



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

Mail Stop 3030

June 4, 2009

VIA U.S. MAIL and FACSIMILE

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 December 27, 2008
Filed March 27, 2009
Form 8-K/A filed August 4, 2008
File No. 0-13470

Dear Mr. Moniz:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your document in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or on any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Form 10-K for the Fiscal Year Ended December 27, 2008

Management's Discussion and Analysis, page 34

Results of Operations, page 40

1. We note Materials Characterization revenues decreased 34% to \$19 million in 2008 over 2007 and increased 125% to \$29 million in 2007 over 2006. In future filings, please expand your discussion to explain the nature of these revenues and the reasons for the significant changes therein.

Form 8-K/A filed August 4, 2008

Exhibit 99.1

Independent Auditors' Report, page 3

2. We note the auditor report issued by Brightman Almagor Zohar & Co. and dated July 30, 2008 on the consolidated financial statements of Tevet Process Control Technologies Ltd. as of and for the years ended December 31, 2007 and 2006. However, we see that the audit report has a qualified opinion. Please refer to SAB Topic 1 (E)(2) which indicates that such qualified opinions are not accepted in filings with the Commission. In particular, please note that financial statements that require a qualification in the accompanying audit report as to compliance with the applicable body of accounting standards do not satisfy the requirements for filings with the Commission. This is true whether the primary basis of accounting is US GAAP, home country GAAP, or IFRS. Please amend the filing to include audited financial statements that include an audit report that complies with Rule 2-02(b) of Regulation S-X.
3. We note that your auditors conducted their audit in accordance with "generally accepted auditing standards, including those prescribed by the Auditors' regulations (Auditors' Mode of Performance) – 1973". Please note that, as clarified by Instruction 2 to Item 8.A.2 of Form 20-F, Rule 2-02 of Regulation S-X requires that financial statements, other than those required to be audited in accordance with the standards of the PCAOB (United States), must be audited in accordance with U.S. generally accepted auditing standards. Please amend the filing to include financial statements that comply with that requirement.

4. We note the audit report includes a statement that an audit also includes assessing the accounting principles used and significant estimates made by the Company's Board of Directors and management, as well as evaluating the overall financial statements presentation. Please tell us how the reference to the company's board of directors is consistent with the language in a US GAAS standard audit report called for in paragraph 8 of AU Section 508. Otherwise, revise the audit report to comply.

Form 8-K filed April 30, 2009

5. We note disclosures herein that "Management uses EBITDA, which excludes costs associated with acquisitions, asset impairments, restructuring and other special items, to evaluate the company's operating and financial results". Release 34-47226 describes EBITDA as "earnings before interest, taxes, depreciation and amortization." "Earnings" is intended to mean net income as presented in the statement of operations under U.S.GAAP. Measures that are calculated differently than those described as EBITDA in the release should not be characterized as "EBIDTA." Instead, the titles of these measures should clearly identify the earnings measure being used and all adjustments. Refer to Question 14 of the FAQ Regarding the Use of Non-GAAP Financial Measures dated June 13, 2003. Please revise future filings as necessary based on our comment.

As appropriate, please revise your documents and respond to these comments within 10 business days or tell us when you will provide us with a response. Please furnish a cover letter with your response that keys your responses to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please submit your cover letter on EDGAR. Please understand that we may have additional comments after reviewing your responses to our comments.

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 filings;

James P. Moniz
Nanometrics Incorporated
June 4, 2009
Page 4

- 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.

You may contact Dennis Hult, Staff Accountant, at (202) 551-3618 or me if you have questions regarding comments on the financial statements and related matters. Please contact me at (202) 551-3603 with any other questions. In this regard, do not hesitate to contact Martin James, Senior Assistant Chief Accountant, at (202) 551-3671.

Sincerely,

Jay Webb
Reviewing Accountant