses, capital expenditures and for repayment and servicing of outstanding debt and accrued interest.

As of December 31, 2018, and December 31, 2017, cash and cash equivalents were $1,186,000 and $800,000, respectively.

On April 12, 2018 the maturity dates of a $1,500,000 Subordinated Convertible Promissory Note to Clarex Limited ("Clarex") and a $1,000,000 Subordinated Convertible Promissory Note to an affiliate of Clarex were each extended to April 1, 2021from April 1, 2019. The notes bear interest at 6%. Interest accrues yearly and is payable on maturity. Unpaid interest, along with principal, may be converted into securities of the Company as follows: the notes are convertible in the aggregate into 1,500,000 units and 1,000,000 units, respectively, with each unit consisting of one share of common stock and one warrant. Each warrant allows the holder to acquire 0.75 shares of common stock at a price of $1.35 per share. As part of the agreement to extend the maturity date of the notes, the expiration dates of the warrants were extended from April 1, 2022 to April 1, 2024.

The Company paid $187,500 and $112,500 for interest on the subordinated convertible promissory notes in 2018 and 2017, respectively. Accrued interest of $75,000 and $112,500 is included in Accounts payable and accrued liabilities as of December 31, 2018 and 2017, respectively.

In total, the Company paid $198,000 of interest in 2018 and $125,000 of interest in 2017 on its outstanding debt, including interest paid on the subordinated convertible promissory notes.

In 2018, the Company had capital expenditures of $154,000. In 2017, capital expenditures were $119,000

The Company had a net increase in cash of $386,000 for the twelve months ended December 31, 2018 compared to a net decrease in cash of $173,000 for the twelve months ended December 31, 2017.

Cash flows pertaining to our source and use of cash are presented below (in thousands):

	Years ended December 31,	
	2018	2017
Net cash provided by (used in) operations	$ 552	$ 30
Capital expenditures & purchase of precious metals	(155)	(121)
Proceeds on sale or disposal of plant and equipment	—	24
Purchase of patent license	—	—
Principal payments on debt obligations	(12)	(108)

Overview of Financial Condition

The Company recorded a net income of $707,000 for the twelve months ended December 31, 2018 compared to a net loss of $683,000 in the same period last year. The Company's cash and cash equivalents increased to $1,186,000 at December 31, 2018 compared to $800,000 at December 31, 2017.

The Company's management expects that future cash flows from operations and its existing cash reserves will provide adequate liquidity for the Company's operations and working capital requirements through at least March 31, 2020.

Contractual Obligations

The following table describes our contractual obligations as of December 31, 2018 (in thousands).

Contractual Obligations	Total	Less than 1 Year	1-3 Years	4-5 Years	Greater Than 5 Years
Convertible notes payable, including interest	$2,988	$ 150	$ 300	$2,538	$ —
Notes payable-other, including interest	340	23	69	46	202
Total contractual cash obligations	$3,328	$ 173	$ 369	$2,584	$ 202

Off-Balance Sheet Arrangements

The Company did not have any off-balance sheet arrangements at December 31, 2018 and 2017.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

N/A

Item 8. Financial Statements and Supplementary Data

The financial statements and supplementary financial information required to be filed under this Item are presented commencing on page 21 of the Annual Report on Form 10-K, and are incorporated herein by reference.

Item 9. Changes In and Disagreements with Accountants on Accounting and Financial Disclosure

Item 9A. Controls and Procedures

None

a) Evaluation of Disclosure Controls and Procedures

The Company’s management, including the Chief Executive Officer and the Chief Financial Officer, has evaluated the effectiveness of the design and operation of the Company’s disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) as of the end of the period covered by this Annual Report on Form 10-K. Based upon that evaluation, the Company’s Chief Executive Officer and Chief Financial Officer have concluded that the disclosure controls and procedures as of December 31, 2018 are effective to ensure that information required to be disclosed in the reports the Company files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms and that such information is accumulated and communicated to the Company's management, including the Chief Executive Officer and the Chief Financial Officer, to allow timely decisions regarding disclosure.

b) Management’s Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining an adequate system of internal control over financial reporting. Our internal control over financial reporting includes those policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of our financial statements in accordance with generally accepted accounting principles in the United States, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Due to its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. All internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation. Because of the inherent limitations of internal control, there is a risk that material misstatements may not be prevented or detected on a timely basis by internal control over financial reporting. However, these inherent limitations are known features of the financial reporting process. Therefore, it is possible to design into the process safeguards to reduce, though not eliminate, this risk.

Management assessed the effectiveness of the Company’s system of internal control over financial reporting as of December 31, 2018. In making this assessment, management used the framework in Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”).

Based on our assessment and the criteria set forth by COSO, management has concluded that the Company maintained effective internal control over financial reporting as of December 31, 2018.

c) Changes in Internal Control over Financial Reporting

There have been no changes in the Company's internal control over financial reporting identified in connection with the evaluation that occurred during the Company's last fiscal quarter that have materially affected, or that are reasonably likely to materially affect, the Company's internal controls over financial reporting.

Item 9B Other Information

None

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required under this item is incorporated by reference to the Company's Proxy Statement for the 2019 Annual Meeting of Stockholders which we anticipate will be filed within 120 days after our fiscal year ended December 31, 2018.

Item 11. Executive Compensation

The information required under this item is incorporated by reference to the Company's Proxy Statement for the 2019 Annual Meeting of Stockholders which we anticipate will be filed within 120 days after our fiscal year ended December 31, 2018.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required under this item is incorporated by reference to the Company's Proxy Statement for the 2019 Annual Meeting of Stockholders which we anticipate will be filed within 120 days after our fiscal year ended December 31, 2018.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required under this item is incorporated by reference to the Company's Proxy Statement for the 2019 Annual Meeting of Stockholders which we anticipate will be filed within 120 days after our fiscal year ended December 31, 2018.

Item 14. Principal Accountant Fees and Services

The information required under this item is incorporated by reference to the Company's Proxy Statement for the 2019 Annual Meeting of Stockholders which we anticipate will be filed within 120 days after our fiscal year ended December 31, 2018.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) (1) Financial Statements.

Reference is made to the Index to Financial Statements and Financial Statement Schedule commencing on Page 20

(a) (2) Financial Statement Schedule.

Reference is made to the Index to Financial Statements and Financial Statement Schedule on Page 20. All other schedules have been omitted because the required information is not present or is not present in amounts sufficient to require submission of the schedule, or because the information required is included in the Financial Statements or Notes thereto.

(a) (3) Exhibits.

Exhibit No.	**Description of Exhibit**
3.1	Restated Certificate of Incorporation of Photonics Products Group, Inc. (incorporated by reference to Exhibit 3.1 to the Company's Registration Statement on Form S-1 filed with the Securities and Exchange Commission on August 25, 2004)
3.2	By-Laws of Photonic Products Group, Inc. (incorporated by reference to Exhibit 3.2 to the Company's Registration Statement on Form S-1 filed with the Securities and Exchange Commission on August 25, 2004)
3.3	Certificate of Amendment to Restated Certificate of Incorporation of Photonics Products Group, Inc., dated June 2, 2010 (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on June 7, 2010).
3.4	Certificate of Amendment to Restated Certificate of Incorporation of Photonics Products Group, Inc., dated January 23, 2012 (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on January 23, 2012).
4.1	Specimen Common Stock Certificate (incorporated by reference to Exhibit 4.1 to the Company's Registration Statement on Form S-1 filed with the Securities and Exchange Commission on August 25, 2004)
4.2	Subordinated Convertible Promissory Note dated July 25, 2014 held by Clarex, Ltd. (incorporated by reference to Exhibit 4.4 to the Company's Annual Report on Form 10-K filed with the Securities and Exchange Commission on April 13, 2015)
4.3	Subordinated Convertible Promissory Note dated July 25, 2014 held by Welland, Ltd. (incorporated by reference to Exhibit 4.5 to the Company's Annual Report on Form 10-K filed with the Securities and Exchange Commission on April 13, 2015)
10.1	2000 Equity Compensation Program (incorporated by reference to Exhibit 10.1 to the Company's Registration Statement on Form S-1 filed with the Securities and Exchange Commission on August 25, 2004)
10.2	2010 Equity Compensation Program (incorporated by reference to Exhibit B to the Company's Proxy Statement for the 2010 Meeting of Stockholders filed with the Securities and Exchange Commission on April 30, 2010)
10.3	Proposal to Renew and Extend Lease dated June 1, 2015 between Inrad Optics, Inc. ("Tenant") and S & R Costa Realty, LLP ("Landlord") (incorporated by reference to Exhibit 10.3 to the Company's Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 30, 2016)
14.1	

	Code of Ethics (incorporated by reference to Exhibit 14.1 to the Company's Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 31, 2006)
21.1	List of Subsidiaries (incorporated by reference to Exhibit 21.1 to the Company's Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 31, 2006)
23.1*	Consent of PKF O'Connor Davies, LLP Independent Registered Public Accounting Firm
31.1*	Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2*	Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1**	Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
32.2**	Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
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

* Filed herewith ** Furnished herewith

Item 16. Form 10-K Summary.

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) 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.

INRAD OPTICS, INC.

By: /s/ Amy Eskilson
Amy Eskilson
Chief Executive Officer

Dated: April 1, 2019

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	**Title**	**Date**
/s/ Jan M. Winston Jan M. Winston	Chairman of the Board of Directors	April 1, 2019
/s/ Dennis G. Romano. Dennis G. Romano	Director	April 1, 2019
/s/ Luke P. LaValle, Jr. Luke P. LaValle, Jr.	Director	April 1, 2019
/s/ N.E. Rick Strandlund N.E. Rick Strandlund	Director	April 1, 2019
/s/ William J. Foote William J. Foote	Director	April 1 ,2019
/s/ Amy Eskilson Amy Eskilson	President, Chief Executive Officer and Director (Principal Executive Officer)	April 1, 2019
/s/ Elias T. Kabous Elias T. Kabous	Chief Financial Officer, Secretary and Treasurer (Principal Financial and Accounting Officer)	April 1, 2019

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INRAD OPTICS, INC. AND SUBSIDIARIES

INDEX TO THE CONSOLIDATED FINANCIAL STATEMENTS

AS OF AND FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017

CONTENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and Board of Directors

Inrad Optics, Inc. and Subsidiaries

Northvale, New Jersey

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Inrad Optics, Inc. and Subsidiaries (the “Company”) as of December 31, 2018 and 2017, and the related consolidated statements of operations, shareholders’ equity and cash flows for each of the two years in the period ended December 31, 2018, and the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2018, in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audit, we are required to obtain an understanding of internal control over financial reporting, but not for the purpose of expressing an opinion on the effectiveness of the Company’s internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ PKF O'Connor Davies, LLP
We have served as the Company's auditor since 2017.

New York, New York
April 1, 2019

INRAD OPTICS, INC. AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

	December 31, 2018	2017
Assets		
Current Assets:		
Cash and cash equivalents	$1,185,553	$799,953
Accounts receivable (net of allowance for doubtful accounts of $15,000 in 2018 and 2017)	1,296,487	1,034,398
Inventories, net	3,015,883	3,196,001
Other current assets	180,893	127,900
Total Current Assets	5,678,816	5,158,252
Plant and Equipment:		
Plant and equipment at cost	14,696,966	14,726,638
Less: Accumulated depreciation and amortization	(14,069,880)	(14,013,850)
Total plant and equipment	627,086	712,788
Precious Metals	562,347	563,760
Intangible Assets, net of accumulated amortization	32,156	70,219
Other Assets	32,020	37,486
Total Assets	$6,932,425	$6,542,505
Liabilities and Shareholders' Equity		
Current Liabilities:		
Current portion of long-term notes payable -other	$12,960	$12,486
Accounts payable and accrued liabilities	835,015	1,217,157
Customer advances	772,927	869,677
Total Current Liabilities	1,620,902	2,099,320
Related Party Convertible Notes Payable	2,500,000	2,500,000
Long-Term Notes Payable -other, net of current portion	244,781	257,738
Total Liabilities	4,365,683	4,857,058
Commitments		
Shareholders' Equity:		
Common stock: $.01 par value; 60,000,000 authorized shares 13,636,988 issued at December 31, 2018 and 13,521,200 issued at December 31, 2017	136,371	135,213
Capital in excess of par value	19,055,615	18,882,086
Accumulated deficit	(16,610,294)	(17,316,902)
	2,581,692	1,700,397

Less - Common stock in treasury, at cost (4,600 shares)	(14,950)	(14,950)
Total Shareholders' Equity	2,566,742	1,685,447
Total Liabilities and Shareholders' Equity	$6,932,425	$6,542,505

See notes to consolidated financial statements

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INRAD OPTICS, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF OPERATIONS

	Years Ended December 31,	
	2018	2017
Revenues		
Net sales	$11,488,727	$9,859,201
Cost and expenses		
Cost of goods sold	8,387,527	7,936,534
Selling, general and administrative expense	2,233,760	2,416,794
	10,621,287	10,353,328
Operating income (loss)	867,440	(494,127)
Other income (expense), net		
Interest expense, net	(158,544)	(160,643)
(Loss) gain on exchange of precious metals	(2,288)	(51,761)
Gain on sale or disposal of plant and equipment	—	24,000
	(160,832)	(188,404)
Income (Loss) before income taxes	706,608	(682,531)
Income tax provision	—	—
Net income (loss)	$706,608	$(682,531)
Net income (loss) per share – basic	$0.05	$(0.05)
Net income (loss) per share – diluted	$0.05	$(0.05)
Weighted average shares outstanding – basic	13,561,207	13,357,622
Weighted average shares outstanding – diluted	13,930,708	13,357,622

See notes to consolidated financial statements

INRAD OPTICS, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY

	Common Stock Shares	Amount	Capital in excess of par value	Accumulated Deficit	Treasury Stock	Total Shareholders' Equity
Balance, January 1, 2017	13,156,544	$131,567	$18,699,852	$(16,634,371)	$(14,950)	$2,182,098
401K contribution	356,323	3,563	120,726	—	—	124,289
Common stock issued on exercise of options	8,333	83	1,980	—	—	2,063
Stock-based compensation expense	—	—	59,528	—	—	59,528
Net loss for the year	—	—	—	(682,531)	—	(682,531)
Balance, December 31, 2017	13,521,200	$135,213	$18,882,086	$(17,316,902)	$(14,950)	$1,685,447
401K contribution	111,288	1,113	91,668	—	—	92,781
Common stock issued on exercise of options	4,500	45	1,343	—	—	1,388
Stock-based compensation expense	—	—	80,518	—	—	80,518
Net income for the year	—	—	—	706,608	—	706,608
Balance, December 31, 2018	13,636,988	$136,371	$19,055,615	$(16,610,294)	$(14,950)	$2,566,742

See notes to consolidated financial statements

INRAD OPTICS, INC AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 31,	
	2018	2017
Cash flows from operating activities:		
Net income (loss)	$ 706,608	$ (682,531)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:		
Depreciation and amortization	278,173	365,048
401K common stock contribution	92,780	124,289
(Gain) on sale or disposal of plant and equipment	—	(24,000)
Loss (gain) on exchange of precious metals	2,288	51,761
Stock-based compensation expense	80,518	59,528
Change in inventory reserve	39,003	198,528
Changes in operating assets and liabilities:		
Accounts receivable	(262,088)	170,510
Inventories	141,115	(654,665)
Other current assets	(52,993)	16,070
Other assets	5,466	(7,148)
Accounts payable and accrued liabilities	(419,643)	104,986
Customer advances	(96,750)	270,337
Accrued interest on related party note payable	37,500	37,500
Total adjustments and changes	(154,631)	712,744
Net cash provided by operating activities	551,977	30,213
Cash flows from investing activities:		
Purchase of plant and equipment	(154,407)	(119,483)
Purchase of precious metals	(875)	(1,874)
Proceeds from sale of plant and equipment		24,000
Net cash used in investing activities	(155,282)	(97,357)
Cash flows from financing activities:		
Proceeds from issuance of common stock	1,388	2,063
Principal payments of notes payable-other	(12,483)	(108,299)
Net cash (used in) financing activities	(11,095)	(106,236)
Net increase (decrease) in cash and cash equivalents	385,600	(173,380)
Cash and cash equivalents at beginning of the year	799,953	973,333
Cash and cash equivalents at end of the year	$ 1,185,553	$ 799,953
Supplemental Disclosure of Cash Flow Information:		
Interest paid	$ 197,581	$ 124,987

Income taxes paid	$ —	$ 1,050
Non Cash Investing Activities:		
Exchange of Precious Metals	$ 2,000	$ 48,757

See notes to consolidated financial statements

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INRAD OPTICS, INC. AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

TWO YEARS ENDED DECEMBER 31, 2018

1. Nature of Business and Operations and Summary of Significant Accounting Policies and Estimates

a. Nature of Business and Operations

Inrad Optics, Inc. and Subsidiaries (the “Company”), was incorporated in the state of New Jersey and is a manufacturer of crystals, crystal devices, electro-optic and optical components, and sophisticated laser devices and instruments. The Company has administrative offices and manufacturing operations in Northvale, New Jersey.

The Company’s principal customers include commercial instrumentation companies and OEM laser systems manufacturers, research laboratories, government agencies, and defense contractors. The Company’s products are sold domestically using its own sales staff, and in major overseas markets, principally Europe, Israel, Japan, and Asia, using independent sales agents.

b. Liquidity

As of December 31, 2018, the Company had working capital of $4,057,914 and cash and cash equivalents of $1,185,553. Management believes based on the Company’s operations and its existing working capital resources together with existing cash flows, the Company has sufficient cash flows to fund operations through at least March 31, 2020.

c. Principles of consolidation

The accompanying consolidated financial statements include the accounts of the Company and its wholly-owned subsidiaries. Upon consolidation, all inter-company accounts and transactions are eliminated.

d. Use of estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America (“U.S. GAAP”) requires management to make certain estimates and assumptions. These estimates and assumptions affect the reported amounts in the consolidated financial statements and accompanying notes. These estimates include, but are not limited to, determining our allowance for doubtful accounts, our allowance for inventory obsolescence, the fair value and depreciable lives of long-lived tangible and intangible assets, and deferred taxes and the associated valuation allowance. Actual results could differ from these estimates.

e. Cash and cash equivalents

The Company considers cash-on-hand and highly liquid investments with original maturity dates of three months or less at the date of purchase to be cash and cash equivalents.

f. Accounts receivable

Accounts receivable are carried at net realizable value, net of write-offs and allowances. The Company establishes an allowance for doubtful accounts based on estimates as to the collectability of accounts receivable. Management specifically analyzes past-due accounts receivable balances and, additionally, considers bad debt history, customer credit-worthiness, current economic trends and changes in customer payment terms when evaluating the adequacy of the allowance for doubtful accounts. Uncollectible accounts receivable are written-off when it is determined that the balance will not be collected.

g. Inventories

Inventories are stated at the lower of cost (first-in, first-out method) or net-realizable value. Cost of manufactured goods includes material, labor and overhead.

The Company records a reserve for slow moving inventory as a charge against earnings for all products identified as surplus, slow moving or discontinued. Excess work-in-process costs are charged against earnings whenever estimated costs-of-completion exceed unbilled revenues.

h. Plant and Equipment

Plant and equipment are depreciated using the straight-line method over the estimated useful lives of the related assets which range between five and seven years. Amortization of leasehold improvements is computed using the straight-line method over the lesser of 10 years or the remaining term of the lease including optional renewal periods, as appropriate, when failure to renew the lease imposes an economic penalty on the Company in such an amount that renewal appears to be probable. In determining the amount of the economic penalty, management considers such factors as (i) the costs associated with the physical relocation of the offices, manufacturing facility and equipment, (ii) the economic risks associated with business interruption and potential customer loss during relocation and transition to new premises, (iii) the significant costs of leasehold improvements required at any new location to custom fit our specific manufacturing requirements, and (iv) the economic loss associated with abandonment of existing leasehold improvements or other assets whose value would be impaired by vacating the facility.

Maintenance and repairs of property and equipment are charged to operations and major improvements are capitalized. Upon retirement, sale or other disposition of property and equipment, the cost and accumulated depreciation are eliminated from the accounts and a gain or loss is recorded.

i. Income taxes

Deferred taxes are provided on the asset and liability method whereby deferred tax assets are recognized for deductible temporary differences and operating loss and tax credit carry forwards and deferred tax liabilities are recognized for taxable temporary differences. Temporary differences are the differences between the amounts of assets and liabilities recorded for income tax and financial reporting purposes. Deferred tax assets are reduced by a valuation allowance when, in the opinion of management, it is more likely than not that some portion of the deferred tax assets will not be realized. Deferred tax assets and liabilities are adjusted for the effects of changes in tax laws and rates on the date of enactment.

On December 22, 2017, the Tax Cuts and Jobs Act of 2017 (the “Tax Act”) was signed into law making significant changes to the Internal Revenue Code. Changes include, but are not limited to, a federal corporate tax rate decrease from 35% to 21% for tax years beginning after December 31, 2017, the transition of U.S international taxation from a worldwide tax system to a territorial system, and a one-time transition tax on the mandatory deemed repatriation of foreign earnings. We have estimated our provision for income taxes in accordance with the Tax Act and guidance, and the company has maintained the full valuation allowance on its deferred tax asset.

The Company recognizes the financial statement benefit of an uncertain tax position only after determining that the relevant tax authority would more likely than not sustain the position. For tax positions meeting the more likely than not threshold, the amount recognized in the financial statements is the largest benefit that has a greater than 50%

likelihood of being realized upon ultimate settlement with the relevant tax authority.

The Company classifies interest and penalties related to income taxes as income tax expense in its Consolidated Financial Statements.

The Company had no unrecognized tax benefits or liabilities, and no adjustment to its financial position, results of operations, or cash flows relating to uncertain tax positions taken on all open tax years. The Company is no longer subject to federal income tax examinations by tax authorities for the years before 2015 and state or local income tax examinations by tax authorities for the years before 2015.

j. Impairment of long-lived assets

Long-lived assets, such as plant and equipment and purchased intangibles with finite lives, which are subject to amortization, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to estimated undiscounted future cash flows expected to be generated by the asset. If the carrying amount of an asset exceeds its estimated future cash flows, an impairment charge is recognized by the amount by which the carrying amount of the asset exceeds the fair value of the assets. Long-lived assets held for sale would be separately presented in the balance sheet and reported at the lower of the carrying amount or fair value less costs to sell and would no longer be depreciated.

k. Stock-based compensation

Stock based compensation expense is estimated at the grant date based on the fair value of the award. The Company estimates the fair value of stock options granted using the Black-Scholes option pricing model. The fair value of restricted stock units granted is estimated based on the closing market price of the Company's common stock on the date of the grant. The fair value of these awards, adjusted for estimated forfeitures, is amortized over the requisite service period of the award, which is generally the vesting period.

l. Revenue recognition

The Company adopted the provisions of ASU 2014-09 on January 1, 2018, using the modified retrospective approach. Revenue from the Company's sales continue to generally be recognized either when products are shipped (i.e. point in time) or under certain long-term government contracts, as the Company transfers control of the product or service to its customers (i.e. over time), Internal research and development costs see note 2.

m. Internal research and development costs

Internal research and development costs are charged to expense as incurred.

n. Precious metals

Precious metals are stated at cost and consist of various fixtures used in the high temperature crystal growth manufacturing process. From time to time the quoted market values of these precious metals may be below cost. Management evaluates these market adjustments on a recurring basis and if it is determined that they are other than temporary the carrying value would be adjusted.

o. Advertising costs

Advertising costs included in selling, general and administrative expenses were $25,000 and $11,000 for the years ended December 31, 2018 and 2017, respectively. Advertising costs are charged to expense when the related services are incurred or related events take place.

p. Concentrations and credit risk

The concentration of credit risk in the Company's accounts receivable is mitigated by the Company's credit evaluation process, familiarity with its small base of recurring customers and reasonably short collection terms and the geographical dispersion of revenue. The Company generally does not require collateral but, in some cases, the Company negotiates cash advances prior to the undertaking of the work. These cash advances are recorded as current liabilities on the balance sheet until corresponding revenues are realized.

The Company utilizes many relatively uncommon materials and compounds to manufacture its products and relies on outside vendors for certain manufacturing services. Therefore, any failure by its suppliers to deliver materials of an adequate quality and quantity could have an adverse effect on the Company's ability to meet the commitments of its customers.

For the year ended December 31, 2018, the Company had three customers who had sales representing 22.3%, 12.9% and 9.4% of total revenues, respectively. In 2017, the Company had the same three customers had sales representing 14.4%, 14.8%, and 5.6% of total revenues. Since the Company is a supplier of custom manufactured components to OEM customers, the relative size and identity of the largest customer accounts changes somewhat from year to year. In the short term, the loss of any one of these large customer accounts could have a material adverse effect on business, results of operations, and financial condition.

q. Fair value measurements

The Company follows U.S. GAAP accounting guidance which establishes a framework for measuring fair value and expanded related disclosures. The framework requires fair value to be determined based on the exchange price that would be received for an asset, or paid to transfer a liability (an exit price), in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants.

The valuation techniques required are based upon observable and unobservable inputs. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect the Company's market assumptions. The accounting guidance requires the following fair value hierarchy:

- Level 1 - Quoted prices (unadjusted) for identical assets and liabilities in active markets that the Company has the ability to access at the measurement date.

- Level 2 - Quoted prices for similar assets and liabilities in active markets; quoted prices for identical or similar assets and liabilities in markets that are not active; and inputs other than quoted prices that are observable for the asset or liability, including interest rates, yield curves and credit risks, or inputs that are derived principally from or corroborated by observable market data through correlation.

- Level 3 - Values determined by models, significant inputs to which are unobservable and are primarily based on internally derived assumptions regarding the timing and amount of expected cash flows.

Long-lived assets, including goodwill and other intangible assets, may be measured at fair value if such assets are held for sale or if there is a determination that the asset is impaired. Managements' determination of fair value, although highly subjective, is based on the best information available, including internal projections of future earnings and cash flows discounted at an appropriate interest rate, quoted market prices when available, market prices for similar assets, broker quotes and independent appraisals, as appropriate.

r. Recent Accounting Pronouncements

In May 2014, the FASB issued Accounting Standards Update ("ASU") 2014-09, "Revenue from Contracts with Customers (Topic 606)" ("ASU 2014-09"), which supersedes the revenue recognition requirements in ASC 605, "Revenue Recognition." ASU 2014-09 is based on the principle that revenue is recognized to depict the transfer of goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. It also requires additional disclosure about the nature, amount, timing, and uncertainty of revenue, cash flows arising from customer contracts, including significant judgments and changes in judgments, and assets recognized from costs incurred to obtain or fulfill a contract. ASU 2014-09 is effective for fiscal years beginning after December 15, 2017, including interim periods within that reporting period. The Company adopted the provisions of ASU 2014-09 on January 1, 2018, using the modified retrospective approach. Revenue from the Company's sales continue to generally be recognized either when products are shipped (i.e. point in time) or under certain long-term government contracts, as the Company transfers control of the product or service to its customers (i.e. over time), which approximates the previously used percentage-of-completion method of accounting. As such, the adoption of ASU 2014-09 had no material impact to the Company's financial position or results of operations; however, the Company has now presented the disclosures required by this new standard, refer to Note 2.

In January 2017, the FASB issued guidance which clarifies the definition of a business and provides revised criteria and a framework to determine whether an integrated set of assets and activities is a business. For public companies, the new guidance is effective for fiscal years beginning after December 15, 2017, including interim periods within those years. The Company adopted the new guidance on January 1, 2018 as required, with no impact on the Company's consolidated financial statements upon adoption.

In August 2016, the FASB issued ASU 2016-15, Statement of cash flows (Topic 230) which provides guidance on the classification of certain cash receipts and payments in the statement of cash flows intended to reduce diversity in practice. The guidance is effective for interim and annual periods beginning in 2018. Early adoption is permitted. The guidance is to be applied retrospectively to all periods presented but may be applied prospectively if retrospective application would be impracticable. The Company adopted the new guidance on January 1, 2018 as required. There are no significant impacts to the Company's consolidated financial statements from the adoption of the new guidance.

In June 2016, the FASB issued ASU No. 2016-13, "Financial Instruments - Credit Losses: Measurement of Credit Losses on Financial Instruments" ("ASU 2016-13" which amended guidance on the accounting for credit losses on financial instruments within its scope. The guidance introduces an expected loss model for estimating credit losses, replacing the incurred loss model. The new guidance also changes the impairment model for available-for-sale debt securities, requiring the use of an allowance to record estimated credit losses (and subsequent recoveries). The new guidance is effective for interim and annual periods beginning in 2020, with earlier application permitted in 2019. The Company is currently evaluating the impact of adoption on its consolidated financial statements.

In March 2016, the FASB issued ASU No. 2016-09, Compensation — Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting, which simplifies several aspects of the accounting for employee share-based payments, including income tax consequences, application of award forfeitures to expense, classification on the statement of cash flows, and classification of awards as either equity or liabilities. This guidance is effective for annual reporting periods beginning after December 15, 2016, and interim periods within those annual periods. The adoption of the guidance in ASU No. 2016-09 on January 1, 2017 did not have a material effect on the Company's financial statements and related footnote disclosures.

In February 2016, the FASB created Topic 842 and issued ASU 2016-02, Leases. The guidance in this update supersedes Topic 840, Leases. This ASU requires lessees to recognize a right-of-use assets and a lease liability, initially measured at the present value of the lease payments on the balance sheet. For public companies, the amendments will be effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. Earlier application is permitted. The Company will adopt ASU 2016-02 and we do not expect a material impact on the financial statements and disclosure.

In January 2016, the FASB issued ASU 2016-01, "Financial Instruments–Overall: Recognition and Measurement of Financial Assets and Financial Liabilities", which changes how entities measure certain equity investments and how entities present changes in the fair value of financial liabilities measured under the fair value option that are attributable to instrument-specific credit risk. The adoption of ASU 2016-01 did not have a material impact to the Company's financial position or results of operations. ASU 2016-01 is effective for annual reporting periods beginning after December 15, 2017, including interim periods within those fiscal years.

2. Revenue

The Company’s revenues are comprised of product sales as well as products and services provided under long-term government contracts with its customers. All revenue is recognized when the Company satisfies its performance obligation(s) under the contract (either implicit or explicit) by transferring the promised product or service to its customer either when (or as) its customer obtains control of the product or service. A performance obligation is a promise in a contract to transfer a distinct product or service to a customer. A contract’s transaction price is allocated to each distinct performance obligation. The majority of the Company’s contracts have a single performance obligation, as the promise to transfer products or services is not separately identifiable from other promises in the contract and, therefore, not distinct. For contracts with multiple performance obligations, the Company allocates the contract’s transaction price to each performance obligation using the Company’s best estimate of standalone selling price for each distinct product or service in the contract, which is generally based on an observable price.

Revenue is measured as the amount of consideration the Company expects to receive in exchange for transferring products or providing services. As such, revenue is recorded net of returns, allowances, customer discounts, and incentives. Sales, value added, and other taxes collected from customers and remitted to governmental authorities are accounted for on a net (excluded from revenues) basis. Shipping and handling costs are included in cost of goods sold.

The Company’s performance obligations under long-term government contracts are generally satisfied over time. Revenue from products or services transferred to customers over time accounted for approximately 5.0% and 2.1% of revenue for 2018 and 2017, respectively. Revenue under these long-term government contracts are generally recognized over time using an input measure based upon the proportion of actual costs incurred to estimated total project costs, which is a method used to best depict the Company’s performance to date under the terms of the contract.

Accounting for these long-term government contracts involves the use of various techniques to estimate total revenue and costs. The Company estimates profit on these long-term government contracts as the difference between total estimated revenue and expected costs to complete a contract and recognizes that profit over the life of the contract. Contract estimates are based on various assumptions to project the outcome of future events that may span several years. These assumptions include, among other things, labor productivity, costs and availability of materials, and timing of funding by the U.S. government. The nature of these long-term agreements may give rise to several types of variable consideration, such as claims, awards and incentive fees. Historically, these amounts of variable consideration are not considered significant. Additionally, contract estimates may include additional revenue for submitted contract modifications if there exists an enforceable right to the modification, the amount can be reasonably estimated and its realization is probable. These estimates are based on historical collection experience, anticipated performance, and the Company’s best judgement at the time. These amounts are generally included in the contract’s transaction price and are allocated over the remaining performance obligations. Changes in judgments on these above estimates could impact the timing and amount of revenue recognized with a resulting impact on the timing and amount of associated income. Under these long-term government contracts, the Company may receive payments from customers based upon contractual billing schedules; accounts receivable are recorded when the right to consideration becomes unconditional. In the event a contract loss becomes known, the entire amount of the estimated loss is recognized in the Consolidated Statements of Operations.

The majority of the Company's revenue is from products and services transferred to customers at a point in time and were approximately 95.0% and 97.9% of revenue for 2018 and 2017, respectively. The Company recognizes revenue at the point in time in which the customer obtains control of the product or service, which is generally when product title passes to the customer upon shipment. In limited cases, title does not transfer and revenue is not recognized until the customer has received the products at its physical location.

As part of the adoption of Accounting Standards Update ("ASU") 2014-09, "Revenue from Contracts with Customers (Topic 606)", the Company reviewed its sales by market area and reassigned certain customers within the existing markets. In addition, the Universities and National Lab market was renamed to Scientific/R&D. Sales by market area, as previously presented for 2017, were reclassified accordingly.

The following table summarizes the Company's sales by market area:

	December 31,	
	2018	2017
Aerospace & Defense	$2,584,785	$3,137,708
Process Control & Metrology	5,890,753	4,243,562
Laser Systems	1,550,180	1,030,534
Scientific / R&D	1,463,009	1,447,397
Total	$11,488,727	$9,859,201

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Net sales by timing to transfers of goods and services is as follows:

	December 31, 2018	2017
Transfer at point in time	$10,914,423	$9,656,598
Transfer over time	574,304	202,603
Total net sales	$11,488,727	$9,859,201

3. <u>Inventories, net</u>

Inventories are comprised of the following and are shown net of inventory reserves of approximately $2,486,000 for 2018 and $2,447,000 for 2017:

	December 31, 2018	2017
	(In thousands)	
Raw materials	$1,143	$1,174
Work in process, including manufactured parts and components	1,389	1,462
Finished goods	484	560
	$3,016	$3,196

4. <u>Plant and Equipment</u>

Plant and equipment are comprised of the following:

	December 31, 2018	2017
	(In thousands)	
Office and computer equipment	$1,352	$1,333
Machinery and equipment	11,062	11,118
Leasehold improvements	2,283	2,276
	14,697	14,727
Less accumulated depreciation and amortization	(14,070)	(14,014)
	$627	$713

Depreciation expense recorded by the Company totaled approximately $240,000 and $284,000 for 2018 and 2017, respectively. Plant and equipment with a net book value of $0 was sold in 2017 for proceeds of $24,000, Fully depreciated assets of $184,079 were written off in 2018.

The Company evaluates its property and equipment for impairment when events or circumstances indicate and impairment may exist. Based on this evaluation, the Company concluded that, at December 31, 2018, its long-lived assets were not impaired.

5. Intangible Assets

Intangible assets include acquired intangible assets with finite lives, consisting principally of non-contractual customer relationships, completed technology, trademark and licensed patents. Intangible assets with finite lives are amortized on a straight-line basis over the assets' estimated useful life up to 14 years.

Based on management's judgement, there were no events or circumstances that would lead us to conclude that a possible impairment of intangible assets exists as of December 31, 2018.

Amortization expense was approximately $38,000 and $81,000 for the years ended December 31, 2018 and 2017, respectively. Lower amortization for 2018 was due to an Intangible Asset fully amortized by February 2018. Aggregate amortization for the five succeeding years from January 1, 2019 through December 31, 2023 is expected to be approximately $17,000.

The following schedule details the Company’s intangible asset balance by major asset class.

	At December 31, 2018		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
	(In thousands)		
Customer-related	$550	(542)	$ 8
Completed technology	363	(363)	—
Trademarks	187	(187)	—
Licensed Patents	30	(6)	24
Total	$1,130	(1,098)	$ 32

	At December 31, 2017		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
	(In thousands)		
Customer-related	$550	$ (535)	$ 15
Completed technology	363	(348)	15
Trademarks	187	(173)	14
Licensed Patents	30	(4)	26
Total	$1,130	$ (1,060)	$ 70

6. <u>Related Party Transactions</u>

On April 12, 2018 the maturity dates of a $1,500,000 Subordinated Convertible Promissory Note to Clarex Limited (“Clarex”) and a $1,000,000 Subordinated Convertible Promissory Note to an affiliate of Clarex were each extended to April 1, 2021 from April 1,2019. The notes bear interest at 6%. Interest accrues yearly and is payable on maturity. Unpaid interest, along with principal, may be converted into securities of the Company as follows: the notes are convertible in the aggregate into 1,500,000 units and 1,000,000 units, respectively, with each unit consisting of one share of common stock and one warrant. Each warrant allows the holder to acquire 0.75 shares of common stock at a price of $1.35 per share. As part of the agreement, the expiration dates of the warrants were extended from April 1, 2022 to April 1,2024.

The Company paid $187,500 and $112,500 for interest on the notes in 2018 and 2017, respectively. Accrued interest of $75,000 and $112,000 is included in Accounts payable and accrued liabilities as of December 31, 2018 and 2017, respectively.

7. Other Long-Term Notes

Other Long-Term Notes consist of the following:

	December 31,	
	2018	2017
	(In thousands)	
U.S. Small Business Administration term note payable in monthly installments of $1,922 and bearing an interest rate of 4.0% and expiring in May 2032.	$ 258	$ 270
	258	270
Less current portion	(13)	(12)
Other Long-Term Notes, excluding current portion	$ 245	$ 258

Other Long-Term Notes mature as follows:

Year ending December 31:	**(In thousands)**
2019	13
2020	13
2021	14
2022	15
2023	15
Thereafter	188
	$ 258

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8. Accounts Payable and Accrued Liabilities

Accounts payable and accrued expenses are comprised of the following:

	December 31, 2018	December 31, 2017
	(In thousands)	
Trade accounts payable and accrued purchases	$399	$740
Accrued payroll	114	121
Accrued 401K company matching contribution	125	143
Accrued expenses – other	197	213
	$835	$1,217

9. Income Taxes

The Company did not record a current provision for income tax due to the availability of net operation loss carryforwards to offset taxable income for both federal and state tax purposes.

A reconciliation of the income tax provision computed at the statutory Federal income tax rate to our effective income tax rate follows (in percent):

	Years Ended December 31, 2018	Years Ended December 31, 2017
Federal statutory rate	(21)%	(34)%
State statutory rate	(9)	(7)
Reduction in Federal rate due to tax reform	0	259
Reduction in State rate due to tax rate change	24	0
Change in Valuation Allowance	8	(214)
Permanent Differences	(2)	(2)
Effective income tax rate	0 %	0 %

At December 31, 2018 and 2017, the Company had estimated Federal net operating loss carry forwards of approximately $8,699,000 and $9,435,000, respectively and State net operating loss carry forwards of approximately $5,221,000 and $5,977,000, respectively. These tax loss carry forwards expire at various dates through 2037.

Internal Revenue Code Section 382 places a limitation on the utilization of Federal net operating loss and other credit carry forwards when an ownership change, as defined by the tax law, occurs. Generally, this occurs when a greater than 50 percentage point change in ownership occurs. Accordingly, the actual utilization of the net operating loss and carryforwards for tax purposes may be limited annually to a percentage (based on the risk free interest rate) of the fair market value of the Company at the time of any such ownership change. The Company has not prepared an analysis of ownership changes but does not believe that a greater than 50% change of ownership has occurred and such limitations would not apply to the Company.

The Tax Cuts and Jobs Act was enacted on December 22, 2017. The Tax Act eliminates alternative minimum taxes and lowers the U.S. federal corporate income tax from 34% to 21% effective January 1, 2018. The Company remeasured its net deferred tax assets at December 31, 2017 using the new Federal Tax Rate and posted a one-time reduction of $1,765,000 in deferred tax assets and $1,765,000 to the valuation allowance to reflect the lower realization rate to be applied commencing in 2018.

Deferred tax assets (liabilities) are comprised of the following:

	December 31,	
	2018	2017
	(In thousands)	
Account receivable reserves	$4	$4
Inventory reserves	746	685
Inventory capitalization	102	101
Depreciation	312	291
Loss carry forwards	2,229	2,371
Gross deferred tax assets	3,393	3,452
Valuation allowance	(3,393)	(3,452)
Net deferred tax asset	$—	$—

In evaluating the Company's ability to recover deferred tax assets in future periods, management considers the available positive and negative factors, including the Company's recent operating results, the existence of cumulative losses and near term forecasts of future taxable income that is consistent with the plans and estimates management is using to manage the underlying business. A significant piece of objective negative evidence evaluated was the cumulative loss incurred by the Company over the three-year period ended December 31, 2017. Such objective evidence limits the ability to consider other subjective evidence such as our projections for future growth.

On the basis of this evaluation, as of December 31, 2018 and 2017, the valuation allowance was decreased by $59,000 and increased by $302,000, respectively. The company concluded it was more likely than not that it would not be able to realize any portion of the benefit on the deferred tax assets and the valuation allowance was adjusted to provide a full valuation against the deferred tax assets.

The Company files income tax returns in the United States, which typically provides for a three-year statute of limitations on assessments. The Company is no longer subject to federal, state or local income tax examinations by tax authorities for the years before 2015.

The guidance for accounting for uncertainties in income taxes requires that we recognize the financial statement effects of a tax position when it is more likely than not, based on the technical merits, that the position will be sustained upon examination. There were no unrecognized tax benefits that impacted our effective tax rate and accordingly, there was no material effect to our financial position, results of operations or cash flows.

Our policy is to recognize interest and penalties related to the underpayment of income taxes as a component of income tax expense. To date, there have been no interest or penalties charged to us in relation to the underpayment of income taxes.

We do not anticipate that our unrecognized tax benefits will significantly increase in the next 12 months.

10. Equity Compensation Program and Stock-based Compensation

a. 2010 Equity Compensation Program

The Company's 2010 Equity Compensation Program provides for grants of options, stock appreciation rights and restricted stock awards to employees, officers, directors, and others who render services to the Company. The Program is comprised of four parts including: (i) the Incentive Stock Option Plan which provides for grants of “incentive stock options”, (ii) the Supplemental Stock Option Plan which provides for grants of stock options that shall not be “incentive stock options”, (iii) the Stock Appreciation Rights Plan which allows the granting of stock appreciation rights and, (iv) the Restricted Stock Award Plan which provides for the granting of restrictive shares of Common Stock and restricted stock units. The plan is administered by the Compensation Committee of the Board of Directors. Under this plan, an aggregate of up to 4,000,000 shares of common stock may be granted.

b. 2000 Equity Compensation Program

The Company’s 2000 Equity Compensation Program expired on June 2, 2010. All outstanding grants of options, stock appreciation rights and performance shares issued under the Program will remain outstanding and shall expire on the date determined by the terms of the original grant. The latest date of expiration for outstanding grants under the plan is March 28, 2020.

c. Stock Option Expense

The Company's results for the years ended December 31, 2018 and 2017 include stock-based compensation expense for stock option grants totaling $80,000 and $60,000, respectively. Such amounts have been included in the Consolidated Statements of Operations within cost of goods sold ($22,000 for 2018 and $17,000 for 2017), and selling, general and administrative expenses ($58,000 for 2018 and $43,000 for 2017).

As of December 31, 2018 and 2017, there were $180,000 and $89,000 of unrecognized compensation costs, net of estimated forfeitures, related to non-vested stock options, which are expected to be recognized over a weighted average period of approximately 1.89 years and 1.4 years, respectively.

The weighted average estimated fair value of stock options granted in the two years ended December 31, 2018 and 2017 was $0.98 and $0.56, respectively. The Company uses the Black-Scholes option pricing model to calculate the grant-date fair value of an option award. The Company assumes a dividend yield of zero, as the Company has not paid dividends in the past and does not expect to in the foreseeable future. The expected volatility is based upon the historical volatility of our common stock which the Company believes results in the best estimate of the grant-date fair value of employee stock options because it reflects the market's current expectations of future volatility. The risk-free rate is based on the U.S. Treasury yield curve in effect at the time of the grant with maturity dates approximately equal to the expected life at the grant date. The expected life is based upon the period of expected benefit based on the Company's evaluation of historical and expected future employee exercise behavior.

The following range of weighted-average assumptions were used for to determine the fair value of stock option grants during the years ended December 31, 2018 and 2017:

	Years Ended December 31, 2018		2017	
Dividend yield	—	%	—	%
Volatility	140.0	%	133-134	%
Risk-free interest rate	2.6	%	2.2 – 2.3	%
Expected life	10 years		10 years	

d. Stock Option Activity

A summary of the Company's outstanding stock options as of and for the years ended December 31, 2018 and 2017 is presented below:

	Options		Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (In Years)	Aggregate Intrinsic Value(a)
Outstanding as of January 1, 2017	760,214		$ .60		
Granted	180,000		.58		
Exercised	(8,333	)	.25		
Forfeited /Expired	(28,873	)	$ 1.09		
Outstanding as of December 31, 2017[b]	903,008		$ .58	5.20	648,410
Granted	175,000		1.00		
Exercised	(4,500	)	.31		

Forfeited /Expired	(15,300)	.98		
Outstanding as of December 31, 2018[b]	1,058,208	$ .64	5.58	337,997
Exercisable as of December 31, 2018	708,717	$ .59	3.45	264,192

(a) Intrinsic value for purposes of this table represents the amount by which the fair value of the underlying stock, based on the respective market prices as of December 31, 2018 exceeds the exercise prices of the respective options. All of the options used in the calculation of the aggregate intrinsic value for outstanding options are exercisable as of December 31, 2018.

(b) Based on the Company's historical forfeiture rate, the number of options expected to vest is the same as the total outstanding at December 31, 2018.

The following table represents non-vested stock options granted, vested, and forfeited for the year ended December 31, 2018.

Non-vested Options	**Options**	**Weighted-Average Grant-Date Fair Value - $**
Non-vested - January 1, 2018	330,495	.44
Granted	175,000	.98
Vested	(156,004)	.38
Forfeited	—	—
Non-vested – December 31, 2018	349,491	.74

The total weighted average grant date fair value of options vested during the years ended December 31, 2018 and 2017, was $62,000 and $34,000, respectively.

The following table summarizes information about stock options outstanding at December 31, 2018:

	Options Outstanding			Options Exercisable	
Range of Exercise Price	**Number Outstanding**	Weighted Average Remaining **Contractual Life in Years**	Weighted Average **Exercise Price**	**Number Outstanding**	Weighted Average **Exercise Price**
$0.18 - $0.35	407,167	6.26	$.29	352,676	$.28
$0.50 - $1.00	636,100	2.66	$.86	341,100	$.88
$1.50 - $1.75	14,941	0.10	$1.75	14,941	$1.75

11. Net Income (Loss) per Share

Basic income (loss) per common share is computed by dividing net income (loss) by the weighted average number of common shares outstanding. Diluted income (loss) per common share is computed by dividing net income (loss) by the weighted average number of common shares and common stock equivalents outstanding, calculated on the treasury stock method for options, stock grants and warrants using the average market prices during the period, including potential common shares issuable upon conversion of outstanding convertible notes, except if the effect on the per share amounts is anti-dilutive.

For the year ended December 31, 2018, a total of 2,500,000 anti-dilutive common shares issuable upon conversion of outstanding convertible notes and 1,875,000 common shares underlying warrants issuable upon conversion of outstanding related party convertible notes have been excluded from the diluted computation of net income per share because their effect is anti-dilutive. In addition, 1,058,208 common stock equivalents related to outstanding options have been excluded from the diluted computation because their effect is anti-dilutive.

For the year ended December 31, 2017, all common equivalent shares outstanding have been excluded from the diluted computation because their effect is anti-dilutive. This included 903,008 common stock equivalents related to outstanding options, in addition to 2,500,000 common shares and 1,875,000 common shares underlying warrants issuable upon conversion of outstanding related party convertible notes.

12. Commitments

a. Lease commitments

The Company occupies approximately 42,000 square feet of space located at 181 Legrand Avenue, Northvale, New Jersey pursuant to a net lease. Under the terms of the lease, the Company is obligated for all real estate taxes, maintenance and operating costs of the facility. The lease for the Northvale facility was renewed for a term of two years from June 1, 2015 to May 31, 2017 along with options to renew the lease for two additional one year terms running through May 31, 2019, at substantially the same terms. In 2017, the Company exercised its option to renew the Northvale lease for an additional one year term running through May 31, 2018. The Company exercised the option to renew the lease for a one-year term through May 31, 2019. The company intends to have a new lease agreement prior to May, 31, 2019.

The Company’s total rent expense for the year ended December 31, 2018 and 2017 was $290,000 and $283,000, respectively.

The Company also paid real estate taxes and insurance premiums under the terms of the lease that totaled approximately $94,000 in 2018 and $91,000 in 2017.

Future minimum annual rentals at December 31, 2018 which cover the remaining lease term expiring on May 31, 2019. total $122,310.

b. Retirement plans

The Company maintains a 401(k) savings plan (the "Plan") for all eligible employees (as defined in the plan). The 401(k) plan allows employees to contribute up to 70% of their compensation on a salary reduction, pre-tax basis up to the statutory limitation. The 401(k) plan also provides that the Company, at the discretion of the Board of Directors, may match employee contributions based on a pre-determined formula.

In 2018, the Company's 401(k) matching contribution for employees was $124,783. This will be funded by way of a contribution of 134,176 shares of the Company's common stock, which will be issued to the Plan in April, 2019. In 2017, the Company's 401(k) matching contribution for employees was $123,706. This was funded by way of cash contribution of $31,000 and a contribution of 111,288 shares of the Company's common stock, which were issued to the Plan in June, 2018. The Company records the distribution of the common shares in the Consolidated Statement of Shareholders' Equity as of the date of distribution to the 401(k) plan administrator.

13. Product Sales, Foreign Sales and Sales to Major Customers

The Company's export sales, which are primarily to customers in countries within Europe, Israel, Asia and Japan, amounted to approximately 40% and 32.5% of product sales in 2018 and 2017, respectively.

The Company had sales to three major customers which accounted for approximately 44.6% of sales in 2018. One customer, a division of a major U.S. defense industry corporation that manufactures electro-optical systems for U.S. and foreign governments accounted for 12.9% of 2018 sales. The two other customers included one foreign-based and one domestic-based manufacturer of process control and metrology equipment whose sales represented 22.3% and 9.4% of sales, respectively. For 2017 the top three customers represented 14.4%, 14.8% and 5.6% respectively. Given the concentration of sales within a small number of customers, the loss of any of these customers would have a significant negative impact on the Company and its business units.

During the past two years, sales to the Company's top five customers represented approximately 56.1%, and 45.2% of sales, respectively. Given the concentration of sales within a small number of customers, the loss of any of these customers would have a significant negative impact on the Company and its business units.

14. Shareholders' Equity

a. Common shares reserved at December 31, 2018, are as follows:

2010 Equity compensation plan	4,000,000
2000 Equity compensation plan	80,341
Subordinated convertible notes	2,500,000
Warrants issuable on conversion of Subordinated convertible notes	1,875,000
	8,455,341

b. Warrants

The Company had no outstanding warrants as of December 31, 2018 and 2017.

15. Fair Value of Financial Instruments

The methods and assumptions used to estimate the fair value of the following classes of financial instruments were:

Current Assets and Current Liabilities: The carrying amount of cash, current receivables and payables and certain other short-term financial instruments approximate their fair value as of December 31, 2018 due to their short-term maturities.

Long-Term Debt: The fair value of the Company's long-term debt, including the current portion, for notes payable and subordinated convertible debentures, was estimated using a discounted cash flow analysis, based on the Company's assumed incremental borrowing rates for similar types of borrowing arrangements. The fair value of long-term debt is estimated to be $2,752,000 compared to its carrying amount of $2,758,000 as of December 31, 2018.