

Rhine Bruce C
Form SC 13G
February 14, 2007

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

SCHEDULE 13G

Under the Securities Exchange Act of 1934

Nanometrics Incorporated

(Name of Issuer)

Common Stock, par value \$0.001 per share

(Title of Class of Securities)

630077105

(CUSIP Number)

December 31, 2006

(Date of Event Which Requires Filing of this Statement)

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

Rule 13d-1(b)

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Rule 13d-1(c)

Rule 13d-1(d)

* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter the disclosures provided in a prior cover page. The information required in the remainder of this cover page shall not be deemed to be filed for the purpose of Section 18 of the Securities Exchange Act of 1934 (Act) or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

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CUSIP No. 630077105

1. Name of Reporting Persons:

I.R.S. Identification Nos. of above persons (entities only).

Bruce C. Rhine

2. Check the Appropriate Box if a Member of a Group (See Instructions)

(a) ..

(b) ..

3. SEC Use Only

4. Citizenship or Place of Organization

United States of America

| | | |
|-----------------|-----------------------------|----------------|
| Number of | 5. Sole Voting Power | |
| Shares | | 39,873 |
| | 6. Shared Voting Power | |
| Beneficially by | | 947,593 |
| Owned by | 7. Sole Dispositive Power | |
| Each | | 39,873 |
| | 8. Shared Dispositive Power | |
| Reporting | | 947,593 |
| Person | | |

With:

9. Aggregate Amount Beneficially Owned by Each Reporting Person

987,466

10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions).

x*

11. Percent of Class Represented by Amount in Row (9)

7.6

12. Type of Reporting Person (See Instructions)

IN

* The Rhine 2000 Children's Trust (the Children's Trust) holds 406,200 shares of Common Stock. David Johnson is the Trustee of the Children's Trust and has sole voting and dispositive power over the shares held by the Children's Trust. The Reporting Person disclaims beneficial ownership of these securities.

Item 1. (a) Name of Issuer:

Nanometrics Incorporated

(b) Address of Issuer's Principal Executive Offices:

1550 Buckeye Drive, Milpitas, CA 95035

Item 2. (a) Name of Person Filing:

Bruce C. Rhine

(b) Address of Principal Business Office or, if none, Residence:

1550 Buckeye Drive, Milpitas, CA 95035

(c) Citizenship:

United States of America

(d) Title of Class of Securities:

Common Stock, par value \$0.001 per share

(e) CUSIP Number:

630077105

Item 3. Not applicable.

Item 4. Ownership.

Provide the following information regarding the aggregate number and percentage of the class of securities of the issuer identified in Item 1.

(a) Amount beneficially owned:

987,466 shares (consisting of (i) 2,926 shares held by the Reporting Person, (ii) 12,910 shares held by the Reporting Person and his spouse as joint tenants with rights of survivorship, (iii) 934,683 shares held by the Bruce Charles Rhine and Martha Hawn Rhine Family Trust, and (iv) 36,947 shares held by the Reporting Person that are issuable upon exercise of common stock options within 60 days of December 31, 2006).

(b) Percent of class:

7.6 (percentage ownership is calculated based on 18,141,589 shares of common stock outstanding as of December 31, 2006 and assumes that 36,947 shares underlying the common stock options exercisable within 60 days of December 31, 2006 are deemed outstanding pursuant to SEC Rule 13d-3(d)(1)(i).

(c) Number of shares as to which the person has:

(i) Sole power to vote or to direct the vote

39,873.

(ii) Shared power to vote or to direct the vote

947,593.

(iii) Sole power to dispose or to direct the disposition of

39,873.

(iv) Shared power to dispose or to direct the disposition of

947,593.

Item 5. Ownership of Five Percent or Less of a Class

Not applicable.

Item 6. Ownership of More than Five Percent on Behalf of Another Person.

Not applicable.

Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on By the Parent Holding Company

Not applicable.

Item 8. Identification and Classification of Members of the Group

Not applicable.

Item 9. Notice of Dissolution of Group

Not applicable.

Item 10. Certification

Not applicable.

SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

February 13, 2007

Date

/s/ Bruce C. Rhine

Signature

Bruce C. Rhine

Name

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