

MFIC CORP  
Form 10-K  
March 18, 2005

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**

WASHINGTON, D.C. 20549

**FORM 10-K**

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**ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF  
THE SECURITIES EXCHANGE ACT OF 1934**

**For the fiscal year ended December 31, 2004**

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**Commission File Number: 0-11625**

**MFIC CORPORATION**

(Exact name of registrant as specified in its charter)

**Delaware**

(State or other jurisdiction of  
incorporation or organization)

**04-2793022**

(I.R.S. Employer Identification No.)

**30 Ossipee Road, P.O. Box 9101**

**Newton, Massachusetts**

(Address of principal executive offices)

**02464-9101**

(Zip Code)

Registrant's telephone number, including area code: **(617) 969-5452**

Securities registered pursuant to Section 12(b) of the Act: **None**

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Securities registered pursuant to Section 12(g) of the Act: **Common Stock, \$.01 par value**

Indicate by check mark whether the registrant; (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes  No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is an accelerated filer (as defined in Rule 12b-2 of the Act) Yes  No

The aggregate market value of Common Stock held by non-affiliates of the registrant (without admitting that any person whose shares are not included in determining such value is an affiliate), based upon the closing sale price of the Common Stock on June 30, 2004 and on March 11, 2005 respectively as reported on the NASDAQ Over-the-Counter Bulletin Board was approximately \$14,034,000 and \$20,294,000.

The number of shares outstanding of the registrant's Common Stock as of March 11, 2005 was 9,677,834 shares.

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Portions of the definitive Proxy Statement to be delivered to shareholders in connection with the Company's Annual Meeting of Stockholders are incorporated by reference into Part III.

**MFIC Corporation**

**2004 Form 10-K Annual Report**

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This Report contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Such statements are subject to certain risks and uncertainties, including without limitation those discussed in Item 7 under the heading "Certain Factors and Cautionary Statement Regarding Forward-Looking Statements." Such forward-looking statements speak only as of the date on which they are made, and the Company cautions readers not to place undue reliance on such statements.

Microfluidizer® is a trademark of the Company, which has been registered with the United States Patent and Trademark Office. All other trademarks or trade names referred to herein are the property of their respective owners.

**Item 1. BUSINESS:**

**Company Overview:**

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MFIC Corporation (MFIC or the Company) has, for 20 years, specialized in manufacturing and marketing a broad line of high shear fluid processing systems used in numerous applications in the chemical, pharmaceutical, biotech, food and cosmetics industries.

MFIC's line of high shear fluid processor equipment, marketed under the Company's Microfluidizer trade name, are capable of creating nanoparticles (commonly defined as particles having dimensions in the 10-1000 nanometer range) including nanostructures, microemulsions, and nanosuspensions. The equipment's ability to produce commercial quantities of such materials has been important to producers of pharmaceuticals, coatings and other products.

Additionally, the Company is commercializing its proprietary equipment, processes and technology for the continuous creation of nanoparticles. The Company has announced and undertaken commercialization efforts for its patented Microfluidizer Mixer/Reactor (MMR), which is a high pressure multiple stream mixer/reactor.

The Company's Microfluidizer high shear fluid processing technology is used for formulation of products that are normally very difficult to mix. Microfluidizer processor technology allows manufacturers in the chemical, pharmaceutical, cosmetic, and food processing industries to produce higher quality products with better characteristics on a more consistent basis than with other blending, mixing, or homogenizing techniques. Additionally, the equipment is used for cell disruption to harvest the cultivated contents of bacterial, yeast, mammalian and/or plant cells and for liposomal encapsulation of materials for the cosmetics and biotech/biopharma industries.

The Company's management believes that future commercialization and growth of nanotechnology may be, in large part, enabled by the manufacturing capability of the Company's materials processor and MMR equipment. Further, the Company guarantees scaleup of formulations and results on its equipment from 100 milliliters per minute on its laboratory and benchtop models to gallons per minute on its pilot and production models.

The Company was incorporated in Delaware in 1983. The Company, formerly named Biotechnology Development Corporation, changed its name effective June 8, 1993 to Microfluidics International Corporation, and again changed its name effective July 12, 1999 to MFIC Corporation. Until its sale on February 9, 2004, the Company also operated another division, known as the Morehouse-COWLES Division, which manufactured and sold a broad line of mechanical fluid materials processing systems used for a variety of dispersing, milling, and blending applications across a variety of industries. The Morehouse-COWLES Division manufactured and distributed high shear dispersers, dissolvers, colloid mills, horizontal media mills, vertical media mills, and sold grinding media for such equipment. The Company's principal executive offices are located at 30 Ossipee Road, in Newton, Massachusetts, 02464-9101 and its telephone number is (617) 969-5452.

The Technologies:

Materials Processor Equipment. The Company's Microfluidizer high shear fluid processing equipment is based on patents and related technology that were licensed by the Company from Arthur D. Little & Co. in 1983 and subsequently purchased by the Company in 1985. The Company holds one unexpired United States patent related to the method used to intimately mix liquids and disperse particulate solids in microemulsions. See Patents and Proprietary Rights Protection.

Microfluidizer high shear fluid processors differ from conventional mechanical mixing and processing technologies in that they utilize highly pressurized product streams that travel at high velocities in precisely defined microchannels producing high shear forces and then collide at ultra-high velocities in a small, confined space producing high forces of impact. There are no moving parts in this mixing and collision zone ( fixed geometry ). Combined forces of shear and impact which, in the fixed geometry design, act upon products to consistently create thorough deagglomeration and particle size reduction resulting in what the Company believes are smaller, more uniform, highly stable, and reproducible dispersions and emulsions than can be produced by any other means. Microfluidizer processors also differ from conventional mixing and homogenization equipment in that Microfluidizer processors permit a linear scaleup from 100 milliliters per minute to gallons per minute with no change in product formulation or equipment design and engineering. The formulations processed may be liquid/liquid or liquid/solid formulations.

MMR. The Company has introduced its patented Microfluidizer Mixer-Reactor (MMR) system as a continuous chemical reactor, which the Company believes may become a standard device for conducting chemical reactions, many of which can be configured to produce nanoparticles. This system produces uniform nanoparticles with phase purity previously unachievable with conventional batch reaction technology. This degree of reaction chemistry control can lead to cost-effective product improvements and the development and manufacture of new nanomaterials in scalable quantities.

Commercial Applications:

Microfluidizer processor technology allows manufacturers in the chemical, pharmaceutical, biotechnology, cosmetic, and food processing industries to produce higher quality products with better characteristics on a more consistent basis than with other blending, mixing, or homogenizing techniques. Further, the proprietary equipment enables manufacture of unique products which cannot otherwise be produced. Microfluidizer processor equipment is generally used in the processing of high value-added end-products that require extremely small and uniform particle sizes.

Microfluidizer processor equipment can be used to mix and formulate stable emulsions, dispersions and liposomes, and for cell disruption.

Emulsions are homogenous mixtures of oil and water components (or other normally immiscible components), which, if mixed properly, do not readily separate. Emulsions comprise many products, such as food additives, medicines (including injectable drugs), photographic films, and polymers. The Company believes that, generally, an emulsion processed with Microfluidizer processor equipment will exhibit improved stability and require reduced

concentrations of costly emulsifying agents that are otherwise needed to enhance product stability.

Dispersions are mixtures of fine solids suspended in liquid so that the two do not separate readily after processing. Similar to emulsions, dispersions are used in a variety of consumer and industrial products, including solids for medicines (including injectable drugs), coatings, pigmented dyes for inkjet inks, phosphorescent coatings for TV screens and fluorescent lamps, barium titanate for capacitors and toners.

Liposomes are biodegradable cell-like structures, formed from materials such as cholesterol and lecithin, which can be used to encapsulate medications or nutrients. Pharmaceutical and cosmetic manufacturers use liposomes as a delivery system to target active ingredients for specific anatomical sites and to prolong their efficacy. To date, liposomes have been used commercially in two predominant applications: medical diagnostic agents and cosmetics. Applications include the encapsulation of dye to be used as a marker in medical diagnostic tests and the encapsulation of ingredients for deeper skin penetration, or time-release control, as well as pharmaceutical, food and specialized agricultural applications.

In the biotechnology industry, Microfluidizer processor equipment is currently used to harvest, by cell rupture, the contents of bacteria, plant or mammalian cells. The controlled forces of shear and impact produced by Microfluidizer processor equipment allows the encapsulating cell wall to be ruptured without damage to, or contamination of, the cell contents. The Microfluidizer processor equipment eliminates grinding media contamination, thus minimizing downstream processing requirements.

Microfluidizer processor equipment is generally used in commercial applications where a scientist, formulator or chemist is trying to develop or improve a product formulation for an expensive, high value-added end product. Microfluidizer processor equipment is initially employed in a research laboratory, with the equipment subsequently being used in scaleup to pilot scale production of new or improved products, and ultimately, for full production scale volumes as the improved product comes to market. From laboratory to production the Company guarantees scaleup of formulations and results on its equipment from 100 milliliters per minute on its laboratory and benchtop models to gallons per minute on its production models.

The Company currently manufactures and markets the following lines of equipment:

The HC Series: The HC Series, also known as Homogenizers, is a laboratory-scale series of equipment that is intended to impart moderate levels of energy into a customer's product with greater flow rates than the more energy intensive Microfluidizer processor devices. Operating pressures of products in the Company's HC Series can range from 250 psi to as high as 8,000 psi, and will process as much as two liters of fluid per minute.

The M-110 Series: The M-110 Series, is a laboratory product line that operates with available laboratory air and is designed primarily for research and development applications. Standard models can generate pressures as high as 23,000 psi and have a product flow rate on the order of one-half liter per minute. The M-110EH includes an on-board hydraulic pump system for high performance lab scale micro-mixing at processing pressures up to 30,000 psi and flow rates up to 450 ml/min. It has numerous standard features and options including explosion-proof motors and steam sterilization.





The M-140 Series: The M-140K Series is a laboratory-scale unit developed for customers in the chemical, biotechnology, pharmaceutical, cosmetic and food processing industries that require elevated operating pressures and higher shear forces to achieve better performance. The M-140K can achieve operating pressures up to 40,000 psi. The M-140K has a built-in hydraulic system and utilizes a bi-directional intensifier pump that provides a highly uniform pressure profile. It has been designed with many accessories and options including an explosion proof motor, control package, and solvent seal quench. The M-140K has flow rates up to 500 ml/min.

The M-210 Series: The M-210 Series is a pilot unit and is primarily marketed to pharmaceutical, cosmetic and food product manufacturers who have created a successful new or improved formulation on the M-110 Series unit and would like to increase their production capacity. The M-210 Series unit is typically used for testing formulations at greater volume levels before initiating full-scale production. For some customers (such as biotechnology and pharmaceutical product manufacturers), the M-210 Series may have the capacity to function as a production unit.

The M-700 Series: The M-700 Series was introduced at the end of fiscal 1998 and was initially designed, engineered, and constructed for use in rugged industrial environments such as coatings, paints and pigments research and manufacturing. This product line was especially designed to withstand such hazards as dust, grease, and water spray. Through use of our own proprietary design of an intensifier pump and other components, the system has also proven to be more cost-effective in many user applications.

More recently, because of the market demands of the pharmaceutical, biotech and cosmetic industries, the M-700 product line was upgraded to all stainless steel construction to conform to the U.S. Food and Drug Administration's current Good Manufacturing Practices (cGMP) requirements. (See discussion under heading "Government Regulations.") It also offers steam in place (SIP) and clean in place (CIP) options.

The M-700 Series equipment is available in a variety of configurations and flow rates depending upon motor size and the number of intensifier pumps. On the low end of the spectrum is the 15 HP, single intensifier pump M-7115 machine with flow rates ranging from 0.9 gpm at 10,000 psi to 0.4 gpm at 30,000 psi. The next size up is the 25 HP, single intensifier pump, M-7125 machine with flow rates ranging from 2.3 gpm at 10,000 psi to 0.6 gpm at 30,000 psi. Until September 30, 2003, the largest offering of the M-700 series product line was the 50 HP, dual intensifier pump M-7250 machine with flow rates ranging from 4.5 gpm at 10,000 psi to 1.2 gpm at 30,000 psi.

On September 30, 2003, Microfluidics introduced a new addition to the M-700 series product line, the 100 HP, dual intensifier pump, Model M-710 machine with flow rates ranging from 16 gpm at 5,000 psi to 3.0 gpm at 30,000 psi. This model has the equivalent throughput of the larger and more expensive M-610-100 HP model.

All M-700 series machines are offered with the capability of operating at 40,000 psi. Additionally, during 2003 the Company introduced several new options and equipment features to the M-700 series product offerings including:

(i) The M-700 Microfluidizer Containment System, which is utilized for the protection of personnel engaged in the processing of highly toxic cancer therapeutic drugs and other hazardous materials.

(ii) The M-700 Microfluidizer Split System (separating the power source from the mixing/processing apparatus) accommodates demands of limited space within clean rooms and for noise abatement within pharmaceutical production facilities. In conjunction with this system, the Company also introduced a Level II Steam Sterility Option for all pilot and production systems used for production of injectable and other pharmaceuticals. This option enables compliance with stringent regulatory production requirements. Two such systems have been recently delivered to a pharmaceutical manufacturer.

(iii) Ultra Clean in Place (UCIP) option, which improves the ability to clean in place (CIP) Microfluidizer processor systems between product batch runs or before storage. This capability differentiates our Microfluidizer materials processor systems from all other competitive products. Several pilot and production systems incorporating this option have already been delivered.

The M-610 Series: The M-610 Series consists of custom-built models used for large-scale production. These units have flow rates of up to 18 gallons per minute and generate operating pressures up to 40,000 psi. Generally, these models are available in 100 HP and 200 HP.

Microfluidizer Mixer/Reactor (MMR): The Company has introduced its patented Microfluidizer Mixer/Reactor (MMR) system as a continuous chemical reactor, which the Company believes may become a standard device for conducting chemical reactions, many of which can be configured to produce nanoparticles. This system produces uniform nanoparticles with phase purity previously unachievable with conventional batch reaction technology. This degree of reaction chemistry control can lead to cost-effective product improvements and the development and manufacture of new nanomaterials in scalable quantities. Applications for the new technology include improving the performance of catalysts, planarization polishing media, superconductors, abrasive silica, recording media, photographic media and pigments. It also may be used in the development and production of unique pharmaceutical products. The Company is proceeding with projects involving other companies seeking to optimize or enable drug delivery, catalysts and coatings products, as well as an internal program on nanopolymer creation for drug delivery and other applications. The Company anticipates either receipt of an order or making delivery of its first MMR laboratory development systems (in the \$200,000-\$250,000 sales price range) in the latter part of 2005, with the sale of production systems (in the \$750,000 - \$1,500,000 sales price range) anticipated in 2006. The Company believes that the MMR systems and technology make it a leader in the provision of systems for continuous production of uniform, reproducible, microparticles, nanoparticles and nanodroplets.

Former Company Business Divisions:

Morehouse-COWLES Division: On February 9, 2004, pursuant to an Asset Purchase Agreement (the Asset Purchase Agreement) dated February 5, 2004 between MFIC and a wholly owned subsidiary of NuSil Corporation, a California corporation (NuSil), MFIC sold substantially all of the assets and selected liabilities of its Morehouse-COWLES Division (the

Division), to NuSil. Other than NuSil's prior purchases of products from the Division, there were no preexisting relationships between MFIC and NuSil.

Prior to February 9, 2004, the Company-operated Morehouse-COWLES Division manufactured grinding and dispersing equipment used in a broad number of industries including the coatings and ink industries. The products included high-speed single and multi-shaft dissolvers and dispersers, stone mills, and vertical and horizontal media mills. As one of the early inventors of dispersers, dissolvers, stone mills, and media mills, the one hundred-year-old COWLES name is an industry-accepted symbol of quality, reliable products. The Morehouse-COWLES Division manufactures products that are generally used for blending, mixing, deagglomeration and dispersion of paints and coatings, inks, adhesives, sealants, and pigment dispersions. These applications are more conventional whereby the formulations are less expensive to produce and the volumes of product produced are large. The Morehouse-COWLES product lines are used in broader, high volume, lower value-added applications requiring less stringent particle size reduction.

Epworth Mill Division: Prior to October 1, 2000, the Company's Epworth Mill Division products consisted of ball mills and horizontal media mills. The division was also engaged in the sale and distribution of grinding media. Ball mills are used in coarse grinding application of liquid slurries such as ore from mines or coarse slurries of material that will later be processed into finer slurries. Ball mills use large media in a horizontal rotating cylindrical vessel to crush and grind the product being processed. The patented Zinger® horizontal media mill utilizes a unique design for grinding and dispersing solid materials in a liquid carrying medium. The design is based upon established rotating, horizontal shaft technology but adds the unique capability of enhanced mechanical activity between the grinding media and the product formulation. The enhanced mechanical activity is achieved through a unique combination of specially designed rotors and containment vessels. In comparison to traditional horizontal media mills, the Zinger media mill technology has demonstrated significantly improved productivity in terms of greater volumes of product processed at acceptable quality than the comparably sized and priced horizontal media mills. On July 24, 2000, the Company announced that it would transfer the manufacturing and sale of its Zinger® horizontal media mills from its Michigan-based Epworth Mill Division to the Morehouse-COWLES Division plant in Fullerton, California. The transfer began on October 1, 2000, and was completed in the fourth quarter of fiscal 2000.

On September 30, 2000, the Company ceased operations of the Ball Mill repair business and decided to sell its Ball Mill operation conducted at the Epworth Mill Division through a broker. On April 13, 2001 the Company concluded the sale of the assets of the division's operation for \$200,000 in cash and a promissory note, which resulted in a loss on the sale of these assets of approximately \$53,000.

**Marketing and Sales:**

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The Company's marketing and sales activities are conducted through a corporate marketing and sales group that is responsible for the worldwide marketing and sales of all products.

Marketing programs include media advertising, a website, direct mail, seminars, trade shows and telemarketing. In addition, the Company has an active program of field demonstrations, as well as demonstrations to potential users in the Company's laboratories

located in Newton, Massachusetts, Irvine, California, and Lampertheim, Germany. Distributors and sales agents worldwide are supported with trade advertising, collateral literature and trade show materials. The distributors and sales agents also advertise directly on their own behalf and attend regional and international trade shows. As an aid to the marketing and sales activity for the equipment, the Company provides prospective customers with access to its applications laboratories. These laboratories provide free processing and particle size and distribution analysis of a prospective customer's sample formulation. Additionally, a prospective customer may pay for subsequent laboratory time and services on a fee for services basis, which includes equipment rentals.

The Company sells its equipment in the United States through a network of independent manufacturer's representative firms that are managed by the Company's regional sales managers. In Canada, the Company has an exclusive distributor for the Company's product line. In Europe, the Company sells its equipment through a network of independent regional sales agents who are managed by the Company's European Sales organization. In Asia and the Pacific Rim, the Company sells through a network of distributors and independent manufacturer's representative firms. Customers in other geographical regions are assisted directly by Company sales staff.

Customers:

The users of the Company's systems are in various industries, including the chemical, pharmaceuticals, food, cosmetic and biotechnology industries. Mizuho Industrial Co. Ltd. (Mizuho) and a wholly owned subsidiary of Teva Pharmaceuticals Industries Ltd. (Teva) accounted for 20% and 13% of the Company's revenues from continuing operations in 2004, respectively; 21% and 11%, respectively, in 2003; and 16% and 18%, respectively, in 2002. Mizuho, the Company's Japanese distributor of Microfluidizer processor equipment and spare parts, resells the Company's equipment to numerous end-users in Japan, none of which individually represents 10% or more of the Company's revenues. Three customers accounted for 15%, 15%, and 13% of the trade accounts receivable from continuing operations as of December 31, 2004, respectively. Two customers accounted for 17% and 10% of the trade accounts receivable from continuing operations as of December 31, 2003, respectively, and one customer accounted for 13% of the trade accounts receivable as of December 31, 2002. A reduction or delay in orders from any of the Company's significant customers could have a material adverse effect on the Company's results of operations.

Competition:

The patented Microfluidizer processor equipment product line of high shear fluid processors has direct competition in its major markets, including pharmaceutical and coatings/chemical applications, but management believes that the Company's products have larger installed bases and competitive performance advantages over products of our competitors. The Company believes that the Microfluidizer processor equipment product line offers the highest shear forces available in the process equipment market today. It has been proven in many instances that for critical formulations Microfluidizer processors produce better quality products for our customers.

The M-700 Series of fluid processors, together with the M-210 and M-610 product lines, provide high shear fluid processing capabilities for sanitary, sterile, and industrial applications. The Company believes that the Microfluidizer processor product line provides a distinct

advantage over the product lines of our competitors with respect to the processing of abrasive slurries or solids dispersed in liquids in large part because of the Company's unique, wear-resistant, diamond interaction chamber and the special design of the intensifier pumping system. Further, recent incorporation of MFIC-developed components has reduced the cost of these units, and they are priced competitively with lesser capability processing equipment.

The MMR systems may encounter significant competition and there are other companies that possess patents and claims to equipment or processes that claim to make production quantities of nanoparticles. At least one of these companies, Five Star Technologies Inc. (Five Star), has raised significant investment capital from venture capital sources (\$4.5 million in its second round in October 2003) for its patented technology. Five Star claims the use of hydrodynamic cavitation to achieve production of nano and micro materials. Five Star also claims that its process is inherently scalable. Although the Company believes that its MMR system is superior in design and function there can be no assurance that Five Star, or others, will not pose a competitive impediment to sales of the Company's MMR system.

The Company faces, and will continue to face, intense competition from other companies who manufacture and sell materials processing systems. The Company is subject to significant competition from organizations that are pursuing technologies and products that are similar to the Company's technology and products. The Company's future success will depend in large part on its maintaining its current technologically superior product line and competitive position in the fluid processing systems field. Rapid technological development by the Company or others may result in the Company's products or technologies becoming obsolete before the Company recovers the expenses it incurs in connection with their development. Products offered by the Company could be made obsolete by less expensive or more effective technologies. There can be no assurance that the Company will be able to make the enhancements to its technology necessary to compete successfully with newly emerging technologies. The Company expects competition to intensify in the materials processing systems field as technical advances are made and become more widely known.

#### Research and Development:

The Company's research and development efforts are focused on: (i) developing new processing applications for the process industries; (ii) further enhancements to the functionality, reliability and performance of existing products, and (iii) development of the Microfluidizer Mixer/Reactor (MMR) by: (a) working with customers who assist in the development of the system with both application knowledge and financial support, and (b) internal development program relating to interaction chamber design and creation of a variety of nanomaterials. There can be no assurance that the Company will be able to meet the enhancement challenges posed by applications of its core Microfluidizer processor business. Likewise there can be no assurance that the Company will be able to design and manufacture reaction chambers for its MMR applications that will deliver the desired result for specific applications. Research and development costs for continuing operations were \$1,033,978, \$785,849, and \$583,683 in 2004, 2003, and 2002, respectively. Patent coverage for the MMR has been obtained both in the United States and in Europe (with national entry in process) and the Company is prosecuting the patent application in Canada.



Cooperative Research Arrangements:

The Company subsidizes research and development activities centered around Microfluidizer processor technology at a number of research centers and universities. The Company's subsidy of these activities takes the form of substantial reduction or elimination of the customary rental charges for Microfluidizer processor equipment provided for use. The Company has, in past years, subsidized research and development in the following fields at the following universities:

University	Field of Research/Development
University of Massachusetts, Lowell	biotechnology and nanotechnology
Massachusetts Institute of Technology	nanoemulsions for biomedical applications
Marine Biological Laboratory	cell disruption
Lehigh University	polymer chemistry
Université Laval (Quebec)	food science
Worcester Polytechnic Institute	catalytic chemistry
Purdue University	pharmaceuticals
University of Toronto	genomic research and expression

In addition to their research activities, these universities provide the Company with contacts at industrial companies that may utilize Microfluidizer processor technology. Additionally, on occasion, research reports, technical papers, and doctoral theses may be published, which document the use of Microfluidizer processor technology. Finally, the Company engages in many informal co-operative development efforts with its customers.

Patents and Proprietary Rights Protection:

To protect its proprietary rights, the Company relies on a combination of U.S. patent and trademark laws, trade secrets, confidentiality agreements, contractual provisions and technical means. In the event of patent infringement or breach of confidentiality, there can be no assurance that these measures will be adequate or that the Company will have sufficient resources to prosecute or prevail in an action against a third party. In addition, the Company has not sought patent or trademark protection for its Microfluidizer processor equipment's interaction chamber in any country other than the United States and, as such, its proprietary rights are not subject to the protection of patent or trademark laws of foreign countries where the Company's equipment is sold. The Company's Microfluidizer processor equipment method patent expires on March 13, 2007 and its device patent expired on August 6, 2002. The Company does not believe that the expiration of its device patent will result in any material detriment to the Company since the Company has made many alterations, improvements and advances to its equipment over the years with such modification and innovations having been treated by the Company as trade secrets.

In 1997 the Company completed development of a novel adaptation of its Microfluidizer processor equipment—a Multiple Stream High Pressure Mixer/Reactor, commercially designated as the Microfluidizer Mixer/Reactor (MMR). In August 1997, the Company filed a patent application for the device and its processes with the United States Patent and Trademark Office (USPTO), and filed a Patent Cooperation Treaty (PCT) application on May 5, 1998. In July and November, 2000, the USPTO issued to the Company notices of allowances of utility

patent claims regarding the MMR and the use thereof. On September 18, 2002, the European Patent Office advised the Company it would grant its MMR patent substantially as applied for, including its device and process claims. The Company is in the process of pursuing national entry in France, Germany, Italy, The Netherlands, and the United Kingdom. The Company is currently prosecuting its MMR patent in Canada.

The Company maintains confidentiality agreements with its employees and also maintains confidentiality agreements and non-competition agreements with those third parties to whom it discloses non-public technical information relating to its equipment. The Company believes that enforcement of the provisions of such agreements should adequately protect the Company's proprietary information. However, in the event of a material breach of such agreements certain of the Company's valuable intellectual property may be disclosed to third parties (including competitors). In such event, despite provisions for equitable relief and damages, in the event of any such breach the Company may suffer competitively and be materially impacted negatively as a result of any unauthorized disclosure.

Manufacturing:

At present, the Company subcontracts the manufacture and/or machining and finishing of many of the components of its equipment to third parties, with the Company undertaking the remaining fabrication, assembly and performance testing. The Company has selected certain primary suppliers based upon pricing terms, quality of their products, and the vendor's performance record.

The loss of any primary supplier could have a material, adverse effect on the Company's business, financial condition, or results of operations. Therefore, the Company has identified alternative suppliers for its most critical components of its equipment (Alternative Sources). There can be no assurance that a transition to such Alternative Sources will not entail transitional delays, quality assurance and quality control difficulties, on time delivery problems, any or all of which would likely have an impact on the Company's production of equipment and may have a material adverse effect on the Company's business, financial condition, or results of operations.

Key Management / Personnel:

The Company's continued operation, innovation and growth are to some significant degree reliant on the continued services of its key executive officers and leading technical personnel. The Company does not maintain employment contracts with its key management or leading technical personnel. Though the Company believes that it can identify and recruit replacement key management and technical personnel, there can be no assurance as to such availability, the length of time required to obtain such replacement management and technical personnel, the salary level that may have to be paid to obtain their respective services, or the impact on operations that may be experienced through the interim absence of such key management and technical personnel. The loss of key management or leading technical personnel could, therefore, have a material adverse effect on the Company's business, financial condition, or results of operations.

Government Regulation:

Certain of the Company's customers utilize the Company's products in processes and production that are subject to governmental regulation. For example, the manufacturing and marketing of pharmaceutical products may require the approval of the U.S. Food and Drug Administration (FDA) within the United States and of comparable agencies in foreign countries. The FDA has established mandatory procedures, safety standards and protocols that apply to the manufacture, clinical testing and marketing of new pharmaceutical products in the United States. The process of seeking and obtaining FDA approval of a new product often takes a number of years and often involves the expenditure of substantial resources by the Company's customers. The FDA approval process can result in long lead times that are attendant to manufacturing equipment orders for these applications.

Further, in addition to product approvals, the FDA imposes requirements as to manufacturing practices, record keeping and reporting (current Good Manufacturing Practices or cGMP). cGMP-regulated companies are subject to inspections by the FDA (inclusive of Microfluidizer processor equipment) and product approvals may be withdrawn if cGMP are not met.

At present, the Company's customers include companies who are making FDA approved drugs, preparations, and products (example: x-ray film) for external use and companies who utilize Microfluidizer processor equipment for the formulation or production of FDA approved parenteral (injectable) drugs or compounds.

For the Company's equipment entering Europe, CE compliance (Regulatory Compliance with European Safety Standards) is required. All products manufactured for European customers (and for any others who may request it) by the Company are CE compliant.

Various laws, regulations and recommendations relating to safe working conditions, laboratory practices and the purchase, storage, movement, import and export, use and disposal of harmful or potentially harmful substances that may be used in connection with the Company's research work are, or may, be applicable to its activities. These laws include, among others, the United States Atomic Energy Act, the Clean Air Act, the Clean Water Act, the Occupational Safety and Health Act, the National Environmental Policy Act, the Toxic Substances Control Act, the Resource Conservation and Recovery Act, national restrictions on technology transfer, import, export and customs regulations and other present and possible future local, state or Federal regulation. The extent of adverse governmental regulation, which might result from future legislation or administrative action, cannot be accurately predicted. Certain agreements that may be entered into by the Company involving exclusive license rights may also be subject to national or supranational antitrust regulatory control, the effect of which cannot be predicted.

To date the Company has not been affected by any United States governmental restrictions on technology transfer, import, export and customs regulations and other present local, state or Federal regulation. The extent of adverse governmental regulation, which might result from future legislation or administrative action, cannot be accurately predicted. In particular, H.R. 3162 enacted on October 21, 2001 (the Patriot Act) and other governmental regulation may impose export restrictions on sale of equipment or transfer of technology to certain countries or groups. There can be no assurance that sale of the Company's equipment will not be impacted by such legislation or designation. Depending upon which countries and sales may be designated

for trade restriction such action could have a material adverse effect on the Company's business, financial condition, or results of operations. Also, certain agreements that may be entered into by the Company involving exclusive license rights may also be subject to national or supranational antitrust regulatory control, the effect of which cannot be predicted.

Backlog:

The Company's sales order backlog related to continuing operations of accepted and unfilled orders at March 11, 2005, and March 24, 2004 was approximately \$3,072,000 and \$2,226,000, respectively. Backlog as of any particular date should not be relied upon as indicative of the Company's net revenues for any future period.

Employees:

The Company has approximately 48 full-time employees as of March 11, 2005. None of the Company's employees are covered by a collective bargaining agreement, and the Company considers its relations with its employees to be satisfactory. The Company believes that its future success will depend in large part on its ability to attract and retain highly skilled employees.

**Item 2. PROPERTIES**

The Company's corporate headquarters are in Newton, Massachusetts. The Company also maintains a sales office and laboratory facility in Lampertheim, Germany and a sales office in Irvine, California. The Company rents approximately 47,200 square feet of offices, production and research and development facilities at these locations for administrative, development and production activities. The Company has the option to extend the leases for up to three additional years. A portion of the space at the Newton, Massachusetts facility is sublet to a non-affiliated company for a total of \$12,000 per annum under a tenant-at-will arrangement. The lease terms expire at various times through April 2007. The Company believes these facilities will be adequate for operations for the next several years.

**Item 3. LEGAL PROCEEDINGS**

The Company is not a party to any material legal proceedings.

**Item 4. SUBMISSION OF MATTERS TO VOTE OF SECURITY HOLDERS**

No matters were submitted to a vote of the Company's security holders during the quarter ended December 31, 2004.

**Competition:**

**Item 5.  
MATTERS**

**MARKET FOR REGISTRANT'S COMMON EQUITY AND RELATED STOCKHOLDER**

Market:

The Company's Common Stock is traded on the Over-the-Counter Bulletin Board under the symbol MFIC. The following table sets forth the range of quarterly high and low bid quotations

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for the last two fiscal years, as furnished by the National Association of Securities Dealers Automated Quotation System. The quotations represent interdealer quotations without adjustment for retail markups, markdowns, or commissions, and may not necessarily represent actual transactions.

Quarters Ended	12/31 2004	9/30 2004	6/30 2004	3/31 2004	12/31 2003	9/30 2003	6/30 2003	3/31 2003
<b>Low</b>	\$ 1.57	\$ 1.10	\$ 1.50	\$ 2.25	\$ 0.85	\$ 0.57	\$ 0.20	\$ 0.23
<b>High</b>	\$ 3.90	\$ 2.34	\$ 3.11	\$ 4.30	\$ 2.70	\$ 1.90	\$ 0.73	\$ 0.47

### Holders:

As of March 11, 2005, there were approximately 380 holders of record of the Company's Common Stock.

### Issuance of Warrants:

On November 17, 2004, the Company entered into a general financial and advisory services agreement with Maxim Group LLC pursuant to which Maxim Group LLC was granted a three (3) year warrant to purchase 100,000 shares of the Company's common stock at an exercise price of \$3.20 per share. The securities were issued pursuant to the exemption to the registration requirements of the Securities Act of 1933, as amended, available under Section 4(2) of that Act.

### Dividends:

The Company has never paid any cash dividends on its Common Stock and presently anticipates that no dividends on its Common Stock will be declared in the foreseeable future. The Company's current policy is to retain all of its earnings to finance future growth.

### Equity Compensation Plan Information:

The information in the table below is as of December 31, 2004. See also the Consolidated Financial Statements Note 10.

Plan category	Number of securities to be issued upon exercise of outstanding options, warrants and rights	Weighted-average exercise price of outstanding options, warrants and rights	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a))
Competition:			

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	(a)		(b)		(c)
Equity compensation plans Approved by security holders	1,788,213	\$	1.14		907,815
Equity compensation plans not approved by security holders					
Total	1,788,213	\$	1.14		907,815

**Item 6. SELECTED FINANCIAL DATA**

The selected financial information presented below is derived from the audited consolidated financial statements of the Company for each of the five year period ended December 31, 2004. The information set forth below should be read in conjunction with Management's Discussion and Analysis of Financial Condition and Results of Operations and the Consolidated Financial Statements and related Notes included elsewhere in this Form 10-K. All fiscal years noted below have been restated to reflect the discontinued operations of MFIC Corporation.

**Selected Statement of Operations Data**

	Year Ended December 31, 2004	Year Ended December 31, 2003	Year Ended December 31, 2002	Year Ended December 31, 2001	Year Ended December 31, 2000
Total revenues	\$ 12,158,919	\$ 10,459,631	\$ 9,514,180	\$ 11,210,375	\$ 10,034,585
Total costs and expenses	11,461,749	9,693,551	8,872,465	10,934,902	10,449,756
Income (loss) from continuing operations	697,170	766,080	641,715	275,473	(415,171)
Interest expense	(69,383)	(116,097)	(179,429)	(261,754)	(350,486)
Other expense				(53,142)	(250,000)
Interest income	27,965	9,508	7,191	7,032	248
Net income (loss) from continuing operations before income taxes and extraordinary item	655,752	659,491	469,477	(32,391)	(1,015,409)
Income tax benefit	450,000				
Net income (loss) from continuing operations before discontinued operations and extraordinary item	1,105,752	659,491	469,477	(32,391)	(1,015,409)
(Loss) income from discontinued operations (net of loss from disposal of discontinued operations of \$1,422,715 in 2003)	(231,380)	(4,109,925)	(2,983,451)	(492,795)	347,801
Gain on subordinated debt restructuring					194,500
Net income (loss)	874,372	(3,450,434)	(2,513,974)	(525,186)	(473,108)
Weighted-average shares outstanding:					
Basic	9,345,560	7,767,712	7,426,586	7,375,102	7,086,058
Diluted	10,329,313	8,501,110	7,470,090	7,375,102	7,086,058
Basic amounts per common share:					
Net income (loss) per share from continuing operations before extraordinary gain	\$ .11	\$ .08	\$ .06	\$ (.00)	\$ (.14)
Extraordinary gain per share:				\$ .03	
Net income (loss) per share from continuing operations	\$ .11	\$ .08	\$ .06	\$ (.00)	\$ (.11)
Basic net (loss) income per share from discontinued operations	\$ (.02)	\$ (.52)	\$ (.40)	\$ (.07)	\$ .05
Basic, as reported	\$ .09	\$ (.44)	\$ (.34)	\$ (.07)	\$ (.06)
Diluted amounts per common share:					
Net income (loss) per share from continuing operations before	\$ .10	\$ .08	\$ .06	\$ (.00)	\$ (.14)



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extraordinary gain						
Extraordinary gain per share:					\$	.03
Diluted net income (loss) per share						
from continuing operations	\$	.10	\$	.08	\$	.06
					(\$)	(.00)
Diluted net (loss) income per share						
from discontinued operations	\$	(.02)	\$	(.52)	\$	(.40)
					(\$)	(.07)
Diluted, as reported	\$	.08	\$	(.44)	\$	(.34)
					(\$)	(.07)
						(.06)

**Item 7. MANAGEMENT S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS**

**Certain Factors And Cautionary Statement Regarding Forward-Looking Statements**

Management believes that this report contains forward-looking statements that are subject to certain risks and uncertainties including statements relating to the Company's plan to achieve, maintain and/or increase revenue growth, and/or operating profitability, and to maintain net operating profitability. Such statements are based on management's current expectations and are subject to a number of factors and uncertainties that could cause actual results achieved by the Company to differ materially from those described in the forward-looking statements. The Company cautions investors that there can be no assurance that the actual results or business conditions will not differ materially from those projected or suggested in such forward-looking statements as a result of various factors, including but not limited to, the following risks and uncertainties: (i) whether the performance advantages of the Company's Microfluidizer materials processing equipment will be realized commercially or that a commercial market for the equipment will continue to develop, (ii) whether the timing of orders will significantly affect the size of quarter to quarter revenues and resulting net income results for a particular quarter, (iii) whether the Company will have access to sufficient working capital through continued and improving cash flow from sales and ongoing borrowing availability, the latter being subject to the Company's ability to comply with the covenants and terms of the Company's loan agreement with its senior lender, (iv) whether the Company's expectation that the benefits of nanotechnology will, in part, be realized by the ability of the MMR to produce innovative materials in large quantities, and (v) whether the Company is able to increase the number of prototype MMR placements and then manufacture and introduce commercial production MMR equipment.

**Critical Accounting Policies**

The Company considers certain accounting policies related to revenue recognition and related receivables as well as the valuation of inventories to be critical policies due to the estimation processes involved in each.

Revenue Recognition. The Company's policy is to recognize revenue from sales of machines and spare parts upon shipment to our customers and the fulfillment of all contractual terms and conditions, pursuant to the guidance provided by Staff Accounting Bulletin No. 101, Revenue Recognition in Financial Statements (SAB 104), issued by the Securities and Exchange Commission.

**Rental income from the lease of equipment is recognized on a straight-line basis over the term of the lease agreement.**

**Judgments are required in evaluating the creditworthiness of our customers. In all instances, revenue is not recognized until the Company has determined that collection is reasonably assured.**

**Should changes in conditions cause management to determine the aforementioned criteria are not met for certain future transactions, revenue recognized for any reporting period could be adversely affected.**

**Allowance for Doubtful Accounts.** The Company's policy is to maintain allowances for estimated losses resulting from the inability of our customers to make scheduled payments. The Company regularly evaluates the collectibility of our trade receivable balances based on a combination of factors. When a customer's account balance becomes past due, we initiate dialogue with the customer to determine the cause. If it is determined that the customer will be unable to meet its financial obligation to us we record a specific allowance to reduce the related receivable to the amount we expect to recover given all information presently available.

We believe our reported allowances are adequate as of December 31, 2004 and 2003. If the financial condition of our customers were to deteriorate, however, resulting in their inability to make payments, the Company may need to record additional allowances, which would result in additional expenses being recorded for the period in which such determination was made.

**Inventory Valuation.** The Company values its inventory at the lower of cost or net realizable value on a first-in-first-out method. Management regularly evaluates inventory quantities on hand and records a provision for obsolete or excess inventory levels greater than those of anticipated usage in the subsequent two years. There are external factors that may require an adjustment to the anticipated demand including, but not limited to, technological changes in our markets, our ability to meet changing customer requirements, competitive pressures in products and prices, and the availability of key components from our suppliers. Purchasing requirements and alternative usage avenues are explored within these processes to mitigate inventory exposure. When recorded, our reserves are intended to reduce the carrying value of our inventory to its net realizable value.

**Impairment.** It has been the Company's policy to review the carrying values of long-lived assets and amortizable intangibles for impairment whenever an event or changes in circumstances indicated that the carrying amount of an asset may not be recoverable.

**Product Warranties.** Our products are generally sold with a twelve month warranty provision that require us to remedy deficiencies in quality or performance of our products at no cost to our customers only after it has been determined that the cause of the deficiency is not due to the actions of the machine operator or product used in the machine.

**Fiscal 2004 Compared to Fiscal 2003**

In 1998, the Company purchased the assets and liabilities of Morehouse-COWLES, Inc. (Morehouse-COWLES). This was done to complete a strategic combination with Microfluidics, in order to enhance the Company's position in the coatings market, which, at the time, was the dominant part of the Company's business.

Since that time, the direction of the core business of the Company changed significantly from coatings to other areas, in particular the health care sector. The Company determined that it could no longer support the previous strategic plan and the Company, therefore, prepared a plan to divest the Morehouse-COWLES Division.

It was expected that the sale would positively impact the Company's cash flow, and would allow the Company to focus on the core business, and expand its sales and marketing resources for the Company's Microfluidizer processor systems line, and promote its new MMR nanoparticle production systems.

During the fourth quarter of 2003, management committed to a plan to sell substantially all the assets and associated liabilities of Morehouse-COWLES. Accordingly, at fiscal year end 2003, the Company reported the division as discontinued operations and reclassified the assets and associated liabilities as available for sale. The search for a buyer eventually resulted in NuSil Corporation, a California corporation (NuSil) making an offer in December 2003 to purchase the Morehouse-COWLES Division's assets and related liabilities at a price that was acceptable to the Company.

On February 9, 2004, pursuant to an Asset Purchase Agreement (the Asset Purchase Agreement) dated February 5, 2004 between MFIC and a wholly owned subsidiary of NuSil, MFIC sold substantially all of the assets and selected liabilities of its Morehouse-COWLES Division (the Division), to NuSil. Other than NuSil's prior purchases of products from the Division, there were no preexisting relationships between MFIC and NuSil.

The assets of the Division that were sold included accounts receivable, furniture, fixtures and equipment, inventory and supplies, books and records, bids, contracts, prepaid expenses, leases, intellectual property, goodwill, domain names and claims, all as described in the Asset Purchase Agreement (collectively, the Assets). In addition, certain rights and obligations arising after February 9, 2004 under the Division's PacifiCare Group Health Insurance Policy were assigned. The Division's cash or cash equivalents on hand on February 9, 2004 were excluded from the assets being sold. Under the Asset Purchase Agreement, the Division's executory obligations under certain contracts and bids, and the Division's accounts payable as of February 9, 2004 in the amount of \$623,240, were assumed by NuSil.

The purchase price (other than the assumption of accounts payable described in the preceding paragraph) paid under the Asset Purchase Agreement was \$918,238. Of the purchase price, \$768,238 (the Closing Cash) was paid in cash, \$100,000 was paid in the form of a Promissory Note (the Purchase Note) and \$50,000 (the Holdback Payment) was withheld for payment at a future date subject to any purchase price adjustments and offsets, as provided for in the Asset Purchase Agreement.

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The Closing Cash was paid directly to PNC Bank, National Association (PNC), to be applied to MFIC's outstanding balance under MFIC's Revolving Credit Loan with PNC (the Revolving Credit Loan).

The aforementioned Purchase Note bears interest at 5 percent per annum, is secured by the Assets pursuant to a Security Agreement dated February 5, 2004 (the Security Agreement) between the parties and is subject to certain offsets as provided in the Asset Purchase Agreement. Principal and interest on the Purchase Note are payable on February 9, 2005, unless there is a claim for an offset as allowed for under the Asset Purchase Agreement, which claim might delay final payment of amounts due under the Purchase Note until final resolution of any such claim under the procedures outlined in the Asset Purchase Agreement.

Pursuant to the Asset Purchase Agreement, MFIC entered into a Noncompetition and Nonsolicitation Agreement, dated February 5, 2004, which limits MFIC's ability to compete with the business of the Division for a period of five years.

The sale generated a loss of approximately \$1,420,000. Due to the sale of the Morehouse-COWLES Division, goodwill associated with the 1998 purchase of this division in the amount of \$2,100,000 has been impaired in 2003.

### Results of Continuing Operations

Total revenues for the year ended December 31, 2004 from continuing operations were \$12,158,919 as compared to revenues of \$10,459,631 for the year ended December 31, 2003, representing an increase of \$1,699,288, or 16%.

North American sales for the year ended December 31, 2004 were approximately \$6,212,000, a 16% increase as compared to North American sales of approximately \$5,337,000 for the year ended December 31, 2003. This increase in North American sales was principally due to an increase in the sale of machines of approximately \$680,000. Foreign sales were approximately \$5,947,000 for the year ended December 31, 2004 compared to \$5,123,000 for the year ended December 31, 2003, an increase of \$824,000, or 16%. The increase in foreign sales was principally due to an increase in the sale of spare parts of approximately \$977,000 compared to 2003.

Total cost of goods sold for 2004 was \$5,607,755 or 46% of revenue, as compared to \$4,988,226 or 48% of revenue for 2003. The increase in cost of goods sold in absolute dollars reflects principally the increase in sales generated by the Company compared to the previous year. The Company's major product lines have different profit margins, as well as multiple profit margins within each product line. In the course of the periods compared, there may be significant changes in the cost of revenues as a percentage of revenue depending on the mix of product sold. Also, the cost of sales as a percentage of revenue will differ between laboratory and pilot plant units sold, due to the difference in costs between air driven and electric-hydraulic units.

Total operating expenses for 2004 were \$5,853,994, or 48% of revenue, as compared to \$4,705,325, or 45% of revenue, for 2003, which is an increase of \$1,148,669, or 24%.





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Research and development expenses for 2004 were \$1,033,978 compared to \$785,849 for 2003, an increase of \$248,129, or 32%. The increase in research and development expenses is principally due to an increase in payroll costs, as a result of both an increase in headcount and pay increases of approximately \$253,000, an increase in consultants of approximately \$41,000, an increase in travel and related costs of approximately \$10,000, partially offset by a decrease in testing materials of approximately \$79,000.

Selling expenses for 2004 increased approximately \$400,000, or 18%, from \$2,187,389 to \$2,587,658. The increase was due principally to an increase in outside commissions of approximately \$194,000, an increase in advertising costs of approximately \$115,000, an increase in payroll costs of approximately \$91,000, an increase in public relations costs of approximately \$36,000, partially offset by a decrease in travel and related costs of approximately \$38,000.

For the year ended December 31, 2004, general and administrative expenses increased by approximately \$500,000, or 29%, from \$1,732,087 for the year ended December 31, 2003, to \$2,232,358. The increase in general and administrative expenses was principally due to an increase in payroll and related costs of approximately \$241,000, professional fees of approximately \$148,000, and investor relation expenses of approximately \$73,000, general overhead costs of approximately \$71,000, partially offset by a decrease in bad debt expense of approximately \$76,000.

Interest expense for 2004 decreased to \$69,383 from \$116,097 for 2003, a decrease of \$46,714, or 40%. The decrease was due primarily to the reduction in the line of credit caused by the paydown of the debt from proceeds received from the sale of the Morehouse-COWLES Division.

Interest income for 2004 increased to \$27,965 from \$9,508 in 2003, an increase of \$18,457, or 194%. The increase is due to available cash being invested in money markets and certificates of deposit.

### **Results of Discontinued Operations**

Total revenues for the year ended December 31, 2004 were \$323,635 as compared to revenues of \$3,655,237 for the year ended December 31, 2003, representing a decrease of \$3,331,602, or 91%.

The decrease in revenue is due to the sale of the discontinued operation to NuSil Corporation (NuSil) on February 9, 2004.

Total cost of goods sold for 2004 was \$308,548, or 95% of revenue, as compared to \$2,601,957, or 71% of revenue for 2003. The decrease in cost of goods sold in absolute dollars is due to the sale of the discontinued operation to NuSil Corporation (NuSil) on February 9, 2004.

Total operating expenses for 2004 were \$238,760, or 74% of revenue, as compared to \$1,640,490, or 45% of revenue, for 2003, which is a decrease of \$1,401,730, or 85%.



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Research and development expenses for 2004 were \$37,413 compared to \$318,105 for 2003, a decrease of \$280,692, or 88%. The decrease in research and development expenses was due to the sale of the discontinued operation to NuSil Corporation (NuSil) on February 9, 2004.

Selling expenses for 2004 decreased approximately \$729,243, or 84%, from \$863,337 to \$134,094. The decrease in selling expenses is due to the sale of the discontinued operation to NuSil Corporation (NuSil) on February 9, 2004.

For the year ended December 31, 2004, general and administrative expenses decreased by \$391,795 from \$459,048 for the year ended December 31, 2003, to \$67,253, or 85%. The decrease in general and administrative expenses is due to the sale of the discontinued operation to NuSil Corporation (NuSil) on February 9, 2004.

### **Fiscal 2003 Compared to Fiscal 2002**

#### **Results of Continuing Operations**

Total revenues for the year ended December 31, 2003 from continuing operations were \$10,459,631 as compared to revenues of \$9,514,180 for the year ended December 31, 2002, representing an increase of \$945,451, or 10%.

North American sales for the year ended December 31, 2003 decreased to approximately \$5,337,000, or 17%, as compared to North American sales of approximately \$6,462,000 for the year ended December 31, 2002. This decrease in North American sales was principally due to a decrease in the sale of machines of approximately \$754,000, and a decrease in the sale of spare parts of approximately \$371,000. Foreign sales were approximately \$5,123,000 for the year ended December 31, 2003 compared to \$3,052,000 for the year ended December 31, 2002, an increase of \$2,071,000, or 68%. This increase in foreign sales was principally due to an increase in the sale of machines of approximately \$1,323,000, and an increase in the sale of spare parts of approximately \$748,000.

Total cost of goods sold for 2003 from continuing operations was \$4,988,226, or 48% of revenue, as compared to \$4,438,351, or 47% of revenue for 2002. The increase in cost of goods sold reflects primarily the increase in sales generated by the Company. The Company's major product lines have different profit margins, as well as multiple profit margins within each product line. In the course of the periods compared, there may be significant changes in the cost of revenues as a percentage of revenue depending on the mix of product sold. Also, the cost of sales as a percentage of revenue will differ between laboratory and pilot plant units sold, due to the difference in costs between air driven and electric-hydraulic units.

Total operating expenses from continuing operations for 2003 were \$4,705,325 or 45% of revenue, as compared to \$4,434,114 or 47% of revenue for 2002, which is an increase of \$271,211 or 6%.

Research and development expenses for 2003 were \$785,849 compared to \$583,683 for 2002, an increase of \$202,166 or 35%. The increase in research and development expenses is primarily due to an increase in research costs of approximately \$131,000, and an increase in payroll and related costs of approximately \$96,000, partially offset by a decrease in amortization



costs of approximately \$12,000, and a decrease in outside contract services of approximately \$13,000.

Selling expenses for 2003 increased approximately \$101,000, from \$2,086,547 in 2002 to \$2,187,389 or 5%. The increase was due principally to an increase of approximately \$124,000 in payroll and related costs, approximately \$100,000 in travel and entertainment costs, and \$54,000 in delivery costs, partially offset by a decrease in advertising expenses of approximately \$107,000 and a decrease in commission expense of approximately \$70,000.

General and administrative expenses for 2003 decreased by approximately \$32,000, from \$1,763,884 for the year ended December 31, 2002, to \$1,732,087, or 2%. The decrease in general and administrative expenses is primarily due to a decrease in payroll costs of approximately \$87,000, a decrease in professional fees of approximately \$58,000 and a decrease in corporate expenses of approximately \$37,000, offset by increases in bad debt expense of approximately \$101,000 and overhead costs of approximately \$48,000.

Interest expense for 2003 decreased from \$179,429 in 2002 to \$116,097, a decrease of \$63,332, or 35%. The decrease was due principally to a reduction in the interest rate paid, and a reduction in the amount of debt borrowed.

Interest income for 2003 increased to \$9,508 from \$7,191 for 2002, an increase of \$2,317. The increase is due to interest earned on the note and accounts receivable arising from the sale of the Ball Mill operation.

### **Results of Discontinued Operations**

Total revenues for the year ended December 31, 2003 from discontinued operations of the Morehouse-COWLES Division (the Division) were \$3,655,237 as compared to revenues of \$5,059,202 for the year ended December 31, 2002, representing a decrease of \$1,403,965, or 28%. The decrease in revenues is due primarily to a decrease in machine sales of approximately \$930,000, and a decrease in the sale of spare parts of approximately \$496,000.

North American sales for the year ended December 31, 2003 decreased to approximately \$2,798,000, or 28%, as compared to North American sales of approximately \$3,880,000 for the year ended December 31, 2002. This decrease in North American sales was principally due to a decrease in the sale of machines. Foreign sales were approximately \$835,000 for the year ended December 31, 2003 compared to \$1,179,000 for the year ended December 31, 2002, a decrease of approximately \$344,000, or 29%.

Total cost of goods sold for 2003 was \$2,601,957, or 71% of revenue, as compared to \$3,626,407 or 72% of revenue, for 2002. The decrease in cost of goods sold reflects primarily the decrease in sales generated by the Division. The Division's major product lines have different profit margins, as well as multiple profit margins within each product line. In the course of the periods compared, there may be significant changes in the cost of revenues as a percentage of revenue depending on the mix of product sold.

Total operating expenses for 2003 were \$1,640,490 or 45% of revenue, as compared to \$1,754,837, or 35% of revenue for 2002, which is a decrease of \$114,347, or 7%.



Research and development expenses for 2003 were \$318,105 compared to \$322,811 for 2002, a decrease of \$4,706, or 1%. The decrease in research and development expenses is primarily due to a decrease in payroll and related costs of approximately \$6,000.

Selling expenses for 2003 decreased approximately \$143,000, from \$1,006,746 in 2002 to \$863,337, or 14%. The decrease was due principally to the reduction of selling expenses at the Eastern sales office located in South Haven, Michigan, of approximately \$70,000, a decrease in payroll and related costs of approximately \$68,000, a decrease in commission expense of approximately \$24,000, and a decrease in travel expenses of approximately \$79,000, partially offset by increases of approximately \$95,000 in advertising costs and approximately \$14,000 in demonstration cost expenses.

General and administrative expenses for 2003 increased by approximately \$34,000, from \$425,280 for the year ended December 31, 2002 to \$459,048, or 8%. The increase in general and administrative expenses is primarily due to an increase in professional fees of approximately \$16,000.

Under SFAS No. 142, goodwill impairment is deemed to exist if the net book value of a reporting unit exceeds its estimated fair value. Upon adoption of SFAS No. 142 in the first quarter of 2002, the Company recorded a one-time, noncash charge of \$2,661,409 to reduce the carrying value of its goodwill. Such charge is nonoperational in nature and is reflected in discontinued operations in the accompanying consolidated statement of operations pursuant to the SFAS No. 142 transition rules.

**QUARTERLY RESULTS OF OPERATIONS**

The following table sets forth, for the periods presented, certain data from our consolidated statements of operations. In the opinion of our management, the unaudited quarterly consolidated statement of operations data have been prepared on substantially the same basis as our audited consolidated financial statements and include all adjustments, consisting only of normal recurring adjustments, necessary for a fair presentation of the financial information for the periods presented. This information should be read in conjunction with the consolidated financial statements and related notes included elsewhere in this Annual Report on Form 10-K. The operating results in any quarter are not necessarily indicative of the results that may be expected for any future period. Fiscal years 2004 and 2003 quarters have been restated to reflect the discontinued operations of the Company.

Summarized unaudited quarterly financial data are as follows

	<b>Fiscal 2004 Quarters</b>			
	<b>First</b>	<b>Second</b>	<b>Third</b>	<b>Fourth</b>
Revenues	\$ 2,251,452	\$ 3,081,977	\$ 3,163,785	\$ 3,661,705
Gross profit	1,238,579	1,675,974	1,813,584	1,823,027
Net (loss) income from continuing operations before income tax benefit	(55,183)	256,495	282,050	172,390
Income tax benefit				450,000
Net (loss) income from continuing operations	(55,183)	256,495	282,050	622,390
(Loss) from discontinued operations	(231,380)			
Net (loss) income	(286,563)	256,495	282,050	622,390
Basis net (loss) income per share:				
Net (loss) income per share from continuing operations	\$ (.01)	\$ .03	\$ .03	\$ .06
Basic net (loss) income per share from discontinued operations	\$ (.02)	\$ .00	\$ .00	\$ .00
Basic, as reported	\$ (.03)	\$ .03	\$ .03	\$ .06
Diluted net income (loss) per share:				
Net (loss) income per share from continuing operations	\$ (.01)	\$ .02	\$ .03	\$ .06
Diluted net loss per share from discontinued operations	\$ (.02)	\$ .00	\$ .00	\$ .00
Diluted, as reported	\$ (.03)	\$ .02	\$ .03	\$ .06



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	Fiscal 2003 Quarters			
	First	Second	Third	Fourth
Revenues	\$ 2,949,677	\$ 3,119,465	\$ 1,912,738	\$ 2,477,751
Gross profit	1,491,923	1,666,124	958,398	1,354,960
Net income (loss) from continuing operations	405,571	341,855	(157,266)	69,331
Loss from discontinued operations, including loss on disposal of \$1,422,715 in fourth quarter 2003	(215,899)	(87,215)	(186,080)	(3,620,731)
Net income (loss)	189,672	254,640	(343,346)	(3,551,400)
Basic net income (loss) per share from continuing operations:	\$ .05	\$ .05	\$ (.02)	\$ .00
Basic net loss per share from discontinued operations	\$ (.03)	\$ (.01)	\$ (.02)	\$ (.46)
Basic, as reported	\$ .03	\$ .03	\$ (.05)	\$ (.45)
Diluted net income (loss) per share from continuing operations	\$ .05	\$ .05	\$ (.02)	\$ .00
Diluted net loss per share from discontinued operations	\$ (.03)	\$ (.01)	\$ (.02)	\$ (.46)
Diluted, as reported	\$ .03	\$ .03	\$ (.05)	\$ (.45)

## LIQUIDITY AND CAPITAL RESOURCES

On March 3, 2004, the Company entered into a Revolving Credit and Term Loan Agreement with a new lender, Banknorth, N.A. (the New Lender), providing the Company with a \$2 million credit facility. The proceeds drawn down from the New Lender under the credit facility were used to pay off both the line of credit and term loan owed PNC Bank N.A. (the Previous Lender).

Under the terms of agreement with the New Lender, the Company has two covenants that it must meet on an annual basis. The Company borrows funds on the Revolving Credit Line at the prime rate. The \$1 million Term Loan is payable ratably over a four year period at the fixed rate calculated equal to the Federal Home Loan Bank Classic Rate plus 2.5%. See discussion of New Credit Facility in the notes to the financial statements.

On March 31, 2004, the Company completed a private placement offering of investment units (each unit consisting of one share of common stock and a 3-year warrant to purchase an additional one-half share of common stock). A total of 1,426,616 units were sold, yielding gross proceeds of \$3,566,536. The units were priced at \$2.50 and the associated warrants totaling 713,308 units are exercisable at \$3.05. Additionally, the placement agent for the offering received 5-year warrants to purchase 213,992 shares of common stock at an exercise price of \$3.20 per share. The value of the warrants granted to the placement agent was approximately \$351,000.

The Company used cash of \$142,299 in 2004 from operations and generated cash of \$236,292 in 2003, and \$398,748 in 2002. In 2004, the Company's principal operating cash requirements were to fund its increase in inventories, trade and other receivables, prepaid expenses, and a decrease in current liabilities, partially offset by net income. In 2003, the Company's principal operating cash requirements were to fund its net loss, its increase in prepaid expenses, inventory, and a decrease in current liabilities, offset by a decrease in trade and other receivables, and other current assets. In 2002, the Company's principal operating cash requirements were to fund its decrease in current liabilities, and increase in other current assets and prepaid expenses, offset by net income from operations, and a decrease in receivables and inventory.

The Company generated cash of \$513,083 and used cash of \$53,172, and \$38,706 for investing activities in 2004, 2003, and 2002, respectively. Net cash provided by investing activities in 2004 was generated through the sale of the Morehouse-COWLES Division, partially offset by the purchase of capital equipment. Net cash used in investing activities for both 2003 and 2002 included the proceeds from the sale of assets, net of the purchase of capital equipment. The Company's sale of assets principally related to used equipment. As of December 31, 2004, the Company had no material commitments for capital expenditures.

For financing activities, the Company generated cash of \$1,607,060 in 2004, and used cash of \$217,806 in 2003, and \$362,472 in 2002. In 2004, cash was generated from the net proceeds from the private placement offering, the issuance of common stock for options exercised, proceeds from stock issued from the employee stock purchase plan, and net proceeds from a new term loan and line of credit from the New Lender, offset by payments on the previous line of credit, the term note and subordinated debt. In 2003, cash was used to pay down the line of credit, subordinated debt, and the line of credit term note, partially offset by the issuance of common stock. In 2002 cash was used to pay a note payable arising from a settlement agreement

(see Note 7 Debt), to pay down the term note, and the subordinated debt, and was partially offset by proceeds from the line of credit, and the issuance of common stock.

The cash and cash equivalents balance at December 31, 2004 was \$2,028,114, an increase of \$1,977,844 from the December 31, 2003 balance of \$50,270. At December 31, 2003, the Company maintained a line of credit and a term loan (collectively the Credit Facility) with the Previous Lender. The line of credit facility provided for a maximum borrowing of \$4,000,000. On March 3, 2004, the Company received a new line of credit from the New Lender. The proceeds of the new line of credit and term note were used to pay off the balance due the Previous Lender. As of December 31, 2004 and March 11, 2005, the Company had borrowings of \$812,503 and \$994,504 outstanding under its loan facility, respectively.

Under the terms of the line of credit with the Previous Lender, the Company was subject to a number of restrictions that impacted the Company's use of funds. The Company was limited to acquisition of property of \$250,000 per year or less, could not pay dividends, and maintained certain financial covenants as defined. In addition, the Company was required to maintain a lockbox arrangement with the Previous Lender, and all cash receipts were included in the lockbox and were applied against the outstanding line of credit. Borrowings outstanding under the Credit Facility were secured by a collateral pledge to the Previous Lender of substantially all of the assets of the Company. On February 19, 2003, the Company and the Previous Lender signed a third amendment to the original agreement extending the credit facility for one year until February 28, 2004. On February 6, 2004, the Company and the Previous Lender entered into a Fourth Amendment and Waiver in connection with the Company's sale of the assets of the Morehouse-COWLES Division. At December 31, 2003, the Company did not meet the net income covenant and would have required a waiver from its Previous Lender. However, in conjunction with the new credit facility it obtained from the New Lender, no waiver was required from the Previous Lender.

The Company's ability to continue planned operations is dependent upon access to financing which is potentially impacted by the Company's ability to achieve future compliance with the financial covenants.

Assuming that there is no significant change in the Company's business, the Company believes that cash flows from operations, together with existing cash balances, will be sufficient to meet its working capital and debt service requirements for at least the next twelve months.

Additionally, although the Company has raised approximately \$3.6 million in a private placement offering which closed in March 2004, the Company may, from time to time, seek to raise additional capital for various initiatives that management believes advance the interests of the Company. The terms upon which the Company may raise such additional capital may include private placements of its stock, which placements are usually priced at discount to the then-current market price of the Company's stock (in order to compensate for the fact that the stock being sold is not freely-tradable) or upon other terms that management believes appropriate under the circumstances.

#### **Recent Accounting Pronouncements**

In November 2004, the FASB issued FASB Statement No. 151, Inventory Costs an amendment of ARB No. 43 (SFAS 151), which is the result of its efforts to converge U.S.



accounting standards for inventories with international Accounting Standards. SFAS No. 151 requires idle facility expenses, freight, handling costs, and wasted material (spoilage) costs to be recognized as current-period charges. It also requires that allocation of fixed production overheads to the costs of conversion be based on the normal capacity of the production facilities. SFAS No. 151 will be effective for inventory costs incurred during fiscal years beginning after June 15, 2005. The company is evaluating the impact of this standard on our consolidated financial statements.

In December 2004, the FASB issued SFAS No. 123 (Revised 2004) Share-Based Payment ( SFAS No. 123R ). SFAS No. 123R addresses all forms of share-based payment ( SBP ) awards, including shares issued under employee stock purchase plans, stock options, restricted stock and stock appreciation rights. SFAS No. 123R will require the Company to expense SBP awards with compensation cost for SBP transactions measured at fair value. The FASB originally stated a preference for a lattice model because it believed that a lattice model more fully captures the unique characteristics of employee stock options in the estimate of fair value, as compared to the Black-Scholes model which the Company currently uses for its disclosure. The FASB decided to remove its explicit preference for a lattice model and not require a single valuation methodology. SFAS No. 123R requires the Company to adopt the new accounting provisions beginning in our fiscal year 2006. The Company is evaluating the impact of this standard and expects that it could have a material effect on its consolidated financial statements.

#### **Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK**

The Company's financial instruments are generally not subjected to changes in market value as a result of changes in interest rates due to the short maturities of the instruments. The Company's fixed rate debt is not exposed to cash flow or interest rate changes but is exposed to fair market value changes in the event of refinancing this fixed rate debt. The Company does not have significant exposure to fluctuations in foreign exchange rates.

The Company had no variable rate borrowings outstanding under its revolving credit agreement at December 31, 2004. Therefore, an adverse change in interest rates for this variable rate debt would have had no material effect on the Company's earnings and cash flows on an annual basis.

For additional information about the Company's financial instruments, see Note 7 to the Financial Statements.

**Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA**

The following Consolidated Financial Statements of the Company and its Subsidiaries appear at the end of this report starting on Page F-1 and include:

Report Independent Auditors

Consolidated Balance Sheets as of December 31, 2004 and 2003

Consolidated Statements of Operations for the years ended December 31, 2004, 2003 and 2002

Consolidated Statements of Cash Flows for the years ended December 31, 2004, 2003 and 2002

Consolidated Statements of Changes in Stockholders' Equity for the years ended December 31, 2004, 2003 and 2002

Notes to Consolidated Financial Statements

**Item 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE**

None.

Item 9A. ■

## **CONTROLS AND PROCEDURES**

(a) *Evaluation of disclosure controls and procedures.* Based on his evaluation as of the end of the fiscal quarter ended December 31, 2004, each of our principal executive officer and principal financial officer have concluded that our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended) are effective to ensure that material information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in Securities and Exchange Commission rules and forms.

(b) *Changes in internal control over financial reporting.* There were no significant changes in our internal control over financial reporting during the fiscal quarter ended December 31, 2004 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.



**Item 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT**

Code of Ethics

The Company has adopted a Code of Ethics that applies to all of the Company's employees, officers and directors, and which is attached to this Report as Exhibit 14. Any person may receive a copy, without charge, of the Company's Code of Ethics by sending a request for the Code of Ethics to MFIC Corp., 30 Ossipee Road, Newton, MA 02464-9101, ATTN: Investor Relations. The Code of Ethics is also viewable on the Company's website at the following URL: <http://www.mficcorp.com/nethics.html>

The information required by this Item 10 will be incorporated by reference from the Company's definitive proxy statement or will be filed as an amendment to the Company's Form 10-K within 120 days of the Company's fiscal year end.

**Item 11. EXECUTIVE COMPENSATION**

The information required by this Item 11 will be incorporated by reference from the Company's definitive proxy statement or will be filed as an amendment to the Company's Form 10-K within 120 days of the Company's fiscal year end.

**Item 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT**

The information required by this Item 12 will be incorporated by reference from the Company's definitive proxy statement or will be filed as an amendment to the Company's Form 10-K within 120 days of the Company's fiscal year end.

**Item 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS**

During 2002 and 2003, the Company leased a facility in South Haven, Michigan from B-2 Enterprises, Inc. This entity is owned and controlled by Messrs. J.B. Jennings and Bret A. Lewis, former principal shareholders. In 2003 and 2002, the Company paid B-2 Enterprises, Inc. approximately \$63,295 and \$102,180 in rent, respectively. The lease ended in August, 2003.

**Item 14. INDEPENDENT ACCOUNTANT FEES FOR FISCAL 2004 AND FISCAL 2003**

*Audit-Related Fees*

During the years ended December 31, 2004 and December 31, 2003, Brown & Brown LLP was paid approximately \$139,000 and \$70,000 respectively for assurance and related services reasonably related to the performance of audit or review of the Company's financial statements and are not reported under Item 9(e) of the Company's definitive proxy statement. All services were approved by the Audit Committee.

*Tax Fees*

During the years ended December 31, 2004 and December 31, 2003, Brown & Brown LLP was paid approximately \$14,000 and \$16,000 respectively for tax compliance, tax advice and tax planning services. All tax services were approved by the Audit Committee.

*All Other Fees*

During the years ended December 31, 2004 and December 31, 2003, Brown & Brown LLP was paid approximately \$56,000 and \$0, respectively, for non-audit services. All of these services were approved by the Audit Committee.

The Audit Committee has considered whether the provision of non-core audit services to the Company by the Company's principal auditor is compatible with maintaining independence, and have affirmed, in each instance, that the provision of such service was compatible with the principal auditor's independent role.

**Item 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES AND REPORTS ON FORM 8-K**

**(a) Consolidated Financial Statements.**

The following Consolidated Financial Statements are included in Item 8:

Reports of Independent Auditors

Consolidated Balance Sheets as of December 31, 2004 and 2003

Consolidated Statements of Operations for the years ended December 31, 2004, 2003, and 2002

Consolidated Statements of Cash Flows for the years ended December 31, 2004, 2003, and 2002

Consolidated Statements of Changes in Stockholders' Equity for the years ended December 31, 2004, 2003, and 2002

Notes to Consolidated Financial Statements

**(b) Exhibits.**

The Company hereby files as part of this Form 10-K the Exhibits listed below

**(c) Financial Statement Schedules.**

The following Consolidated Financial Statement Schedule of the Registrant is filed as part of this report:

Schedule II Valuation and Qualifying Accounts and Reserves

**INDEPENDENT AUDITORS REPORT**

The Board of Directors and Stockholders of MFIC Corporation:

We have audited the accompanying consolidated balance sheets of MFIC Corporation and subsidiaries as of December 31, 2004 and 2003 and the related consolidated statements of operations, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2004. Our audits also included the financial statement schedule listed in the Index at Item 15(c). These financial statements and schedule are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements and schedule based on our audits.

We conducted our audits in accordance with auditing standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of MFIC Corporation and subsidiaries at December 31, 2004 and 2003 and the consolidated results of their operations and their cash flows for the three years in the period ended December 31, 2004, in conformity with accounting principles generally accepted in the United States of America. Also, in our opinion, the related financial statement schedule, when considered in relation to the basic financial statements taken as a whole, presents fairly in all material respects the information set forth therein.

/s/ BROWN & BROWN, LLP

Boston, Massachusetts  
March 2, 2005

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## MFIC CORPORATION

## CONSOLIDATED BALANCE SHEETS

ASSETS	December 31,	
	2004	2003
<i>Current Assets:</i>		
Cash and cash equivalents	\$ 2,028,114	\$ 50,270
Accounts receivable, less allowance for doubtful accounts of \$13,203 and \$58,500 in 2004 and 2003, respectively.	2,056,522	1,814,584
Note receivable - NuSil	100,000	
Note receivable - current	25,000	16,429
Inventories, net	1,888,138	1,683,703
Prepaid expenses	227,607	207,210
Other current assets	45,167	38,749
Assets available for sale		1,383,118
Deferred income taxes	450,000	
<b>TOTAL CURRENT ASSETS</b>	<b>6,820,548</b>	<b>5,194,063</b>
<i>Property and Equipment, at cost:</i>		
Furniture, fixtures and office equipment	451,341	330,022
Machinery and equipment	368,374	219,765
Leasehold improvements	85,795	50,568
	<b>905,510</b>	<b>600,355</b>
Less: accumulated depreciation and amortization	(511,170)	(418,066)
<b>Net property and equipment</b>	<b>394,340</b>	<b>182,289</b>
Note receivable - long-term		54,761
Patents, licenses and other assets (net of accumulated amortization of \$225,885 in 2004 and \$216,155 in 2003)	77,413	55,978
<b>TOTAL ASSETS</b>	<b>\$ 7,292,301</b>	<b>\$ 5,487,091</b>

The accompanying notes are an integral part of these consolidated financial statements.

	December 31,	
LIABILITIES AND STOCKHOLDERS EQUITY	2004	2003
<i>Current Liabilities:</i>		
Line of credit	\$	\$ 2,425,613
Accounts payable	120,841	882,091
Accrued expenses	355,627	179,806
Accrued interest- related party		2,639
Accrued compensation and vacation pay	132,970	111,855
Customer advances	775,327	223,501
Current portion of term note payable	250,000	58,735
Current portion of long-term debt- related party	6,250	75,000
Liabilities associated with assets available for sale		661,095
<b>TOTAL CURRENT LIABILITIES</b>	<b>1,641,015</b>	<b>4,620,335</b>
Long-term debt, net of current portion- related party		6,250
Term note	562,503	
Commitments (Note 11)		
<i>Stockholders Equity:</i>		
Common Stock, par value \$.01 per share, 20,000,000 shares authorized; 9,921,984 and 8,028,158 shares issued; 9,661,538 and 7,767,712 shares outstanding at December 31, 2004 and 2003, respectively	99,220	80,281
Additional paid-in capital	16,485,828	13,150,862
Accumulated deficit	(10,808,564)	(11,682,936)
Less: Treasury Stock, at cost, 260,446 shares at December 31, 2004 and 2003, respectively	(687,701)	(687,701)
<b>TOTAL STOCKHOLDERS EQUITY</b>	<b>5,088,783</b>	<b>860,506</b>
<b>TOTAL LIABILITIES AND STOCKHOLDERS EQUITY</b>	<b>\$ 7,292,301</b>	<b>\$ 5,487,091</b>

The accompanying notes are an integral part of these consolidated financial statements.

## MFIC CORPORATION

## CONSOLIDATED STATEMENTS OF OPERATIONS

	Years Ended December 31,		
	2004	2003	2002
Revenues	\$ 12,158,919	\$ 10,459,631	\$ 9,514,180
Cost of goods sold	5,607,755	4,988,226	4,438,351
Gross profit	6,551,164	5,471,405	5,075,829
Operating expenses:			
Research and development	1,033,978	785,849	583,683
Selling	2,587,658	2,187,389	2,086,547
General and administrative	2,232,358	1,732,087	1,763,884
Total operating expenses	5,853,994	4,705,325	4,434,114
Income from continuing operations	697,170	766,080	641,715
Interest expense	(69,383)	(116,097)	(179,429)
Interest income	27,965	9,508	7,191
Net income from continuing operations before income tax benefit	655,752	659,491	469,477
Income tax benefit	450,000		
Net income from continuing operations	1,105,752	659,491	469,477
Loss from discontinued operations (net of loss from disposal of discontinued operations of \$1,422,715 in 2003)	(231,380)	(4,109,925)	(2,983,451)
Net income (loss)	\$ 874,372	\$ (3,450,434)	\$ (2,513,974)
Weighted average number of common and common equivalent shares outstanding:			
Basic	9,345,560	7,767,712	7,426,586
Diluted	10,329,313	8,501,110	7,470,090
Basic amounts per common share:			
Net income per share from continuing operations	\$ .11	\$ .08	\$ .06
Basic net (loss) per share from discontinued operations	\$ (.02)	\$ (.52)	\$ (.40)
Basic, as reported	\$ .09	\$ (.44)	\$ (.34)
Diluted amounts per common share:			
Net income per share from continuing operations	\$ .10	\$ .08	\$ .06
Diluted net (loss) per share from discontinued operations	\$ (.02)	\$ (.52)	\$ (.40)
Diluted, as reported	\$ .08	\$ (.44)	\$ (.34)

The accompanying notes are an integral part of these consolidated financial statements.

**MFIC CORPORATION**



## CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	2004	2003	2002
<i>Cash flows from operating activities:</i>			
Net income (loss)	\$ 874,372	\$ (3,450,434)	\$ (2,513,974)
Adjustments to reconcile net income (loss) to net cash used in operating activities:			
Change in accounting principle			2,661,409
Impairment of goodwill		2,100,000	
Income tax benefit	(450,000)		
Provision for disposal of discontinued operations		1,422,715	
Depreciation and amortization	111,829	264,101	308,131
Provision for loss on trade receivables	(45,297)	24,378	6,985
Provision for other receivables	46,190	76,000	
Provision for excess inventory	53,000	60,000	
Gain on sale of assets		(26,931)	(42,268)
Issuance of restricted common stock to consultants			11,668
<i>Changes in assets and liabilities:</i>			
Receivables	(196,641)	146,573	242,043
Inventories	(257,435)	(49,733)	64,647
Prepaid expenses	(20,397)	(50,209)	(11,831)
Other current assets	(46,578)	51,281	(40,229)
Current liabilities	(15,127)	(331,449)	(287,833)
Assets and liabilities available for sale	(196,215)		
Net cash (used in) provided by operating activities	(142,299)	236,292	398,748
<i>Cash flows from investing activities:</i>			
Proceeds from sale of fixed assets		26,931	105,991
Purchase of fixed assets	(305,155)	(96,532)	(163,864)
Proceeds from note receivable		16,429	19,167
Proceeds from sale of assets available for sale	818,238		
Net cash provided by (used in) investing activities	513,083	(53,172)	(38,706)
<i>Cash flows from financing activities:</i>			
Principal payments on bank line of credit PNC	(2,425,613)	(256,374)	
Proceeds from term loan Banknorth	1,000,000		146,195
Principal payments on term note PNC	(58,735)	(95,004)	(95,004)
Principal payments on term loan Banknorth	(187,497)		
Principal payments on note payable			(350,000)
Issuance of common stock under employee stock purchase plan	20,993	11,713	11,581
Issuance of common stock under employee stock option plan	343,973	144,859	6,006
Issuance of common stock purchased through warrants		52,000	
Proceeds from private placement (net of closing costs of \$577,601)	2,988,939		
Payments on subordinated debt-related party	(75,000)	(75,000)	(81,250)
Net cash provided by (used in) financing activities	1,607,060	(217,806)	(362,472)
Net increase (decrease) in cash and cash equivalents	1,977,844	(34,686)	(2,430)
Cash and cash equivalents, beginning of year	50,270	84,956	87,386
Cash and cash equivalents, end of year	\$ 2,028,114	\$ 50,270	\$ 84,956
<i>Supplemental disclosure of cash flow information:</i>			
Cash paid for interest	\$ 67,942	\$ 130,967	\$ 204,977

The accompanying notes are an integral part of these consolidated financial statements.



**MFIC CORPORATION****CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS EQUITY**

	Number of Shares	Common Stock		Accumulated Deficit	Treasury Stock		Total Stockholders Equity
		\$0.01 Par Value	Additional Paid-in Capital		Number of Shares	Stated at Cost	
Balance, December 31, 2001	7,643,981	\$ 76,440	\$ 12,916,876	\$ (5,718,528)	260,446	\$ (687,701)	\$ 6,587,087
Stock options exercised	19,375	194	5,812				6,006
Issuance of common stock under employee stock purchase plan	29,207	292	11,289				11,581
Issuance of common stock to consultants	12,501	125	11,543				11,668
Net loss				(2,513,974)			(2,513,974)
Balance, December 31, 2002	7,705,064	77,051	12,945,520	(8,232,502)	260,446	(687,701)	4,102,368
Stock options exercised	186,377	1,863	142,996				144,859
Issuance of common stock under employee stock purchase plan	36,717	367	11,346				11,713
Stock warrants exercised	100,000	1,000	51,000				52,000
Net loss				(3,450,434)			(3,450,434)
Balance, December 31, 2003	8,028,158	\$ 80,281	\$ 13,150,862	\$ (11,682,936)	260,446	\$ (687,701)	\$ 860,506
Stock options exercised	440,532	4,406	339,567				343,973
Issuance of common stock from private placement	1,426,616	14,266	2,974,673				2,988,939
Issuance of common stock under employee stock purchase plan	26,678	267	20,726				20,993
Net income				874,372			874,372
Balance, December 31, 2004	9,921,984	\$ 99,220	\$ 16,485,828	\$ (10,808,564)	260,446	\$ (687,701)	\$ 5,088,783

The accompanying notes are an integral part of these consolidated financial statements.

**MFIC CORPORATION**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**



**Note 1 ORGANIZATION AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES**

**Organization**

MFIC Corporation (MFIC or the Company), through its wholly-owned subsidiary, Microfluidics Corporation (Microfluidics), its operating division, operates in one segment, specializing in producing and marketing a broad line of proprietary fluid materials processing systems used for a variety of grinding, mixing, milling, and blending applications across a variety of industries and for use in numerous applications within those industries. Microfluidizer materials processor systems are produced at Microfluidics.

**Principles of Consolidation**

The consolidated financial statements of the Company include the accounts of the Company and its wholly owned subsidiaries. All significant intercompany transactions and balances have been eliminated in consolidation.

**Use of Estimates**

The preparation of consolidated financial statements in conformity with accounting principles generally accepted in the United States of America ( Generally Accepted Accounting Principles ) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

**Reclassifications**

As described in Note 4, in December 2003, the Company committed to a plan to sell substantially all the assets and associated liabilities of its Morehouse-COWLES Division. As such, in accordance with generally accepted accounting principles, results of operations have been reclassified to reflect Morehouse-COWLES operating results, net of income taxes, as Discontinued Operations. Further, certain prior period balances have been reclassified to conform to the current period presentation.

### **Revenue Recognition**

Revenue from the sale of machines and spare parts is generally recognized upon shipment of the product or when the earnings process is complete. Rental income for the lease of equipment is recognized on a straight-line basis over the term of the lease agreement. Rental income and equipment sales are classified in revenues in the consolidated statement of operations.

The Company has adopted Securities and Exchange Commission (SEC) Staff Accounting Bulletin (SAB) No. 104, *Revenue Recognition in Financial Statements*. The Company recognizes sales at the time of shipment of the system to the customer. Management believes the customer's post-delivery acceptance provisions and installation are routine. The Company has never failed to successfully complete a system installation. With few exceptions, the Company limits its liability to the return of the equipment sold. Installation costs are predictable and insignificant to the total purchase price. The Company has demonstrated a history of customer acceptance subsequent to shipment and installation of these systems.

### **Cash and Cash Equivalents**

The Company considers all highly liquid securities with initial maturities of 90 days or less, at the time of acquisition, to be cash equivalents.

### **Allowance for Doubtful Accounts**

The Company maintains an allowance for estimated losses resulting from the inability of its customers to make required payments. An estimate of uncollectible amounts is made by management based upon historical bad debts, current customer receivable balances, age of customer receivable balances, customer's financial condition and current economic trends. If the actual uncollected amounts significantly exceed the estimated allowance, the Company's operating results would be significantly adversely affected.

### **Inventories**

Inventories consist of material, labor and manufacturing overhead and are stated at the lower of cost or market. Cost is determined on a first-in, first-out basis (FIFO).

The Company periodically reviews quantities of inventory on hand and compares these amounts to expected usage of each particular product line. Reserves are established to record provisions for slow moving inventories in the period in which it becomes reasonably evident that the item is not useable, salable or the market value is less than cost.





### **Property and Equipment**

The Company's property and equipment is recorded at cost. Depreciation is computed using the straight-line method, based upon estimated useful lives of 3 to 7 years. Leasehold improvements are amortized using the straight-line method based upon the shorter of the estimated useful lives or remaining life of the lease. Expenditures for maintenance and repairs are expensed as incurred. Upon retirement or sale of property and equipment, the cost of the disposed asset and the related accumulated depreciation are removed from the accounts and any resulting gain, or loss is credited or charged to operations.

### **Long-Lived Assets**

In accordance with Statements of Financial Accounting Standards ( SFAS ) No.144, *Accounting for the Impairment or Disposal of Long-Lived Assets* ( SFAS No. 144 ), the Company reviews long-lived assets and all amortizing intangible assets for impairment whenever events or changes in circumstances indicate the carrying amount of such assets may not be recoverable. Recoverability of these assets is determined by comparing the forecasted undiscounted net cash flows of the operation to which the assets relate, to the carrying amount. If the operation is determined to be unable to recover the carrying amount of its assets, then intangible assets are written down first, followed by the other long-lived assets of the operation, to fair value. Fair value is determined based on discounted cash flows or appraised values, depending upon the nature of the assets.

### **Patents, Licenses, and Other Intangible Assets**

Patents, patent applications and rights are stated at acquisition cost. Amortization is recorded using the straight-line method over the shorter of the legal lives or useful life of the patents. Patents, licenses and other intangible assets are being amortized over a period of 3 to 17 years.

### **Goodwill**

Goodwill represents the excess of cost over the fair value of net assets of a business acquired. The Company adopted SFAS No. 141, *Business Combinations* ( SFAS No. 141 ) in fiscal 2001 and SFAS No. 142, *Goodwill and Other Intangible Assets* ( SFAS No. 142 ) in fiscal year 2002. SFAS No. 141 requires that the purchase method of accounting be used for all business combinations initiated after June 30, 2001. SFAS No. 141 also specifies the criteria that intangible assets acquired in a purchase method business combination must meet in order to be recognized and reported apart from goodwill.

SFAS No. 142 requires that goodwill and intangible assets with indefinite lives no longer be amortized, but instead be tested for impairment, at least annually. SFAS No. 142 also requires that the intangible assets with definite lives be amortized over their respective estimated useful lives to their residual value and reviewed for impairment in accordance with SFAS No. 144.

### **Research and Development Expenses**

The Company charges research and development expenses to operations as incurred.

### **Earnings (Loss) per Share**

Basic and diluted net loss per share is presented in conformity with SFAS No. 128, *Earnings per Share* ( *SFAS No. 128* ), for all periods presented. In accordance with SFAS No. 128, basic and diluted net loss per common share was determined by dividing net income or loss applicable to common stockholders by the weighted average number of common shares outstanding during the period. Options to purchase 1,782,713, 1,929,662 and 2,010,650 shares of common stock were outstanding for the years ended 2004, 2003, and 2002, respectively. Basic and diluted net income per share are \$.09 and \$.08, respectively, per share for 2004. Basic and diluted net loss per share are \$(.44) per share for 2003. Basic and diluted net loss per share are \$(.34) per share for 2002.

### **Fair Value of Financial Instruments**

The carrying amount of cash and cash equivalents, accounts receivable, accounts payable and accrued liabilities approximates fair value due to the short term nature of these accounts. The Company's bank debt, because it carries a variable interest rate, is stated at its approximate fair market value. The Company's subordinated debt bears interest at 10%, which approximates fair market value.

### **Income Taxes**

The Company accounts for income taxes under SFAS No. 109, *Accounting for Income Taxes* ( *SFAS No. 109* ). Under SFAS No. 109, deferred tax assets or liabilities are computed based on the differences between the financial statement and income tax bases of assets and liabilities using the effective tax rates. Deferred income tax expense or credits are based on changes in the asset or liability from period to period. The Company records a valuation allowance against any net deferred tax assets if it is more likely than not that they will not be realized.

**Stock Based Compensation**

As allowed by SFAS No. 123, *Accounting for Stock-Based Compensation*, the Company has elected to account for stock-based compensation at intrinsic value with disclosure of the effects of fair value accounting on net income and earnings per share on a pro forma basis. At December 31, 2004, the Company had one stock incentive plan, which is described more fully in Note 10. The Company accounts for awards issued to employees under its stock incentive plan pursuant to the recognition and measurement principles of Accounting Principles Board (APB) Opinion No. 25, *Accounting for Stock Issued to Employees*, and related interpretations. No stock-based employee compensation cost is reflected in net income, as all options granted under the plan had an exercise price equal to the market value of the underlying common stock on the date of grant. The following table illustrates the effect on net income (loss) and earnings (loss) per share if the Company had applied the fair value recognition provisions of SFAS No. 123:

	2004	2003	2002
Net income (loss), as reported	\$ 874,372	\$ (3,450,434)	\$ (2,513,974)
Deduct: total stock-based employee compensation expense determined under fair value based method for all awards, net of related tax effects	(231,886)	(113,509)	(340,178)
Pro forma net income (loss)	\$ 642,486	\$ (3,563,943)	\$ (2,854,152)
Net income (loss) per share:			
Basic - as reported	\$ .09	\$ (0.44)	\$ (0.34)
Diluted - as reported	\$ .08	\$ (0.44)	\$ (0.34)
Basic - pro forma	\$ .07	\$ (0.46)	\$ (0.38)
Diluted pro forma	\$ .06	\$ (0.46)	\$ (0.38)

Stock options granted to non-employees are accounted for in accordance with SFAS No. 123 and the Emerging Issues Task Force (EITF) Abstract No. 96-18, *Accounting for Equity Instruments That Are Issued to Other Than Employees for Acquiring, or in Conjunction with Selling, Goods or Services*, and related interpretations, which generally requires the value of options to be periodically remeasured and charged to expense as they are earned over the performance period. Compensation related to stock appreciation rights and other variable stock option or award plans should be measured at the end of each period. The Company did not grant any stock options to non-employees, during 2004, 2003, or 2002.

### **Recent Accounting Pronouncements**

In November 2004, the FASB issued FASB Statement No. 151, *Inventory Costs* an amendment of ARB No. 43 ( SFAS No. 151 ), which is the result of its efforts to converge U.S. accounting standards for inventories with international Accounting Standards. SFAS No. 151 requires idle facility expenses, freight, handling costs, and wasted material (spoilage) costs to be recognized as current-period charges. It also requires that allocation of fixed production overheads to the costs of conversion be based on the normal capacity of the production facilities. SFAS No. 151 will be effective for inventory costs incurred during fiscal years beginning after June 15, 2005. The Company is evaluating the impact of this standard on its consolidated financial statements.

In December 2004, the FASB issued SFAS No. 123 (Revised 2004) *Share-Based Payment* ( SFAS No. 123R ). SFAS No. 123R addresses all forms of share-based payment ( SBP ) awards, including shares issued under employee stock purchase plans, stock options, restricted stock and stock appreciation rights. SFAS No. 123R will require the Company to expense SBP awards with compensation cost for SBP transactions measured at fair value. The FASB originally stated a preference for a lattice model because it believed that a lattice model more fully captures the unique characteristics of employee stock options in the estimate of fair value, as compared to the Black-Scholes model which the Company currently uses for its disclosure. The FASB decided to remove its explicit preference for a lattice model and not require a single valuation methodology. SFAS No. 123R requires the Company to adopt the new accounting provisions beginning in our fiscal year 2006. The Company is evaluating the impact of this standard and expects that it could have a material effect on its consolidated financial statements.

### **Note 2            INDUSTRY SEGMENT, GEORGRAPHIC AND ENTERPRISE-WIDE REPORTING**

SFAS No. 131, *Disclosures about Segments of an Enterprise and Related Information*, ( SFAS No. 131 ), requires companies to report selected information about operating segments, as well as enterprise-wide disclosures about products, services, geographic areas and major customers. Operating segments are determined based on the way management organizes its business for making operating decisions and assessing

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performance. The Company's chief decision-maker, as defined under SFAS No. 131, is the chairman and chief executive officer. The Company has determined that it conducts its operations in one business segment: the development, manufacture, marketing and sale of process and formulation equipment. The Company's sales are primarily to companies with processing needs in the chemical, pharmaceutical, food, cosmetic, and biotechnology industries. The Company has less than 1% of total assets in foreign countries. As a result, the financial information disclosed herein represents all of the material financial information related to the Company's principal operating segment.

Approximate sales to customers from continuing operations by geographic markets, are as follows:

	2004		2003		2002
North America	\$ 6,212,000	\$	5,337,000	\$	6,462,000
Asia	3,774,000		3,204,000		2,350,000
Europe	2,173,000		1,919,000		702,000
	<b>\$ 12,159,000</b>	<b>\$</b>	<b>10,460,000</b>	<b>\$</b>	<b>9,514,000</b>

### Customers:

The users of the Company's systems are in various industries, including the chemical, pharmaceuticals, food, cosmetic and biotechnology industries. Mizuho Industrial Co. Ltd., the Company's exclusive Japanese distributor of our Microfluidizer processor equipment and spare parts (Mizuho) and a wholly owned subsidiary of Teva Pharmaceuticals Industries Ltd. (Teva) accounted for 20% and 13% respectively of the Company's revenues from continuing operations in 2004. Two customers, Mizuho and Teva accounted for 21% and 11%, respectively, of the revenues from continuing operations in 2003. Teva and Mizuho, respectively, accounted for 18% and 16% of the revenues from continuing operations in 2002, respectively. Three customers accounted for 15%, 15%, and 13% of the trade accounts receivable from continuing operations as of December 31, 2004, respectively. Two customers accounted for 17% and 10% of the trade accounts receivable from continuing operations as of December 31, 2003, respectively, and one customer accounted for 13% of the trade accounts receivable as of December 31, 2002. Mizuho, as a distributor of the Company's equipment, sells the Company's equipment to many of its own customers and therefore there is no actual reliance on a single customer. It accounted for 20% of the Company's 2004 revenues and 21% of the Company's 2003 revenues. A reduction or delay in orders from others of these greater than 10% customers or other significant customers could have a material adverse effect on the Company's results of operations.

**Note 3            INVENTORIES**

The components of inventories are as follows at December 31:

	<b>2004</b>	<b>2003</b>
Raw materials	\$ 1,786,427	\$ 1,580,991
Work in progress	147,376	80,439
Finished goods	117,335	132,273
	2,051,138	1,793,703
Less: provision for excess inventory	163,000	110,000
<b>TOTAL</b>	<b>\$ 1,888,138</b>	<b>\$ 1,683,703</b>

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**Note 4 ASSETS AVAILABLE FOR SALE**

In the fourth quarter of 2003 the Company determined that its Morehouse-COWLES Division (the Division) was not strategic to the Company's on-going objectives and in December 2003, management committed to a plan to sell substantially all the assets and associated liabilities of the Division. Accordingly, the Company reported the Division as a discontinued operation in accordance with SFAS No. 144. The Consolidated financial statements have been reclassified to segregate the assets and associated liabilities available for sale and operating results of these discontinued operations for all periods presented.

Assets and liabilities of discontinued operations are as follows:

	December 31	
	2004	2003
<u>Assets available for sale</u>		
Accounts receivable-trade	\$	\$ 472,573
Inventory		2,204,128
Prepaid expense		35,517
Net property and equipment		93,615
Goodwill		
Total assets available for sale		2,805,833
Less: provision for loss on disposal		(1,422,715)
Net assets available for sale	\$	\$ 1,383,118
<u>Liabilities associated with assets held for sale</u>		
Accounts payable and accrued expenses		457,139
Customer deposits		203,956
Liabilities associated with assets held for sale	\$	\$ 661,095

Summary Operating Results of the Discontinued Operations of Morehouse-COWLES are as follows:

	2004	2003	2002
Revenue	\$ 323,635	\$ 3,655,237	\$ 5,059,202
Cost of sales	308,548	2,601,957	3,626,407
Gross profit	15,087	1,053,280	1,432,795
Total operating expenses	238,760	3,740,490	1,754,837
Loss from discontinued operations before cumulative effect of change in accounting principle and disposal	(223,673)	(2,687,210)	(322,042)
Loss on disposal of discontinued operations	(7,707)	(1,422,715)	
Cumulative effect of change in accounting principle			(2,661,409)
Loss from discontinued operations	\$ (231,380)	\$ (4,109,925)	\$ (2,983,451)

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In December 2003, in conjunction with the establishment of management's plan to sell the Morehouse-COWLES Division, the Company determined that the remaining goodwill of \$2,100,000 was fully impaired and accordingly charged to discontinued operations.

On February 9, 2004, pursuant to an Asset Purchase Agreement (the "Asset Purchase Agreement") dated February 5, 2004 between MFIC and a wholly owned subsidiary of NuSil Corporation ("NuSil"), MFIC sold substantially all of the assets and selected liabilities of its Morehouse-COWLES Division (the "Division"), to NuSil. Other than NuSil's prior purchases of products from the Division, there were no preexisting relationships between MFIC and NuSil.

The assets of the Division that were sold included accounts receivable, furniture, fixtures and equipment, inventory and supplies, books and records, bids, contracts, prepaid expenses, leases, intellectual property, goodwill, domain names and claims, all as described in the Asset Purchase Agreement (collectively, the "Assets"). In addition, certain rights and obligations arising after February 9, 2004 under the Division's PacifiCare Group Health Insurance Policy were assigned. The Division's cash on hand on February 9, 2004 were excluded from the assets being sold. Under the Asset Purchase Agreement, the Division's executory obligations under certain contracts and bids, and the Division's accounts payable as of February 9, 2004 in the amount of \$623,240, were assumed by NuSil.

The purchase price (other than the assumption of accounts payable described in the preceding paragraph) paid under the Asset Purchase Agreement was \$918,238. Of the purchase price, \$768,238 (the "Closing Cash") was paid in cash, \$100,000 was paid in the form of a Promissory Note (the "Purchase Note") and \$50,000 (the "Holdback Payment") was withheld for payment subject to any purchase price adjustments and offsets, as provided for in the Asset Purchase Agreement. In accordance with the Asset Purchase Agreement, this Company received the holdback payment on March 26, 2004.

The Closing Cash was paid directly to PNC Bank, National Association ("PNC"), to be applied to MFIC's outstanding balance under MFIC's Revolving Credit Loan with PNC (the "Revolving Credit Loan").

The aforementioned Purchase Note bears interest at 5 percent per annum, is secured by the Assets pursuant to a Security Agreement dated February 5, 2004 (the "Security Agreement") between the parties and is subject to certain offsets as provided in the Asset Purchase Agreement. Principal and interest on the Purchase Note are payable on February 9, 2005, unless there is a claim for an offset as allowed for under the Asset Purchase Agreement, which claim might delay final payment of amounts due under the Purchase Note until final resolution of any such claim under the procedures outlined in the Asset Purchase Agreement.

Pursuant to the Asset Purchase Agreement, MFIC entered into a Noncompetition and Nonsolicitation Agreement, dated February 5, 2004, which limits MFIC's ability to compete with the business of the Division for a period of five years.



**Note 5**            **INTANGIBLES AND OTHER ASSETS**

In 2001, the Company capitalized \$64,528 of costs related to the Multiple-Stream High Pressure Mixer Reactor patent, with an additional \$28,582 of costs related to this patent capitalized in 2004. These costs are being amortized over a 17-year period, beginning in the last quarter of 2001. Amortization of these costs was \$9,747 in 2004, and \$3,800 in both 2003 and 2002.

In 1995, the Company capitalized \$96,680 of patent costs related to a cooperative research venture. Amortization of these assets charged to expense was \$0 in 2004 and 2003, and \$14,896 in 2002.

Costs incurred in connection with the debt refinancing that occurred on March 3, 2004 are being amortized over four years, the initial term of the line of credit. The total of such costs was approximately \$36,533. Amortization of these costs amounted to \$8,978 in 2004.

Costs incurred in connection with the debt refinancing that occurred on February 28, 2000 were amortized over three years, the initial term of the line of credit. The total of such costs which are fully amortized was approximately \$207,000. Amortization of these costs amounted to \$11,534 in 2003, and \$69,204 in 2002.

**Note 6**            **GOODWILL**

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In 1998, MFIC purchased substantially all of the assets and assumed certain liabilities of Epworth Manufacturing Company, Inc. of South Haven, Michigan (Epworth) and Morehouse-COWLES, Inc. of Fullerton, California (Morehouse-COWLES) pursuant to an Asset Purchase Agreement.

In accordance with the Agreement, MFIC paid the following as consideration for the purchase price: (i) \$5,508,480 in cash, (ii) two subordinated promissory notes in the aggregate principal amount of \$800,000 (the Promissory Notes) and (iii) 900,000 shares of MFIC's restricted common stock, \$0.01 par value per share, subject to the restrictions as defined. MFIC also incurred approximately \$500,000 in expenses. In addition, MFIC assumed approximately \$1,930,000 in accounts payable and accrued liabilities. The acquisition had been accounted for under the purchase method of accounting, and the Company recognized goodwill of \$6,194,459 which was fully allocated to Morehouse-COWLES.

On January 1, 2002, the Company adopted SFAS No. 142, *Goodwill and Other Intangible Assets*, which requires companies to discontinue the amortization of goodwill and certain intangible assets with an indefinite useful life. Instead, SFAS No. 142 requires that goodwill and intangible assets deemed to have an indefinite useful life be reviewed for impairment upon adoption of SFAS No. 142 and annually thereafter.

Upon adoption of SFAS No. 142 in the first quarter of 2002, the Company recorded a one-time, noncash charge of \$2,661,409 to reduce the carrying value of its goodwill. Such charge is nonoperational in nature and is reflected as a cumulative effect of an accounting change pursuant to the SFAS No. 142 transition rules.

**Note 7 DEBT**

Long-term debt as of the following dates consisted of:

	December 31,	
	2004	2003
Line of credit	\$	\$ 2,425,613
10% subordinated note payable to related party		81,250
Term note payable		58,735
		2,565,598
Less current portion		(2,559,348)
Long term debt, net of current portion	\$	\$ 6,250

**Subordinated Note Payable**

The subordinated note is payable to Lake Shore Industries Inc., a related party as defined and disclosed in Note 13 of the financial statements.

**Notes Payable**

In October, 2000, the Company entered into a settlement agreement related to a warranty claim dating back to 1998 for the Epworth Mill division pursuant to which the Company paid \$100,000 upon execution of the agreement, and executed a promissory note for \$350,000 payable two years from the execution date, with interest payable quarterly in arrears at 10% per annum. The Company paid off the balance of this note in December 2002.

## Credit Facility

On February 28, 2000, the Company entered into a revolving credit and term loan agreement with National Bank of Canada (together with its successors, the Lender) providing the Company with a \$4,475,000 three-year revolving credit and term loan facility. The Credit Facility was comprised of: (i) a \$4 million three year revolving line of credit (Revolving Credit Line) with advances thereunder bearing interest at an interest rate equal to the prime rate (the Prime Rate for United States borrowings from the National Bank of Canada as publicly announced from time to time) plus one-half percent (0.50%). All borrowings under the Revolving Credit Line were evidenced by a \$4 million promissory note having a maturity date of February 28, 2003 (the Revolving Note), and (ii) a \$475,000 term promissory note, amortized over a five-year period but having a maturity date of February 28, 2003 and bearing interest at an interest rate equal to the Prime Rate (4.75% at December 31, 2001) plus three quarters of one percent (0.75%). Loans under the Credit Facility were secured by a collateral pledge to the Lender of substantially all the assets of the Company and its subsidiaries. The Company's Microfluidics Corporation subsidiary guaranteed the Company's obligations to the Lender under the Credit Facility. The Company also pledged to the Lender all shares of Microfluidics Corporation owned by the Company.

On January 16, 2002, the United States portion of National Bank of Canada's operations and its loan portfolio was sold to PNC Bank, N.A. On February 19, 2003, the Company and PNC Bank, N.A. entered into an extension of the loan for an additional year, until February 28, 2004.

On March 29, 2002, the Company and the Lender agreed on a revised set of covenants for fiscal 2002 under a second amendment to the original agreement. On February 19, 2003, the Company and the Lender entered into a third amendment to the original agreement extending the credit facility for an additional year until February 28, 2004, with no change to the revised covenants agreed upon under a March 29, 2002 agreement.

On February 6, 2004 the Company and PNC Bank, N.A. (PNC) entered into a Fourth Amendment and Waiver to Revolving Credit and Term Loan Agreement permitting the sale of the assets of the Company's Morehouse-COWLES Division in exchange for payment to PNC of all monies received by the Company in connection with such sale and assignment to PNC of deferred payments and a promissory note from the purchase issued as part of the purchase price. On March 3, 2004, the outstanding loan balance was repaid from the proceeds of a new senior debt financing from Banknorth, N.A.

Due to the subjective acceleration clause, and the lock-box arrangement, the revolving credit line is classified as a current liability in the consolidated balance sheet. At December 31, 2004 and 2003, the outstanding balance on the Revolving Credit Line was \$0 and \$2,425,613, having an interest rate of 5.25%. The balance outstanding on the term loan was \$812,503, at an interest rate of 5.67%.

At December 31, 2003, the Company would not have met the net income covenant which, according to the terms of the lending agreement, would have required a waiver from its previous lender, PNC. However, in conjunction with the subsequent credit facility it obtained from the new lender, Banknorth, N.A., no waiver was required from the previous lender.

On March 3, 2004, the Company and its Microfluidics Corporation subsidiary, as co-borrowers, entered into a revolving credit and term loan agreement with Banknorth, N.A. (the New Lender) providing the Company with a \$2,000,000 demand revolving credit and four year term loan facility (the Credit Facility). The Credit Facility was comprised of (i) a \$1,000,000 demand revolving line of credit (The Revolving Credit Line) with advances thereunder bearing interest at an interest rate equal to the prime rate (the Prime Rate for United States borrowings from Banknorth, N.A. as publicly announced from time to time). All borrowings under the Revolving Credit Line were evidenced by a \$1,000,000 demand promissory note (the Revolving Note), and (ii) a \$1,000,000 term promissory note, amortized over a four year period but having a maturity date of March 3, 2008 and bearing interest at an interest rate equal to the Federal Home Loan Bank Classic Rate at March 4, 2004 plus two and one-half percent (2.50%). Loans under the Credit Facility are secured by a collateral pledge to the New Lender of substantially all the assets of the Company and its subsidiaries. The Company's Microfluidics Corporation subsidiary guaranteed the Company's obligations to the New Lender under the Credit Facility. The Company also pledged to the New Lender all shares of Microfluidics Corporation owned by the Company. The Company is required to meet two covenants on an annual (calendar) basis as of December 31 of a given year. (i) The Company's senior debt may not be more than four times the amount of its tangible capital base, and (ii) its debt service coverage ratio may not be less than 1.20 to 1. At December 31, 2004, the Company was in compliance with both covenants.

**Note 8           EMPLOYEE BENEFIT PLANS**

The Company offers a 401(k) profit-sharing plan (the 401K Plan), to its employees. All Company and related entity employees who are eighteen years of age and have completed one hour of service are eligible to participate in the 401K Plan. Employees may contribute from 1% to 20% of their compensation. The Company's contribution is discretionary, with contributions made from time to time as management deems advisable. The Company made no matching contributions during 2004, 2003 or 2002. The Company also instituted a cafeteria plan in 1992, giving the employees certain pre-tax advantages on specific payroll deductions.

**Note 9**      **INCOME TAXES**

The benefit for income taxes is as follows:

	2004	Year ended December 31 2003 (In thousands)	2002
Deferred:			
Federal	\$ 345,000	\$	\$
State	105,000		
	\$ 450,000	\$	\$

The amount reported as income tax benefit in 2004 is the result of the reversal of tax reserves recorded in prior years.

The total income tax benefit differs from the income tax at the statutory federal income tax rate due to the following:

	2004	Year ended December 31 2003 (In thousands)	2002
Federal income tax at statutory rate	34.0%	34.0%	34.0%
State income taxes, net of Federal Benefit	6.3%	6.3%	6.3%
Net research and development and other tax credits			
Valuation allowance	(152.6)%	(40.3)%	(40.3)%
Reversal of valuation allowance recorded in prior years	6.5%		
Total income tax benefit	(106)%	0%	0%

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The following is a summary of the significant components of the Company's deferred tax assets and liabilities:

	Year ended December 31	
	2004	2003
	(In thousands)	
Deferred tax assets:		
Purchased intangibles	\$ 11,000	\$
Net operating loss carryforwards	4,683,000	1,757,000
Research and development and other credits	180,000	171,000
Accruals and allowances not currently deductible for tax purposes	129,000	2,332,000
Depreciation and other	(440,000)	
Valuation allowance	(4,063,000)	(4,260,000)
<b>Total deferred tax assets</b>	<b>\$ 450,000</b>	<b>\$</b>

At December 31, 2004, the Company has available net operating loss carryforwards of approximately \$11,505,000 expiring at various dates through 2024, federal research and development credit carryforwards of approximately \$171,000 expiring in varying amounts during the period 2004 through 2019 and state and research and development credit carryforwards of approximately \$9,000 expiring in varying amounts during the period 2004 through 2019. Ownership changes, as defined in the Internal Revenue Code, may have limited the amount of net operating loss carry forwards that can be utilized annually to offset future taxable income. Subsequent ownership changes could further affect the limitation in future years.

**Note 10            STOCKHOLDERS' EQUITY**

The Company adopted the 1988 Stock Plan (the Plan) as the successor plan to the 1987 Stock Plan, which, as amended at the 2002 stockholders meeting, authorizes the grant of Stock Rights for up to 3,500,000 shares of common stock, and the 1989 Non-Employee Director Stock Option Plan which, as amended at the 1996 stockholders meeting, authorizes the grant of nonqualified stock options for up to 500,000 shares of common stock.

**Stock Option Plans**





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Options granted under the Plans vest over a three-to-five-year period and expire 5 - 10 years from the grant date. At December 31, 2004, 907,815 shares were available for future grant under the Plans. Information with respect to activity under the Plans are as follows:

	Number of Shares	Weighted Average Exercise Price
Outstanding, December 31, 2000	1,761,575	\$ 0.94
Granted	328,500	0.81
Exercised	(24,375)	0.31
Canceled	(452,720)	0.98
Outstanding, December 31, 2001	1,612,980	0.88
Granted	532,045	0.52
Exercised	(19,375)	0.31
Canceled	(115,000)	0.60
Outstanding, December 31, 2002	2,010,650	0.90
Granted	257,409	0.47
Exercised	(186,377)	0.78
Canceled	(152,020)	1.13
Outstanding, December 31, 2003	1,929,662	0.74
Granted	392,668	2.27
Exercised	(440,532)	0.79
Canceled	(93,585)	0.67
Outstanding, December 31, 2004	1,788,213	\$ 1.14
Exercisable, December 31, 2002	1,093,972	\$ 1.01
Exercisable, December 31, 2003	1,102,020	\$ 0.96
Exercisable, December 31, 2004	979,763	\$ 0.79

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The following table summarizes information relating to outstanding and exercisable stock options as of December 31, 2004:

Exercise Price	Number of Shares	Outstanding		Exercisable	
		Weighted Average Remaining Contractual Life (Years)	Weighted Average Exercise Price	Number of Shares	Weighted Average Exercise Price
\$0.30 .90	919,938	5.5	\$ .53	518,013	\$ 0.54
.95 2.48	861,423	7.0	1.63	461,750	1.07
3.12 4.25	6,852	9.5	3.69	0	
	1,788,213			979,763	

**Accounting for Stock-Based Compensation**



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SFAS No. 123, *Accounting for Stock-Based Compensation*, requires the measurement of the fair value of stock options to be included in the statement of income or disclosed in the notes to the financial statements. The Company has determined that it will continue to account for stock-based compensation for employees under APB Opinion No. 25, *Accounting for Stock issued to Employees*, and elect the disclosure-only alternative under No. SFAS 123.

The Company has computed the pro forma disclosures required under SFAS No. 123 for its stock compensation plan for employees during the years ended December 31, 2004, 2003 and 2002 using the Black-Scholes option pricing model under the fair value method as prescribed by SFAS No. 123. The assumptions used for the years ended December 31, 2004, 2003 and 2002 are as follows:

	2004	December 31, 2003	2002
Risk-free interest rates	3.55%	4.75%	4.36%
Expected lives	5 years	5 years	5 years
Expected volatility	106%	164%	75%
Dividend yield	0%	0%	0%

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**Private Placement**

On March 31, 2004, the Company completed a private placement of investment units (each unit consisting of one share of common stock and a 3-year warrant to purchase an additional ½ share of common stock). A total of 1,426,616 units were sold, yielding gross proceeds of \$3,566,540. The units were priced at \$2.50 and the associated warrants are exercisable at \$3.05. Additionally, the placement agent for the offering received 5 year warrants to purchase 142,662 shares of common stock at an exercise price of \$3.20 per share. The value of the warrants granted to the placement agent is approximately \$351,000, and was accounted for as a non cash financing activity.

**Warrants**

On September 23, 1999, the Chief Executive Officer of the Company, Irwin J. Gruverman, was granted warrants to purchase up to 100,000 shares of the Company's common stock at a price of \$0.52 per share, having an expiration date of July 2, 2004. The warrants were exercised on November 25, 2003.

On November 17, 2004, the Company entered into a general financial and advisory services agreement with Maxim Group LLC pursuant to which Maxim Group LLC was granted a three (3) year warrant to purchase 100,000 shares of the Company's common stock at an exercise price of \$3.20 per share.

**Employee Stock Purchase Plan**

The Company has an employee stock purchase plan (the Purchase Plan). Under the Purchase Plan, participants are granted options to purchase the Company's common stock twice a year at the lower of 85% of market value at the beginning or end of each period. Calculation of the number of options granted, and subsequent purchase of these shares, is based upon voluntary payroll deductions during each six-month period. The number of options granted to each employee under this plan is limited to a maximum amount of 1,000 shares for each six-month period. The number of shares issued pursuant to this plan totaled 26,678, 36,717, and 29,207, in 2004, 2003, and 2002, respectively.

**Note 11 COMMITMENTS**

The Company leases its facilities under non-cancelable operating leases expiring through August 2006. Future minimum rental payments under the operating leases at December 31, 2004 are approximately as follows:

2005	\$	339,000
2006		152,000
<b>Total Lease Payments</b>	<b>\$</b>	<b>491,000</b>





Rent expense for 2004, 2003, and 2002 was approximately \$357,000, \$439,000, and \$402,000, respectively. A portion of the space is sublet to a non-affiliated company under a tenant-at-will arrangement for a total of \$12,000 per annum.

**Note 12 RELATED PARTY TRANSACTIONS**

As discussed in Notes 6 and 13, the Company owed the former principals of Morehouse and Epworth \$6,250, \$81,250, and \$156,250 at December 31, 2004, 2003, and 2002, respectively. Interest capitalized on the \$300,000 note in connection with the Settlement Agreement discussed in Note 13 amounted to \$88,750 and is being amortized over 5 years. Total payments in 2004 and 2003 were \$4,757 and \$12,340, respectively.

**Note 13 SETTLEMENT AGREEMENT, DEBT RESTRUCTURING AND REFINANCING**

On December 20, 1999 the Company signed an agreement in principle (the Agreement In Principle) with J.B. Jennings and Bret A. Lewis, the former owners of the Epworth Mill and Morehouse-COWLES businesses (the Sellers), Lake Shore Industries, Inc., and JLJ Properties, Inc., entities owned and controlled by the Sellers. The Agreement In Principle sets forth understandings among the parties concerning restructuring of the Company's subordinated debt and resolution of various disputes. On January 17, 2000, a definitive settlement agreement incorporating these subject matters was executed between the parties (the Settlement Agreement). In connection with the closing of the Credit Facility, and pursuant to a Settlement Agreement dated January 17, 2000 with the Company's subordinated debt holders, the subordinated debt of the Company was restructured in the following manner. The outstanding August 14, 1998 \$500,000 subordinated promissory note, having a remaining \$475,000 principal balance together with accrued interest at the Closing Date in the approximate amount of \$77,500, and accrued interest on the August 14, 1998 \$300,000 subordinated note were converted to 500,000 shares of MFIC restricted common stock (the Conversion Shares). The fair market value of the Company's Common Stock on the date of the Agreement In Principle was \$0.31 per share. MFIC was granted the right for a three-year period to repurchase the Conversion Shares at a purchase price of \$1.75 per share. The August 14, 1998 \$300,000 subordinated note was replaced with a new \$300,000 subordinated promissory note dated February 28, 2000 (the 2000 Subordinated Note). The 2000 Subordinated Note has a maturity date of February 28, 2005 and bears interest at a rate of ten percent (10%) per annum. The note is payable interest only in its first year and then is payable in equal quarterly installments of principal together with outstanding interest thereon until maturity.

**Note 14**      **QUARTERLY RESULTS OF OPERATIONS**

Summarized unaudited quarterly financial data are as follows:

	<b>Fiscal 2004 Quarters</b>			
	<b>First</b>	<b>Second</b>	<b>Third</b>	<b>Fourth</b>
Revenues	\$ 2,251,452	\$ 3,081,977	\$ 3,163,785	\$ 3,661,705
Gross profit	1,238,579	1,675,974	1,813,584	1,823,027
Net (loss) income from continuing operations before income tax benefit	(55,183)	256,495	282,050	172,390
Income tax benefit				450,000
Net (loss) income from continuing operations	(55,183)	256,495	282,050	622,390
(Loss) from discontinued operations	(231,380)			
Net (loss) income	(286,563)	256,495	282,050	622,390
Basis net (loss) income per share:				
Basic net (loss) income per share from continuing operations	\$ (.01)	\$ .03	\$ .03	\$ .06
Basic net (loss) income per share from discontinued operations	\$ (.02)	\$ .00	\$ .00	\$ .00
Basic, as reported	\$ (.03)	\$ .03	\$ .03	\$ .06
Diluted net income (loss) per share:				
Diluted net (loss) income per share from continuing operations	\$ (.01)	\$ .02	\$ .03	\$ .06
Diluted net loss per share from discontinued operations	\$ (.02)	\$ .00	\$ .00	\$ .00
Diluted, as reported	\$ (.03)	\$ .02	\$ .03	\$ .06

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	Fiscal 2003 Quarters			
	First	Second	Third	Fourth
Revenues	\$ 2,949,677	\$ 3,119,465	\$ 1,912,738	\$ 2,477,751
Gross profit	1,491,923	1,666,124	958,398	1,354,960
Net income (loss) from continuing operations	405,571	341,855	(157,266)	69,331
Loss from discontinued operations, including loss on disposal of \$1,422,715 in fourth quarter 2003	(215,899)	(87,215)	(186,080)	(3,620,731)
Net income (loss)	189,672	254,640	(343,346)	(3,551,400)
Basic net income (loss) per share from continuing operations:	\$ .05	\$ .05	\$ (.02)	\$ .00
Basic net loss per share from discontinued operations	\$ (.03)	\$ (.01)	\$ (.02)	\$ (.46)
Basic, as reported	\$ .03	\$ .03	\$ (.05)	\$ (.45)
Diluted net income (loss) per share from continuing operations	\$ .05	\$ .05	\$ (.02)	\$ .00
Diluted net loss per share from discontinued operations	\$ (.03)	\$ (.01)	\$ (.02)	\$ (.46)
Diluted, as reported	\$ .03	\$ .03	\$ (.05)	\$ (.45)

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**Exhibit Index**

<b>Exhibit Number</b>	<b>Description of Exhibit</b>
3(a)	Certificate of Incorporation for the Company, as amended (filed as Exhibit 2A to Registration Statement No. 0-11625 on Form 8-A and as Exhibit 3.1(a) to the Company's Report on Form 10-Q for the quarterly period ended September 30, 1999 and incorporated herein by reference).
3(b)	Amended and Restated By-Laws for the Company (filed as Exhibit 3.3(b) to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 1996 and incorporated herein by reference).
4.2	Form of Warrant issued to placement agent under the Placement Agent Agreement attached as Exhibit 10.62
4.3	Form of Warrant issued to investors in the private placement described in the Placement Agency Agreement attached as Exhibit 10.62
10.1	1987 Stock Plan (filed as Exhibit 10(g) to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 1987 and incorporated herein by reference).
10.2	1988 Stock Plan (filed as Exhibit 10(g) to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 1988 and incorporated herein by reference).
10.3	1989 Non-Employee Directors Stock Option Plan (filed as Exhibit 10.1 to the Company's registration statement on Form S-8 filed October 22, 1996 and incorporated herein by reference).
10.4	Lease for 30 Ossipee Road, Newton, Massachusetts dated May 23, 1997 between Microfluidics International Corporation and J. Frank Gerrity, Trustee of 1238 Chestnut Street Trust under Declaration of Trust dated May 23, 1969, recorded with Middlesex South Registry of Deeds in Book 11682, Page 384 (filed as Exhibit 3.10(a) to the Company's form 10-Q for the quarterly period ended June 30, 1997 and incorporated herein by reference).
10.5	Letter of Understanding between Microfluidics International Corporation and Worcester Polytechnic Institute dated as of April 3, 1992 (filed as Exhibit 3.10(f) to the Company's Form 10-K for the fiscal year ended December 31, 1993 and incorporated herein by reference).
10.6	Agreement between Microfluidics International Corporation and Catalytica, Inc. dated as of October 18, 1993 (filed as Exhibit 3.10(g) to the Company's Form 10-K for the fiscal year ended December 31, 1993 and incorporated herein by reference) with amendments dated September 1, 1994 and March 31, 1995.
10.7	Amendment to agreement dated September 1, 1994 between Microfluidics International Corporation and Catalytica, Inc. dated as of October 18, 1993 (filed as Exhibit 3.10(g) to the Company's Form 10-K for the fiscal year ended December 31, 1993, and incorporated herein by reference).

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- 10.8 Amendment to agreement dated March 31, 1995 between Microfluidics International Corporation and Catalytica, Inc. dated as of October 18, 1993 (filed as Exhibit 3.10(g) to the Company's Form 10-K for the fiscal year ended December 31, 1993, and incorporated herein by reference)
  - 10.9 License Agreement among Microfluidics International Corporation, Worcester Polytechnic Institute and Catalytica, Inc. dated as of October 18, 1993 (filed as Exhibit 3.10(h) to the Company's Form 10-K for the fiscal year ended December 31, 1993 and incorporated herein by reference).
  - 10.10 Amendment to agreement dated September 1, 1994 between Microfluidics International Corporation and Catalytica, Inc. dated as of October 18, 1993 (filed as Exhibit 3.10(g) to the Company's Form 10-K for the fiscal year ended December 31, 1993, and incorporated herein by reference).
  - 10.11 Letter, dated August 15, 1995, from Microfluidics International Corporation to Michael T. Rumley. (filed as Exhibit 3.10(j) to the Company's Form 10-K for fiscal year ended December 31, 1995 and incorporated herein by reference).
  - 10.12 Letter, dated December 31, 1995 from Microfluidics International Corporation to Irwin J. Gruverman. (filed as Exhibit 3.10(k) to the Company's Form 10-K for fiscal year ended December 31, 1996 and incorporated herein by reference).
  - 10.13 Warrant for the Purchase of Shares of Common Stock, dated July 14, 1993, in favor of Ladenburg, Thalmann & Co. Inc. (filed as Exhibit 3.10(l) to the Company's Form 10-K or fiscal year ended December 31, 1996 and incorporated herein by reference).
  - 10.14 Letter, dated December 31, 1996, from Microfluidics International Corporation to Irwin J. Gruverman. (filed as Exhibit 3.10(o) to the Company's Form 10-K for fiscal year ended December 31, 1996 and incorporated herein by reference).
  - 10.15 Agreement between Microfluidics International Corporation and Catalytica, Inc. dated January 1, 1995 regarding participation in and management of the Advanced Technology Program (ATP). (filed as Exhibit 3.10(p) to the Company's Form 10-K for fiscal year ended December 31, 1996 and incorporated herein by reference).
  - 10.16 Consulting Agreement with James Little. (filed as Exhibit 3.10(q) to the Company's Form 10-K for fiscal year ended December 31, 1996 and incorporated herein by reference).
  - 10.17 Supplemental Agreement between Catalytica Advanced Technologies, Inc. and Microfluidics International Corporation dated December 31, 1997. (filed as Exhibit 3.10(r) to the Company's Form 10-K for the fiscal year ended December 31, 1997, and incorporated herein by reference)
  - 10.19 1988 Stock Plan as amended (filed as Exhibit 10(a) to the Company's Form 10-Q for the quarterly period ended March 31, 1997 and incorporated herein by reference)
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- 10.20 Asset Purchase Agreement, dated as of June 19, 1998, by and among the Company, Epworth Manufacturing Company and Morehouse-COWLES, Inc. (filed as Exhibit 2.1 to Schedule 13D of Bret A. Lewis, File No. 005-35850, and incorporated herein by Reference).
  - 10.21 Stockholders Agreement, dated August 14, 1998, by and among the Company and J.B. Jennings and Bret A. Lewis (filed as Exhibit 2.2 to Schedule 13D of Bret A. Lewis, File No. 005-35850, and incorporated herein by reference).
  - 10.22 \$500,000 Subordinated Promissory Note issued by the Company to Epworth Manufacturing Company (filed as Exhibit 99.2 to the Company's Form 8-K on August 27, 1998, File No. 000-11625, and incorporated herein by reference).
  - 10.23 \$300,000 Subordinated Promissory Note issued by the Company to Epworth Manufacturing Company (filed as Exhibit 99.2 to the Company's Form 8-K on August 27, 1998, File No. 000-11625, and incorporated herein by reference).
  - 10.26 Revolving Credit and Term Loan Agreement among MFIC Corporation and National Bank of Canada dated February 28, 2000. (Filed as Exhibit 10.26 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.27 Revolving Credit Note of the Company in favor of National Bank of Canada in the amount of \$4,000,000.00 dated February 28, 2000. (Filed as Exhibit 10.27 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.28 Term Note of the Company in favor of National Bank of Canada in the amount of \$475,000.00 dated February 28, 2000. (Filed as Exhibit 10.28 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.29 Security Agreement of the Company in favor of National Bank of Canada dated February 28, 2000. (Filed as Exhibit 10.29 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.30 Trademark and Trademark Applications Security Agreement of the Company in favor of National Bank of Canada, dated February 28, 2000. (Filed as Exhibit 10.30 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.31 Patent and Patent Applications Security Agreement of the Company in favor of National Bank of Canada, dated February 28, 2000. (Filed as Exhibit 10.31 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
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- 10.32 Unlimited Guaranty of Microfluidics Corporation in favor of National Bank of Canada dated February 28, 2000. (Filed as Exhibit 10.32 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.33 Stock Pledge Agreement between the Company and National Bank of Canada dated February 28, 2000. (Filed as Exhibit 10.33 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.34 Subordination Agreement among the Company, Lake Shore Industries, Inc. and National Bank of Canada dated as of February 28, 2000. (Filed as Exhibit 10.34 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.35 Subordinated Promissory Note on the Company in favor of Lake Shore Industries, Inc. in the amount of \$300,000.00 dated February 28, 2000. (Filed as Exhibit 10.35 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.37 Settlement Agreement, dated January 17, 2000 by and among the Company, Bret A. Lewis, J. B. Jennings, Lake Shore Industries, Inc., and JLJ Properties, Inc., with \$300,000 Subordinated Promissory Note dated February 28, 2000, issued by the Company to Lake Shore Industries, Inc. (FKA Epworth Manufacturing Company, Inc). (Filed as Exhibit 10.37 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.38 Letter, dated December 31, 1999, from MFIC Corporation to Irwin J. Gruverman and G&G Diagnostics Corp. (Filed as Exhibit 10.38 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.39 Letter, dated December 31, 1999, from MFIC Corporation to Irwin J. Gruverman. (Filed as Exhibit 10.39 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.40 First Amendment to Revolving Credit and Term Loan Agreement between the Company and National Bank of Canada dated March 30, 2000. (Filed as Exhibit 10.40 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.41 Lease between ABB and Microfluidics dated April 14, 2000 for space at Lampertheim, Germany. (Filed as Exhibit 10.41 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.42 Security Agreement between MFIC Corporation and J.M. Huber Corporation dated October 18, 2000. (Filed as Exhibit 10.42 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.43 Settlement agreement between MFIC Corporation and J.M. Huber Corporation dated December 18, 2000. (Filed as Exhibit 10.43 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
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- 10.44 Letter, dated December 31, 2000, from MFIC Corporation to Irwin J. Gruverman and G&G Diagnostics Corporation. (Filed as Exhibit 10.45 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.45 Letter, dated December 31, 2000, from MFIC Corporation to Irwin J. Gruverman. (Filed as Exhibit 10.46 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2000, and incorporated herein by reference.)
  - 10.46 Lease for 30 Ossipee Road, Newton, Massachusetts dated October 19, 2001, between Microfluidics International Corporation and King Real Estate Corp., Trustee of 1238 Chestnut Street Trust under Declaration of Trust dated May 23, 1969, recorded with Middlesex South Registry of Deeds in Book 11682, Page 384. (Filed as Exhibit 10.47 to the Company's Annual Report on Form 10-K for fiscal year ended December 21, 2001, and incorporated herein by reference.)
  - 10.47 Consulting agreement with Vincent Cortina dated January 2, 2002. (Filed as Exhibit 10.48 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2001, and incorporated herein by reference.)
  - 10.48 Letter dated December 31, 2001 from MFIC Corporation to Irwin J. Gruverman. (Filed as Exhibit 10.49 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2001, and incorporated herein by reference.)
  - 10.49 Second Amendment to Revolving Credit and Term Loan Agreement between the Company and PNC Bank, N.A. dated March 29, 2002. (Filed as Exhibit 10.50 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2001, and incorporated herein by reference.)
  - 10.50 1986 Employee Stock Purchase Plan as Amended (Filed as Exhibit 10.51 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2001, and incorporated herein by reference.)
  - 10.51 1988 Stock Plan as Amended. (Filed as Exhibit 10.52 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2001, and incorporated herein by reference.)
  - 10.52 Letter dated December 31, 2002 from MFIC Corporation to Irwin J. Gruverman. (Filed as Exhibit 10.53 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2002, and incorporated herein by reference.)
  - 10.53 Third Amendment to Revolving Credit and Term Loan Agreement between the Company and PNC Bank N.A. dated February 19, 2003. (Filed as Exhibit 10.54 to the Company's Annual Report on Form 10-K for fiscal year ended December 31, 2002, and incorporated herein by reference.)
  - 10.54 Fourth Amendment and Waiver to Revolving Credit and Term Loan Agreement between the Company and PNC Bank, N.A. dated February 6, 2004 (Filed as Exhibit 10.54 to the Company's Form 10-K dated December 31, 2003, and incorporated herein by reference).
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- 10.55 Asset Purchase Agreement dated February 5, 2004, by and among MFIC Corporation and Morehouse-COWLES, Inc. (Filed as Exhibit 2 to the Company's Form 8K dated February 13, 2004, and incorporated herein by reference.)
  - 10.56 Revolving Line of Credit Note in the amount of \$1,000,000 in favor of Banknorth, N.A. dated March 3, 2004 (Filed as Exhibit 10.56 to the Company's Form 10-K dated December 31, 2003, and incorporated herein by reference).
  - 10.57 Letter dated December 31, 2003 from MFIC Corporation to Irwin Gruverman (Filed as Exhibit 10.57 to the Company's Form 10-K dated December 31, 2003, and incorporated herein by reference).
  - 10.58 Secured Term Note in the amount of \$1,000,000 in favor of Banknorth, N.A. dated March 3, 2004 (Filed as Exhibit 10.58 to the Company's Form 10-K dated December 31, 2003, and incorporated herein by reference).
  - 10.59 Loan and Security Agreement between Banknorth, N.A. and the Company dated March 3, 2004 (Filed as Exhibit 10.59 to the Company's Form 10-K dated December 31, 2003, and incorporated herein by reference).
  - 10.60 Trademark Security Agreement of the Company in favor of Banknorth, N.A., dated March 3, 2004 (Filed as Exhibit 10.60 to the Company's Form 10-K dated December 31, 2003, and incorporated herein by reference).
  - 10.61 Patent Security Agreement of the Company in favor of Banknorth, N.A., dated March 3, 2004 (Filed as Exhibit 10.61 to the Company's Form 10-K dated December 31, 2003, and incorporated herein by reference).
  - 10.62 Placement Agency Agreement between the Company and Casimir Capital L.P. dated February 13, 2004 (Filed as Exhibit 10.62 to the Company's Form 10-K dated December 31, 2003, and incorporated herein by reference).
  - 10.63 First Amendment to Placement Agency Agreement between the Company and Casimir Capital L.P. dated March 12, 2004 (Filed as Exhibit 10.63 to the Company's Form 10-K dated December 31, 2004, and incorporated herein by reference).
  - 10.64 Registration Rights Agreement between the Company and Purchasers dated March 16, 2004 (Filed as Exhibit 10.64 to the Company's Form 10-K dated December 31, 2003, and incorporated herein by reference).
  - \*10.65 Lease between ABB and MFIC Corporation dated April 1, 2004 for space at Lampertheim, Germany
  - \*10.66 Letter Agreement between Maxim Group LLC and MFIC Corporation dated November 17, 2004 to provide general financial advisory and investment banking services to the Company.
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- 10.67 Report on Form 8-K regarding preliminary unaudited fiscal 2003 and fourth quarter sales results dated March 5, 2004.
- 10.68 Report on Form 8-K regarding the commencement of a private placement offering dated February 20, 2004.
- 10.69 Report on Form 8-K regarding the disposition of selected assets and liabilities dated February 13, 2004.
- 14. Code of Ethics, as adopted by the Company (Filed as Exhibit 14. to the Company's Form 10-K dated December 31, 2003, and incorporated herein by reference).
- 21. Subsidiary of the Company, Microfluidics Corporation, a Delaware corporation
- \*23(a) Consent of Brown & Brown, LLP
- \*31.1 Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2003.
- \*31.2 Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2003.
- \*32.1 Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
- \*32.2 Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

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\*Filed herewith

\*\*Management contracts or compensatory plan or arrangement required to be filed as an exhibit to this Form 10-K pursuant to Item 14 of this report.

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**SIGNATURES**

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized, in the city of Newton, Commonwealth of Massachusetts, on the 11<sup>th</sup> day of March 2005.

By: /s/ Irwin J. Gruverman  
 Irwin J. Gruverman  
 Chief Executive Officer

Pursuant to the requirements of the Securities and Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Irwin J. Gruverman Irwin J. Gruverman	Chief Executive Officer (Principal Executive Officer), Chairman of the Board of Directors and Secretary	March 11, 2005
/s/ Dennis P. Riordan Dennis P. Riordan	Controller (Principal Financial and Accounting Officer)	March 11, 2005
/s/ James N. Little James N. Little	Director	March 11, 2005
/s/ Vincent Cortina Vincent Cortina	Director	March 11, 2005
/s/ Leo Pierre Roy Leo Pierre Roy	Director	March 11, 2005
/s/ Edward T. Paslawski Edward T. Paslawski	Director	March 11, 2005

## SCHEDULE II

## MFIC CORPORATION

## Valuation and Qualifying Accounts and Reserves

For the years ended December 31, 2004, 2003, and 2002

	Balance at Beginning of Period	Additions Charged to Costs and Expenses	Deductions and Adjustments	Balance at End of Period
<b>ALLOWANCE FOR DOUBTFUL ACCOUNTS</b>				
For the year ended December 31, 2004	\$ 58,500	\$ 25,447	\$ 70,744	\$ 13,203
For the year ended December 31, 2003	33,500	25,000		58,500
For the year ended December 31, 2002	48,500		15,000	33,500
<b>INVENTORY RESERVE</b>				
For the year ended December 31, 2004	\$ 110,000	\$ 98,000	\$ 45,000	\$ 163,000
For the year ended December 31, 2003	50,000	60,000		110,000
For the year ended December 31, 2002	40,000	10,000		50,000
<b>ACCUMULATED AMORTIZATION RELATED TO GOODWILL AND OTHER INTANGIBLES</b>				
For the year ended December 31, 2004	\$ 6,918,244	\$	\$ 6,918,244	\$
For the year ended December 31, 2003	4,814,444	2,103,800		6,918,244
For the year ended December 31, 2002	2,065,135	2,749,309		4,814,444