Registration No. 333-

As filed with the Securities and Exchange Commission on August 23, 2017

NANOMETRICS INC

Form S-8

August 23, 2017

Jeffrey Andreson

UNITED STATES SI Washington, D.C. 20	ECURITIES AND EXCHANGE COM 549	MISSION
FORM S-8		
REGISTRATION ST	CATEMENT Under The Securities Act of	of 1933
NANOMETRICS IN (Exact name of Regis	CORPORATED strant as specified in its charter)	
Delaware (State or other jurisdi	ction of incorporation or organization)	94-2276314 (I.R.S. Employer Identification Number)
1550 Buckeye Drive Milpitas, California 9	05025	
-	cip code, of Registrant's principal execu	tive offices)
Nanometrics Incorpor	rated 2005 Equity Incentive Plan	

	Lugar i iling. NANO	WILTHIOS INC - FOITH 3-0
Chief Financial Officer		
Nanometrics Incorporated		
1550 Buckeye Drive		
Milpitas, California 95035		
(408) 545-6000		
(Name, address, including zi	p code, and telephone num	ber, including area code, of agent for service)
Copies to:		
	Janet Taylor	Samuel M. Livermore
	General Counsel	Cooley llp
	Nanometrics Incorporated	101 California Street, 5th Floor
	1550 Buckeye Drive	San Francisco, CA 94111-5800
	Milpitas, California 95035	(415) 693-2000
	(408) 545-6000	
Indicate by check mark when	ther the registrant is a large	accelerated filer, an accelerated filer, a non-accelerated filer

or a smaller reporting company. See definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b 2 of the Exchange Act.

Large accelerated filer Accelerated filer

Non accelerated filer (Do not check if a smaller reporting company) Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

CALCULATION OF REGISTRATION FEE

	Proposed Maximum Proposed Maximum			
	Amount to be	Offering	Aggregate	Amount of
Title of Securities to be Registered	Registered (1)	Price Per Share (2)	Offering Price (2)	Registration Fee
Common Stock, \$0.001 par value per share	1,000,000	\$25.81	\$25,810,000	\$2,992

- (1) Pursuant to Rule 416 promulgated under the Securities Act of 1933, as amended (the "Securities Act"), this Registration Statement shall also cover any additional shares of the Registrant's Common Stock that become issuable under the plan set forth herein by reason of any stock dividend, stock split, recapitalization or other similar transaction effected without receipt of consideration that increases the number of outstanding shares of the Registrant's Common Stock.
- (2) Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457(h) and Rule 457(c) promulgated under the Securities Act. The offering price per share and the aggregate offering price are based upon the average of the high and low prices of the Registrant's Common Stock as reported on The NASDAQ Global Select Market on August 16, 2017.

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

The following documents have been filed by the Registrant with the Securities and Exchange Commission (the "Commission") and are incorporated herein by reference:

the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, filed with the Commission on March 3, 2017 (the "Form 10-K");

the information specifically incorporated by reference into the Form 10-K from the Registrant's definitive proxy statement on Schedule 14A, filed with the Commission on April 4, 2017;

the Registrant's Quarterly Report on Form 10-Q, filed with the Commission on May 3, 2017;

the Registrant's Quarterly Report on Form 10-Q, filed with the Commission on August 3, 2017;

the Registrant's Current Reports on Form 8-K, filed with the Commission on February 14, 2017, March 3, 2017, May 25, 2017, and August 11, 2017; and

the description of the Registrant's common stock contained in the Registrant's registration statement on Form 8-A filed with the Commission on April 29, 1985, including any amendments or reports filed for the purpose of updating such description (including under the caption "Description of Capital Stock" in the Registrant's registration statement on Form S-3 filed with the Commission on November 18, 2009).

All documents subsequently filed by the Registrant pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits furnished on such form that relate to such items, prior to the filing of a post-effective amendment to this Registration Statement which indicates that all of the shares of Common Stock offered have been sold or which deregisters all of such shares then remaining unsold, shall be deemed to be incorporated by reference in this Registration Statement and to be a part hereof from the date of the filing of such documents.

For purposes of this Registration Statement, any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

Item 4. Description of Securities.

Not applicable.

Item 5. Interests of Named Experts and Counsel.

Not applicable.

Item 6. Indemnification of Directors and Officers.

The Registrant's certificate of incorporation provides that the Registrant must indemnify its directors to the fullest extent under applicable law. Pursuant to Delaware law, this includes elimination of liability for monetary damages for breach of the directors' fiduciary duty of care to the Registrant and its stockholders. However, the Registrant's directors may be personally liable for liability:

for any breach of duty of loyalty to the Registrant or to its stockholders;

for acts or omissions not in good faith or that involve intentional misconduct or a knowing violation of law;

for unlawful payment of dividends or unlawful stock repurchases or redemptions under Section 174 of the Delaware General Corporation Law; or

for any transaction from which the director derived an improper personal benefit.

In addition, the Registrant's bylaws provide that:

II-1

- the Registrant is required to indemnify its directors and officers to the fullest extent permitted by Delaware law, subject to limited exceptions;
- the Registrant may indemnify its employees and other agents as set forth in Delaware law or any other applicable law:
- the Registrant is required to advance expenses to its directors and officers as incurred in connection with legal proceedings against them for which they may be indemnified; and
- the rights conferred in the amended and restated bylaws are not exclusive.

The Registrant has entered into indemnification agreements with each of its directors and officers. These agreements, among other things, require the Registrant to indemnify each director and officer to the fullest extent permitted by Delaware law, including indemnification for expenses such as attorneys' fees, judgments, fines and settlement amounts incurred by the director or officer in any action or proceeding, including any action by or in the right of the Registrant, arising out of the person's services as a director or officer of the Registrant, any subsidiary of the Registrant or any other company or enterprise to which the person provides services at the Registrant's request. At present, the Registrant is not aware of any pending or threatened litigation or proceeding involving any of its directors, officers, employees or agents in which indemnification would be required or permitted. The Registrant believes that its charter provisions and indemnification agreements are necessary to attract and retain qualified persons as directors and officers.

Item 7. Exemption from Registration Claimed.

Not Applicable.

Item 8. Exhibits.

Exhibit Number Description of Document 3.1 Certificate of Incorporation of Nanometrics Incorporated (1) 3.2 Bylaws of Nanometrics Incorporated (2) 4.1 Reference is made to Exhibits 3.1 and 3.2 4.2 Specimen Common Stock Certificate (3) 5.1 Opinion of Cooley llp 23.1 Consent of Independent Registered Public Accounting Firm 23.2 Consent of Cooley llp (included in Exhibit 5.1) 24.1 Power of Attorney (included in the signature page hereto) Nanometrics Incorporated Amended and Restated 2005 Equity 99.1 Incentive Plan (4)

- (1) Previously filed as Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed with the Commission on October 5, 2006, and incorporated herein by reference.
- (2) Previously filed as Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed with the Commission on April 12, 2012, and incorporated herein by reference.
- (3) Previously filed as Exhibit 4.1 to the Registrant's Quarterly Report on Form 10-Q filed with the Commission on November 9, 2006, and incorporated herein by reference.
- (4) Previously filed as Appendix B to the Registrant's definitive proxy statement on Schedule 14A filed with the Commission on April 4, 2017, and incorporated herein by reference. Item 9. Undertakings.
- 1. The undersigned Registrant hereby undertakes:
- (a) To file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement:
- (i) To include any prospectus required by section 10(a)(3) of the Securities Act of 1933;
- (ii) To reflect in the prospectus any facts or events arising after the effective date of the Registration Statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set

II-2

forth in the Registration Statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective Registration Statement.

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the Registration Statement or any material change to such information in the Registration Statement;

Provided, however, that paragraphs (a)(i) and (a)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the Registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference herein.

- (b) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered herein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
- (c) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
- 2. The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the Registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the Registration Statement shall be deemed to be a new registration statement relating to the securities offered herein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
- 3. Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act of 1933 and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933 and will be governed by the final adjudication of such issue.

II-3

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Milpitas, State of California on August 23, 2017.

NANOMETRICS INCORPORATED

By:/s/ Jeffrey Andreson

Jeffrey Andreson

Chief Financial Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Timothy J. Stultz, Jeffrey Andreson and Janet Taylor, or either of them, his true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement on Form S-8, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission (the "SEC"), and generally to do all such things in their names and behalf in their capacities as officers and directors to enable the registrant to comply with the provisions of the Securities Act of 1933, as amended, and all requirements of the SEC, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement has been signed by the following persons in the capacities indicated.

Signature	Title	Date
/s/ Timothy J. Stultz	President, Chief Executive Officer and Director (Principal Executive Officer)	August 22,2017
Timothy J. Stultz		
/s/ Jeffrey Andreson	Chief Financial Officer (Principal Accounting and Financial Officer)	August 22,2017
Jeffrey Andreson		
/s/ Bruce C. Rhine	Chairman of the Board, Director	August 22,2017

Director	August 22,2017
Director	August 22,2017
Director	August 22,2017
	,
s Director	August 22,2017
Director	August 22,2017
	Director Director Director

EXHIBIT INDEX

99.1

Incentive Plan (4)

Exhibit Number 3.1	Description of Document Certificate of Incorporation of Nanometrics Incorporated (1)
3.2	Bylaws of Nanometrics Incorporated (2)
4.1	Reference is made to Exhibits 3.1 and 3.2
4.2	Specimen Common Stock Certificate (3)
5.1	Opinion of Cooley llp
23.1	Consent of Independent Registered Public Accounting Firm
23.2	Consent of Cooley llp (included in Exhibit 5.1)
24.1	Power of Attorney (included in the signature page hereto)
00.1	Nanometrics Incorporated Amended and Restated 2005 Equity

- (1) Previously filed as Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed with the Commission on October 5, 2006, and incorporated herein by reference.
- (2) Previously filed as Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed with the Commission on April 12, 2012, and incorporated herein by reference.
- (3) Previously filed as Exhibit 4.1 to the Registrant's Quarterly Report on Form 10-Q filed with the Commission on November 9, 2006, and incorporated herein by reference.

Previously filed as Appendix B to the Registrant's definitive proxy statement on Schedule 14A filed with the Commission on April 4, 2017, and incorporated herein by reference.