NANOPHASE TECHNOLOGIES CORPORATION
Form S-3
January 22, 2004
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As filed with the Securities and Exchange Commission on January 22, 2004

Registration No. 333-____

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, DC 20549

FORM S-3

REGISTRATION STATEMENT

UNDER

THE SECURITIES ACT OF 1933

NANOPHASE TECHNOLOGIES CORPORATION

(Exact name of registrant as specified in its charter)

Delaware	**36-3687863**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

1319 Marquette Drive

Romeoville, Illinois 60446

(630) 771-6700

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

JOSEPH E. CROSS, CHIEF EXECUTIVE OFFICER

NANOPHASE TECHNOLOGIES CORPORATION

1319 Marquette Drive

Romeoville, Illinois 60446

(630) 771-6700

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

JOHN L. EISEL, ESQ.

GEOFFREY C. COCKRELL, ESQ.

Wildman, Harrold, Allen & Dixon LLP

225 West Wacker Drive

Chicago, Illinois 60606-1229

(312) 201-2000

(312) 201-2555 (fax)

Approximate date of commencement of proposed sale to the public: From time to time after the effective date of this registration statement.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box. ¨

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box. x

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please 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(c) 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 delivery of the prospectus is expected to be made pursuant to Rule 434, please check the following box. ¨

Calculation of registration fee

Title of Each Class of Securities to be Registered (1)	Amount to be Registered	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Debt securities Common stock Warrants			
Total	$15,000,000	$15,000,000	$1,213.50(2)

(1) There are being registered hereunder by the Registrant such indeterminate principal amount of debt securities; such indeterminate number of shares of common stock; and such indeterminate number of warrants to purchase common stock and debt securities of the Registrant as shall have an aggregate initial offering price not to exceed $15,000,000.

(2) Calculated pursuant to Rule 457(o) of the rules and regulations under the Securities Act of 1933, as amended.

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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 WHICH 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.

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THE INFORMATION IN THIS PROSPECTUS IS NOT COMPLETE AND MAY BE CHANGED. WE MAY NOT SELL THESE SECURITIES UNTIL THE REGISTRATION STATEMENT FILED WITH THE SECURITIES AND EXCHANGE COMMISSION IS EFFECTIVE. THE PROSPECTUS IS NOT AN OFFER TO SELL THESE SECURITIES AND IT IS NOT SOLICITING AN OFFER TO BUY THESE SECURITIES IN ANY STATE WHERE THE OFFER OR SALE IS NOT PERMITTED.

Subject to Completion, dated January 22, 2004

PROSPECTUS

$15,000,000

NANOPHASE TECHNOLOGIES CORPORATION

DEBT SECURITIES

COMMON STOCK

WARRANTS

We may offer from time to time the following in one or more series, with an aggregate principal amount of up to a maximum of $15,000,000, at prices and on terms to be determined at the time of offering:

- debt securities, which may consist of debentures, notes or other types of debt
- shares of common stock
- warrants to purchase debt securities or common stock

When we offer securities pursuant to this prospectus, we will deliver to you this prospectus as well as a prospectus supplement setting forth the specific terms of the securities being offered. We urge you to read carefully this prospectus and the accompanying prospectus supplement before you make your investment decision.

Our common stock is traded on the Nasdaq National Market under the symbol NANX . Any common stock sold pursuant to a prospectus supplement will be listed on such exchange, subject to official notice of issuance. On January 16, 2004, the closing price of the common stock, as reported on the Nasdaq National Market, was $13.60 per share.

We will sell these securities directly to our stockholders or to purchasers or through agents on our behalf or through underwriters or dealers as designated from time to time. If any agents or underwriters are involved in the sale of any of these securities, the applicable prospectus supplement will provide the names of the agents or underwriters and any applicable fees, commissions or discounts.

INVESTING IN OUR SECURITIES INVOLVES RISKS. SEE RISK FACTORS BEGINNING ON PAGE 5 OF THIS PROSPECTUS.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR DETERMINED IF THIS PROSPECTUS IS TRUTHFUL OR COMPLETE. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

The date of this prospectus is , 2004.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement filed by us with the Securities and Exchange Commission, or Commission, utilizing a shelf registration process. Under this shelf process, we may, from time to time, sell any combination of securities described in this prospectus in one or more offerings up to a total amount of $15,000,000. This prospectus provides you with a general description of the securities we may offer. Each time we sell securities, we will provide a prospectus supplement that will contain specific information about the terms of that offering. The prospectus supplement may also add, update or change information contained in this prospectus. You should read both this prospectus and any applicable prospectus supplement together with additional information described below under the heading Where You Can Find More Information. As used in this prospectus, company, we, our and us refer to Nanophase Technologies Corporation, except where the context otherwise requires or as otherwise indicated.

We have not authorized any dealer, salesman or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus and the accompanying supplement to this prospectus. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus or the accompanying prospectus supplement as if we had authorized it. This prospectus and the accompanying supplement to this prospectus do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate, nor do this prospectus and the accompanying supplement to this prospectus constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. You should not assume that the information contained in this prospectus and the supplement to this prospectus is correct on any date after their respective dates, even though this prospectus or a supplement is delivered or securities are sold on a later date.

WHERE YOU CAN FIND MORE INFORMATION ABOUT US

We file annual, quarterly and special reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC s web site at http://www.sec.gov. You may also read and copy any document we file at the SEC s public reference rooms in Washington, D.C., New York, and Chicago, Illinois. Please call the SEC at 1-800-732-0330 for further information on the public reference rooms.

The SEC allows us to incorporate by reference the information we file with them, which means that we can disclose important information to you by referring you to these documents. The information incorporated by reference is an important part of this prospectus, and information that we file later with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below (and any amendments thereto) and any future filings made with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934 until the offering under this registration statement is completed or withdrawn:

Annual Report on Form 10-K for the fiscal year ended December 31, 2002 filed March 31, 2003, as amended by Amendment No. 1 on Form 10-K/A filed May 23, 2003;

Quarterly Report on Form 10-Q for the quarter ended March 31, 2003 filed May 15, 2003;

Quarterly Report on Form 10-Q for the quarter ended June 30, 2003 filed August 13, 2003;

Quarterly Report on Form 10-Q for the quarter ended September 30, 2003 filed November 14, 2003;

Current Reports on Form 8-K filed April 18, 2003, April 23, 2003, August 7, 2003, September 10, 2003 and October 23, 2003; and

The description of our common stock contained in our registration statement on Form 8-A, including any amendments or reports filed to update such information.

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The information incorporated by reference into this prospectus is an important part of this prospectus. Any statement contained in an incorporated document shall be deemed to be modified or superseded for purposes of the registration statement or this prospectus to the extent that a statement contained herein or in any other subsequently filed incorporated documents or in an accompanying prospectus supplement modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as modified or superseded, to constitute a part of this prospectus.

To obtain a copy of these filings at no cost, you may telephone us at 630-771-6700 or write us at Investor Relations Department, Nanophase Technologies Corporation, 1319 Marquette Drive, Romeoville, Illinois 60446. Unless otherwise requested, exhibits to an incorporated document will not be provided unless the exhibit is specifically incorporated by reference into this prospectus.

In addition, we make available free of charge through our website at http://www.nanophase.com our annual reports on Form

10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and all amendments to those reports as soon as reasonably practicable after such material is electronically filed with or furnished to the Commission. Other than the information expressly incorporated by reference into this prospectus, information on, or accessible through, our website is not a part of this prospectus, any prospectus supplement or the registration statement of which this prospectus is a part.

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PROSPECTUS SUMMARY

The following summary is qualified in its entirety by reference to, and should be read in conjunction with, the more detailed information appearing elsewhere in this prospectus or incorporated by reference herein. Investors should also carefully consider the information set forth under Risk Factors beginning on page 5.

We are in the business of commercializing the emerging technology of nanocyrstalline materials, i.e. materials with a particle size less than 100 billionths of a meter. Nanocrystalline materials often exhibit unusual, and many times valuable, behavior in applications compared to normal materials. Nanocrystalline technology allows engineering of materials at the smallest, or most fundamental manufactured level, yet allowing increased material performance.

We have three core proprietary and patented (or patent pending) technologies to engineer nanomaterials for applications:

- The manufacture of nanocrystalline powders such as metals, oxides, carbides and nitrides using two patented and proprietary processes (physical vapor synthesis (PVS) and NanoArc Synthesis). These powders are manufactured in commercial volume and quality at two ISO 9001:2000 certified facilities. Nanomaterials for personal care applications are manufactured to USP (United States Pharmocopia as promulgated by the US Food and Drug Administration) and cGMP standards (current good manufacturing practices as promulgated by the US Food and Drug Administration);

- The capability to coat, or partially coat, each individual nanoparticle with various materials and then attach specific chemical properties to allow nanomaterials to be dispersed in a wide range of media; and

- The capability to disperse nanocrystalline powders in water and various organic solvents.

We apply our unique powder production and coating technologies to engineer nanocrystalline material solutions for both processes and end products. Our patented technologies create powder additives that are capable of modifying, either individually or in optimal combinations, the electrical, chemical, mechanical, and optical properties of conventional materials.

While markets continue to emerge for nanotechnology, and are forecasted to do so for the next 10-20 years, our current markets include healthcare, polishing, catalysts, various coatings, and electronic applications. In many of these applications, our nanomaterials display unique performance attributes. We pursue new vertical market applications through a consultative, solution-based approach focusing on lead customers in targeted markets. As we develop application solutions, we market these solutions, and derivations thereof, to similar applications in horizontal markets.

We are engaged in ongoing research and application development for and with companies on a global basis, which have enhanced our intellectual property. We license technology to other companies, license technology from companies, and create technology in joint arrangements with companies. In some instances, we patent applications for nanocrystalline materials in various industries. We are developing additional nanotechnology processes, complementary technologies, and continually improving our core technologies, including manufacturing operations.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

Some of the statements contained in, or incorporated by reference into, this prospectus are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These statements are based on our current plans and expectations and involve risks and uncertainties that may cause actual results to differ materially from the forward-looking statements. Generally, the words believe, expect, intend, plan, estimate, predict, anticipate, will, may, should and similar expressions identify forward-looking

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statements. We urge you to consider these factors carefully in evaluating the forward-looking statements contained in this prospectus. Forward-looking statements are made only as of the date of this prospectus. We do not intend, and undertake no obligation, to update these forward-looking statements. For a more in-depth discussion of these and other factors that could cause actual results to differ from those contained in forward-looking statements, see the discussion under Risk Factors below. In addition, you should carefully consider the specific risks set forth under the caption Rick Factors in the applicable prospectus supplement before making your investment decision.

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RISK FACTORS

This offering involves a high degree of risk. Before making an investment decision, you should carefully consider the following risks and the risks set forth in the supplement which accompanies this prospectus and in our periodic reports on Form 10-K and Form 10-Q which have been filed with the SEC and are incorporated by reference into this prospectus. The trading price of our common stock could decline due to any of these risks, and you could lose all or part of your investment. You also should refer to the other information appearing elsewhere in this prospectus, or incorporated by reference into this prospectus.

We have a limited operating history and face difficulties encountered by early stage companies in new and rapidly evolving markets.

We have only a limited operating history. We were formed in November 1989 and began our commercial nanocrystalline materials operations in January 1997. We have not yet generated a significant amount of revenue from our nanocrystalline materials operations. Because of our limited operating history and the early stage of development of our market, we have limited insight into trends that may emerge and affect our business and cannot be certain that our business strategy will be successful or that it will successfully address these risks. In addition, our efforts to address any of these risks may distract personnel or divert resources from other more important initiatives.

We have a history of losses that may continue in the future.

We have incurred net losses in each year since our inception with net losses of $4.52 million in 2000, $5.74 million in 2001, $5.16 million in 2002 and $4.36 million for the nine months ended September 30, 2003. As of September 30, 2003, we had an accumulated deficit of approximately $44.27 million and presently expect to continue to incur losses on an annual basis through at least the end of 2004. We believe that our business depends, among other things, on our ability to significantly increase revenue. If revenue fails to grow at anticipated rates or if operating expenses increase without a commensurate increase in revenue, or if we fail to adjust operating expense levels accordingly, then the imbalance between revenue and operating expenses will negatively impact our cash balances and our ability to achieve profitability on a quarterly basis.

We depend on a small number of customers for a high percentage of our sales, and the loss of a significant customer could cause a decline in revenue and/or increases in the level of losses incurred.

Sales to our customers are executed pursuant to purchase orders and annual supply contracts; however, customers can cease doing business with us at any time without notice. We expect a significant portion of our future sales to remain concentrated within a limited number of strategic customers. We may not be able to retain our strategic customers, such customers may cancel or reschedule orders, or in the event of canceled orders, such orders may not be replaced by other sales or by sales that are on as favorable terms. In addition, sales to any particular customer may fluctuate significantly from quarter to quarter, which could affect our ability to achieve anticipated revenues on a quarterly basis.

Sales to BASF Corporation and C.I. Kasei, a division of Itochu Corporation, accounted for approximately 79% of total revenue for the year ended December 31, 2002, and sales to the same two customers accounted for approximately 85% of total revenue in 2001. For the years ended December 31, 2002 and 2001, a single customer accounted for 73% and 76% of our total revenue, respectively. If we were to lose one or both of these customers, then results of operations would be materially harmed. Additional details may be found in our Form 10-K.

We have been consistently expanding both our marketing and business development efforts and our production efficiency in order to address the issues of our dependence upon a limited amount of customers, enhancement of gross profit and operating cash flows, and the achievement of profitability. We currently have customers that may grow to the point where they generate significant revenues and margins as relationships expand. Our largest customer, BASF, currently accounts for the majority of revenues. We view this customer as a single leg of the business and plan on adding more customers of similar magnitude over the next several years. Given the unique nature of our products, and the fact that markets for them are not yet fully developed, it is difficult to accurately predict when additional large customers will materialize. Management expects gross margins, taken for the year 2003 as a whole, to be positive. The extent to which the Company s margins remain positive, as a

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percentage of revenue, will be dependent upon revenue mix, revenue volume, and the Company s ability to continue to cut costs. The extent of the growth in revenue volume, and the related gross profit that this revenue generates, will be the main drivers in generating positive operating cash flows and, ultimately, net income.

Any downturn in the markets served by us would harm our business.

A majority of our products are incorporated into products such as sunscreens, polishing slurries, personal care, and to a lesser extent abrasion-resistant coatings for flooring, and catalytic converters. These markets have from time to time experienced cyclical, depressed business conditions, often in connection with, or in anticipation of, a decline in general economic conditions. These industry downturns have resulted in reduced product demand and declining average selling prices. Our business would be harmed by any future downturns in the markets that we serve.

We depend on collaborative development relationships with our customers.

We have established, and will continue to pursue, collaborative relationships with many of our customers. Through these relationships, we seek to develop new applications for our nanocrystalline materials and share development and manufacturing resources. We also seek to coordinate the development, manufacture and marketing of our nanocrystalline products. Future success will depend, in part, on our continued relationships with these customers and our ability to enter into similar collaborative relationships with other customers. We can make no assurance that our customers will continue in these collaborative development relationships or that they will not enter into collaborative development relationships with our competitors. Additionally, these customers may require a share of control of these collaborative programs. Some of our agreements with these customers limit our ability to license our technology to others and/or limit our ability to engage in certain product development or marketing activities. These relationships can usually be terminated unilaterally by customers. If we are unable to initiate or sustain such collaborative relationships, then we may be unable to independently develop, manufacture or market our current and future nanocrystalline materials or applications.

Our manufacturing processes are susceptible to disruption.

Our success will depend, in part, on our ability to manufacture nanocrystalline materials in significant quantities, with consistent quality and in an efficient and timely manner. We may need to continue to expand our current facilities or obtain additional facilities in the future. Any material disruption in our operations could have a material adverse effect on our business, results of operations and financial condition. While we maintain customary property and business interruption insurance, this insurance may not adequately compensate us for all losses that we may incur.

Protection of our intellectual property is limited and uncertain.

Our intellectual property is important to our business. We seek to protect our intellectual property through patent, trademark and copyright law, trade secret protection and confidentiality or license agreements with our employees, customers, suppliers and others. We can make no assurance that our means of protecting our intellectual property rights in the United States or abroad will be adequate or that others, including our competitors, will not use our proprietary technology without our consent. We can also make no assurance that we will receive the necessary patent protection for any applications pending with the U.S. Patent and Trademark Office or that any of the patents that we currently own or

license will be sufficient to keep competitors from using our materials or processes. In addition, we can make no assurance that any patents that we currently own or license will be held valid if subsequently challenged by others or that others will not claim rights in the patents and other proprietary technology that we own or license. Additionally, others may have already developed or may subsequently develop similar products or technologies without violating any of our proprietary rights. If we fail to obtain patent protection or preserve our trade secrets we may be unable to effectively compete against others offering similar products and services. In addition, if we fail to operate without infringing the proprietary rights of others or lose any license to technology that we currently have or will acquire in the future, we may be unable to continue making the products that we currently make.

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Furthermore, litigation may be necessary to enforce our intellectual property rights, to protect our trade secrets, to determinate the validity and scope of the proprietary rights of others, or to defend against claims of infringement or invalidity. Such litigation could result in substantial costs and diversion of resources and could harm our business, operating results and financial condition. In addition, if others assert that our technology infringes their intellectual property rights, resolving the dispute could divert our management team and financial resources.

In the future, we may license certain of our intellectual property, such as trademarks or copyrighted material, to third parties. While we would attempt to ensure that any licensees maintain the quality and value of our brand, we can make no assurance that we will refrain from actions that might diminish this quality and value.

We may be subject to claims that one or more of the business methods used by us infringe upon patents held by others. The defense of any claims of infringement made against us by third parties could involve significant legal costs and require our management to divert time and other resources from our business operations. Either of these consequences of an infringement claim could have a material adverse effect on our operating results. If we are unsuccessful in defending any claims of infringement, we may be forced to obtain licenses or pay royalties to continue to use our technology. We may not be able to obtain any necessary licenses on commercially reasonable terms or at all. If we fail to obtain necessary licenses or other rights, or if these licenses are costly, our operating results may suffer either from reductions in revenue through our inability to serve clients or from increases in costs to license third-party technology.

Our industry is experiencing rapid changes in technology.

Rapid changes have occurred, and are likely to continue to occur, in the development of advanced materials and processes. Our success will depend, in large part, upon our ability to keep pace with advanced materials technologies, industry standards and market trends and to develop and introduce new and improved products on a timely basis. We will likely commit substantial resources to develop our technologies and product applications and, in the future, to expand our commercial manufacturing capacity as volume grows. We can make no assurance that our development efforts will not be rendered obsolete by the research efforts and technological advances of others or that other advanced materials will not prove more advantageous than those we produce.

Our market is highly competitive, and if we are unable to compete effectively, then our business will not grow.

The advanced materials industry is new, rapidly evolving and intensely competitive, and we expect competition to intensify in the future. The market for materials having the characteristics and potential uses of our nanocrystalline materials is the subject of intensive research and development efforts by both governmental entities and private enterprises around the world. We believe that the level of competition will increase further as more product applications with significant commercial potential are developed. The nanocrystalline product applications that we are developing will compete directly with products incorporating both conventional and advanced materials and technologies. While we are not currently aware of the existence of commercially available competitive products with the same attributes as those we offer, we can make no assurance that other companies will not develop and introduce new or competitive products. We can also make no assurance that our competitors will not succeed in developing or marketing materials, technologies and better or less expensive products than the ones we offer. In addition, many of our potential competitors have substantially greater financial and technical resources, and greater manufacturing and marketing capabilities than we do. If we fail to improve our current and potential nanocrystalline product applications at an acceptable price, or otherwise compete with producers of conventional materials, we will lose market share and revenue to our competitors.

We may need to raise additional capital in the future

We expect to expend significant resources on research, development and product testing, and in expanding current capacity or capability for new business. In addition, we may incur significant costs in preparing, filing, prosecuting, maintaining and enforcing our patents and other proprietary rights. We may seek additional funding through public or private financing and through contracts with government or other companies. We can make no assurance that additional financing will be available on acceptable terms or at all. If we are unable to obtain adequate funds, we may be required to delay, scale-back or eliminate some of our manufacturing and marketing

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operations or we may need to obtain funds through arrangements on less favorable terms. If we obtain funding on unfavorable terms, we may be required to relinquish rights to some of our intellectual property.

To raise additional funds in the future, we would likely sell our equity or debt securities or enter into loan agreements. To the extent that we issue debt securities or enter into loan agreements, we may become subject to financial, operational and other covenants that we must observe. In the event that we were to breach any of these covenants, then the amounts due under such loans or debt securities could become immediately payable by us, which could significantly harm us. To the extent that we sell additional shares of our equity securities, you may face economic dilution if the future equity securities are sold at a lower price than your purchase price in this offering, and, to the extent that you do not participate in such future offerings, you would also face dilution of your percentage ownership of us.

We currently have a supply agreement with BASF that contains provisions which could potentially result in a mandatory transfer of technology and sale of production equipment to BASF providing capacity sufficient to meet BASF s production needs. The transfer and related sale would be triggered only in the event that one of the following occurs:

- our earnings for a twelve month period ending with our most recently published quarterly financial statements are less than zero and our cash, cash equivalents and liquid investments are less than $2,000,000,
- any lender accelerates any debt in excess of $10,000,000, or
- we become insolvent as defined in the supply agreement.

In the event of a triggering event where we are required to sell to BASF production equipment providing capacity sufficient to meet BASF s production needs, the equipment would be sold at 115% of the equipment s depreciated cost.

We believe that we have complied with all contractual requirements and that we have not had a triggering event . We further believe that the proceeds of the May 29, 2002 and September 8, 2003 private placements provide sufficient cash balances to avoid the first triggering event referenced above through the third quarter of 2004. In all likelihood, we may need to set aside a portion of the proceeds of the private placements in order to avoid a triggering event. Further, we expect, although such exercise is not guaranteed, to receive an additional $2,000,000 in equity capital relating to the future exercise of warrants relating to the September 2003 fundraising. This additional funding should allow us to avoid a triggering event through at least early 2005. If a triggering event were to occur and BASF elected to proceed with the transfer and related sale mentioned above, we would lose both significant revenue and the ability to generate significant revenue to replace that which was lost in the near term. Replacement of necessary equipment that would be purchased and removed by BASF pursuant to this triggering event could take six months to a year. Any additional capital outlays required to rebuild capacity would probably be greater than the proceeds from the purchase of the assets pursuant to our agreement with BASF. This shortfall might put us in a position where it would be difficult to secure additional funding given what would then be an already tenuous cash position. Such an event would also result in the loss of many of the Company s key staff and line employees due to economic realities. We believe that our employees are a critical component of our success and would be difficult to quickly replace and train. Given the occurrence of such an event, we might not be able to hire and retrain skilled employees given the stigma relating to such an event and its impact on us. We would effectively reduce our size and staffing to a point where we could remain a going concern. Such a change would make it unlikely that, without unforeseen funding, we could continue to grow at anything other than an incremental rate.

We depend on key personnel.

Our success will depend, in large part, upon our ability to attract and retain highly qualified research and development, management, manufacturing, marketing and sales personnel on favorable terms. Due to the specialized nature of our business, we may have difficulty locating, hiring and retaining qualified personnel on favorable terms. If we were to lose the services of any of our key executive officers or other key personnel, or if we are unable to attract and retain other skilled and experienced personnel on acceptable terms in the future, then our business, results of operations and financial condition would be materially harmed. In addition, we do not currently have key-man

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life insurance policies covering all of our executive officers or key employees, nor do we presently have any plans to purchase such policies.

We face potential product liability risks.

We may be subject to product liability claims in the event that any of our nanocrystalline product applications are alleged to be defective or cause harmful effects. Because our nanocrystalline materials are used in other companies products, to the extent our customers become subject to suits relating to their products, such as medical implants and cosmetic and skin-care products, we can make no assurance that these claims will not also be asserted against us. We currently maintain insurance coverage in the amount of $10 million for product liability claims, which may or may not prove to be sufficient. We may incur significant costs in defending or settling product liability claims. Even if we are able to settle these claims, we can make no assurance that any settlement would be on acceptable terms. The costs related to these claims could have a material adverse effect on our business, results of operations and financial condition.

We are subject to governmental regulations.

Current and future laws and regulations may require us to make substantial expenditures for preventive or remedial action. We can make no assurance that our operations, business or assets will not be materially and adversely affected by governmental interpretation and enforcement of current or future environmental laws and regulations. In addition, our coating operations pose a risk of accidental contamination or injury. The damages in the event of an accident or the costs to prevent or remediate an environmental event could exceed our resources or otherwise have a material adverse effect on our business, results of operations and financial condition.

In addition, both of our facilities and all of our operations are subject to the plant and laboratory safety requirements of various occupational safety and health laws. We believe we have complied in all material respects with regard to governmental regulations applicable to us. We can make no assurance, however, that we will not have to incur significant costs in defending or settling future claims of alleged violations of governmental regulations or that these regulations will not materially restrict or impede our operations in the future. In addition, our efforts to comply with or contest any regulatory actions may distract personnel or divert resources from other more important initiatives.

The manufacture and use of certain products that contain our nanocrystalline materials are subject to intense governmental regulation. As a result, we are required to adhere to the requirements of the regulations of governmental authorities in the United States and other countries. These regulations could increase our cost of doing business and may render some potential markets prohibitively expensive.

We have implemented anti-takeover provisions which could discourage or prevent a takeover, even if an acquisition could be beneficial to our stockholders.

In October 1998, we entered into a Rights Agreement, commonly referred to as a poison pill. The provisions of this agreement and some of the provisions of our certificate of incorporation, our bylaws and Delaware law could, together or separately:

- discourage potential acquisition proposals;

delay or prevent a change in control; and

limit the price that investors might be willing to pay in the future for shares of our common stock.

In particular, our board of directors is authorized to issue up to 24,588 shares of preferred stock (less any outstanding shares of preferred stock) with rights and privileges that might be senior to our common stock, without the consent of the holders of the common stock.

In addition, Section 203 of the Delaware General Corporations Law and the terms of our stock option plans may discourage, delay or prevent a change in control of our company.

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Future sales of our common stock by existing stockholders could negatively affect the market price of our stock and make it more difficult for us to sell stock in the future.

Sales of our common stock in the public market, or the perception that such sales could occur, could result in a decline in the market price of our common stock and make it more difficult for us to complete future equity financings. A substantial number of shares of our common stock and shares of common stock subject to outstanding warrants may be resold pursuant to currently effective registration statements. As of January 15, 2004, in addition to the shares to be sold in this offering, there are:

- 16,058,058 shares of common stock that have been issued in registered offerings or upon the exercise of options under our equity incentive plan and are freely tradable in the public markets,
- 1,370,000 shares of common stock which have been registered for resale under a Registration Statement on Form S-3 (Registration No. 333-90326);
- an aggregate of 1,928,619 shares of common stock that may be issued on the exercise of stock options outstanding under our equity incentive plan.

We cannot estimate the number of shares of common stock that may actually be resold in the public market because this will depend on the market price for our common stock, the individual circumstances of the sellers, and other factors. If stockholders sell large portions of their holdings in a relatively short time, for liquidity or other reasons, the market price of our common stock could decline significantly.

We have been involved in litigation.

In 1998, Harbour Court LPI, a small stockholder, sued us, several of our then-current and former officers and the underwriters of our initial public offering of common stock in the United States District Court for the Northern District of Illinois. The complaint alleged that the defendants had violated the federal Securities Exchange Act of 1934 by making supposedly fraudulent material misstatements and omissions of fact in connection with soliciting consents to our initial public offering from several of our preferred stockholders. The supposed misrepresentations concerned purported mischaracterization of revenue that we received from our then-largest customer. The complaint further alleged that the suit should be maintained as a plaintiff class action on behalf of several former preferred stockholders whose shares of preferred stock were converted into common stock in connection with our initial public offering. The complaint sought relief including unquantified compensatory damages and attorneys fees. In September 2000, each of the defendants answered the complaint, denying all wrongdoing. Following initial discovery, we agreed to settle all claims against all defendants for $800,000, plus up to an additional $50,000 for the cost of settlement administration. The settlement did not admit liability by any party. The court ordered final approval of the settlement in January 2002 and concurrently dismissed the complaint with prejudice. In January 2003, the court approved interim payment to the plaintiffs of $17,102 in settlement administration costs. Because both the settlement and the settlement administration costs were funded by our directors and officers liability insurance, neither the settlement nor the settlement administration costs payments have had a material adverse effect on the Company s financial position or results of operations.

In November 2001, George Tatz, a purchaser of 200 shares of our common stock, sued us and Joseph Cross, our President and CEO, in the United States District Court for the Northern District of Illinois. The complaint alleged that the defendants violated the federal Securities Exchange Act of 1934 by making supposedly fraudulent material misstatements and omissions of fact in connection with our public disclosures, including certain press releases, concerning our dealings with Celox, a British customer. The complaint further alleged that the action should be maintained as a plaintiff class action on behalf of buyers who purchased shares of our common stock from April 5, 2001 through October 24,

2001. The complaint sought relief including unquantified compensatory damages and attorneys fees. In March 2002, the plaintiff filed an amended complaint, alleging that we and four of our officers (Joseph Cross; Daniel Bilicki our vice president of sales and marketing; Jess Jankowski our acting chief financial officer; and Gina Kritchevsky our then-current chief technology officer) were liable under the federal Securities Exchange Act of 1934 for making supposedly fraudulent material misstatements and omissions of fact in connection with our press releases, publicly-filed reports and other public disclosures concerning our relationship

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with Celox and our purportedly improper booking, and later reversal, of $400,000 in revenue from a one-time sale to that customer treated as a bill and hold transaction. The amended complaint alleged the same class and sought the same relief as in the plaintiff s initial complaint. In November 2002, the defendants answered the amended complaint, denying all alleged wrongdoing. Following initial discovery, on June 11, 2003, we agreed to settle all claims against all defendants for $2,500,000. On June 12, 2003, the court certified the class alleged in the amended complaint. On December 1, 2003, the court ordered final approval of the settlement and dismissed the amended complaint with prejudice. The settlement does not admit liability by any party. Because the settlement has been funded by our directors and officers liability insurance, the settlement has not had a material adverse effect on our financial position or results of operations.

Dilutive Effect of Private Placements.

On May 29, 2002 we sold 1,370,000 shares of our common stock to selected accredited investors at a purchase price of $5.00 per share. On May 29, 2002 the closing sale price of our common stock, as reported on Nasdaq, was $5.15 per share. On September 8, 2003 we sold 453,001 shares of our common stock to Grace Brothers, Ltd. at a purchase price of $4.415 per share together with a warrant to purchase a like number of shares of common stock during the next twelve months also at a price of $4.415 per share. The share price for the common stock was determined based on the fifteen-day market closing average for the Company s stock ending September 5, 2003. On September 8, 2003 the closing sale price of our common stock as reported on Nasdaq, was $5.50 per share. Both of these issuances of stock at below the then-current market price had a dilutive effect on existing common stockholders.

We have never paid dividends.

We currently intend to retain earnings, if any, to support our growth strategy. We do not anticipate paying dividends on our stock in the foreseeable future.

USE OF PROCEEDS

Unless otherwise specified in the prospectus supplement, we intend to use the net proceeds from the sale of the securities offered by this prospectus and any accompanying prospectus supplement for general corporate purposes, which might include working capital, increase in technology development, increase in business development, capital expenditures, the repayment of indebtedness, the repurchase of shares of our equity securities and acquisitions. Pending use for these purposes, we may invest proceeds from the sale of the securities in short-term marketable securities. The precise amount and timing of sales of any securities will be dependent on market conditions and the availability and cost of other funds to us.

On May 29, 2002, we completed the sale of 1,370,000 shares of our common stock in a private placement to selected institutional and accredited investors, resulting in gross proceeds of $6,850,000. On September 8, 2003, we completed the sale of 453,001 shares of our common stock in a private placement to Grace Brothers, Ltd., resulting in gross proceeds of $2,000,000. To date, we have used the proceeds of both private placements for operations and general working capital purposes. In all likelihood, we may need to reserve as much as $2.0 million of the proceeds of the private placements or this offering in order to avoid a triggering event in our BASF contract.

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RATIO OF EARNINGS TO FIXED CHARGES

	Years Ended December 31,					Nine Months Ended September 30,
	1998	1999	2000	2001	2002	2003
Ratio of Earnings to Fixed Charges(1)(2)						

(1) In computing the ratio of earnings to fixed charges, (a) earnings have been computed as loss before provision for income taxes excluding fixed charges and (b) fixed charges consist of interest expense and the estimated interest portion of rent expense.

(2) For the years ended December 31, 1998, 1999, 2000, 2001 and 2002, and the nine months ended September 30, 2003, earnings were insufficient to cover fixed charges for those periods by $5,477,880, $5,117,067, $4,518,327, $5,710,243, $5,086,563 and $4,342,357, respectively.

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DESCRIPTION OF DEBT SECURITIES

This prospectus describes the general terms and provisions of our debt securities. When we offer to sell a particular series of debt securities, we will describe the specific terms of the series in a supplement to this prospectus. Accordingly, for a description of the terms of any series of debt securities, you must refer to both the prospectus supplement relating to that series and the description of the debt securities in this prospectus. To the extent the information contained in the prospectus supplement differs from this summary description, you should rely on the information in the prospectus supplement.

The debt securities offered hereby will be issued under an indenture between us and the trustee named therein. The indenture will be subject to, and governed by, the Trust Indenture Act of 1939, as amended. A copy of the form of indenture will be filed in an amendment to the registration statement of which this prospectus is a part or filed in a Current Report on Form 8-K and incorporated by reference in the registration statement of which this prospectus is a part. The following description of certain provisions of the form of indenture does not purport to be complete and is subject to, and is qualified in its entirety by reference to, all the provisions of the indenture to be filed in an amendment to the registration statement of which this prospectus is a part or filed in a Current Report on Form 8-K and incorporated by reference in the registration statement of which this prospectus is a part.

General

The terms of each series of debt securities will be established by or pursuant to a resolution of our board of directors and detailed or determined in the manner provided in an officers certificate or by a supplemental indenture. The particular terms of each series of debt securities will be described in a prospectus supplement relating to the series, including any pricing supplement.

We will be able to issue an unlimited amount of debt securities under the indenture that may be in one or more series with the same or various maturities, at par, at a premium, or at a discount. We will set forth in a prospectus supplement, including any pricing supplement, relating to any series of debt securities being offered, the initial offering price, the aggregate principal amount and the following terms of the debt securities:

We will provide in a prospectus supplement, including any pricing supplement, relating to any series of debt securities being offered, the aggregate principal amount and the following terms of the debt securities:

- the title of the debt securities;
- the aggregate principal amount of the debt securities and any limit on the aggregate principal amount of the debt securities;
- whether we will issue the debt securities at a discount and the portion of the principal amount of the debt securities payable upon declaration of acceleration of the maturity of the securities or upon redemption, if other than the principal amount, and the rate at which the original issue discount will accrue;
- the date on which we will pay the principal on the debt securities;

the rate, which may be fixed or variable, or the method used to determine the rate at which the debt securities will bear interest;

the date from which interest will accrue, the date on which interest will be payable and any regular record date for the interest payable on any interest payment date;

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the place where we will pay, or the method of payment of, principal, premium and interest on the debt securities and where holders may surrender the debt securities for conversion, registration of transfer or exchange;

any obligation we have to redeem or purchase the debt securities under any sinking fund or similar provisions or at the option of a holder of debt securities;

our right to redeem the debt securities and the date on which, the price at which and the terms and conditions upon which we may redeem the debt securities;

the denominations in which we will issue the debt securities, if other than denominations of $1,000 and any multiples of $1,000;

provisions, if any, for the defeasance or discharge of our obligations relating to the debt securities;

whether we will issue the debt securities in registered or bearer form;

the currency in which we will pay principal, premium and interest on the debt securities;

if we will pay principal, premium or interest on the debt securities in one or more currencies other than those in which the debt securities are denominated, the manner in which we will determine the exchange rate on the payments;

the manner in which we will determine the amounts of payment of principal, premium or interest on the debt securities if these amounts may be determined by reference to an index based on a currency other than that in which the debt securities are denominated or designated or by reference to a commodity, commodity index, stock exchange index or financial index;

any addition to, or change or deletion of, any events of default or covenants in the indenture;

a discussion of any material or special United States federal income tax considerations applicable to the debt securities;

any depositaries, trustees, interest rate calculation agents, exchange rate calculation agents or other agents relating to the debt securities other than those originally appointed;

whether we will issue the debt securities in the form of global securities and whether we will issue the global securities in temporary or permanent global form;

any rights of the holders of the debt securities to convert the debt securities into other securities or property and the terms and conditions of the conversion;

any subordination provisions relating to the debt securities;

any listing of the debt securities on a securities exchange;

any provisions relating to any security provided for by the debt securities; and

any other terms of the debt securities that will not be inconsistent with the indenture.

We may issue debt securities at a discount below their stated principal amount. Even if we do not issue the debt securities below their stated principal amount, for United States federal income tax purposes the debt securities may be deemed to have been issued with a discount because of interest payment characteristics. We will describe in a prospectus supplement the United States federal income tax considerations applicable to debt securities issued at a

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discount or deemed to be issued at a discount. We will also describe in a prospectus supplement the special United States federal income tax considerations or other restrictions or terms applicable to debt securities issuable in bearer form, offered exclusively to foreigners or denominated in a foreign currency.

Denominations, Registration, Transfer and Exchange

Unless we specify otherwise in the prospectus supplement, the debt securities of any series will be issuable only in denominations of $1,000 and multiples of $1,000, and will be payable only in U.S. dollars.

We may issue the debt securities in whole or in part in the form of one or more global securities that will be deposited with, or on behalf of, a depositary identified in the applicable prospectus supplement. We may issue the global securities in either registered or bearer form and in either temporary or permanent form. We will describe the specific terms of the depositary arrangement relating to a series of debt securities in the prospectus supplement.

You may transfer or exchange certificated debt securities at any office we maintain for this purpose in accordance with the terms of the indenture. We will not charge a service fee for any transfer or exchange of certificated debt securities, but we may require payment of a sum sufficient to cover any tax or other governmental charge we are required to pay in connection with a transfer or exchange.

You may effect the transfer of certificated debt securities and the right to receive the principal, premium and interest on certificated debt securities only by surrendering the certificate representing those certificated debt securities and either reissuance by us or the trustee of the certificate to the new holder or the issuance by us or the trustee of a new certificate to the new holder.

We are not required to:

- register, transfer or exchange debt securities of any series during a period beginning at the opening of 15 business days before the day we transmit a notice of redemption of debt securities of the series selected for redemption and ending at the close of business on the day of the transmission; or
- to register, transfer or exchange any debt security so selected for redemption in whole or in part, except the unredeemed portion of any debt security being redeemed in part.

Covenants

We will describe in the prospectus supplement any restrictive covenants applicable to an issue of debt securities.

Consolidation, Merger or Sale of Assets

Unless we have pre-existing contractual obligations, we may not consolidate or merge with or into, or sell, assign, convey or transfer our properties and assets substantially in their entirety to another corporation, person or entity unless:

- in the case of a consolidation or merger, (1) we are the surviving corporation, or (2) the successor corporation is an entity organized and validly existing under the laws of the United States, any state of the United States or the District of Columbia and expressly assumes our obligations under the debt securities and the indenture; and

- immediately after giving effect to the transaction, no event of default exists.

Notwithstanding the foregoing, any subsidiary of ours may consolidate with, merge into or transfer all or part of its properties and assets to us.

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Events of Default

Each of the following is an event of default relating to a series of debt securities: