

NANOMETRICS INC
Form S-3
November 18, 2009
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As filed with the Securities and Exchange Commission on November 18, 2009.

Registration No. 333-

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM S-3
REGISTRATION STATEMENT

UNDER

THE SECURITIES ACT OF 1933

NANOMETRICS INCORPORATED

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

1550 Buckeye Drive

Milpitas, CA 95035

(408) 545-6000

94-2276314
(I.R.S. Employer

Identification Number)

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(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

James P. Moniz

Chief Financial Officer

Nanometrics Incorporated

1550 Buckeye Drive

Milpitas, CA 95035

(408) 545-6000

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

Ralph L. Arnheim, III

Sonny Allison

Perkins Coie LLP

1899 Wynkoop Street, Suite 700

Denver, CO 80202

(303) 291-2300

Approximate date of commencement of proposed sale to the public: From time to time after this Registration Statement becomes effective as determined by market conditions and other factors.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act of 1933, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act of 1933, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act of 1933, check the following box.

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If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act of 1933, check the following box. "

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of large accelerated filer, accelerated filer and smaller reporting company in Rule 12b-2 of the Exchange Act of 1934.

Large accelerated filer " Accelerated filer " Non-accelerated filer x Smaller reporting company "

(Do not check if a smaller reporting company)

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to Be Registered (2)	Amount to Be Registered (3)	Proposed Maximum Offering Price Per Share (1)	Proposed Maximum Aggregate Offering Price (1)	Amount of Registration Fee
Common stock, par value \$0.001	6,200,000	\$12.14	\$75,268,000	\$4,199.95

- (1) Estimated in accordance with Rule 457(c) of the Securities Act of 1933 solely for the purposes of calculating the registration fee for the shares offered hereunder, based on the average of the high and low prices per share of the registrant's common stock as reported on the NASDAQ Global Market on November 16, 2009.
- (2) Pursuant to Rule 416 under the Securities Act of 1933, an indeterminate number of additional securities are registered hereunder that may be issued to prevent dilution in connection with a stock split, stock dividend, recapitalization, or similar event or adjustment.
- (3) Includes 1,200,000 shares which are being registered for resale from time to time by the selling stockholder named herein.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the registration statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

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The information in this prospectus is not complete and may be changed. We and the selling stockholder named in this prospectus may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED NOVEMBER 18, 2009

PROSPECTUS

6,200,000 Shares

Common Stock

NANOMETRICS INCORPORATED

This prospectus relates to the offer and sale at various times in one or more offerings of up to 6,200,000 shares of our common stock. Of these shares, 1,200,000 are being offered by the selling stockholder named in this prospectus and 5,000,000 are being offered by us. We will not receive any of the proceeds from the sale of shares by the selling stockholder.

We will provide specific terms of any offering in supplements to this prospectus. Any prospectus supplement may also add, update or change information in this prospectus. You should read this prospectus, any applicable prospectus supplement and the additional information incorporated by reference in this prospectus carefully before you purchase any of our securities. We may also authorize one or more free writing prospectuses to be provided to you in connection with these offerings. You should read carefully this prospectus, the applicable prospectus supplement and any related free writing prospectus, as well as any documents incorporated by reference before you invest in any of our securities. **This prospectus may not be used to offer or sell any securities unless accompanied by the applicable prospectus supplement.**

Our common stock is listed on the NASDAQ Global Market under the symbol NANO. On November 16, 2009, the last reported sales price of our common stock was \$12.64 per share. The applicable prospectus supplement will contain information, where applicable, as to any other listing on the NASDAQ Global Market or any securities market or other exchange of the securities, if any, covered by the prospectus supplement.

Investing in our securities involves risk. You should carefully review the risks and uncertainties described under the heading Risk Factors beginning on page 4 and in the documents which are incorporated by reference herein, and contained in the applicable prospectus supplement and any related free writing prospectus.

We will sell these securities directly to investors, through agents designated from time to time or to or through underwriters or dealers. For additional information on the methods of sale, you should refer to the section entitled "Plan of Distribution" in this prospectus. If any underwriters are involved in the sale of any securities with respect to which this prospectus is being delivered, the names of such underwriters and any applicable commissions or discounts will be set forth in a prospectus supplement. The price to the public of such securities and the net proceeds we expect to receive from such sale will also be set forth in a prospectus supplement.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2009.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or the SEC, using a shelf registration process. Under this shelf registration process, we may from time to time sell up to 5,000,000 shares of our common stock in one or more offerings and the selling stockholder may sell up to 1,200,000 shares of our common stock in one or more offerings. We have provided to you in this prospectus a general description of the securities we may offer. Each time we or the selling stockholder sell securities under this shelf registration, we will, to the extent required by law, provide a prospectus supplement that will contain specific information about the terms of that offering. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to these offerings. The prospectus supplement and any related free writing prospectus that we may authorize to be provided to you may also add, update or change information contained in this prospectus or in any documents that we have incorporated by reference into this prospectus. To the extent there is a conflict between the information contained in this prospectus and the prospectus supplement or any related free writing prospectus, you should rely on the information in the prospectus supplement or the related free writing prospectus; *provided that* if any statement in one of these documents is inconsistent with a statement in another document having a later date for example, a document incorporated by reference in this prospectus or any prospectus supplement or any related free writing prospectus the statement in the document having the later date modifies or supersedes the earlier statement.

We and the selling stockholder have not authorized any dealer, agent or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus and any accompanying prospectus supplement. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus or an accompanying prospectus supplement. This prospectus and the accompanying prospectus supplement, if any, do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate, nor do this prospectus and the accompanying prospectus supplement constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. You should not assume that the information contained in this prospectus, any applicable prospectus supplement or any related free writing prospectus is accurate on any date subsequent to the date set forth on the front of the document or that any information we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference (as our business, financial condition, results of operations and prospects may have changed since that date), even though this prospectus, any applicable prospectus supplement or any related free writing prospectus is delivered or securities are sold on a later date.

As permitted by the rules and regulations of the SEC, the registration statement, of which this prospectus forms a part, includes additional information not contained in this prospectus. You may read the registration statement and the other reports we file with the SEC at the SEC's web site or at the SEC's offices described below under the heading *Where You Can Find Additional Information*.

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SUMMARY

This summary highlights selected information from this prospectus and does not contain all of the information that you need to consider in making your investment decision. You should carefully read the entire prospectus, including the risks of investing discussed under "Risk Factors" and in the documents which are incorporated by reference herein, and contained in the applicable prospectus supplement and any related free writing prospectus, the information incorporated by reference, including our financial statements, and the exhibits to the registration statement of which this prospectus is a part. When used in this prospectus, the terms "Nanometrics," "we," "our," "us" or the "Company" refer to Nanometrics Incorporated and its consolidated subsidiaries, unless otherwise indicated or as the context otherwise requires.

About Nanometrics Incorporated

Overview

Nanometrics is a leading supplier of advanced process control metrology systems used primarily in the manufacturing and packaging of semiconductors, solar photovoltaics (PVs) and high-brightness LEDs (HB-LEDs), as well as by customers in the silicon wafer and data storage industries. Nanometrics standalone and integrated metrology systems measure various thin film properties, critical dimensions, overlay control, topography and optical, electrical and material properties, including the structural composition of silicon, compound semiconductor and PV devices, during various steps of the manufacturing process, from front end of line substrate manufacturing through die preparation for advanced packaging. These systems enable device manufacturers to improve yields, increase productivity and lower their manufacturing costs.

We have been a pioneer and innovator in the field of optical metrology. Nanometrics has an extensive installed base of over 6,000 systems in over 150 production factories worldwide. Our major customers include Samsung Electronics Co. Ltd., Intel Corporation, Toshiba Semiconductor, Western Digital Corporation, Hynix Semiconductor Inc., and Renesas Technology Corp.

Our Business

We offer a comprehensive line of metrology products and technologies to address the manufacturing requirements of the high-tech industry. Our metrology systems can be categorized as follows:

Standalone, fully automated systems for high-volume semiconductor manufacturing process control;

Integrated systems incorporated onto semiconductor and solar PV processing systems that provide real-time measurements and feedback to improve process control and increase total system productivity; and

Standalone, manual and semi-automated systems used to monitor material characteristics of various silicon and compound semiconductor devices and substrates.

We believe that there are numerous characteristics of the semiconductor, solar PV, high-brightness LED and other component manufacturing markets that drive a growing need for process control metrology. As films and film materials become thinner and more exotic, along with more demanding critical dimension control and overlay requirements, advanced process control metrology will continue to grow in importance, especially as wafers become more expensive to manufacture and as advanced wafer-scale packaging is deployed in a growing number of applications. We expect these factors will continue to drive the demand for our advanced standalone and integrated metrology products. Additionally, customers can deploy our products into their R&D lines to accelerate the process development cycle and enable faster production ramp.

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Additional demands for better film uniformity, tighter dimensional and overlay control, tool-to-tool matching and within-tool chamber uniformity is driving the need for integrated process control metrology. These new tool requirements will drive the need to place metrology inside the processing tools for real-time, integrated, process control metrology, using both feed-forward and feedback of the collected metrology data to control the process equipment.

We have made several strategic business decisions to enable us to further address these metrology trends, including:

Introducing new leading-edge products in every core product line and primary market served;

Restructuring our business and practices for operational and earnings leverage;

Diversifying our product line and served markets through acquisitions, such as our 2006 acquisition of Accent Optical Technologies, Inc.; our 2008 acquisition of Tevet Process Control Technologies (Tevet), an integrated metrology supplier serving both semiconductor and solar PV industries; and our acquisition of the UnifireTM product line from Zygo Corporation in June 2009;

The continuing development of new measurement technologies for advanced chemical mechanical planarization, or CMP, and photolithographic processes; and

Researching innovative applications of existing technology to new market opportunities within the solar PV industry.

Demand for our products continues to be driven by the increasing use of multiple thin film technologies by semiconductor manufacturers, and by the increased adoption of both integrated metrology and real-time process control. With feature sizes shrinking below 32 nanometers (nm), there is an increasing need for very tight process tolerances as well as productivity improvements in semiconductor fabrication facilities (fabs). As a result, semiconductor device and wafer manufacturers are investing in process control and metrology systems that improve their manufacturing efficiency by detecting process variations sooner and facilitating rapid diagnosis and corrective action. Our process control and metrology systems measure and characterize the physical dimensions, material composition, optical and electrical characteristics and other critical parameters of semiconductor devices during their fabrication and advanced packaging process steps. For the photolithography process, overlay and critical dimension systems provide enhanced control of layer alignment and device dimensions. For lattice engineering applications, metrology systems monitor the physical, optical, electrical and material characteristics of compound semiconductor, strained silicon and silicon-on-insulator (SOI) devices, including composition, crystal structure, layer thickness, dopant concentration, contamination and electron mobility.

We were incorporated in California in 1975 and reincorporated in Delaware in 2006. Our executive offices are located at 1550 Buckeye Drive, Milpitas, California 95035. We transact business directly and through our subsidiaries unless otherwise indicated.

We maintain a website at www.nanometrics.com where our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and all amendments to those reports are available without charge, as soon as reasonably practicable following the time they are filed with or furnished to the SEC. Additional information about Nanometrics that is on our website is not, however, part of this prospectus. You may read and copy any materials we file with the SEC at the SEC's public reference room at 100 F Street, NE, Washington, DC 20549. You may obtain information on the operation of the public reference room by calling the SEC at 1-800-SEC-0300. The SEC also maintains an electronic Internet site that contains our reports, proxy and information statements, and other information at <http://www.sec.gov>.

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RISK FACTORS

Except for the historical information contained in this prospectus or incorporated by reference, this prospectus (and the information incorporated by reference in this prospectus) contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those discussed here or incorporated by reference. Factors that could cause or contribute to such differences include, but are not limited to, (i) the risks and uncertainties described under the heading **Risk Factors** contained in, or incorporated into, the applicable prospectus supplement and any related free writing prospectus, and (ii) those discussed in the section entitled **Risk Factors** contained in our most recent Annual Report on Form 10-K and Quarterly Report on Form 10-Q filed with the SEC, as well as any amendments thereto reflected in subsequent filings with the SEC, which are incorporated herein by reference in their entirety (collectively the **Nanometrics Risk Factors**).

Investment in our securities involves risks. Prior to making a decision about investing in our securities, you should consider carefully the Nanometrics Risk Factors, together with all of the other information contained or incorporated by reference in this prospectus and any prospectus supplement or any related free writing prospectus, including any additional specific risks described in any such prospectus supplement or free writing prospectus. Each of these risk factors could adversely affect our business, operating results and financial condition, which may result in the loss of all or part of your investment.

Keep these risk factors in mind when you read forward-looking statements contained elsewhere or incorporated by reference in this prospectus, any accompanying prospectus supplement, or any related free writing prospectus. These statements relate to our expectations about future events. Discussions containing forward-looking statements may be found, among other places, in **Business and Management's Discussion and Analysis of Financial Condition and Results of Operations** incorporated by reference from our most recent Annual Report on Form 10-K and our Quarterly Reports on Form 10-Q, as well as any amendments thereto reflected in subsequent filings with the SEC. These forward-looking statements are based largely on our expectations and projections about future events and future trends affecting our business, and so are subject to risks and uncertainties, including the risks and uncertainties described below under **Forward-Looking Information**, that could cause actual results to differ materially from those anticipated in the forward-looking statements.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

Our disclosure and analysis in this prospectus, in any prospectus supplement or related free writing prospectus, in the documents incorporated by reference and in some of our other public statements contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, as amended. This Act provides a safe harbor for forward-looking statements to encourage companies to provide prospective information about themselves so long as they identify these statements as forward-looking and provide meaningful cautionary statements identifying important factors that could cause actual results to differ from the projected results. In some cases, you can identify forward-looking statements by terminology such as anticipate, believe, continue, could, estimate, expect, intend, may, might, predict, should, or will, or the negative of those terms, or comparable terminology.

Any or all of our forward-looking statements in this prospectus, in any prospectus supplement or related free writing prospectus, in the documents incorporated by reference and in any other public statements we make may turn out to be inaccurate. Forward-looking statements reflect our current expectations or forecasts of future events or results and are inherently uncertain. Inaccurate assumptions we might make and known or unknown risks and uncertainties can affect the accuracy of our forward-looking statements. Accordingly, no forward-looking statement can be guaranteed and future events and actual or suggested results may differ materially.

We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise. You are advised, however, to consult any further disclosures we make in our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K, as well as in any prospectus supplement relating to this prospectus and other public filings with the SEC.

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USE OF PROCEEDS

Except as described in any prospectus supplement and any free writing prospectus in connection with a specific offering, we currently intend to use the net proceeds from the sale of the securities offered under this prospectus for general corporate purposes, including working capital. We may also use the net proceeds to repay any debts and/or invest in or acquire complementary businesses, products or technologies, although we have no current commitments or agreements with respect to any such investments or acquisitions as of the date of this prospectus. We have not determined the amount of net proceeds to be used specifically for the foregoing purposes. As a result, our management will have broad discretion in the allocation of the net proceeds and investors will be relying on the judgment of our management regarding the application of the proceeds of any sale of the securities. Pending use of the net proceeds, we intend to invest the proceeds in short-term, investment-grade, interest-bearing instruments. We will not receive any proceeds from the sale of shares of our common stock by the selling stockholder.

When we offer securities, we will describe the intended use of the net proceeds from that offering in a prospectus supplement. The actual amount of net proceeds we spend on a particular use will depend on many factors, including, our future capital expenditures, the amount of cash required by our operations, and our future revenue growth, if any. Therefore, we will retain broad discretion in the use of the net proceeds.

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DILUTION

If you invest in an offering of common stock by us, your interest will be diluted to the extent of the difference between the public offering price per share in an offering under this prospectus and the net tangible book value per share after the offering, except to the extent proceeds are applied to the repayment of debt. We will set forth in the applicable prospectus supplement or free writing prospectus the following information regarding any material dilution of the equity interests of investors purchasing shares in an offering by us under this prospectus:

the net tangible book value per share of our equity securities before and after the offering;

the amount of the increase in such net tangible book value per share attributable to the cash payments made by investors purchasing shares in the offering; and

the amount of the immediate dilution from the public offering price to such investors.

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The following table presents information regarding the selling stockholder and the shares that such selling stockholder may offer and sell from time to time under this prospectus and any prospectus supplement. Such information was obtained from the selling stockholder and has not been independently verified by us. The term "selling stockholder" includes his transferees, pledgees, donees, or other successors. Any material relationship the selling stockholder has had with us during the past three years is described in the footnotes to the table. To our knowledge, there currently are no agreements, arrangements, or understandings with respect to the sale of any shares of our common stock.

The selling stockholder may from time to time offer and sell pursuant to this prospectus up to 1,200,000 shares of common stock owned by him. The selling stockholder, however, makes no representations that the shares covered by this prospectus will be offered for sale. The selling stockholder will pay any underwriting discounts and commissions and expenses incurred by the selling stockholder for brokerage, accounting, tax or legal services or any other expenses incurred by the selling stockholder in connection with sales by him. We will bear all other costs, fees and expenses incurred in effecting the registration of the shares covered by this prospectus, including, but not limited to, all registration and filing fees and fees and expenses of our counsel and our accountants.

Name of Beneficial Owner	Shares Beneficially Owned		Shares Being Registered for Resale (3)	Shares Beneficially Owned	
	Prior to Offering (1) Number	Percent (2)		After Offering (1)(3)(4) Number	Percent (5)
Vincent J. Coates (6)	3,501,511	18.63%	1,200,000	2,301,511	9.67%

- (1) The selling stockholder named in the table has sole voting and investment power with respect to all shares of common stock beneficially owned by him. The numbers and percentages shown include (a) the shares of common stock actually owned as of November 17, 2009, and (b) the shares of common stock which the selling stockholder had the right to acquire within sixty (60) days upon the exercise of options, warrants, or the conversion of convertible securities held by the selling stockholder on November 17, 2009. In calculating the percentage of ownership, all shares of common stock that the selling stockholder had the right to acquire within sixty (60) days upon the exercise of options, warrants, or the conversion of convertible securities held by the selling stockholder are deemed to be outstanding for the purpose of computing the percentage of the shares of common stock owned by such person, but are not deemed to be outstanding for the purpose of computing the percentage of the shares of common stock owned by any other person or group.
- (2) Calculated on the basis of 18,799,386 shares of common stock, which is the number of shares of our common stock outstanding as of November 17, 2009.
- (3) We do not know the extent to which the selling stockholder will sell any of the common stock being registered hereby.
- (4) Assumes all the shares of common stock covered hereby are sold in the offering.
- (5) Calculated on the basis of 23,799,386 shares of common stock outstanding upon completion of this offering.
- (6) Vincent J. Coates founded Nanometrics and served as Vice-Chairman of the Board of Directors and Chairman of our Scientific Advisory Board from July 2007 through August 2009, as Chairman of the Board from January 1975 through July 2007 and as Secretary from February 1989 until July 2007. On August 25, 2009, Vincent J. Coates resigned from the Board and the Board appointed Norman Coates, the son of Vincent J. Coates, as a director of the Company to fill the vacancy created by the resignation of Vincent J. Coates. Norman Coates currently serves as a director on the Board.

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DESCRIPTION OF CAPITAL STOCK

General

The following description of our capital stock includes a summary of certain provisions of our certificate of incorporation and our bylaws. This description is subject to the detailed provisions of, and is qualified by reference to, our certificate of incorporation and our bylaws.

We are authorized to issue up to 50,000,000 shares, consisting of 47,000,000 shares of common stock, par value \$0.001 per share, and 3,000,000 shares of preferred stock, per value \$0.001 per share.

Common Stock

Holders of our common stock are entitled to one vote for each share held of record on all matters submitted to a vote of stockholders. Subject to preferences that may be applicable to any outstanding shares of preferred stock, the holders of common stock are entitled to receive ratably such dividends, if any, as may be declared by the board of directors out of funds legally available for the payment of dividends. If we liquidate, dissolve or wind up, the holders of common stock are entitled to share ratably in all assets remaining after payment of liabilities and liquidation preferences of any outstanding shares of preferred stock. The rights, preferences and privileges of holders of common stock are subject to, and may be adversely affected by, the rights of any series of preferred stock which we may designate and issue in the future. Holders of common stock have no preemptive rights or rights to convert their common stock into any other securities. There are no redemption or sinking fund provisions applicable to the common stock.

Preferred Stock

Pursuant to our restated certificate of incorporation, the board of directors has the authority, without further action by the stockholders, to issue up to 3,000,000 shares of preferred stock in one or more series and to fix the designations, powers, preferences, privileges, and relative, participating, optional or special rights and the qualifications, limitations or restrictions thereof, including dividend rights, conversion rights, voting rights, terms of redemption and liquidation preferences, any or all of which may be greater than the rights of the common stock. The board of directors, without stockholder approval, can issue preferred stock with voting, conversion or other rights that could adversely affect the voting power and other rights of the holders of common stock. Currently, no shares of preferred stock have been designated as a series.

Delaware Anti-Takeover Law and Anti-Takeover Effects of Provisions of Our Charter and Bylaws

Delaware Anti-Takeover Statute

We are subject to Section 203 of the Delaware General Corporation Law. In general, these provisions prohibit a Delaware corporation from engaging in any business combination with any interested stockholder for a period of three (3) years following the date that the stockholder became an interested stockholder, unless the transaction in which the person became an interested stockholder is approved in a manner presented in Section 203 of the Delaware General Corporation Law. Generally, a business combination is defined to include mergers, asset sales and other transactions resulting in financial benefit to a stockholder. In general, an interested stockholder is a person who, together with affiliates and employees, owns, or within three (3) years, did own, 15% or more of a corporation's voting stock.

Charter and Bylaws

Our bylaws provide for our board of directors to be divided into three classes, with staggered three-year terms. As a result, only one class of directors will be elected at each annual meeting of stockholders, with the other classes continuing for the remainder of their respective three-year terms. Stockholders have no cumulative voting rights, and the stockholders representing a majority of the shares of common stock outstanding are able to elect all of the directors.

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Our bylaws require a stockholder who intends to nominate a candidate for election to the board of directors, or to raise new business at a stockholder meeting, to give advance written notice to us. In order to be timely, the stockholder's notice must be delivered to or mailed and received at our principal executive offices not less than one hundred twenty (120) calendar days before the one year anniversary of the date on which we first mailed our proxy statement to stockholders in connection with the previous year's annual meeting of stockholders; *provided, however*, that in the event that no annual meeting was held in the previous year or the date of the annual meeting has been changed by more than thirty (30) days from the date of the prior year's meeting, notice by the stockholder to be timely must be so received not later than the close of business on the later of one hundred twenty (120) calendar days in advance of such annual meeting and ten (10) calendar days following the date on which public announcement of the date of the meeting is first made. The notice provision requires a stockholder who desires to raise new business to provide us certain information concerning the nature of the new business, the stockholder and the stockholder's interest in the new business. Similarly, a stockholder wishing to nominate any person for election as a director will need to provide us with certain information concerning the nominee and the stockholder. A special meeting of the stockholders may be called by the Chairman of the Board or by the affirmative vote of a majority of our board of directors. These provisions all may have the effect of delaying, deferring or preventing a change in control.

The classification of our board of directors and lack of cumulative voting will make it more difficult for our existing stockholders to replace our board of directors as well as for another party to obtain control of us by replacing our board of directors. Since our board of directors has the power to retain and discharge our officers, these provisions could also make it more difficult for existing stockholders or another party to effect a change in management.

These and other provisions may have the effect of deterring hostile takeovers or delaying changes in control or management. These provisions are intended to enhance the likelihood of continued stability in the composition of our board of directors and in the policies of our board of directors and to discourage certain types of transactions that may involve an actual or threatened change in control. These provisions are designed to reduce our vulnerability to an unsolicited acquisition proposal. The provisions also are intended to discourage certain tactics that may be used in proxy fights. However, such provisions could have the effect of discouraging others from making tender offers for our shares and, as a consequence, they also may inhibit fluctuations in the market price of the our shares that could result from actual or rumored takeover attempts. Such provisions also may have the effect of preventing changes in our management.

Transfer Agent and Registrar

Registrar and Transfer Company is the transfer agent and registrar for our common stock.

Listing

Our common stock is listed for trading on the NASDAQ Global Market under the symbol NANO.

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PLAN OF DISTRIBUTION

We and the selling stockholder may sell the securities to or through underwriters or dealers, through agents, or directly to one or more purchasers. A prospectus supplement or supplements (and any related free writing prospectus that we may authorize to be provided to you) will describe the terms of the offering of the securities, including, to the extent applicable:

the name or names of any agents or underwriters;

the name of, and number of shares of our common stock being sold by, the selling stockholder;

the purchase price of the securities being offered and the proceeds we will receive from the sale;

any over-allotment options under which underwriters may purchase additional securities from us or the selling stockholder;

any agency fees or underwriting discounts and other items constituting agents or underwriters compensation;

any public offering price;

any discounts or concessions allowed or reallocated or paid to dealers; and

any securities exchanges or markets on which such securities may be listed.

We may distribute the securities from time to time in one or more transactions at:

fixed price or prices, which may be changed from time to time;

market prices prevailing at the time of sale;

prices related to such prevailing market prices; or

negotiated prices.

Agents

We or the selling stockholder may designate agents who agree to use their reasonable efforts to solicit purchases of our securities for the period of their appointment or to sell our securities on a continuing basis. We will name any agent involved in the offering and sale of securities and we will describe any commissions we will pay the agent in the applicable prospectus supplement.

Underwriters

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The term "selling stockholder" includes donees, pledgees, transferees or other successors-in-interest selling shares received after the date of this prospectus from the selling stockholder as a gift, pledge, partnership distribution or other non-sale related transfer. If we or the selling stockholder use underwriters for a sale of securities, the underwriters will acquire the securities for their own account. The underwriters may resell the securities in one or more transactions, including negotiated transactions, at a fixed public offering price or at varying prices determined at the time of sale. The obligations of the underwriters to purchase the securities will be subject to the conditions set forth in the applicable underwriting agreement. Subject to certain conditions, the underwriters will be obligated to purchase all the securities of the series offered if they purchase any of the securities of that series. We may change from time to time any public offering price and any discounts or concessions the underwriters allow or reallow or pay to dealers. We may use underwriters with whom we or the selling stockholder have a material relationship. We will describe the nature of any such relationship in any applicable prospectus supplement naming any such underwriter. Only underwriters we name in the prospectus supplement are underwriters of the securities offered by the prospectus supplement.

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We and the selling stockholder may provide agents and underwriters with indemnification against civil liabilities related to offerings under this prospectus, including liabilities under the Securities Act, or contribution with respect to payments that the agents or underwriters may make with respect to these liabilities.

Direct Sales

We and the selling stockholder may also sell securities directly to one or more purchasers without using underwriters or agents. Underwriters, dealers and agents that participate in the distribution of the securities may be underwriters as defined in the Securities Act, and any discounts or commissions they receive from us and any profit on their resale of the securities may be treated as underwriting discounts and commissions under the Securities Act. We will identify in the applicable prospectus supplement any underwriters, dealers or agents and will describe their compensation. We and the selling stockholder may have agreements with the underwriters, dealers and agents to indemnify them against specified civil liabilities, including liabilities under the Securities Act. Underwriters, dealers and agents may engage in transactions with or perform services for us in the ordinary course of their businesses. In addition, any shares that qualify for sale by the selling stockholder pursuant to Rule 144 under the Securities Act of 1933 may be sold under Rule 144 rather than pursuant to this prospectus.

Stabilization Activities

Any underwriter may engage in over-allotment, stabilizing transactions, short covering transactions and penalty bids in accordance with Regulation M under the Exchange Act. Over-allotment involves sales in excess of the offering size, which create a short position. Stabilizing transactions permit bids to purchase the underlying security so long as the stabilizing bids do not exceed a specified maximum. Short covering transactions involve purchases of the securities in the open market after the distribution is completed to cover short positions. Penalty bids permit the underwriters to reclaim a selling concession from a dealer when the securities originally sold by the dealer are purchased in a covering transaction to cover short positions. Those activities may cause the price of the securities to be higher than it would otherwise be. If commenced, the underwriters may discontinue any of these activities at any time.

Passive Market Making

Any underwriters who are qualified market makers on the NASDAQ Global Market may engage in passive market making transactions in the securities on the NASDAQ Global Market in accordance with Rule 103 of Regulation M, during the business day prior to the pricing of the offering, before the commencement of offers or sales of the securities. Passive market makers must comply with applicable volume and price limitations and must be identified as passive market makers. In general, a passive market maker must display its bid at a price not in excess of the highest independent bid for such security. If all independent bids are lowered below the passive market maker's bid, however, the passive market maker's bid must then be lowered when certain purchase limits are exceeded.

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LEGAL MATTERS

The validity of the securities being offered by this prospectus will be passed upon for us by Perkins Coie LLP. If the validity of any securities is also passed upon by counsel any underwriters, dealers or agents, that counsel will be named in the prospectus supplement relating to that specific offering.

EXPERTS

The consolidated financial statements and schedule as of December 27, 2008 and December 29, 2007 and for each of the three years in the period ended December 27, 2008 incorporated by reference in this prospectus have been so incorporated in reliance on the report of BDO Seidman, LLP, an independent registered public accounting firm, incorporated herein by reference, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information electronically with the SEC. You may read and copy these reports, proxy statements and other information at the SEC's public reference room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the public reference room. You can request copies of these documents by writing to the SEC and paying a fee for the copying costs. The SEC also maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, including us. The SEC's Internet site can be found at <http://www.sec.gov>. In addition, we make available on or through our website copies of these reports as soon as reasonably practicable after we electronically file or furnish them to the SEC. Our website can be found at <http://www.nanometrics.com>.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

We are allowed to incorporate by reference information contained in documents that we file with the SEC. This means that we can disclose important information to you by referring you to those documents and that the information in this prospectus is not complete. You should read the information incorporated by reference for more detail. We incorporate by reference in two ways. First, we list below certain documents that we have already filed with the SEC. The information in these documents is considered part of this prospectus. Second, the information in documents that we file in the future will update and supersede the current information in, and be incorporated by reference in, this prospectus.

We incorporate by reference into this prospectus the documents listed below, any filings we make with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of the initial registration statement of which this prospectus is a part and prior to the effectiveness of the registration statement, and any filings we make with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act from the date of this prospectus until the termination of this offering (in each case, except for the information furnished under Item 2.02 or Item 7.01 in any current report on Form 8-K and Form 8-K/A):

our Annual Report on Form 10-K for the fiscal year ended December 27, 2008, filed on March 27, 2009;

our Quarterly Reports on Form 10-Q for the quarters ended March 28, 2009, June 27, 2009 and September 26, 2009, filed on May 12, 2009, August 11, 2009 and November 9, 2009, respectively;

the description of our Common Stock contained in our Registration Statement on Form 8-A filed with the Commission on April 29, 1985, including any amendment or report filed for the purpose of updating such description;

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our Current Reports on Form 8-K, filed with the Commission on April 30, 2009, May 29, 2009, June 23, 2009, July 30, 2009, August 31, 2009, and October 29, 2009, and our Current Report on Form 8-K/A, filed with the Commission on August 3, 2009; and

all other reports filed pursuant to Section 13(a) or 15(d) of the Exchange Act since the end of the fiscal year covered by the annual report referred to above.

We will provide each person, including any beneficial owner, to whom a prospectus is delivered, a copy of any or all of the information that has been incorporated by reference into this prospectus but not delivered with this prospectus upon written or oral request at no cost to the requester. Requests should be directed to: Nanometrics Incorporated, 1550 Buckeye Drive, Milpitas, CA 95035, Attn: Investor Relations, telephone: (408) 545-6000.

This prospectus is part of a registration statement on Form S-3 that we filed with the SEC. That registration statement contains more information than this prospectus regarding us and our common stock, including certain exhibits and schedules. You can obtain a copy of the registration statement from the SEC at the address listed above or from the SEC's website.

You should rely only on the information provided in and incorporated by reference into this prospectus or any prospectus supplement. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus or any prospectus supplement is accurate as of any date other than the date on the front cover of these documents.

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NANOMETRICS INCORPORATED

6,200,000 Shares

Common Stock

PROSPECTUS

, 2009

Table of Contents**PART II****INFORMATION NOT REQUIRED IN PROSPECTUS****Item 14. Other Expenses of Issuance and Distribution**

The following table sets forth the fees and expenses incurred or expected to be incurred by Nanometrics Incorporated in connection with the issuance and distribution of the securities being registered hereby, other than underwriting discounts and commissions. All of the amounts shown are estimated except the SEC registration fee. Estimated fees and expenses can only reflect information that is known at the time of filing this registration statement and are subject to future contingencies, including additional expenses for future offerings.

Securities and Exchange Commission registration fee	\$ 4,199.95
Printing and engraving expenses ⁽¹⁾	\$ 5,000.00
Legal fees and expenses	\$ 25,000.00
Accounting fees and expenses	\$ 15,000.00
Miscellaneous expenses	\$ 5,000.00
Total	\$ 54,199.95

⁽¹⁾ Does not include any fees or expenses in connection with any subsequent underwritten offering and any prospectus supplements.

Item 15. Indemnification of Officers and Directors

Section 145 of the Delaware General Corporation Law authorizes a corporation to indemnify its directors and officers against liabilities arising out of actions, suits and proceedings to which they are made or threatened to be made a party by reason of the fact of their prior or current service to the Company as a director or officer, in accordance with the provisions of Section 145, which are sufficiently broad to permit indemnification under certain circumstances for liabilities arising under the Securities Act of 1933, as amended (the Securities Act). The indemnity may cover expenses (including attorneys' fees) judgments, fines and amounts paid in settlement actually and reasonably incurred by the director or officer in connection with any such action, suit or proceeding. Section 145 permits corporations to pay expenses (including attorneys' fees) incurred by directors and officers in advance of the final disposition of such action, suit or proceeding. In addition, Section 145 provides that a corporation has the power to purchase and maintain insurance on behalf of its directors and officers against any liability asserted against them and incurred by them in their capacity as a director or officer, or arising out of their status as such, whether or not the corporation would have the power to indemnify the director or officer against such liability under Section 145. Our bylaws provide that, to the fullest extent permitted by the Delaware General Corporation Law, we shall indemnify any director or officer of Nanometrics who was or is made or is threatened to be made a party or is otherwise involved in any action, suit or proceeding, whether civil, criminal, administrative or investigative, by reason of the fact that he or she, or a person for whom he or she is the legal representative, is or was a director, officer, employee or agent of Nanometrics or is or was serving at the request of Nanometrics as a director, officer, employee or agent of another corporation or of a partnership, joint venture, trust, enterprise or non-profit entity, including service with respect to employee benefit plans, against all liability and loss suffered and expenses reasonably incurred by such person in connection with any such proceeding. Notwithstanding the foregoing, our bylaws further provide that Nanometrics shall be required to indemnify a person in connection with a proceeding initiated by such person only if the proceeding was authorized by our board of directors.

Section 102 of the Delaware General Corporation Law allows a corporation to include in its certificate of incorporation a provision that eliminates the personal liability of the directors of that corporation to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except where the director breached the duty of loyalty, failed to act in good faith, engaged in intentional misconduct or knowingly violated a law, authorized the payment of a dividend or approved a stock repurchase in violation of Delaware corporate law or obtained an improper personal benefit. To the fullest extent permitted by the Delaware General Corporation Law, our Certificate of Incorporation eliminates a director's personal liability for monetary damages to Nanometrics and its stockholders arising from a breach of fiduciary duty as a director.

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We have entered into indemnification agreements with our officers and directors, which agreements are intended to provide our officers and directors with indemnification to the maximum extent permitted under the Delaware General Corporation Law. We also have obtained an insurance policy covering our directors and officers with respect to certain liabilities, including liabilities arising under the Securities Act.

Item 16. Exhibits

Exhibit Number	Description
1.1	Form of Underwriting Agreement (to be filed if necessary by amendment or as an exhibit to a report pursuant to Section 13(a), 13(c) or 15(d) of the Exchange Act).
3.1	Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 filed with the Registrant's Current Report on Form 8-K filed October 5, 2006).
3.2	Bylaws of the Registrant (incorporated by reference to Exhibit 3.2 filed with the Registrant's Current Report on Form 8-K filed October 5, 2006).
4.1	Form of Registrant's Common Stock Certificate (incorporated by reference to Exhibit 4.1 filed with the Registrant's Quarterly Report on Form 10-Q filed November 9, 2006).
5.1*	Opinion of Perkins Coie LLP.
23.1*	Consent of BDO Seidman, LLP, independent registered public accounting firm.
23.2*	Consent of Perkins Coie LLP (included in Exhibit 5.1).
24.1*	Power of attorney (included on the signature page to the registration statement).

* Filed herewith

Item 17. Undertakings

(a) The undersigned registrant hereby undertakes:

(1) 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 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 20% change in the maximum aggregate offering price set forth in the Calculation of Registration Fee table in the effective registration statement; and

(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)(1)(i), (a)(1)(ii) and (a)(1)(iii) 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 in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement;

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(2) 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 therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof;

(3) 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;

(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(A) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(B) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5) or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii) or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which the prospectus relates, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof. *Provided, however*, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date; and

(5) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities, the undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;

(ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned Registrant or used or referred to by the undersigned registrant;

(iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of an undersigned registrant; and

(iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

(b) 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 therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

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(c) 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 Act 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 Act and will be governed by the final adjudication of such issue.

(d) The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

Table of Contents**SIGNATURES**

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 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 November 18, 2009.

NANOMETRICS INCORPORATED

By: */s/* JAMES P. MONIZ
James P. Moniz
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, Ph.D. and James P. Moniz, and each of them acting individually, as his true and lawful attorneys-in-fact and agent, with full power of each to act alone, with full powers of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments to this Registration Statement (including post-effective amendments and any related registration statements filed pursuant to Rule 462 and otherwise), and to file the same with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and 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 for all intents and purposes as he might or could do in person, hereby ratifying and confirming that all said attorneys-in-fact and agents, or any of them or their substitute or resubstitute, 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 and on the dates indicated.

Signature	Title	Date
<i>/s/</i> TIMOTHY J. STULTZ, PH.D. Timothy J. Stultz, Ph.D.	Director, President and Chief Executive Officer (Principal Executive Officer)	November 18, 2009
<i>/s/</i> JAMES P. MONIZ James P. Moniz	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	November 18, 2009
<i>/s/</i> BRUCE C. RHINE Bruce C. Rhine	Chairman of the Board of Directors	November 18, 2009
<i>/s/</i> NORMAN COATES Norman Coates	Director	November 18, 2009
<i>/s/</i> HOWARD A. BAIN III Howard A. Bain III	Director	November 18, 2009
<i>/s/</i> STEPHEN J. SMITH, PH.D. Stephen J. Smith, Ph.D.	Director	November 18, 2009
<i>/s/</i> J. THOMAS BENTLEY	Director	November 18, 2009

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J. Thomas Bentley

/s/ WILLIAM G. OLDHAM, PH.D.

Director

November 18, 2009

William G. Oldham, Ph.D.

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EXHIBIT INDEX

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