NANOMETRICS INC Form S-4/A June 08, 2005 Table of Contents

As filed with the Securities and Exchange Commission on June 8, 2005

Registration No. 333-123630

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Amendment No. 1 to FORM S-4 REGISTRATION STATEMENT

Under

The Securities Act of 1933

NANOMETRICS INCORPORATED

(Exact name of registrant as specified in its charter)

California (State or other jurisdiction of

3829 (Primary Standard Industrial 94-2276314 (I.R.S. Employer

incorporation or organization)

Classification Code Number)

Identification Number)

1550 Buckeye Drive

Milpitas, California 95035

(408) 435-9600

(Address, including zip code, and telephone number, including area code, of registrant s principal executive offices)

Paul B. Nolan **Chief Financial Officer Nanometrics Incorporated** 1550 Buckeye Drive Milpitas, California 95035 (408) 435-9600 (Name, address, including zip code, and telephone number, including area code, of agent for service) Copies to: Aaron J. Alter, Esq. Thomas R. King, Esq. Michael S. Ringler, Esq. Robert K. Ranum, Esq. Troy Foster, Esq. Fredrikson & Byron P.A. Wilson Sonsini Goodrich & Rosati 200 South Sixth Street **Professional Corporation Suite 4000** 650 Page Mill Road **Minneapolis, MN 55402-1425** Palo Alto, California 94304-1050 (612) 492-7000 (650) 493-9300

Approximate date of commencement of proposed sale to the public: As soon as practicable after the effectiveness of this registration statement and the satisfaction or waiver of all other conditions under the merger agreement described herein.

If the securities being registered on this form are to be offered in connection with the formation of a holding company and there is compliance with General Instruction G, check the following box.

If this form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment that specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the registration statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

Subject to completion, dated June 8, 2005

The information in this joint proxy statement/prospectus is not complete and may be changed. Registrant may not sell these securities until the registration statement filed with the Securities and Exchange Commission, of which this document is a part, is declared effective. This joint proxy statement/prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any jurisdiction where the offer, solicitation or sale is not permitted or would be unlawful prior to registration or qualification under the securities laws of any such jurisdiction. Any representation to the contrary is a criminal offense.

MERGER PROPOSED YOUR VOTE IS VERY IMPORTANT

The respective boards of directors of Nanometrics Incorporated and August Technology Corporation have unanimously approved the merger of August Technology with Nanometrics pursuant to the terms and conditions of a merger agreement, dated as of January 21, 2005, between Nanometrics and August Technology. Following the completion of this merger, which we refer to as the August merger, Nanometrics will be renamed August Nanometrics Inc. We sometimes refer to this combined company as August Nanometrics in this joint proxy statement/prospectus.

If we complete this merger, August Technology shareholders will receive 0.6401 of a share of August Nanometrics common stock for each share of August Technology common stock they own at the completion of the merger and August Technology will become a wholly-owned subsidiary of Nanometrics. Based on the total number of shares of August Technology common stock outstanding on June 7, 2005, the maximum number of shares of August Nanometrics common stock that will be issued to August Technology shareholders in the August merger is 11,548,593. Based on the total number of shares and options of Nanometrics and August Technology outstanding on April 2, 2005, August Technology shareholders will hold approximately 46.4% of the fully-diluted shares of August Nanometrics common stock immediately after this merger, and Nanometrics shareholders will hold approximately 53.6% of the fully-diluted shares of August Nanometrics common stock immediately after this merger.

Nanometrics common stock is quoted on the Nasdaq National Market and traded under the symbol NANO. August Technology common stock is quoted on the Nasdaq National Market and traded under the symbol AUGT. The following table sets forth the closing prices for Nanometrics common stock and August Technology common stock as reported on the Nasdaq National Market on January 20, 2005, the last trading day before Nanometrics and August Technology announced the August merger and June 7, 2005, the last trading day before the date of this joint proxy statement/prospectus. The following table also sets forth historical pro forma equivalent prices which reflect the fluctuating value of the Nanometrics common stock that August Technology shareholders would receive in exchange for each share of August Technology common stock if the August merger was completed on either of these dates, applying the exchange ratio of 0.6401 of a share of August Nanometrics common stock for each share of August Technology common stock.

	Nanomo Common		Technology non Stock	Equ Value	Forma ivalent of August Common Stock
January 20, 2005	\$	13.10	\$ 9.15	\$	8.39
June 7, 2005	\$	11.53	\$ 11.26	\$	7.38

Nanometrics and August Technology cannot complete the August merger unless Nanometrics shareholders approve the issuance of shares of August Nanometrics common stock in the August merger and August Technology shareholders approve the merger agreement and the August merger. More information about Nanometrics, August Technology and the August merger is contained in this joint proxy statement/prospectus.

We encourage you to read this joint proxy statement/prospectus carefully before voting on the August merger, including the section entitled Risk Factors beginning on page 34.

Nanometrics also is taking this opportunity to call and hold its 2005 annual meeting of shareholders. At the Nanometrics annual meeting, Nanometrics is submitting several additional proposals for the consideration and approval of its shareholders including a proposal to reincorporate under the laws of the State of Delaware through a merger with one of its wholly-owned subsidiaries, Minor League Merger Corporation. Throughout this joint proxy statement/prospectus, we refer to this merger as the reincorporation merger. In connection with this proposal, Nanometrics is also proposing to implement several governance-related changes to its certificate of incorporation.

The Nanometrics board of directors unanimously recommends that Nanometrics shareholders vote FOR the proposal to approve the issuance of shares of August Nanometrics common stock in the August merger and FOR each of the other proposals to be considered at the Nanometrics annual meeting.

The August Technology board of directors unanimously recommends that the August Technology shareholders vote FOR August Technology s proposal to approve the merger agreement and the August merger and FOR each of the other proposals to be considered at the August Technology special meeting.

The dates, times and places of the Nanometrics and August Technology shareholder meetings are as follows:

For Nanometrics shareholders:

For August Technology shareholders:

a.m., local time

a.m., local time

Your vote is very important. Whether or not you plan to attend your respective company s shareholder meeting, please take the time to vote by completing and mailing to us the enclosed proxy card. If your shares are held in street name, you must instruct the record holder of your shares in order to vote.

Sincerely,

John D. Heaton President and Chief Executive Officer Nanometrics Incorporated

Jeff L. O Dell Chairman and Chief Executive Officer August Technology Corporation

None of the Securities and Exchange Commission, any state securities regulator or any other regulatory authority has approved or disapproved of the transactions described in this joint proxy statement/prospectus or the securities to be issued under this joint proxy statement/prospectus or determined if the disclosure in this joint proxy statement/prospectus is accurate or adequate. Any representation to the contrary is a criminal offense.

This joint proxy statement/prospectus is dated

, 2005, and is being mailed to shareholders of Nanometrics and August Technology

on or about , 2005.

ADDITIONAL INFORMATION

This joint proxy statement/prospectus incorporates by reference important business and financial information about Nanometrics and August Technology from documents that are not included in or delivered with this joint proxy statement/prospectus. For a more detailed description of the information incorporated by reference into this joint proxy statement/prospectus and how you may obtain it, see the section of this joint proxy statement/prospectus entitled *Additional Information Where You Can Find More Information* beginning on page 200.

You can obtain any of the documents incorporated by reference into this joint proxy statement/prospectus from Nanometrics or August Technology, as applicable, or from the Securities and Exchange Commission, through its website at www.sec.gov. Documents incorporated by reference are available from Nanometrics and August Technology without charge, excluding any exhibits to those documents, unless the exhibit is specifically incorporated by reference as an exhibit in this joint proxy statement/prospectus. Nanometrics shareholders and August Technology shareholders may request a copy of such documents by contacting either Nanometrics or August Technology, as appropriate, at:

Nanometrics Incorporated August Technology Corporation

1550 Buckeye Drive 4900 West 78th Street

Milpitas, California 95035 Bloomington, Minnesota 55435

Attn: Investor Relations Attn: Investor Relations

In addition, you may obtain copies of the information relating to Nanometrics, without charge, by sending an e-mail to investors@nanometrics.com or by calling (408) 435-9600.

You may obtain copies of the information relating to August Technology, without charge, by calling The Proxy Advisory Group of Strategic Surveillance, LLC at (866) 657-8728 or (212) 850-8150.

We are not incorporating the contents of the websites of the Securities and Exchange Commission or any other person into this joint proxy statement/prospectus. We are only providing the information about how you can obtain certain documents that are incorporated by reference into this joint proxy statement/prospectus at the SEC website for your convenience.

In order for you to receive timely delivery of the documents in advance of the Nanometrics annual meeting and August Technology special meeting, Nanometrics or August Technology, as applicable, must receive your request no later than , 2005.

NANOMETRICS INCORPORATED

NOTICE OF ANNUAL MEETING OF SHAREHOLDERS

	TO	THE	SHA	REHO	LDFRS	OF NANON	IETRICS	INCORPORATED
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TO THE SHAREHOLDERS OF NANOMETRICS INCORPORATED:
NOTICE IS HEREBY GIVEN that the annual meeting of shareholders of Nanometrics Incorporated, a California corporation (Nanometrics will be held on , , , 2005 at a.m., local time, at the principal offices of Nanometrics located at 1550 Buckeye Driv Milpitas, California 95035. At the annual meeting, Nanometrics shareholders will consider and vote upon the following:
1. A proposal to approve the issuance of shares of August Nanometrics common stock in connection with the merger of August Technology Corporation with Major League Merger Corporation, a wholly-owned subsidiary of Nanometrics, pursuant to an Agreement and Plan of Mergand Reorganization, dated as of January 21, 2005, by and among Nanometrics, Major League Merger Corporation, Minor League Merger Corporation and August Technology Corporation.
2. A proposal to approve the reincorporation of Nanometrics under the laws of the State of Delaware through a merger of Nanometrics with Minor League Merger Corporation, a wholly-owned subsidiary of Nanometrics.
3. Proposals to approve various governance-related provisions in the certificate of incorporation of August Nanometrics (if the August merger described in Proposal 1 is completed) or of Nanometrics (if the August merger described in Proposal 1 is not completed), consisting of the following proposals to be effective upon the completion of the reincorporation merger:
3A a proposal to approve a provision limiting the August Nanometrics (or Nanometrics, if the August merger is not completed) stockholders right to call special meetings of stockholders;
3B a proposal to approve a provision limiting the August Nanometrics (or Nanometrics, if the August merger is not completed) stockholders ability to act by written consent;
3C a proposal to approve a provision requiring a super-majority vote of the August Nanometrics (or Nanometrics, if t

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completed) stockholders right to remove directors from the board without cause; and

the August merger is not completed) bylaws;

August merger is not completed) stockholders to amend certain provisions of its certificate of incorporation;

3D a proposal to approve a provision requiring a super-majority vote of the August Nanometrics (or Nanometrics, if the August merger is not completed) stockholders to amend certain provisions of the August Nanometrics (or Nanometrics, if

3E a proposal to approve a provision limiting the August Nanometrics (or Nanometrics, if the August merger is not

3F a proposal to approve a provision limiting cumulative voting rights in connection with the election of directors.

4. A proposal to elect seven director nominees to the Nanometrics board of directors shareholders at which their respective successors are elected and qualified, or until t	
5. A proposal to ratify the appointment of BDO Seidman, LLP as Nanometrics ind fiscal year ending December 31, 2005.	lependent registered public accounting firm for Nanometrics
6. Such other business as may properly come before the annual meeting or any post	ponements or adjournments thereof.
The foregoing items of business are more fully described in the joint proxy statemer shareholders.	nt/prospectus accompanying this notice of annual meeting of
Only Nanometrics shareholders of record at the close of business on and any postponements or adjournments thereof.	005 are entitled to notice of and to vote at the annual meeting

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All Nanometrics shareholders are cordially invited to attend the annual meeting in person. However, to ensure representation at the annual meeting, Nanometrics shareholders are urged to mark, sign, date and return the enclosed proxy card as promptly as possible in the postage-prepaid envelope enclosed for that purpose. Any Nanometrics shareholder of record attending the annual meeting may vote in person even if that shareholder previously returned a proxy card for the annual meeting.

BY ORDER OF THE BOARD OF DIRECTORS,

Vincent J. Coates

Chairman of the Board of Directors and Secretary

Milpitas, California

, 2005

2005 at

AUGUST TECHNOLOGY CORPORATION

4900 West 78th Street

Bloomington, Minnesota 55435

NOTICE OF SPECIAL MEETING OF SHAREHOLDERS

TO RE	HELD ON	2005

To the Shareholders of August Technology Corporation:

a.m., local time, for the following purposes:

1. To consider and vote upon a proposal to approve the Agreement and Plan of Merger and Reorganization, dated as of January 21, 2005, by and among Nanometrics Incorporated (Nanometrics), Major League Merger Corporation (Merger Sub 1), Minor League Merger Corporation (Merger Sub 2) and August Technology and the merger contemplated therein. Pursuant to the merger agreement, (a) Nanometrics will be merged with and into Merger Sub 2, a Delaware corporation, to reincorporate Nanometrics under Delaware law, and (b) August Technology will

on

A special meeting of the shareholders of August Technology Corporation (August Technology) will be held at

- be merged with and into Merger Sub 1 (the August merger), and August Technology will thereby become a wholly-owned subsidiary of Nanometrics. In connection with the August merger, Nanometrics will be renamed August Nanometrics Inc. Holders of August Technology common stock will receive shares of August Nanometrics common stock based upon the exchange ratio described in the accompanying joint proxy statement/prospectus.
- 2. To consider and vote upon a proposal to approve the governance and other provisions in the post-transaction certificate of incorporation and bylaws of August Nanometrics consisting of the following proposals to be effective upon the completion of the reincorporation merger:
 - 2a: A proposal to approve a provision limiting the August Nanometrics stockholders right to call special meetings of stockholders;
 - 2b: A proposal to approve a provision limiting the August Nanometrics stockholders ability to act by written consent;
 - 2c: A proposal to approve a provision requiring a super-majority vote of the August Nanometrics stockholders to amend certain provisions of the August Nanometrics certificate of incorporation; and
 - 2d: A proposal to approve a provision requiring a super-majority vote of the August Nanometrics stockholders to amend certain provisions of the August Nanometrics bylaws.

Your vote is very important. Even if you expect to attend the special meeting, please complete, sign, and date the enclosed proxy card and return it promptly in the enclosed postage-paid envelope. If no
The attached joint proxy statement/prospectus contains more detailed information regarding the August merger and the merger agreement and includes a copy of the merger agreement.
The record date for the special meeting is the close of business on , 2005. Only August Technology shareholders of record at that time are entitled to notice of and to vote at the special meeting or any adjournment or postponement thereof. To approve the merger agreement and the August merger, the holders of a majority of all the outstanding shares of August Technology common stock must vote in favor of the merger agreement and the August merger. To approve the remaining proposals, the affirmative vote of the holders of a majority of the shares of our common stock present and voting on such proposal, in person or by proxy, at the special meeting is required.
4. To transact such other business as may properly come before the special meeting or any adjournment or postponement thereof.
3. To consider and vote upon a proposal to adjourn the special meeting, if necessary, to permit further solicitation of proxies if there are not sufficient votes at the time of the special meeting to approve any of the foregoing proposals.

instructions are indicated on your proxy card, your shares will be voted FOR each of the foregoing proposals. If you do not return your proxy card or vote in person, the effect is a vote AGAINST the August merger. You can revoke your proxy at any time before it is exercised by giving written notice to the secretary of August Technology, or filing another proxy, or attending the special meeting and voting in person.

If the merger agreement is approved and the August merger is consummated, you will be sent a letter of transmittal with instructions for surrendering your certificates representing shares of August Technology common stock. Please do not send your share certificates until you receive these materials.

The August Technology board of directors unanimously recommends that you vote FOR the approval of the merger agreement and the August merger and FOR the approval of the governance provisions to be effective following the reincorporation of Nanometrics under Delaware law, and FOR the adjournment of the special meeting, if necessary to solicit additional proxies.

BY ORDER OF THE BOARD OF DIRECTORS,

Stanley D. Piekos, Chief Financial Officer and Secretary

, 2005

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Annex A-1	Form of Parent Shareholder Voting Agreement
Annex A-2	Form of Company Shareholder Voting Agreement
Annex B	Form of Amended and Restated Certificate of Incorporation of August Nanometrics Inc.
Annex B-1	Form of Amended and Restated Bylaws of August Nanometrics Inc.
Annex C	Opinion of Adams Harkness, Inc.
Annex D	Opinion of Needham & Company, LLC (f/k/a Needham & Company, Inc.)

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OUESTIONS AND ANSWERS FOR NANOMETRICS SHAREHOLDERS

The following are some questions that shareholders of Nanometrics may have regarding the matters being considered at the annual meeting of Nanometrics shareholders, as well as brief answers to those questions. Nanometrics urges you to read the remainder of this joint proxy statement/prospectus carefully because the information below does not provide all of the information that might be important to you.

Q: Why am I receiving this joint proxy statement/prospectus?

A: The respective boards of directors of Nanometrics and August Technology have unanimously approved the merger of August Technology with Nanometrics in accordance with the terms and conditions of a merger agreement, dated as of January 21, 2005, between Nanometrics and August Technology. Pursuant to the terms of the merger agreement, August Technology will merge with a wholly-owned subsidiary of Nanometrics and August Technology will thereby become a wholly-owned subsidiary of Nanometrics. We refer to this merger herein as the August merger. In connection with the August merger, Nanometrics will be renamed August Nanometrics Inc. If we complete the August merger, August Technology shareholders will receive 0.6401 of a share of August Nanometrics common stock for each share of August Technology common stock they own at the completion of the August merger. Based on the total number of shares and options of Nanometrics and August Technology outstanding on April 2, 2005, August Technology shareholders will hold approximately 46.4% of the fully-diluted shares of August Nanometrics common stock immediately after the August merger, and Nanometrics shareholders will hold approximately 53.6% of the fully-diluted shares of August Nanometrics common stock immediately after the August merger.

Nanometrics and August Technology cannot complete the August merger unless Nanometrics shareholders approve the issuance of shares of August Nanometrics common stock in the August merger. The Nanometrics board of directors is soliciting your proxy to vote FOR Nanometrics proposal to approve the issuance of shares of August Nanometrics common stock in the August merger. This joint proxy statement/prospectus describes Nanometrics, August Technology and the August merger so that you may make an informed decision with respect to this merger proposal.

Nanometrics also is taking this opportunity to call and hold its 2005 annual meeting of shareholders. At the Nanometrics annual meeting, Nanometrics is submitting several additional proposals for the consideration and approval of its shareholders, including a proposal to reincorporate under the laws of the State of Delaware through a merger with one of its wholly-owned subsidiaries, Minor League Merger Corporation. Nanometrics cannot complete the reincorporation merger without the approval of its shareholders, as more fully described in this joint proxy statement/prospectus. *The August merger, however, is not contingent on the completion of the reincorporation merger*. As a result, if Nanometrics and August Technology complete the August merger and the reincorporation merger, August Nanometrics will be a Delaware corporation. However, if Nanometrics and August Technology complete the August merger but not the reincorporation merger, August Nanometrics will be a California corporation.

In connection with the reincorporation merger, Nanometrics is also proposing to implement various governance-related provisions in the certificate of incorporation of August Nanometrics (if the August merger is completed) or Nanometrics (if the August merger is not completed) to be effective upon completion of the reincorporation merger.

Nanometrics is also proposing the election of seven directors to its board of directors. If Nanometrics seven director nominees are elected and Nanometrics and August Technology do not complete the August merger, Nanometrics new directors will hold office until the next annual meeting of Nanometrics shareholders. If Nanometrics seven director nominees are elected and Nanometrics and August Technology complete the August merger, however, four of Nanometrics director nominees will resign (leaving three Nanometrics directors on the August Nanometrics

board of directors), August Technology will select three of its directors to join the August

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Nanometrics board of directors and these six directors (the three remaining Nanometrics directors and three directors appointed from the August Technology board of directors) will select a seventh individual to join the August Nanometrics board of directors. Nanometrics has selected Vincent J. Coates and John D. Heaton as two of the three directors who will remain on the August Nanometrics board of directors if the August merger is completed. Nanometrics has not yet selected the third of its directors who will remain on the August Nanometrics board of directors. August Technology selected Jeff L. O Dell as one of the three directors who will join the August Nanometrics board of directors if the August merger is completed. August Technology has not yet selected the other of its directors who will join the August Nanometrics board of directors.

Finally, Nanometrics is proposing that you ratify the appointment of BDO Seidman, LLP as Nanometrics independent registered public accounting firm for Nanometrics fiscal year ending December 31, 2005.

Questions and Answers about the August Merger

Q: Why are Nanometrics and August Technology proposing the August merger? (See page 90)

A: Nanometrics and August Technology believe that by combining the highly complementary, non-overlapping product lines of the two companies, August Nanometrics can generate improved long-term operating and financial results and establish a stronger competitive position in the industry. The boards of directors of Nanometrics and August Technology also believe that August Nanometrics will have the ability to provide a more comprehensive and better integrated set of tools to its customers, gain increased access to capital, create additional opportunities for marketing its products, respond more quickly and effectively to technological change, increased consolidation and industry demands, and provide more effective support coverage to its customers.

In addition, the Nanometrics board of directors believes that August Nanometrics can achieve greater scale and presence in the semiconductor equipment industry, provide an opportunity for increased sales and better integrated and broader product line, as well as provide Nanometrics shareholders with the opportunity to participate in the potential for growth of the combined company after the August merger.

Q: What are the risks of the August merger?

A: The August merger involves numerous risks and uncertainties, including, but not limited to, the following: the expense, time and disruption of Nanometrics business related to integrating the operations of Nanometrics and August Technology; the anticipated benefits and synergies of the August merger may not be realized; the trading price of Nanometrics common stock may decline if the August merger is not completed; and customers, distributors, resellers or others may delay or defer decisions concerning Nanometrics during the pendency, or as a result of, the August merger.

We encourage you to read this joint proxy statement/prospectus carefully, including the section entitled Risk Factors beginning on page 34, for a complete discussion of risks associated with the August merger and August Nanometrics.

Q: What will I receive in the August merger? (See page 118)

A: If Nanometrics and August Technology complete the August merger, you will continue to hold the Nanometrics shares that you currently hold and will not receive any payment or other consideration in the August merger. However, your stock certificates will represent shares of August Nanometrics.

Q: What are the United States federal income tax consequences of the August merger to me? (See page 119)

A: You will not recognize any gain or loss for United States federal income tax purposes in respect of your shares of Nanometrics common stock as a result of the August merger.

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Attached as Exhibits 8.1 and 8.2 to the registration statement of which this joint proxy statement/prospectus forms a part are opinions of tax counsel to Nanometrics and August Technology, respectively, that the August merger will constitute a reorganization within the meaning of Section 368(a) of the Internal Revenue Code. In addition, it is a condition to the August merger that each of August Technology and Nanometrics receive a legal opinion to the effect that the August merger will constitute a reorganization within the meaning of Section 368(a) of the Internal Revenue Code.

The approval or disapproval of the reincorporation merger will have no effect on the material United States federal income tax consequences of the August merger.

Q: When do Nanometrics and August expect to complete the August merger?

A: Nanometrics and August Technology are working to complete the August merger as quickly as possible. Nanometrics and August Technology currently expect to complete the August merger in the third quarter of 2005. Nanometrics and August Technology cannot predict the exact timing of the completion of the August merger, however, because it is subject to several conditions beyond their control, including approval by the shareholders of both Nanometrics and August Technology.

Q: What vote is required by Nanometrics shareholders to proceed with the August merger? (See page 67)

A: Under the applicable rules of the Nasdaq Stock Market, Nanometrics cannot complete the August merger unless the issuance of shares of August Nanometrics common stock in the August merger is approved by the affirmative vote of the holders of a majority of the shares of Nanometrics common stock represented and voting at the Nanometrics annual meeting.

Q: How does the Nanometrics board of directors recommend that I vote on the August merger? (See page 94)

A: The Nanometrics board of directors unanimously recommends that you vote FOR Nanometrics proposal to approve the issuance of shares of August Nanometrics common stock in the August merger.

Q: Did the Nanometrics board of directors obtain a fairness opinion in connection with its determination to proceed with the August merger? (See page 94)

A: Yes. On January 20, 2005, Adams Harkness, Inc., financial advisor to Nanometrics, provided to the Nanometrics board of directors its oral opinion, which was subsequently confirmed by delivery of a written opinion dated January 20, 2005, that, as of the date of such opinion, the exchange ratio for August Technology common stock provided for in the merger agreement was fair, from a financial point of view, to the holders of Nanometrics common stock. The full text of Adams Harkness written opinion is attached to this joint proxy statement/prospectus as Annex C. We encourage you to read this opinion carefully in its entirety for a description of the procedures followed, assumptions made, matters considered and limitations on the review undertaken. Adams Harkness opinion is directed to the Nanometrics board of directors and addresses only the fairness from a financial point of view of the exchange ratio for August Technology common stock provided for in the merger

agreement as of the date of the opinion. Nanometrics was required to pay Adams Harkness a fee upon the delivery by Adams Harkness of the fairness opinion and has agreed to pay an additional fee upon completion of the August merger.

Q: How do the Nanometrics directors and executive officers intend to vote on the August merger? (See page 132)

A: All of the Nanometrics directors and executive officers have entered into voting agreements with August Technology pursuant to which they have agreed to vote all of their respective shares of Nanometrics common

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stock in favor of Nanometrics proposal to approve the issuance of shares of August Nanometrics common stock in the August merger and the other proposals related to the August merger.

At the close of business on January 21, 2005, the date of the merger agreement, directors and executive officers of Nanometrics and their affiliates beneficially owned and were entitled to vote 3,392,274 shares of Nanometrics common stock, collectively representing approximately 26.9% of the shares of Nanometrics common stock outstanding on that date. As of the record date for the Nanometrics annual meeting, directors and executive officers of Nanometrics and their affiliates beneficially owned and were entitled to vote shares of Nanometrics common stock, collectively representing approximately of the shares of Nanometrics common stock outstanding on that date.

Q: Do any of the Nanometrics directors and executive officers have any special interests in the August merger? (See page 101)

A: In considering the recommendation of the Nanometrics board of directors with respect to the issuance of shares of August Nanometrics common stock in the August merger, you should be aware that members of the Nanometrics board of directors and Nanometrics executive officers have interests in the August merger that may be different than, or in addition to, the interests of Nanometrics shareholders generally. These interests include:

the appointment of three current directors of Nanometrics, including Vincent J. Coates and John D. Heaton, as directors of August Nanometrics upon completion of the August merger, and the appointment of certain executive officers of Nanometrics, including Vincent J. Coates and John D. Heaton, as executive officers of August Nanometrics upon completion of the August merger;

the potential receipt of severance payments, payable to the following executive officers in the following respective amounts if they were required to resign from their respective positions with Nanometrics in connection with the August merger:

Name and Title	Total Se	verance Payment
Vincent J. Coates	\$	1,024,000
Chairman of the Board and Secretary		
John D. Heaton	\$	341.800

President and Chief Executive Officer

and the provision of directors and officers insurance coverage to current directors and officers of Nanometrics following the August merger.

The Nanometrics board of directors was aware of these interests and considered them, among other matters, when making its determination to approve the merger agreement and when making its recommendation that the Nanometrics shareholders approve the issuance of shares of August Nanometrics common stock in the August merger.

Questions and Answers about the Reincorporation Merger

Q: Why is Nanometrics proposing the reincorporation merger? (See page 172)

A: The Nanometrics board of directors has determined that it is prudent to reincorporate under the laws of the State of Delaware because it is important for Nanometrics to be able to draw upon well-established principles of corporate governance in making legal and business decisions. The prominence and predictability of Delaware corporate law provides a reliable foundation on which our governance decisions can be based, and Nanometrics believes that its shareholders will benefit from the responsiveness of Delaware corporate law to their needs and the needs of the corporation they own.

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Q: What will I receive in the reincorporation merger? (See page 171)

A: If Nanometrics completes the reincorporation merger, each share of Nanometrics common stock will be automatically converted into one share of Minor League Merger Corporation, which is currently a wholly-owned subsidiary of Nanometrics incorporated under the laws of the State of Delaware.

Q: What are the United States federal income tax consequences of the reincorporation merger to me? (See page 174)

A: The reincorporation merger will constitute a reorganization within the meaning of Section 368(a) of the Internal Revenue Code of 1986. As a result, you will not recognize any gain or loss for United States federal income tax purposes as a result of the reincorporation merger.

Q: When does Nanometrics expect to complete the reincorporation merger?

A: If Nanometrics shareholders approve the reincorporation merger and the issuance of shares of August Nanometrics common stock in the August merger, Nanometrics will complete the reincorporation merger immediately prior to completing the August merger. If Nanometrics shareholders approve the reincorporation merger but do not approve the August merger, Nanometrics will complete the reincorporation as soon as practicable following the Nanometrics annual meeting.

Q: What vote is required by Nanometrics shareholders to approve the reincorporation merger and the proposed governance-related provisions? (See page 175)

A: Under applicable state law, Nanometrics cannot complete the reincorporation merger unless it is approved by the affirmative vote of the holders of a majority of the outstanding shares of Nanometrics common stock entitled to vote on the record date.

Under applicable state law, stockholder approval of the reincorporation merger is sufficient to implement the proposed governance-related provisions in the certificate of incorporation of August Nanometrics (if the August merger is completed) or Nanometrics (if the August merger is not completed). Under rules promulgated by the Securities and Exchange Commission, however, we are required to present each of the proposed governance-related provisions as a separate proposal for stockholder approval. Accordingly, if we complete the reincorporation merger, we have determined that we will not implement any of the proposed governance-related provisions unless such provision is independently approved by the affirmative vote of the holders of a majority of the shares of Nanometrics common stock present and voting on the provision at the Nanometrics annual meeting.

Q: How does the Nanometrics board of directors recommend that I vote on the reincorporation merger and the proposed governance-related provisions? (See page 175)

A: The Nanometrics board of directors unanimously recommends that you vote FOR Nanometrics proposal to approve the reincorporation merger.

The Nanometrics board of directors also unanimously recommends that you vote FOR Nanometrics proposal to approve each of the governance-related provisions described in this joint proxy statement/prospectus to be considered at the Nanometrics annual meeting.

Q: Will Nanometrics proceed with the August merger if the Nanometrics shareholders do not approve the reincorporation merger?

A: Yes. The reincorporation merger is not a condition to completion of the August merger and Nanometrics intends to proceed with the August merger even if Nanometrics does not obtain the requisite shareholder approval to complete the reincorporation merger.

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Q: Will Nanometrics proceed with the reincorporation merger if the Nanometrics shareholders do not approve the August merger?

A: Yes. If Nanometrics obtains the requisite shareholder approval to complete the reincorporation merger, but Nanometrics and August Technology do not proceed with the August merger, Nanometrics still intends to proceed with the reincorporation merger and the proposed governance-related provisions approved by the Nanometrics shareholders.

Q: Will Nanometrics implement any of the proposed governance-related provisions in its articles of incorporation if the Nanometrics shareholders do not approve the reincorporation merger?

A: No. If the Nanometrics shareholders do not approve the reincorporation merger, Nanometrics will not implement any changes to its articles of incorporation, whether or not Nanometrics and August Technology complete the August merger.

Q: What happens if the Nanometrics shareholders approve the reincorporation merger and some, but not all, of the proposed governance-related provisions?

A: We will complete the reincorporation merger and implement only those proposed governance-related provisions that are approved by the Nanometrics shareholders and, if applicable, the August Technology shareholders.

Q: What happens if the Nanometrics shareholders approve the reincorporation merger and a governance-related provision, but the August Technology shareholders do not approve the same governance-related provision?

A: We will complete the reincorporation merger, but we will not implement any governance-related provision that has been proposed to both the Nanometrics shareholders and the August Technology shareholders, but is not approved by the shareholders of both companies.

Additional Questions and Answers

Q: What other matters are Nanometrics shareholders being asked to vote on at the Nanometrics annual meeting? (See page 65)

A: In addition to the August merger, the reincorporation merger and the governance-related proposals, Nanometrics shareholders are being asked to approve:

Nanometrics seven director nominees to the Nanometrics board of directors to serve until the next annual meeting of Nanometrics shareholders at which their respective successors are elected and qualified, or until the earlier of their death, resignation or removal;

and

Nanometrics proposal to ratify the appointment of BDO Seidman, LLP as Nanometrics independent registered public accounting firm for Nanometrics fiscal year ending December 31, 2005.

Q: Will all of the Nanometrics directors elected at the annual meeting continue to serve if the August merger is completed? (See page 127)

A: No. If Nanometrics seven director nominees are elected and Nanometrics and August Technology complete the August merger, four of Nanometrics directors will resign (leaving three Nanometrics directors on the August Nanometrics board of directors), August Technology will select three of its directors to join the August Nanometrics board of directors and these six directors (the three remaining Nanometrics directors and three directors appointed from the August Technology board of directors) will select a seventh individual to join the August Nanometrics board of directors. Nanometrics has selected Vincent J. Coates and John D. Heaton as two of the three directors who will remain on the August Nanometrics

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board of directors if the August merger is completed. Nanometrics has not yet selected the third of its directors who will remain on the August Nanometrics board of directors. August Technology selected Jeff L. O Dell as one of the three directors who will join the August Nanometrics board of directors if the August merger is completed. August Technology has not yet selected the other of its directors who will join the August Nanometrics board of directors.

In addition, the August Nanometrics organizational documents will provide for a classified board of directors consisting of three classes. Class I will be comprised of one director from the Nanometrics board of directors and one director from the August Technology board of directors. Class II will be comprised of one director from the Nanometrics board of directors and one director from the August Technology board of directors. Class III will consist of one director from the Nanometrics board of directors, one director from the August Technology board of directors and the additional director selected by Nanometrics and August Technology. Class I directors will serve for an initial term of one year and for three-year terms thereafter, if re-elected. Class III directors will serve for an initial term of three years and three-year terms thereafter, if re-elected. As noted above, Nanometrics and August Technology have not yet completely determined the composition of the August Nanometrics board of directors, so consequently, they have not yet determined which directors will be in the various classes of directors either.

Q: How does the Nanometrics board of directors recommend that Nanometrics shareholders vote on these proposals?

A: Nanometrics board of directors unanimously recommends that Nanometrics shareholders vote:

FOR Nanometrics seven director nominees to the Nanometrics board of directors to serve until the next annual meeting of Nanometrics shareholders at which their respective successors are elected and qualified, or until the earlier of their death, resignation or removal; and

FOR the proposal to ratify the appointment of BDO Seidman, LLP as Nanometrics independent registered public accounting firm for Nanometrics fiscal year ending December 31, 2005.

Q: What do I need to do now?

A: You should read and consider the information contained in this joint proxy statement/prospectus carefully. You also may want to review the documents referenced under the section of this joint proxy statement/prospectus entitled *Additional Information Where You Can Find More Information* beginning on page 200. You should then vote your shares of Nanometrics common stock in accordance with the instructions in this joint proxy statement/prospectus as soon as possible so that your shares are represented at the Nanometrics annual meeting.

Q: How do I vote or submit my voting instructions? (See page 68)

A: If you are the holder of record of your shares of Nanometrics common stock, you may vote in person at the Nanometrics annual meeting or by submitting a proxy card for the annual meeting. You can vote your shares of Nanometrics common stock by proxy by completing, signing, dating and returning the enclosed proxy card for the annual meeting and returning it in the enclosed pre-paid envelope.

If you hold your shares of Nanometrics common stock through a broker, bank or other nominee (*i.e.*, in street name), you must provide the record holder of your shares with instructions on how to vote your shares at the Nanometrics annual meeting. Please refer to the voting instruction card delivered to you by your broker, bank or other nominee for instructions on how to direct the record holder of your shares to vote your shares at the Nanometrics annual meeting. If you hold your shares of Nanometrics common stock in street name, you must obtain a legal proxy from the record holder of your shares in order to attend the Nanometrics annual meeting and vote in person. If you wish to do so, please contact the broker, bank or other nominee that holds your shares of Nanometrics common stock for instructions on how to obtain a legal proxy for this purpose.

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Q: What happens if I do not vote? (See page 69)

A: If you do not vote in person at the Nanometrics annual meeting or submit a proxy card for the Nanometrics annual meeting, your shares of Nanometrics common stock will not be counted as present at the annual meeting for the purpose of determining the presence of a quorum at the annual meeting, but will have the same effect as a vote *against* approval of the reincorporation merger. Furthermore, broker non-votes will be counted as present at the annual meeting for purposes of determining the presence of a quorum at the annual meeting, but will have the same effect as a vote *against* approval of the reincorporation merger.

If you submit a proxy card for the Nanometrics annual meeting and affirmatively elect to abstain from voting, your proxy will be counted as present for the purpose of determining the presence of a quorum at the annual meeting but will not be voted at the annual meeting. As a result, your abstention will have the same effect as a vote *against* the approval of the issuance of shares of August Nanometrics common stock in the August merger and the approval of the reincorporation merger.

Q: If my shares are held in street name, will my broker, bank, or nominee vote my shares for me on the merger transaction proposals? (See page 69)

A: No. The broker, bank, or other nominee that holds your shares of Nanometrics common stock cannot vote your shares of Nanometrics common stock at the Nanometrics annual meeting unless you provide them with instructions on how to vote your shares in accordance with the information and procedures they provided to you.

Q: Can I change my vote after I have mailed my signed proxy or instruction form? (See page 69)

A: Yes. If you are the record holder of your shares of Nanometrics common stock, you can change your vote at any time before your proxy is voted at the Nanometrics annual meeting by:

delivering to the Nanometrics corporate secretary a signed notice of revocation;

granting the Nanometrics proxy holders a new, later-dated proxy, which must be signed and delivered to the Nanometrics corporate secretary in advance of the vote at the Nanometrics annual meeting; or

attending the Nanometrics annual meeting and voting in person. Your attendance alone, however, will not revoke your previously granted proxy.

If you hold your shares in street name and you have provided voting instructions to the broker, bank or other nominee that holds your shares of Nanometrics common stock for use at the Nanometrics annual meeting, you must follow the instructions of your broker, bank or other nominee in order to change your vote or revoke your proxy for the Nanometrics annual meeting.

Q: Should I send in my stock certificates now? (See page 69)

A: No. You should not submit your stock certificates for Nanometrics shares because your certificates will not be exchanged in connection with the August merger or the reincorporation merger.

Q: What should I do if I receive more than one set of voting materials? (See page 69)

A: You may receive more than one set of voting materials for the Nanometrics annual meeting, including multiple copies of this joint proxy statement/prospectus and multiple proxy cards or voting instruction cards. For example, if you are a record holder of your shares of Nanometrics common stock and your shares are registered in more than one name, you will receive more than one proxy card for the annual meeting. If you hold your shares of Nanometrics common stock in more than one brokerage account, you will receive a separate voting instruction card for each brokerage account in which you hold shares. In addition, if you are a shareholder of Nanometrics and a shareholder of August Technology, you will receive one or more separate proxy cards or

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voting instruction cards for each company. Please complete, sign, date and return each proxy card and voting instruction card that you receive to ensure that your shares will be represented at the Nanometrics annual meeting.

Q: Do I have dissenters or appraisal rights in connection with the August merger or the reincorporation merger? (See page 115)

A: No. Under applicable law, you will not have dissenters or appraisal rights in connection with the August merger or the reincorporation merger.

Q: Whom should I call with questions?

A: If you have any questions about the August merger, the reincorporation merger or any other matters described in this joint proxy statement/prospectus, or if you need additional copies of this joint proxy statement/prospectus or a proxy card for the Nanometrics annual meeting, you should contact:

Nanometrics Incorporated:

1550 Buckeye Drive

Milpitas, California 95035

Attention: Investor Relations

Tel: (408) 435-9600

Fax: (408) 232-5910

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OUESTIONS AND ANSWERS FOR AUGUST TECHNOLOGY SHAREHOLDERS

The following are some questions that shareholders of August Technology may have regarding the matters being considered at the special meeting of August Technology shareholders, as well as brief answers to those questions. August Technology urges you to read the remainder of this joint proxy statement/prospectus carefully because the information below does not provide all of the information that might be important to you.

Q: Why am I receiving this joint proxy statement/prospectus?

A: The respective boards of directors of Nanometrics and August Technology have unanimously approved the merger of August Technology with Nanometrics in accordance with the terms and conditions of a merger agreement, dated as of January 21, 2005, between Nanometrics and August Technology. Pursuant to the terms of the merger agreement, August Technology will merge with a wholly-owned subsidiary of Nanometrics and August Technology will thereby become a wholly-owned subsidiary of Nanometrics. In connection with the August merger, Nanometrics will be renamed August Nanometrics Inc. If we complete the August merger, August Technology shareholders will receive 0.6401 of a share of August Nanometrics common stock for each share of August Technology common stock they own at the completion of the merger. Based on the total number of shares of Nanometrics and August Technology outstanding on April 2, 2005, August Technology shareholders will hold approximately 46.4% of the fully-diluted shares of August Nanometrics common stock immediately after the August merger, and Nanometrics shareholders will hold approximately 53.6% of the fully-diluted shares of August Nanometrics common stock immediately after the August merger.

Nanometrics and August Technology cannot complete the August merger unless August Technology shareholders approve the merger agreement and the August merger. The August Technology board of directors is soliciting your proxy to vote FOR August Technology s proposal to approve the merger agreement and the August merger. The August Technology board of directors is also soliciting your proxy to vote FOR approval of various governance-related provisions in August Nanometrics certificate of incorporation. The August Technology board of directors is also soliciting your proxy to vote FOR adjournment of the special meeting, if necessary, to solicit additional proxies. This joint proxy statement/prospectus describes Nanometrics, August Technology and the August merger so that you may make an informed decision with respect to these proposals.

Q: Why are August Technology and Nanometrics proposing the August merger? (See page 90)

A: Nanometrics and August Technology believe that by combining the highly complementary, non-overlapping product lines of the two companies, August Nanometrics can generate improved long-term operating and financial results and establish a stronger competitive position in the industry. The boards of directors of Nanometrics and August Technology also believe that August Nanometrics will have the ability to provide a more comprehensive and better integrated set of tools to its customers, gain increased access to capital, create additional opportunities for marketing its products, respond more quickly and effectively to technological change, increased consolidation and industry demands, and provide more effective support coverage to its customers.

In addition, the August Technology board of directors believes that August Nanometrics will be able to, among other things, take advantage of cross-selling opportunities, realize cost savings by consolidating certain general and administration functions and eliminating redundant expenses, create growth opportunities, provide economies of scale and marshal greater resources to enable it to compete more effectively with its larger competitors.

Q: What are the risks relating to the August merger?

A: The August merger involves numerous risks and uncertainties, including, but not limited to, the following: the risk that August Technology shareholders will receive less in value for the shares of August Technology common

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stock if the market price of Nanometrics common stock declines; the expense, time and disruption of August Technology s business related to integrating the operations of Nanometrics and August Technology; the anticipated benefits and synergies of the August merger may not be realized; the trading price of August Technology common stock may decline if the August merger is not completed; and customers, distributors, resellers or others may delay or defer decisions concerning August Technology during the pendency, or as a result of, the August merger.

We encourage you to read this joint proxy statement/prospectus carefully, including the section entitled Risk Factors beginning on page 34, for a complete discussion of risks associated with the August merger and August Nanometrics.

Q: What will I receive in the August merger? (See page 118)

A: Each share of August Technology common stock will be converted into the right to receive 0.6401 of a share of August Nanometrics common stock. August Nanometrics will make a cash payment to August Technology shareholders for any fractional shares of August Nanometrics common stock they would otherwise be entitled to receive instead of issuing fractional shares. The number of shares of August Nanometrics common stock to be issued for each share of August Technology common stock is fixed and will not be adjusted for changes in the market values of Nanometrics or August Technology common stock before completion of the August merger. As a result, the value of the August Nanometrics common stock that August Technology shareholders will receive in the transaction will vary as the market price of Nanometrics common stock fluctuates.

Example: If you own 100 shares of August Technology common stock, then as a result of the August merger, you will receive 64 shares of August Nanometrics common stock and the value of 0.01 of a share of August Nanometrics common stock paid out in cash.

Nanometrics common stock is quoted on the Nasdaq National Market and traded under the symbol NANO. August Technology common stock is quoted on the Nasdaq National Market and traded under the symbol AUGT.

The following table sets forth the closing prices for Nanometrics common stock and August Technology common stock as reported on the Nasdaq National Market on January 20, 2005, the last trading day before Nanometrics and August Technology announced the August merger and June 7, 2005, the last trading day before the date of this joint proxy statement/prospectus. These historical and pro forma equivalent sales prices per share reflect the fluctuating value of the Nanometrics common stock that August Technology shareholders would receive in exchange for each share of August Technology common stock if the August merger was completed on either of these dates, applying the exchange ratio of 0.6401 of a share of August Nanometrics common stock for each share of August Technology common stock.

	ometrics mon Stock	· ·	Technology non Stock	Equ Value	Pro Forma Equivalent Value of August Technology Common Stock			
January 20, 2005	\$ 13.10	\$	9.15	\$	8.39			
June 7, 2005	\$ 11.53	\$	11.26	\$	7.38			

The above tables show only historical comparisons. These comparisons may not provide meaningful information to August Technology shareholders in determining whether to approve the merger agreement and the August merger. We urge you to obtain current market quotations

for Nanometrics and August Technology common stock and to review carefully the other information contained in this joint proxy statement/prospectus, or incorporated by reference into this joint proxy statement/prospectus, when considering whether to approve the merger agreement and the August merger.

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Q: How will August Technology stock options be affected by the August merger? (See page 119)

A: At the completion of the August merger, August Nanometrics will assume all outstanding options to purchase August Technology common stock under the August Technology 1997 Stock Incentive Plan. Each option to purchase a share of August Technology common stock outstanding immediately prior to the effective time of the August merger under this plan will become an option to purchase, on the same terms, 0.6401 of a share of August Nanometrics common stock for each share of August Technology common stock for which the option was exercisable, with the option exercise price adjusted accordingly. In addition, certain outstanding options to purchase August Technology s common stock will become fully vested and immediately exercisable as a result of the August merger. Prior to the completion of the August merger (unless Nanometrics instructs August Technology otherwise), August Technology will terminate the August Technology 2000 Employee Stock Purchase Plan and all outstanding purchase rights will be automatically exercised and no further shares of August Technology will be issued pursuant to such plan.

Q: What are the United States federal income tax consequences of the August merger to me? (See page 112)

A: Attached as Exhibits 8.1 and 8.2 to the registration statement of which this joint proxy statement/prospectus forms a part are opinions of tax counsel to Nanometrics and August Technology, respectively, that the August merger will constitute a reorganization within the meaning of Section 368(a) of the Internal Revenue Code. In addition, it is a condition to the August merger that each of August Technology and Nanometrics receive a legal opinion to the effect that the August merger will constitute a reorganization within the meaning of Section 368(a) of the Internal Revenue Code. Assuming that the August merger so qualifies, August Technology shareholders generally will not recognize gain or loss for United States federal income tax purposes as a result of the August merger, except for gain or loss attributable to cash received by August Technology shareholders instead of fractional shares. The approval or disapproval of the reincorporation merger will have no effect on the material United States federal income tax consequences of the August merger.

The tax consequences of the August merger to August Technology shareholders may vary depending upon each such shareholder s situation. Each August Technology shareholder is urged to consult its own tax advisors with respect to the tax consequences of the August merger.

Q: When do Nanometrics and August expect to complete the August merger?

A: Nanometrics and August Technology are working to complete the August merger as quickly as possible. Nanometrics and August Technology currently expect to complete the August merger in the third quarter of 2005. Nanometrics and August Technology cannot predict the exact timing of the completion of the August merger, however, because it is subject to several conditions beyond their control, including approval by the shareholders of both Nanometrics and August Technology.

Q: What vote is required by August Technology shareholders to approve the August merger? (See page 72)

A: Under applicable state law, August Technology cannot complete the August merger unless the merger agreement and the August merger are approved by the affirmative vote of the holders of a majority of the voting power of all shares of common stock of August Technology entitled to vote on such matters. As of the record date for the August Technology special meeting, there were shares of August Technology common stock outstanding, which means the affirmative vote of the holders of shares of August Technology common stock is required to approve the August merger.

Q: What vote is required by August Technology shareholders to approve the reincorporation merger?

A: None. Under the terms of the merger agreement, if Nanometrics does not complete the reincorporation, for whatever reason, the August merger may still be completed by August Technology and Nanometrics if all of the conditions to completing that August merger are satisfied or waived.

Although August Technology shareholders are not being asked to vote on Nanometrics reincorporation merger, August Technology shareholders are being asked to approve various governance-related provisions in the August Nanometrics certificate of incorporation. August Nanometrics will not implement these provisions unless they are approved by the affirmative vote of the holders of a majority of the shares of common stock of August Technology present and voting on such matters.

Q: How does the August Technology board of directors recommend that I vote on the August merger? (See page 104)

A: The August Technology board of directors unanimously recommends that you vote FOR August Technology s proposal to approve the merger agreement and the August merger.

Q: Did the August Technology board of directors obtain a fairness opinion in connection with its determination to proceed with the August merger? (See page 104)

A: Yes. On January 20, 2005, Needham & Company, LLC (formerly known as Needham & Company, Inc.), or Needham & Company, financial advisor to August Technology, delivered to the August Technology board of directors its written opinion that, as of that date and based upon and subject to the assumptions and other matters described in the written opinion, the exchange ratio for August Technology common stock provided for in the merger agreement was fair from a financial point of view to the holders of August Technology common stock. The full text of the Needham & Company opinion is attached to this joint proxy statement/prospectus as Annex D. We encourage you to read the Needham & Company opinion carefully in its entirety for a description of the procedures followed, assumptions made, matters considered and limitations on the review undertaken. Needham & Company sopinion is directed to the August Technology board of directors and addresses only the fairness from a financial point of view to the holders of August Technology common stock of the exchange ratio for August Technology common stock provided for in the merger agreement as of the date of the opinion. August Technology has paid or agreed to pay Needham & Company a nonrefundable fee for rendering the Needham & Company opinion and an additional fee for financial advisory services. A substantial portion of Needham & Company s fees, consisting of the fee for financial advisory services, is contingent on consummation of the August merger.

The August Technology board of directors does not currently intend to request an additional fairness opinion from Needham & Company that updates the analysis provided with its original January 20, 2005 fairness opinion as of a more current date. The August Technology board of directors has worked closely with Needham & Company and August Technology management in connection with its consideration of the August merger and the unsolicited acquisition proposals from Rudolph Technologies, Inc., or Rudolph, and KLA-Tencor Corporation, or KLA, as described below. In view of the analysis undertaken and the circumstances as of the date hereof, the material aspects of which are described in this joint proxy statement/prospectus, the board of directors of August Technology does not believe an additional or updated fairness opinion would add substantive information to its analysis. New developments may cause the August Technology board of directors to change its conclusion, however, and seek an additional or updated fairness opinion.

Q: I have heard that Rudolph Technologies, Inc. and KLA-Tencor Corporation have made unsolicited bids to acquire August Technology. What is the status of discussions with these companies?

A: On January 27, 2005, August Technology received a letter from Rudolph stating that Rudolph is prepared to enter into a merger with August Technology based on a share exchange ratio of 0.6239 of a share of Rudolph stock for each share of August Technology common stock (equivalent to \$10.50 per share of August Technology

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common stock based on the closing price of Rudolph stock on January 27, 2005). The letter stated that each August Technology shareholder may elect to receive all cash, all stock or a combination of cash and stock, subject to proration based on total cash consideration of \$40 million. Pursuant to its obligations under the merger agreement with Nanometrics, August Technology delivered a copy of the letter to Nanometrics. On the same day, Rudolph issued a press release with proposed terms that were slightly different from those described in the letter received by August Technology. The press release stated that Rudolph is prepared to enter into a merger with August Technology whereby each shareholder of August Technology will receive the value of \$2.16 per share in cash and 0.4955 per share in Rudolph common stock (equivalent to \$10.50 per share of August Technology common stock, based on the closing price of Rudolph stock on January 27, 2005). The press release stated that each August Technology shareholder would have the option to elect to receive all cash, all stock or a combination of cash and stock, subject to proration based on total cash consideration of \$40 million. August Technology indicated that it is not for sale but, in accordance with the terms of the merger agreement between Nanometrics and August Technology, it would be willing to discuss a potential transaction with Rudolph once Rudolph executes a confidentiality agreement containing provisions that are no less favorable to August Technology than those contained in August Technology s confidentiality agreement with Nanometrics. On April 4, 2005, August Technology and Rudolph entered into a confidentiality agreement and are currently engaged in discussions and exchanging information with respect to Rudolph s offer. August Technology remains subject to the January 21, 2005 merger agreement with Nanometrics and is conducting the discussions with Rudolph as permitted by the terms of the merger agreement.

On February 9, 2005, August Technology received a letter from KLA, regarding KLA s interest in pursuing a merger with August Technology. The letter stated that KLA proposed to acquire August Technology in a transaction in which the August Technology shareholders would receive \$11.50 in cash per share. KLA also stated that it would be willing to consider using stock as consideration. In a press release dated February 11, 2005, August Technology s board of directors reiterated that August Technology is not for sale. August Technology s board of directors also stated that it had no interest in considering KLA s cash offer, but that in order to fulfill its fiduciary obligations it would investigate the alternative of a transaction in which the consideration to August Technology shareholders would consist of KLA stock at an exchange ratio per share which reflects the intrinsic value of August Technology. The board of directors also stated it believes that several issues, including antitrust concerns, would need to be considered and resolved before any transaction with KLA could be completed. For example, the board of directors understood that it would need to consider, among other things, the mechanics of determining how many KLA shares would be issued, anticipated future values of KLA stock based on KLA s plans and projections, what would happen to August Technology s employees and management and the likelihood that a transaction could be completed. August Technology s board of directors was aware of KLA s significant presence in the front end inspection market and that August Technology competes with KLA for sales. The board recognized that these facts presented some risk that a transaction with KLA might be prevented by the Federal Trade Commission, which is referred to as the FTC, or the Antitrust Division of the United States Department of Justice, which is referred to as the Department of Justice, for competitive reasons, a risk later confirmed when the board of directors learned that the Department of Justice was investigating the offers submitted to August Technology by Rudolph and KLA.

With these conditions and concerns in mind, in accordance with the terms of the merger agreement between Nanometrics and August Technology, August Technology s board of directors indicated that it would be willing to discuss a potential transaction with KLA if KLA executes a confidentiality agreement containing provisions that are no less favorable to August Technology than those contained in August Technology s confidentiality agreement with Nanometrics. KLA and August Technology have been unable to reach agreement on the form of confidentiality agreement.

August Technology s board of directors determined, after consulting with August Technology s financial and legal advisors, that, despite the offers from Rudolph and KLA, continuing to pursue the August merger is in the best interests of August Technology and its shareholders because it provides the highest potential long-term

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value for the August Technology shareholders. For a complete discussion of the consideration the August Technology board of directors gave the Rudolph and KLA offers, we encourage you to read the section of this joint proxy statement/prospectus entitled *The August Merger Background of the Merger* beginning on page 75.

On March 15, 2005, August Technology received notification of early termination of the waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, or the HSR Act, applicable to the August merger. Termination or expiration of this waiting period is a condition to the August merger.

In addition, the Department of Justice has notified August Technology that it has commenced an investigation into the anti-competitive aspects of the offers submitted to August Technology both by Rudolph and by KLA. In connection with this investigation, the Department of Justice has conducted interviews with senior executives of August Technology and by letter dated April 21, 2005 requested that August Technology voluntarily provide documents and information regarding its products and the markets in which it competes. August Technology is in the process of responding to this request for documents and information. August Technology understands that the Department of Justice has contacted and requested information from others in connection with this investigation as well. No further information regarding the timing or scope of the investigation was made available to August Technology. August Technology and Nanometrics do not anticipate that this investigation will affect the completion of the August merger. If August Technology were to proceed with a transaction with Rudolph or KLA, it would be subject to pre-merger notification requirements under the HSR Act.

Q: Does a vote AGAINST the August merger mean that I am voting for August Technology to complete a deal with Rudolph or KLA?

A: No. Even if the August merger is not approved by August Technology s shareholders or cannot be completed for other reasons, there is no guarantee that any agreement can be reached on acceptable terms with either Rudolph, KLA, or any other party.

Q: How do the August Technology directors and executive officers intend to vote on the August merger? (See page 133)

A: All of the August Technology directors and executive officers have entered into voting agreements with Nanometrics pursuant to which they have agreed to vote all of their respective shares of August Technology common stock in favor of August Technology s proposal to approve the merger agreement (including other actions contemplated by the merger agreement) and the August merger.

At the close of business on January 21, 2005, the date of the merger agreement, directors and executive officers of August Technology and their affiliates beneficially owned and were entitled to vote 1,120,911 shares of August Technology common stock, collectively representing approximately 6.3% of the shares of August Technology common stock outstanding on that date. As of the record date for the August Technology special meeting, directors and executive officers of August Technology and their affiliates beneficially owned and were entitled to vote shares of August Technology common stock, collectively representing approximately of the shares of August Technology common stock outstanding on that date.

Q: Do any of the August Technology directors and executive officers have any special interests in the August merger? (See page 110)

A: In considering the recommendation of the August Technology board of directors with respect to the merger agreement and the August merger, you should be aware that members of the August Technology board of directors and August Technology executive officers have interests in the August merger that may be different than, or in addition to, the interests of August Technology shareholders generally. These interests include:

the appointment of three current directors of August Technology, including Jeff L. O Dell, as directors of August Nanometrics upon completion of the August merger, and the appointment of certain executive officers of August Technology, including Jeff L. O Dell and Stanley D. Piekos, as executive officers of August Nanometrics upon completion of the August merger;

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the potential receipt of severance payments, payable to the following executive officers in the following respective amounts, if he or she were to be terminated without cause or were to resign pursuant to an involuntary termination at any time within the 18-month period following the completion of the August merger:

Name and Title	Total Severance Paym				
Jeff L. O Dell	\$	442,500			
Chief Executive Officer					
David Klenk	\$	322,500			
President and Chief Operating Officer					
Stanley D. Piekos	\$	322,500			
Chief Financial Officer and Secretary					
D. Mayson Brooks	\$	315,000			
Vice President, Sales and Field Operations					
Cory Watkins	\$	300,000			
Chief Technical Officer					
Scott Gabbard	\$	262,500			
Vice President, Finance					
Jeff Nelson	\$	41,250			
Vice President, Manufacturing					

the accelerated vesting of executive officers and directors outstanding stock options of August Technology common stock, as a result of which the following executive officers will hold options as set forth below, assuming the value of the merger consideration paid in the August merger in respect of each share of August Technology as of January 20, 2005 is \$8.3851:

Name and Title	Aggregate Shares Subject to Outstanding Options	Aggregate Shares Subject to Unvested Options to be Accelerated in the Merger(1)	Shares Price of Subject to All Unvested Options to be Accelerated in the August		rrage rcise ce of Value of All Unvested tions Options be to be erated Accelerated the in the gust August			eighted verage eercise ee of All ptions	Value of All Options(3)		
Jeff L. O Dell	17,250	4,000	\$	4.70	\$	14,741	\$	7.86	\$	36,853	
Chief Executive Officer											
David Klenk	138,591	7,791	\$	6.74	\$	16,112	\$	7.85	\$	418,269	
President and Chief Operating Officer											
Stanley D. Piekos	180,632	127,100	\$	5.83	\$	386,430	\$	7.08	\$	483,037	

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Chief Financial Officer and Secretary						
D. Mayson Brooks	120,806	26,849	\$ 7.55	\$ 47,862	\$ 9.64	\$ 187,521
Vice President, Sales and Field Operations						
Cory Watkins	60,002	27,999	\$ 9.09	\$ 19,041	\$ 10.51	\$ 57,107
Chief Technical Officer						
Scott Gabbard	87,165	21,433	\$ 8.57	\$ 17,406	\$ 9.57	\$ 113,203
Vice President, Finance						
Jeff Nelson	45,000	45,000	\$ 7.62	\$ 34,439	\$ 7.62	\$ 34,439
Vice President,						
Manufacturing						

⁽¹⁾ Pursuant to the terms of August Technology s 1997 Stock Incentive Plan, certain unvested options will vest at the completion of the August merger.

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- (2) Illustrates the economic value of all unvested options held by each executive officer assuming the acceleration of all such unvested options in the August merger and the exercise of such options, immediately upon completion of the August merger. The economic value was calculated for each executive officer by multiplying the shares subject to in-the-money options by the difference between the value of the merger consideration as of January 20, 2005 (\$8.3851) and the exercise price of such unvested options.
- (3) Illustrates the economic value of all options held by each executive officer assuming the acceleration of all such options in the August merger and the exercise of all options, immediately upon completion of the August merger. The economic value was calculated for each executive officer by multiplying the shares subject to in-the-money options by the difference between the value of the merger consideration as of January 20, 2005 (\$8.3851) and the exercise price of such in-the-money options.

and the continued indemnification of, and provision of directors and officers insurance coverage to, current directors and officers of August Technology following the August merger.

The August Technology board of directors was aware of these interests and considered them, among other matters, in making its recommendation that the August Technology shareholders approve the merger agreement and the August merger.

Q: Who will be on the August Nanometrics board of directors if you complete the August merger? (See page 127)

A: If Nanometrics and August Technology complete the August merger, four of Nanometrics directors will resign (leaving three Nanometrics directors, including Vincent J. Coates and John D. Heaton, on the August Nanometrics board of directors), August Technology will select three of its directors, including Jeff L. O Dell, to join the August Nanometrics board of directors and these six directors (the three remaining Nanometrics directors and three directors appointed from the August Technology board of directors) will select a seventh individual to join the August Nanometrics board of directors. Nanometrics has not yet selected the other Nanometrics director who will remain on the August Nanometrics board of directors, and August Technology has not yet selected the other two August Technology directors who will join the August Nanometrics board of directors.

In addition, the August Nanometrics organizational documents will provide for a classified board of directors consisting of three classes. Class I will be comprised of one director from the Nanometrics board of directors and one director from the August Technology board of directors. Class II will be comprised of one director from the Nanometrics board of directors and one director from the August Technology board of directors. Class III will consist of one director from the Nanometrics board of directors, one director from the August Technology board of directors and the additional director selected by Nanometrics and August Technology. Class I directors will serve for an initial term of one year and for three-year terms thereafter, if re-elected. Class III directors will serve for an initial term of three years and three-year terms thereafter, if re-elected. As noted above, Nanometrics and August Technology have not yet completely determined the composition of the August Nanometrics board of directors, so consequently, they have not yet determined which directors will be in the various classes of directors either.

Q: What do I need to do now?

A: You should read and consider the information contained in this joint proxy statement/prospectus carefully. You also may want to review the documents referenced under the section of this joint proxy statement/prospectus entitled *Additional Information Where You Can Find More Information* beginning on page 200. You should then vote your shares of August Technology common stock in accordance with the instructions in this joint proxy statement/prospectus as soon as possible so that your shares are represented at the August Technology special meeting.

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Q: How do I vote or submit my voting instructions? (See page 72)

A: If you are the holder of record of your shares of August Technology common stock, you may vote in person at the August Technology special meeting or by submitting a proxy card for the special meeting. You can vote your shares of August Technology common stock by proxy by completing, signing, dating and returning the enclosed proxy card for the special meeting and returning it in the enclosed pre-paid envelope.

If you hold your shares of August Technology common stock through a broker, bank or other nominee (*i.e.*, in street name), you must provide the record holder of your shares with instructions on how to vote your shares at the August Technology special meeting. Please refer to the voting instruction card delivered to you by your broker, bank or other nominee for instructions on how to direct the record holder of your shares to vote your shares at the August Technology special meeting. If you hold your shares of August Technology common stock in street name, you must obtain a legal proxy in order to attend the August Technology special meeting and vote in person. If you wish to do so, please contact the broker, bank or other nominee that holds your shares of August Technology common stock for instructions on how to obtain a legal proxy for this purpose.

Q: What happens if I do not vote? (See page 73)

A: If you do not submit a proxy card or vote at the August Technology special meeting, your shares will not be counted as present for the purpose of determining the presence of a quorum. If you submit a proxy card and affirmatively elect to abstain from voting, with respect to the proposal to approve the merger agreement and the August merger, your proxy will be counted as present for the purpose of determining the presence of a quorum but will not be voted at the special meeting. As a result, your abstention will have the same effect as a vote AGAINST the August merger.

Q: If my shares are held in street name, will my broker, bank, or nominee vote my shares for me on the merger transaction proposals? (See page 73)

A: No. The broker, bank, or other nominee that holds your shares of August Technology common stock cannot vote your shares of August Technology common stock at the August Technology special meeting unless you provide them with instructions on how to vote your shares in accordance with the information and procedures they provided to you.

Q: Can I change my vote after I have mailed my signed proxy or instruction form? (See page 73)

A: Yes. If you are the record holder of your shares of August Technology common stock, you can change your vote at any time before your proxy is voted at the August Technology special meeting by:

delivering to the August Technology corporate secretary, a signed notice of revocation;

granting a new, later-dated proxy, which must be signed and delivered to the August Technology corporate secretary in advance of the vote at the August Technology special meeting; or

attending the August Technology special meeting and voting in person. Your attendance alone, however, will not revoke your previously granted proxy.

If you hold your shares in street name and you have provided voting instructions to the broker, bank or other nominee that holds your shares of August Technology common stock for use at the August Technology special meeting, you must follow the instructions of your broker, bank or other nominee in order to change your vote or revoke your proxy for the August Technology special meeting.

Q: Should I send in my stock certificates now?

A: No. If you own shares of August Technology common stock, do not send in your stock certificates now. After the August merger is completed, you will be sent written instructions for exchanging your August Technology share certificates for certificates evidencing shares of August Nanometrics common stock.

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Q: What should I do if I receive more than one set of voting materials? (See page 73)

A: You may receive more than one set of voting materials for the August Technology special meeting, including multiple copies of this joint proxy statement/prospectus and multiple proxy cards or voting instruction cards. For example, if you are a record holder of your shares of August Technology common stock and your shares are registered in more than one name, you will receive more than one proxy card for the special meeting. If you hold your shares of August Technology common stock in more than one brokerage account, you will receive a separate voting instruction card for each brokerage account in which you hold shares. In addition, if you are a shareholder of August Technology and a shareholder of Nanometrics, you will receive one or more separate proxy cards or voting instruction cards for each company. Please complete, sign, date and return each proxy card and voting instruction card that you receive to ensure that your shares will be represented at the August Technology special meeting.

Q: Do I have dissenters or appraisal rights in connection with the August merger? (See page 115)

A: No. Under applicable law, you will not have dissenters or appraisal rights in connection with the August merger.

Q: Whom should I call with questions?

A: If you have any questions about the August merger or any other matters described in this joint proxy statement/prospectus, or if you need additional copies of this joint proxy statement/prospectus or a proxy card for the August Technology special meeting, you should contact:

The Proxy Advisory Group of Strategic Stock Surveillance, LLC

331 Madison Avenue, 12th Floor

New York, New York 10017

Tel: (866) 657-8728 or

(212) 850-8150

Fax: (212) 850-8161

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SUMMARY

The following is a summary of other additional information contained in this joint proxy statement/prospectus. The following summary may not contain all of the information that is important to you. We encourage you to read this entire joint proxy statement/prospectus carefully. In addition, we encourage you to read the information incorporated by reference into this joint proxy statement/prospectus, which includes important business and financial information about Nanometrics and August Technology that has been filed with the Securities and Exchange Commission. You may obtain the information incorporated by reference into this joint proxy statement/prospectus without charge by following the instructions in the section of this joint proxy statement/prospectus entitled Additional Information Where You Can Find More Information beginning on page 200.

The Companies

Nanometrics Incorporated

1550 Buckeye Drive

Milpitas, California 95035

(408) 435-9600

Nanometrics is a leader in the design, manufacture, and marketing of high-performance process control metrology systems used in the manufacture of semiconductors/integrated circuits and flat panel displays. Nanometrics metrology systems (i) measure various thin film properties, critical circuit dimensions and layer-to-layer circuit alignment (overlay) and (ii) inspect for surface defects during various steps of the manufacturing process, enabling semiconductor and integrated circuit manufacturers to improve yields, increase productivity and lower their manufacturing costs. The relative alignment of sequentially patterned thin film layers is critical to device production.

Nanometrics has been a pioneer and innovator in the field of metrology for nearly three decades. It has been selling metrology systems since 1977 and has an extensive installed base with industry leading customers worldwide, including Applied Materials Inc., Samsung, Hynix Semiconductor Inc., IBM, Intel Corporation, Micron Technology, Inc., TSMC Ltd., Renesas, Powerchip, UMC, Ebara, Chi Mei, AU Optronics and Hannstar.

Major League Merger Corporation is a transitory acquisition subsidiary that Nanometrics formed solely to effect the August merger. Minor League Merger Corporation is a transitory subsidiary that Nanometrics formed solely to effect the reincorporation merger. Neither Major League Merger Corporation nor Minor League Merger Corporation has ever conducted any business.

August Technology Corporation

4900 West 78th Street

Bloomington, Minnesota 55435

(952) 820-0060

August Technology is a world-class provider of automated defect detection and product characterization systems for microelectronic device manufacturers. August Technology is systems provide these manufacturers with information that enables process-enhancing decisions, ultimately lowering manufacturing costs, improving time-to-market and enhancing the performance of their products. August Technology combines its core competencies in machine vision technology, optics, lighting and precision motion control with its proprietary software and extensive microelectronic-specific applications experience to deliver scalable, modular systems that excel at the automated detection of advanced macro defects, which August Technology defines to be defects

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greater in size than 0.5 micron. August Technology sells its systems to many of the leading microelectronic device manufacturers throughout the world within the markets of semiconductors, advanced packaging applications, optoelectronics MEMS, data storage and other emerging markets.

August Technology has traditionally provided systems to address the automated inspection needs of the early stages of the final manufacturing or back-end of the microelectronic device manufacturing process. These needs were met primarily with August Technology s NSX Series and 3Di Series of products. In 2003, August Technology introduced the AXi Series for frontside advanced macro detection in the front-end of the wafer manufacturing process and within one year, August Technology added the E-20 for wafer edge inspection and the B-20 for wafer backside inspection. When used in combination the AXi/E-20/B-20 is the industry s first true all-surface advanced macro inspection solution allowing device manufacturers to inspect the top, edge and bottom of a wafer s surface. August Technology complements this broad inspection capability with an expanding suite of software tools designed to enhance the speed and effectiveness of the process by which device manufacturers analyze defects and make decisions regarding their manufacturing process to reduce or eliminate such defects. August Technology refers to this process as the detection-to-decision process.

The Merger Agreement (See page 118)

On January 21, 2005, Nanometrics and August Technology entered into a merger agreement providing for, among other things, the August merger and the reincorporation merger. We have attached the merger agreement to this joint proxy statement/prospectus as Annex A. We encourage you to carefully read the merger agreement in its entirety because it is the legal document that governs the August merger.

Merger Consideration (See page 118)

August Technology shareholders will receive 0.6401 of a share of August Nanometrics common stock for each share of August Technology common stock they own at the completion of the August merger.

August Nanometrics will not issue fractional shares of August Nanometrics common stock in the August merger. As a result, each August Technology shareholder will receive cash for any fractional share of August Nanometrics common stock the shareholder would otherwise be entitled to receive in the August merger.

Treatment of August Technology Stock Options and ESPP (See page 119)

At the completion of the August merger, each outstanding option to purchase August Technology common stock will be assumed by August Nanometrics and converted into an option to acquire August Nanometrics common stock. Pursuant to the terms of August Technology s 1997 Stock Incentive Plan, approximately 400,000 options of the 1.3 million options to purchase shares of August Technology common stock assumed by August Nanometrics will vest at the completion of the August merger.

Prior to the completion of the August merger, August Technology will terminate its employee stock purchase plan and all outstanding purchase rights will be automatically exercised unless Nanometrics instructs August Technology otherwise, and no further shares of August Technology will be issued pursuant to such plan.

Non-Solicitation Restrictions (See page 124)

The merger agreement contains detailed provisions that prohibit Nanometrics and August Technology and the subsidiaries of each of them, as well as their officers, directors and representatives, from taking any action to solicit or engage in discussions or negotiations with any person or group with respect to certain types of alternative acquisition proposals. The merger agreement does not, however, prohibit either party or its board of directors from considering and recommending to the party s shareholders an unsolicited alternative acquisition proposal from a third party if specified conditions are met.

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Conditions to Completion of August Merger (See page 128)

Under the terms of the merger agreement, Nanometrics and August Technology are not required to complete the August merger until the following conditions have been satisfied:

the receipt of the approval of the issuance of shares of August Nanometrics common stock in the August merger by Nanometrics shareholders, and the approval of the merger agreement and the August merger by August Technology shareholders;

the expiration or termination of the waiting period, or any extension of the waiting period, under the HSR Act, (which condition has been satisfied) and receipt of all clearances, consents and approvals necessary for completion of the August merger under United States and foreign antitrust laws;

the absence of any legal restraints or prohibitions preventing the completion of the August merger;

the authorization for listing on the Nasdaq National Market of the shares of August Nanometrics common stock to be issued in the August merger;

the delivery to each party of tax opinions of legal counsel to the effect that the August merger will qualify as a reorganization within the meaning of Section 368(a) of the Internal Revenue Code;

the representations and warranties of each party contained in the merger agreement being true and correct, except to the extent that breaches of these representations and warranties would not result in a material adverse effect on the representing party;

the performance or compliance in all material respects of each party with all agreements and covenants contained in the merger agreement at the completion of the August merger; and

the absence of events or developments since the date of the merger agreement that would reasonably be expected to have a material adverse effect with respect to either party.

Either Nanometrics or August Technology may waive the conditions to the performance of its respective obligations under the merger agreement and complete the August merger even though one or more of these conditions has not been met. Neither Nanometrics nor August Technology can give any assurance that all of the conditions to the August merger will be either satisfied or waived or that the August merger will occur.

The reincorporation is not a condition to completion of the August merger and Nanometrics intends to proceed with the August merger even if Nanometrics does not obtain the requisite shareholder approval to complete the reincorporation merger.

Termination Rights and Fees (See page 130)

Under circumstances specified in the merger agreement, either Nanometrics or August Technology may terminate the merger agreement. Subject to the limitations set forth in the merger agreement, the circumstances generally include if:

the August merger is not completed by September 30, 2005;

a non-appealable final order of a court or other action of any governmental authority has the effect of permanently prohibiting completion of the August merger;

the required approval of the shareholders of each of Nanometrics and August Technology has not been obtained at its respective shareholder meeting;

the other party breaches its representations, warranties or covenants in the merger agreement such that its conditions to completion of the August merger regarding representations, warranties or covenants would not be satisfied;

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the other party has not	complied with	the provisions	s of the	merger	agreement	relating	to non-soli	citation	and bo	ard
recommendations; or										

the other party consents to termination.

If the August merger is not completed under certain circumstances specified in the merger agreement, Nanometrics or August Technology may be required to pay the other \$8.3 million, plus expenses.

Accounting Treatment of the August Merger (See page 114)

August Nanometrics will account for the August merger as a purchase business combination under United States generally accepted accounting principles.

Regulatory Matters Relating to the August Merger (See page 114)

The August merger is subject to antitrust laws. Nanometrics and August Technology have made all required filings under applicable antitrust laws with the Department of Justice and the FTC. On March 15, 2005, the FTC informed Nanometrics and August Technology that early termination of the waiting period associated with these filings had been granted.

Listing of August Nanometrics Common Stock (See page 115)

Nanometrics will apply to have the shares of August Nanometrics common stock to be issued in the August merger to holders of August Technology common stock approved for listing on the Nasdaq National Market.

Delisting and Deregistration of August Technology Common Stock (See page 115)

If the August merger is completed, August Technology common stock will no longer be listed on the Nasdaq National Market and will be deregistered under the Securities Exchange Act of 1934, as amended, which is referred to as the Exchange Act, and August Technology will no longer file periodic reports with the Securities and Exchange Commission.

Recent Developments

On January 27, 2005, August Technology received a letter from Rudolph Technologies, Inc., or Rudolph, stating that Rudolph is prepared to enter into a merger with August Technology based on a share exchange ratio of 0.6239 of a share of Rudolph stock for each share of August Technology common stock (equivalent to \$10.50 per share of August Technology common stock based on the closing price of Rudolph stock on January 27, 2005). The letter stated that each August Technology shareholder may elect to receive all cash, stock or a combination of cash and stock, subject to proration based on total cash consideration of \$40 million. Pursuant to its obligations under the merger agreement with Nanometrics, August Technology delivered a copy of the letter to Nanometrics. On the same day, Rudolph issued a press release with proposed terms that were slightly different from those described in the letter received by August Technology. The press release stated that Rudolph is prepared to enter into a merger with August Technology whereby each shareholder of August Technology will receive the value of \$2.16 per share in cash and 0.4955 per share in Rudolph common stock (equivalent to \$10.50 per share of August Technology common stock, based on the closing price of Rudolph stock on January 27, 2005). The press release stated that each August Technology shareholder would have the option to elect to receive all cash, stock or a combination of cash and stock, subject to proration based on total cash consideration of \$40 million. August Technology has indicated that it is not for sale but, in accordance with the terms of the merger agreement between Nanometrics and August Technology, it would be willing to discuss a potential transaction with Rudolph if Rudolph executes a confidentiality agreement containing provisions that are no less

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favorable to August Technology than those contained in August Technology s confidentiality agreement with Nanometrics. On April 4, 2005, August Technology and Rudolph entered into a confidentiality agreement and are currently engaged in discussions and exchanging information with respect to Rudolph s offer. August Technology remains subject to the January 21, 2005 merger agreement with Nanometrics and is conducting the discussions with Rudolph as permitted by the terms of the merger agreement.

On February 9, 2005, August Technology received a letter from KLA-Tencor Corporation, or KLA, regarding KLA s interest in pursuing a merger with August Technology. The letter stated that KLA proposed to acquire August Technology in a transaction in which the August Technology shareholders would receive \$11.50 in cash per share. KLA also stated that it would be willing to consider using stock as consideration. In a press release dated February 11, 2005, August Technology s board of directors reiterated that August Technology is not for sale. August Technology s board of directors also stated that it had no interest in considering KLA s cash offer, but that in order to fulfill its fiduciary obligations it would investigate the alternative of a transaction in which the consideration to August Technology shareholders would consist of KLA stock at an exchange ratio per share which reflects the intrinsic value of August Technology. The board of directors also stated that it believes that several issues, including antitrust concerns, would need to be considered and resolved before any transaction with KLA could be completed. With these conditions and concerns in mind, in accordance with the terms of the merger agreement between Nanometrics and August Technology, August Technology s board of directors indicated that it would be willing to discuss a potential transaction with KLA if KLA executes a confidentiality agreement containing provisions that are no less favorable to August Technology than those contained in August Technology s confidentiality agreement with Nanometrics. KLA and August Technology have unable to reach agreement on the form of such a confidentiality agreement and have had no discussions regarding the confidentiality agreement since early March. KLA announced in a press release on April 5, 2005 that it owns approximately 4.2% of August Technology s outstanding common stock.

August Technology s board of directors determined, after consulting with August Technology s financial and legal advisors, that, despite the offers from Rudolph and KLA, continuing to pursue the August merger is in the best interests of August Technology and its shareholders because it provides the highest potential long-term value for the August Technology shareholders. For a complete discussion of the consideration the August Technology board of directors gave the Rudolph and KLA offers, we encourage you to read the section of this joint proxy statement/prospectus entitled *The August Merger Background of the August Merger* beginning on page 75.

On March 15, 2005, August Technology received notification of early termination of the waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, applicable to the August merger. Termination or expiration of this waiting period is a condition to the August merger.

In addition, the Department of Justice has notified August Technology that it has commenced an investigation into the anti-competitive aspects of the offers submitted to August Technology by Rudolph and KLA. In connection with this investigation, the Department of Justice has conducted interviews with senior executives of August Technology and by letter dated April 21, 2005 requested that August Technology voluntarily provide documents and information regarding its products and the markets in which it competes. August Technology is in the process of responding to this request for documents and information. August Technology understands that the Department of Justice has contacted and requested information from others in connection with this investigation as well. No further information regarding the timing or scope of the investigation was made available to August Technology. August Technology and Nanometrics do not anticipate that this investigation will affect the completion of the August merger. If August Technology were to proceed with a transaction with Rudolph or KLA, it would be subject to pre-merger notification requirements under the HSR Act.

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On March 14, 2005, Nanometrics announced that it has received notice of a patent infringement lawsuit brought by Nova Measuring Instruments, Ltd. alleging infringement of United States Patent No. 6,752,689, or the 689 Patent. Nanometrics believes that its products do not infringe any valid claim of the 689 patent and that the lawsuit will not have a material impact on its business and operating results.

Legal Proceedings Regarding the August Merger

On February 4, 2005, a shareholder class action lawsuit was filed in Minnesota state court against August Technology and the August Technology board of directors. The lawsuit claims that the directors breached their fiduciary duties to August Technology s shareholders in connection with their actions in agreeing to the August merger. The plaintiff seeks various forms of injunctive relief including an order enjoining August Technology and the directors from consummating the August merger.

On February 14, 2005, a similar shareholder class action lawsuit was filed in Minnesota state court against August Technology and the August Technology board of directors. The lawsuit also claims that the directors breached their fiduciary duties to August Technology s shareholders in connection with their actions in agreeing to the August merger. The plaintiff seeks various forms of injunctive relief including an order enjoining August Technology and the directors from consummating the August merger.

James A. Bernards, Roger E. Gower, Jeff L. O Dell, Linda Hall Whitman and Michael Wright, the members of the board of directors of August Technology who have been named as individual defendants in the two purported class actions, have collectively retained separate counsel to represent them in connection with the foregoing lawsuits. August Technology and these named individuals believe they have meritorious defenses to these claims and intend to vigorously defend these lawsuits. They have moved to dismiss these lawsuits.

The two proceedings have been consolidated and are being heard as one case. On April 19, 2005, the Court issued a 30 day stay of all proceedings. On April 27, 2005, the plaintiffs scheduled a hearing on a motion to amend the complaint. The hearing was scheduled for June 9, 2005. On May 10, 2005, the court issued an order dismissing the complaint for asserting derivative claims without complying with rules governing derivative actions. Thereafter, the court removed the hearing from the calendar. Therefore, at this time, there are no legal proceedings pending.

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Summary Selected Historical Financial Data

Nanometrics and August Technology are providing the following information to aid you in your analysis of the financial aspects of the August merger.

Nanometrics

Nanometrics has derived the following historical information from its audited consolidated financial statements as of January 1, 2005, January 3, 2004, December 28, 2002, December 29, 2001 and December 30, 2000, and for each of the years then ended and from its unaudited consolidated financial statements as of April 2, 2005 and for each of the three month periods ended April 2, 2005 and April 3, 2004. The information is only a summary and should be read in conjunction with Nanometrics consolidated financial statements, accompanying notes and management s discussion and analysis of results of operations and financial condition incorporated by reference into this joint proxy statement/prospectus.

Three Months

	Enc		Year Ended											
	April 2, 2005	April 3, 2004	January 1, 2005	January 3, 2004 (a)	December 28, 2002	December 29, 2001 (b)	December 30 2000 (b)							
			(in thousands, except per share amounts)											
Consolidated Statement of Operations Data:														
Net Revenues:														
Products	\$ 21,166	\$ 11,663	\$ 62,911	\$ 34,592	\$ 28,669	\$ 42,653	\$ 63,468							
Service	2,325	2,008	7,784	7,010	6,054	4,931	6,023							
Total net revenues	23,491	13,671	70,695	41,602	34,723	47,584	69,491							
Costs and Expenses:														
Cost of products	9,750	5,403	27,555	17,691	13,237	17,949	25,082							
Cost of service	2,573	1,611	8,404	6,620	5,765	5,406	6,022							
Research and development	3,179	3,489	12,827	13,399	13,765	10,760	9,238							
Selling	3,145	3,066	11,442	11,496	10,862	9,523	10,313							
General and administrative	1,998	1,295	5,137	4,689	5,104	4,177	4,258							
Goodwill impairment					1,077									
Total costs and expenses	20,645	14,864	65,365	53,895	49,810	47,815	54,913							
Income (loss) from operations	2,846	(1,193)	5,330	(12,293)	(15,087)	(231)	14,578							
Interest income	130	56	276	397	583	2,576	4,129							
Interest expense	(18)	(29)	(110)	(96)	(94)	(86)	(76)							
Other, net	(270)	(3)	(44)	385	100	(517)	(150)							
Total other income, net	(158)	24	122	686	589	1,973	3,903							
Income (loss) before provision (benefit) for income														
taxes	2,688	(1,169)	5,452	(11,607)	(14,498)	1,742	18,481							
Provision (benefit) for income taxes	83	43	426	5,860(c)	(6,230)	782	5,942							
Income (loss) before cumulative effect of change in revenue recognition principle	2,605	(1,212)	5,026	(17,467)	(8,268)	960	12,539							

Cumulative effect of change in revenue recognition principle													(1,364)
Net income (loss)	\$	2,605	\$	(1,212)	\$	5,026	\$	(17,467)	\$	(8,268)	\$ 960	\$	11,175
	_		_		_		_		_		 	_	
Basic net income (loss) per share:													
Income (loss) before cumulative effect of change in													
revenue recognition principle	\$	0.21	\$	(0.10)	\$	0.41	\$	(1.45)	\$	(0.70)	\$ 0.08	\$	1.14
Cumulative effect of change in revenue recognition													
principle					\$		\$		\$		\$	\$	(0.12)
	-		_		_						 		
Net income (loss)	\$	0.21	\$	(0.10)	\$	0.41	\$	(1.45)	\$	(0.70)	\$ 0.08	\$	1.02
									_			_	
Diluted net income (loss) per share:													
Income (loss) before cumulative effect of change in													
revenue recognition principle	\$	0.19	\$	(0.10)	\$	0.38	\$	(1.45)	\$	(0.70)	\$ 0.08	\$	1.06
Cumulative effect of change in revenue recognition													
principle					\$		\$		\$				