

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

**Form 10-K**

(Mark One)

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

For the fiscal year ended December 31, 2007

OR

TRANSITION REPORT UNDER SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from \_\_\_\_\_ to \_\_\_\_\_

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, Newton, Massachusetts

(Address of principal executive offices)

02464

(Zip Code)

(617) 969-5452

(Registrant's telephone number, including area code)

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

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

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes  No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act.

Indicate by check mark whether the registrant (1) filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the past 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 a large accelerated filer, an accelerated filer, or a non-accelerated filer (as defined in Rule 12b-2 of the Exchange Act):

Large Accelerated Filer

Accelerated Filer

Non-Accelerated Filer

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act)

Yes  No

As of March 21, 2008 and June 30, 2006, 10,517,172 and 10,124,769 shares, respectively, of the registrant's Common Stock were outstanding, and the aggregate market value of the registrant's Common Stock held by non-affiliates of the registrant (without admitting that such person whose shares are not included in such calculation is an affiliate) was approximately \$xxxxxx and \$19,048,000, respectively, based on the last sale price as reported by the Over-the-Counter Bulletin Board on each such date.

# MFIC CORPORATION

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## **PART I**

### **Item 1. Business**

#### *Company Overview*

MFIC Corporation (MFIC or the Company) has, for over 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® trademark and trade name, process premixed formulations to produce small, uniform structures, usually of the submicron and nanoscale size (commonly defined as particles having dimensions less than 100 nanometers) including nanostructures, microemulsions and nanosuspensions. The equipment produces commercial quantities of such materials important to producers of pharmaceuticals, coatings and other products.

Additionally, the Company commercializes its proprietary equipment, processes and technology for the continuous production of precipitated submicron or nanoscale particles by interaction of discrete streams of reacting materials. The Company has undertaken commercialization efforts for its patented Microfluidizer Mixer/Reactor (MMR), which is a high, pressure multiple stream mixer/reactor.

The Company's technology embodied within its Microfluidizer® high shear fluid processor is used for formulation of products that are normally very difficult to mix and stabilize. Microfluidizer processors through process intensification allow 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 scale up of formulations and results on its processor equipment from 10 milliliters per minute on its laboratory and bench top models to more than 15 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. From August, 1998 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 mixing applications across a variety of industries. 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.

#### *Technologies*

***Fluid Processing 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.

Microfluidizer high shear fluid processors differ from conventional mechanical mixing and processing technologies in that the Company's equipment utilizes 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 in the fixed geometry design act upon products to cause deagglomeration and particle size reduction. These forces result 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 scale up from milliliters per minute to gallons per minute with no basic change in product formulation or equipment design and engineering. The formulations processed may be liquid/liquid or liquid/solid combinations.

***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. Recent advances have enabled simpler MMR variants, utilizing modified Microfluidizer processors, which the Company plans to market.

#### *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. Newer applications include deagglomeration of carbon nanotubes for subsequent formatting or alignment for specific uses.

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 create and/or maintain 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 pharmaceutical products (including injectable drugs), coatings, pigment dispersions for inkjet inks and toners, phosphorescent coatings for TV screens and fluorescent lamps, and 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, protein grown in bacteria, plant or mammalian cells. The controlled forces of shear and impact produced by Microfluidizer processor equipment allow the 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 a high value-added end product. The Company believes that its laboratory equipment uniquely facilitates modern formulation development and production capability. Microfluidizer processor equipment is initially employed in a research laboratory, with the equipment subsequently being used in scale-up to pilot scale production of new or improved products, and ultimately, for production scale volumes as the improved product comes to market. From laboratory to production, the Company guarantees scale-up of formulations and results on its equipment from 10 milliliters per minute on its laboratory and bench top models up to more than 15 gallons per minute on its pilot and 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 is designed primarily for research and development applications. Standard pneumatic (air-driven) 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 320 ml/min. It has numerous standard features including ceramic plungers, diamond interaction chambers, 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 production unit and is primarily marketed to pharmaceutical, cosmetic and food product manufacturers who have successfully created a 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.

Because of the market demands from 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 Regulation”). It also offers steam in place (SIP) and ultra clean in place (UCIP) options. In addition, the Company recently completed the design of six standardized configurations to our M-700 Series equipment to meet the additional market demands from the pharmaceutical and biotech industries.

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. The M-700 series equipment can achieve operating pressures up to 40,000 psi. 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 gallons per minute (“gpm”) at 10,000 psi to 0.6 gpm at 30,000 psi. The largest offering of the M-700 series product line is the 50 HP, dual intensifier pump M-7250 machine with flow rates ranging from 4.0 gpm at 10,000 psi to 1.2 gpm at 30,000 psi. The M-7250 machine is available with a recently introduced “constant pressure” option in which operating pressure is maintained to within 5% of peak operating pressure resulting in lengthened component life, reduced operating costs, and quieter operation.

In September 2003, Microfluidics introduced a new addition to the M-700 series product line, the Model M-710. The Model M-710 machine is equipped with a 100 HP, dual intensifier pump, with flow rates ranging from 15 gpm at 5,000 psi to 3.0 gpm at 30,000 psi. The Model M-710 has the equivalent throughput of the larger and more expensive M-610-100 HP model.

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 provides a hermetically sealed stainless steel containment isolator that fully encloses the Microfluidizer processor’s high-pressure processing area and is utilized for the safety protection of personnel engaged in the processing of highly toxic cancer therapeutic drugs and other hazardous and potent materials.

(ii.) The M-700 Microfluidizer Split System configuration (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.

(iii.) Level II Steam Sterility Option for all pilot and production systems used for production of injectable and other pharmaceuticals. This option enables steam-in-place (SIP) capability without need for disassembly and allows compliance with stringent regulatory production requirements.

(iv.) Ultra Clean in Place (UCIP) option, which provides 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.

(v.) Constant Pressure control option is now an available feature that eliminates virtually all process pressure variations which dramatically improves the overall reliability of all M-7250 machines.

*The M-610 Series.* The M-610 Series are legacy systems that consist 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 on a continuous (versus batch) basis 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 as well as the conversion of existing insoluble drugs to nanosuspension forms which are then deliverable by conventional means and with high bioavailability. 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 believes that it cannot accurately assess or anticipate either the timing of receipt of an order or the delivery of its first MMR laboratory development systems. However, management believes that such event will occur in the foreseeable future. The Company believes that the MMR systems and technology will make it a leader in the provision of systems for continuous production of uniform, reproducible, microparticles, nanoparticles and nanodroplets involving fast chemical reactions. A recent breakthrough has allowed design of a modified Microfluidizer with capabilities to handle most continuous reaction applications. This simpler equipment design is expected to result in a lower cost system which should accelerate interest in MMR systems.

#### *Former Company Business Division*

*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. Morehouse-COWLES 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.

#### *Marketing and Sales*

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 an aid to the marketing and sales activity for the equipment, the Company provides prospective customers with access to its applications laboratories. These laboratories, located in Newton, Massachusetts, Irvine, California, and Lampertheim, Germany, 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. Typically, about one third of such laboratory trials result in equipment orders within twelve months. Finally, the Company has an active domestic and foreign equipment rental program designed to allow customers to use Microfluidizer

processor equipment at their own locations to experiment with and develop product formulations and processes. A rental period may last from weeks to several months. The Company has a rental pool of equipment to service the needs of customers, including laboratory and pilot production machines. A significant percentage of customers who rent the Company's equipment elect to purchase the rental equipment or to purchase new equipment. For the Company's policy on product warranties, see "Critical Accounting Policies – Product Warranties under Item 7.

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.

The Company sells its equipment in the United States through a network of independent manufacturers' representative firms that are managed by the Company's regional sales managers. In a portion of 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 consisting of a distributor and independent manufacturer's representative firms. Customers in other geographical regions are assisted directly by Company sales staff. In November 2005, the Company appointed a vice-president of sales and marketing, who oversees all regional sales managers, independent manufacturers' representatives, and distributors.

#### *Customers*

The users of the Company's systems are in various industries, including the chemical, pharmaceuticals, food, cosmetic and biotechnology industries. One company accounted for 7.2% of 2007 revenues. One company accounted for 10.0% of 2006 revenues. Two companies each accounted for more than 10% of 2005 revenues and 2004 revenues.

Mizuho Industrial Co. Ltd. (Mizuho), a distributor for the Company, and one customer, Teva Pharmaceuticals Industries Ltd. (Teva) and its wholly-owned subsidiary, accounted for 7.2% and 4.3%, respectively, of the Company's revenues in 2007; 9.2% and 15.2%, respectively, in 2006, 19.5% and 18.9%, respectively, in 2005; and 20.5% and 12.8%, respectively, in 2004.

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.

As of December 31, 2007, two customers accounted for 17.5% and 12.9% of the trade accounts receivable, respectively. As of December 31, 2006, two customers accounted for 14.4% and 13.6% of the trade accounts receivable, respectively. As of December 31, 2005, two customers accounted for 10.8% and 10.7% of the trade accounts receivable, respectively. As of December 31, 2004, three customers accounted for 15.1%, 14.7%, and 13.4% of the trade accounts receivable, respectively. 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.

The Company sells its products in various countries. The Company's sales in North America, including the United States, Canada, and Mexico, accounted for approximately 45.6% of the Company's revenues in 2007; 51.8% of the Company's revenues in 2006; 51.8% of the Company's revenues in 2005; and approximately 51.1% of the Company's revenues in 2004, with almost all of those sales coming from United States and Canada. Sales to the rest of the world accounted for approximately 54.4% of the Company's revenues in 2006; 44.8% of the Company's revenues in 2005; and approximately 48.9% of the revenues in 2004.

Sales through the Company's exclusive distributors in Japan accounted for approximately 11.5% of the Company revenues in 2007, 9.2% of the Company revenues in 2006; 19.5% of the Company revenues in 2005; and 20.5% of the Company's revenues in 2004.

Sales through the Company's representative in Korea accounted for approximately 8.7% of the Company's revenues in 2007; 9.5% of the Company's revenues in 2006; 12.1% of the Company's revenues in 2005; and 4.8% of the Company's revenues in 2004.

#### *Competition*

The 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 a larger installed base and performance advantages over products of our competitors. The Company also believes that its "fixed-geometry" systems which permit a linear scale up for drops per minute to

gallons per minute offer a unique equipment advantage. The Company further 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 have produced 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 Company developed components in the M-700 series equipment 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. Although the Company believes that its MMR system is superior in design and function, there can be no assurance that other companies 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 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*

It is the Company's position that a greater proportion of its sales in the future will be for more advanced processor production systems that will incorporate features not currently included in many of the current production machines. In order to meet such a challenge going forward, it became necessary to hire additional research and development personnel. It also became necessary, as a result of this decision, to increase spending in research and development. Additional resources in both personnel and spending may be required in the future.

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) an internal development program relating to reaction 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 systems for its MMR applications that will deliver the desired result for specific applications. For the years ended December 31, 2006, 2005 and 2004, research and development costs for continuing operations were \$1,763,000, \$1,702,000, and \$1,034,000, 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:

<u>University</u>	<u>Field of Research/Development</u>
University of Massachusetts, Lowell	Biotechnology and nanotechnology
Massachusetts Institute of Technology	Nanoemulsions for biomedical applications



Marine Biological Laboratory  
Lehigh University  
Université Laval (Quebec)  
Worcester Polytechnic Institute  
Purdue University  
University of Toronto  
Northeastern University  
The Hebrew University of Jerusalem

Cell disruption  
Polymer chemistry  
Food science  
Catalytic chemistry  
Pharmaceuticals  
Genomic research and expression  
Pharmaceutical nanotechnology particles  
Colloid chemistry emulsion technology

In addition to their research activities, these universities provide the Company with contacts at industrial companies that may utilize Microfluidizer processor technology. Most recently, the Company entered into a Research Collaboration Agreement with the University of Massachusetts, Lowell (UML) in September 2005 to develop new applications, processes and products in the area of nanomaterials utilizing MFIC's leading-edge materials processing and MMR equipment. 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.

*NOTE: THE REMAINDER OF THIS REPORT, WHICH WAS FILED WITH THE SEC, IS NOT INCLUDED HERE FOR THE PURPOSE OF BREVITY*