



DIVISION OF
CORPORATION FINANCE

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

September 17, 2010

Mr. James P. Moniz
Chief Financial Officer
Nanometrics Incorporated
1550 Buckeye Drive
Milpitas, California 95035

**Re: Nanometrics Incorporated
Form 10-K for the Fiscal Year Ended January 2, 2010
Filed March 26, 2010
File No. 000-13470**

Dear Mr. Moniz:

We have reviewed your filings and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter within ten business days by providing the requested information, or by advising us when you will provide the requested response. If you do not believe our comments apply to your facts and circumstances, please tell us why in your response.

After reviewing the information you provide in response to these comments, we may have additional comments.

Form 10-K for the Year Ended January 2, 2010

Item 7. Management's Discussion and Analysis, page 25

Results of Operations, page 30

1. We note the variances in loss from operations and net loss during the periods presented. Under separate captions, please expand your disclosure in future filings to explain clearly to investors the reasons for the variances in your loss from operations and net loss for the periods presented. Also disclose any known material trends affecting your loss from operations and net loss for the periods presented. Refer to Item 303(b) of Regulation S-K.

Item 7A. Quantitative and Qualitative Disclosure about Market Risk

Foreign Currency Risk, page 37

2. We note from your disclosure that in your foreign locations you have \$5.5 million of net liabilities, including long-term loans payables of \$27.2 million to the United States. Based on this disclosure it appears that you have been offsetting assets with liabilities for a net amount of \$5.5 million, which includes \$27.2 million in long-term loans payables. In this regards, please tell us the nature and types of assets and liabilities you are offsetting with one another, and your rationale for such treatment. Also, please tell us where in the balance sheet is the \$27.2 million long-term loans payable recorded and how it reconciles with the amounts you present as long-term debt obligations in your balance sheet.

Financial Statements, page 38

Note 1. Significant Accounting Policies, page 44

Revenue Recognition, page 45

3. We note from your disclosure that you offer upgrades to your customers, which consist of a group of parts and are included as service revenue. Please tell us more about the upgrades offered to customers, including whether there is any upfront agreement to later provide upgrades as part of an initial sale to customers. Tell us what service you provide with regards to the upgrade, how you account for the upgrades, and why you record the related revenue as service revenue. Please cite the applicable GAAP literature upon which you based your accounting.
4. In this regard, please also clarify for us the nature of your software sales that you reference on page 8 as part of your discussion related to customer service and support. Please tell us if the referenced software is part of your product or sold as part of your

customer service. Tell us how you account for the software sold and revise future filings to include a related discussion as part of your revenue recognition policy.

Item 11. Executive Compensation, page 76

5. We note from your discussion under “Base Salary” on page 13 of the proxy statement that you have incorporated by reference that the Compensation Committee considers the company’s financial performance over the past year based upon revenues and operating results and the individual performance of the executive officer’s duties and areas of responsibility in setting base salary. Please describe the specific items of corporate performance that are taken into account in setting base salary and the how base salary is structured and implemented to reflect the named executive officer’s individual performance and/or individual contribution to these items of the registrant’s performance, describing the elements of individual performance and/or contribution that are taken into account. Please also include such information, as applicable, in future filings. Please see Items 402(b)(2)(v) and 402(b)(2)(vii) of Regulation S-K.
6. We refer to your disclosure under the captions “Stock Option Grants” and “Restricted Stock Unit Grants” on pages 14 and 15 of the proxy statement that you have incorporated by reference into your Form 10-K. We note minimal, if any, discussion and analysis as to how the stock option grants and restricted stock unit grants were determined. Please provide us with substantive analysis and insight into how your Compensation Committee made its stock option grant determinations and restricted stock unit grant determinations with respect to each named executive officer and include such analysis, as applicable, in future filings. Refer to subparagraphs (b)(1)(iii) and (v) of Item 402 of Regulation S-K. For example, please discuss and analyze how the Compensation Committee determined the actual number of shares underlying the stock options that were awarded to your named executive officers and how and why those awards varied among the named executive officers.
7. We note that you have not included any disclosure in response to Item 402(s) of Regulation S-K. Please advise us of the basis for your conclusion that disclosure is not necessary and describe the process you undertook to reach that conclusion.
8. Please tell us why you have not disclosed whether the compensation consultant was engaged by the compensation committee or any other person and why you have not described the nature and scope of their assignment and the material elements of the instructions or direction given to the consultants with respect to the performance of their duties under the engagement.

Form 10-Q for the quarterly period ended July 3, 2010

Item 2. Management’s Discussion and Analysis of Financial Condition and Results of Operations

Results of Operations

Gross margins, page 22

9. We note from your disclosure that the product gross margin for the three and six months periods ended July 3, 2010 of 57.6% and 57% respectively, increased significantly from 34.1% and 30.7%, respectively for the comparable periods of 2009. We note from your disclosure that this increase was the result of changes in product mix. Considering the significant increase to your current periods gross margin, please quantify and disclose the nature of each item that caused this change in product mix and increase in gross margin for three and six months periods ended July 3, 2010. See Item 303 of Regulation S-K and FR-72 for guidance.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes all information required under the Securities Exchange Act of 1934 and that they have provided all information investors require for an informed investment decision. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

In connection with responding to our comments, please provide, in writing, a statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filing; and
- the company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in our review of your filing or in response to our comments on your filing.

Mr. James P. Moniz
Nanometrics Incorporated
September 17, 2010
Page 5

You may contact Julie Sherman, Staff Accountant, at (202) 551-3640 or me at (202) 551-3212 if you have any questions regarding comments on the financial statements and related matters. Please contact Alicia Lam, Staff Attorney, at (202) 551-3316 or Tim Buchmiller, Reviewing Attorney, at (202) 551-3635 if you have questions on any other comments. In this regard, do not hesitate to contact Martin James, Senior Assistant Chief Accountant, at (202) 551-3671.

Sincerely,

Jeff Jaramillo
Branch Chief