UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D. C. 20549

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

March 26, 2007

Date of Report (date of earliest event reported)

Nanometrics Incorporated

(Exact name of Registrant as specified in charter)

Delaware (State or other jurisdiction

0-13470 (Commission File Number) 94-2276314 (I. R. S. Employer

of incorporation)

Identification No.)

1550 Buckeye Drive, Milpitas, California 95035

(Address of principal executive offices)

Registrant s telephone number, including area code: (408) 435-9600

N/A

(Former name or former address, if changed since last report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- " Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- " Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- " Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- " Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Item 5.02 Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers.

On March 26, 2007, Nanometrics announced that it has appointed Bruce C. Rhine, an officer of the company and a member of the Board of Directors, to replace John D. Heaton as the company s President and Chief Executive Officer on an interim basis, effective immediately. The Nominating and Governance Committee of the Board of Directors, together with the Chairman of the Board and the interim CEO, will conduct a nationwide search for a permanent Chief Executive Officer.

Mr. Rhine, 49, has served as the company s Chief Strategy Officer and a director since July 2006. Prior to joining Nanometrics, Mr. Rhine served as Chairman and Chief Executive Office of Accent Optical Technologies, Inc., a supplier of process control and metrology systems to the global semiconductor manufacturing industry, which was acquired by Nanometrics in July 2006. Mr. Rhine holds a B.S. degree in Chemical Engineering and an M.B.A. in Finance from Pennsylvania State University.

On March 26, 2007, the company issued a press release relating to these matters. A copy is filed herewith as Exhibit 99.1 and is incorporated herein by reference.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

Exhibit No. Description

99.1 Press release issued by Nanometrics Incorporated dated March 26, 2007

Signature

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Dated: March 26, 2007 NANOMETRICS INCORPORATED

/s/ Douglas J. McCutcheon Douglas J. McCutcheon

Chief Financial Officer

INDEX TO EXHIBITS

Exhibit No. Description

99.1 Press release issued by Nanometrics Incorporated dated March 26, 2007