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

May 17, 2007

Date of Report (date of earliest event reported)

Nanometrics Incorporated

(Exact name of Registrant as specified in charter)

(State or other jurisdiction

(Commission File Number)

94-2276314 (I. R. S. Employer

Identification No.)

of incorporation)

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)

1

Delaware

0-13470

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.

(d) On May 21, 2007, Nanometrics Incorporated announced that its Board of Directors had appointed Joseph F. Dox as a director of the company, effective as of May 17, 2007. Mr. Dox is expected to join the Audit Committee pending nomination by the company s nominating and governance committee and confirmation by the Board of Directors.

Mr. Dox will participate in the company s standard non-employee director compensation program. As such, Mr. Dox will receive an annual cash retainer of \$15,000 plus \$1,500 for each board and special committee meeting attended and an initial option grant to purchase 20,000 shares of common stock as well as automatic quarterly option grants to purchase 2,500 shares of common stock.

On May 21, 2007, the company issued a press release announcing Mr. Dox s election. 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 May 21, 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: May 21, 2007 NANOMETRICS INCORPORATED

/s/ Quentin B. Wright Quentin B. Wright Interim Chief Financial Officer

INDEX TO EXHIBITS

Exhibit No. Description

99.1 Press release issued by Nanometrics Incorporated dated May 21, 2007