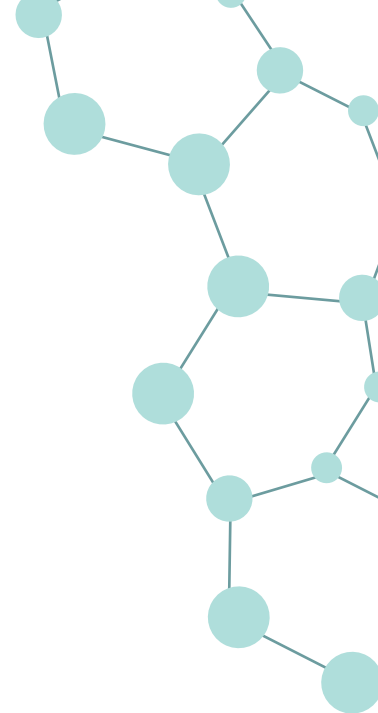


Special Advertising Feature

# The Nano Age

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For several years now investors and consumers have been hearing about the brave and wondrous new world of nanotechnology, of its breathtaking possibilities for the advance of industry, science, medicine, even space exploration and the military. Astounding ideas often take forever to succeed in the real world, and sometimes they never do.

But, happily, nanotechnology is starting to live up to its great promise. Some 212 nanotech consumer products have already reached the market. Among them: a coating for fibers that enables apparel to repel stains; and power generation turbines made by General Electric that don't corrode, thanks to an invisible nanotech layer that provides protection for years.

Nanotechnology is a sweeping arena where chemists, engineers, biologists, and others work on the tiny scale of a nanometer—one billionth of a meter, or 1/80,000th as wide as a human hair. Here, molecules collapse, get rebuilt, and often emerge with jaw-dropping new properties. Example: carbon, when molecularly reconfigured into a "nanotube," can be 100 times stronger than steel but weigh 16 times *less*.

"When you really manipulate and design things on the atomic level, you produce a new set of products with novel properties you could never imagine before," says Lloyd L. Tran, president of the International Association of Nanotechnology (IANano). "And that was a really landmark discovery."

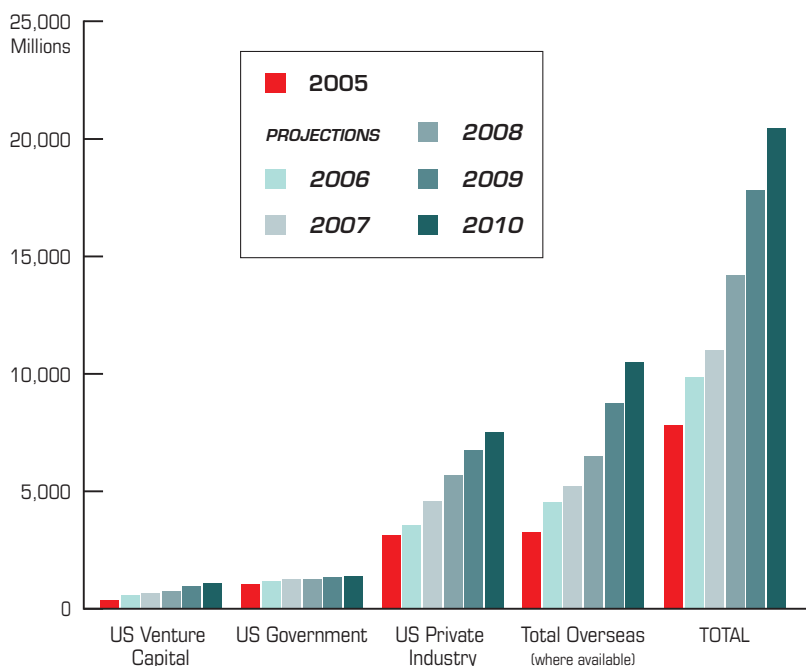
The young industry is small but growing. IANano projects that markets will grow from \$7.5 billion in 2003 to \$28.7 billion in 2008. To date, the firms attracting investment and turning profits have generally

been the manufacturers of tools for nanotech research, makers of consumer products containing nanomaterials, and producers of this new crop of raw nanomaterials. But that's beginning to change, as companies make strides toward reproducing—perhaps someday with the help of mini-molds—amazing materials that are infinitesimally small.

MIV Therapeutics plans to be a charter member in this domain of opportunity. The Vancouver-based research and development firm is about 18 months away from marketing its signature product: an ultra-thin, biocompatible, polymer-free coating for stents, medical devices inserted into the coronary arteries of cardiac patients to keep blood flowing through passageways prone to plaque buildup and blockage.

## Moving from the Lab to the Marketplace

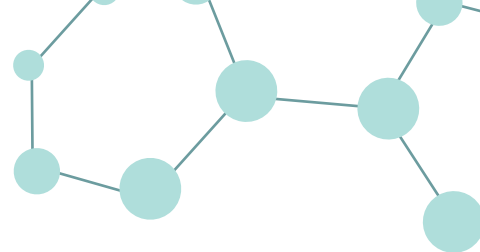
Investment in nanotechnology is projected to boom throughout the decade.



Source: International Association of Nanotechnology

**Scientists can now transform carbon atoms into nanotubes (left), the infinitesimal building blocks of the new molecular order.**

Illustration (opposite page) by: Chris Ewells



Nanotechnology is starting to live up to its promise. Over 200 nanotech consumer products have reached the market.

To date, polymers used to coat stents and release antiinflammatory and other drugs have been prone to adverse reactions as the body's immune system responds defensively to their presence as it would to any other foreign entity.

"There was a real need to come up with a coating for implantable medical devices that was natural, organic and bio-friendly to the human body," says MIV Therapeutics CEO Alan Lindsay. "The main focus here is to provide a safer, friendlier coating that will offer mankind the solution whereby the body will embrace this object, instead of rejecting it."

To achieve this, MIV Therapeutics uses nanotechnology in two ways. First, it modifies the surface of the metal implants and manipulates particles of chemical precursors to make hydroxyapatite, a compound

that simulates human hard tissues, such as teeth and bones, so closely that the immune system accepts it as if it were natural to the body. Second, the firm uses nanotech to turn hydroxyapatite into a super-thin wrap for the stent. The coating not only protects the stent from an immune system attack, but it comes loaded with a batch of time-release drugs that keep dispensing to the heart area long after its polymer forebears would have worn out.

Once cardiac applications hit the market in 2007, MIV Therapeutics plans to bring its know-how to bear more broadly on the estimated \$160 billion market for drug delivery that is "localized," or targeted exclusively to the part of the body that needs treatment. By coating various implanted devices, the firm will help reduce side effects and improve efficiency by

## Technology Platform

Raymor Industries (RAR: TSX-V) is the leading developer of high technology for the production of single-walled carbon nanotubes, nanomaterials, and advanced materials for high-value-added applications. Single-walled carbon nanotubes are lightweight "space-age" materials with an impressive range of mechanical, thermal, electrical, and chemical properties. "Single-walled carbon nanotubes will become the technology platform for a vast array of applications in the aerospace, defense, automotive, electronics, and consumer fields," said Stéphane Robert, President & CEO. "With our high-capacity process coming on stream this spring, Raymor will become a leading producer and supplier of single-walled carbon nanotubes to the global marketplace."



Stéphane Robert,  
CEO and President

Tel: +1.514.932.8805

## Leading Supplier of Nano Metals

QuantumSphere, Inc. is the leading manufacturer of nanoscale metals and alloys for applications in energy, aerospace, electronics, defense, and other markets demanding advanced materials.

QSI-Nano™ metals and alloys were developed in response to the need for a disruptive solution to cost and performance with proven durability in a wide range of commercial applications.

From R&D to ROI, the company is leveraging its leading market position to manufacture and ship high-performance catalyst materials and electrode devices for batteries, micro fuel cells for portable power, and hydrogen generation and storage, among others.

QuantumSphere, Inc.  
Ph: 714-545-NANO  
[www.qsinano.com](http://www.qsinano.com)



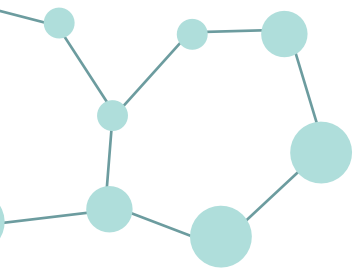
## Nano Engineering

Lumera's nanotechnology-based solutions currently address two markets: bioscience and electro-optics.

The company's Bioscience solutions address high throughput methods for biology and medicine. Products in development include microarrays for enabling the discovery of therapeutic antibodies, like Rituxan™, and microarrays for enabling the discovery of kinase inhibitor oncology drugs, like Gleevec™.

LUMERA'S uniquely engineered polymer materials are also used to build electro-optic modulators that provide the fastest switching speeds (hundreds of GHz) with the lowest drive voltages (<1V) and optical losses in the industry. Using Lumera's proprietary polymer organic modulators, photonic components can be integrated with existing silicon and silicon-germanium-based circuitry.

**LUMERA**  
light applied



treating only the affected area rather than treating the whole body.

“Applying it to the stent was the most challenging of applications,” says chief technology officer Arc Rajtar. “Applying it to other implantable medical devices, in most cases anyhow, seems to be less demanding. And so we’re looking to diversify application of it to other areas.”

### It’s a Small World After All

Other companies across an array of industries are smitten by the possibilities. Established companies are expected to boost annual investment in nanotechnology from \$3.15 billion in 2005 to \$3.58 billion this year and to \$7.5 billion in 2010, according to the IAnano. Venture capitalists, who already invest \$361 million in nanotech firms, are on track to wager \$1.1 billion by 2010.

How do investors sort out the likely winners and losers? There is no guaranteed method, of course, but Steve Jurvetson, managing director of the venture capital firm Draper Fisher Jurvetson, has a tip: One key question to ask of any nanotech firm is whether it depends on any other companies to get to market. Companies that don’t require a lot of change within an industry to get started, says Jurvetson, stand the best chance of generating products and profits in the near term.

Here are several major industries in which nanotechnology is likely to have an impact:

- **LIFE SCIENCES** MIV Therapeutics

is one of the health-care pioneers; other companies are likely to follow. “It just seems life science is rampant with possibilities,” says John Roy, who analyzes nanotechnology companies for investment bank W.R. Hambrecht. “Life sciences are going to be permeated with this for the next 50 years.” Chicago-based Nanosphere, for instance, is marketing a versatile platform for screening nucleic acids and proteins that can help detect early-stage cancer cells.

- **SEMICONDUCTORS** Faster, cooler computer processors are the holy grail of business applications. “Nanotechnology is driven by an urgent need in the semiconductor business” to make computers run hundreds of times faster without getting hot, says IAnano president Tran. Such speed will enable computers to translate voices in real time, for example, therefore eliminating much of the need for human translators. Today’s macro-sized

chips will quickly become obsolete, but only after scientists figure out how to replicate their smaller replacements en masse.

- **ENERGY** GE’s turbines aren’t the only energy-producing beneficiaries of nanotech: Jurvetson is betting on solar panels to become far more efficient as nanotech yields ultra-thin, super-sensitive receptors. And so-called “clean coal” boasts reduced sulfur content as a result of a nanotech process that removes unnecessary minerals from mined coal.

As these and other much-anticipated nanotech products start arriving now at long last, imaginations are already whirling with tomorrow’s possibilities. Yet the full list of potential market applications is impossible to envision—even with the tiniest of scopes.

*To advertise in our next Nanotechnology section, please contact Laurie Evans, FORTUNE Custom Projects, at 212-522-1253.*

### Worldwide Innovations

JEOL electron microscopy, ion beam lithography, and analytical instruments advance scientific, health, and manufacturing innovations worldwide. JEOL is an MIT Institute for Soldier Nanotechnologies partner.



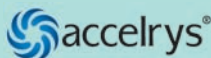
### Nanotech Patent Database

Features over 9,000 U.S. Patents—in both PDF and Text format. A must-have for technology and IP due diligence! Contact us for sample. sales@wizpatent.com



### NanoBiology Initiative

A member-funded collaborative framework for developing software to simulate, design, and analyze drug delivery platforms, biosensors, and point-of-care diagnostics for personalized medicine and targeted therapies.



### Web Listings

- **International Association of Nanotechnology**  
ianano.org
- **Accelrys**  
accelrys.com
- **JEOL USA, Inc.**  
jeolusa.com
- **MIV Therapeutics**  
mivtherapeutics.com
- **QuantumSphere**  
qsinano.com
- **Raymor Industries, Inc.**  
raymor.com
- **WizPatent**  
wizpatent.com



## IANano List of 100 Leading Nanotechnology Public Companies

The Nanotech 100 list of leading public companies involved in nanotechnology is selected by the International Association of Nanotechnology. The selection is based on five criteria. A company's: (1) current involvement in R&D, manufacturing, and marketing of nanotechnology products and services; (2) intellectual property position in nanotechnology; (3) advanced engineering processes in nanotechnology and nanoscale manufacturing and production; (4) impact in the marketplace; (5) sales and revenue derived from nanotechnology products or services.

- 3M
- Acacia Research
- Accelrys
- Acrongenomics
- ADE Phase Shift
- Advanced Magnetics
- Advanced Micro Devices
- Affymetrics
- Agilent Technologies
- Air Products & Chemicals
- Altair Nanotechnology
- Amcol International
- American Pharmaceutical Partners
- American Superconductor
- Applied Films
- Applied Materials
- Arrowhead Research
- BASF
- Baxter Healthcare
- Biophan Technologies
- Biosante Pharmaceutical
- Boston Scientific
- Bristol Meyers
- Cabot
- Caliper Life Sciences
- Cell Robotics International
- Cepheid
- ChevronTexaco: Molecular Diamond Technologies
- Coherent
- CombiMatrix
- DaimlerChrysler
- DayStar Technologies
- Dow Chemical
- Dupont
- Eastman Kodak
- Elan Corporation PLC
- Eli Lilly
- Engelhard
- Fei
- Flamel Tech
- Fujitsu
- General Electric Global Research
- General Motors
- Genus
- Harris & Harris Group
- Hewlett-Packard
- Hitachi
- IBM
- Immunicon
- Infineon
- Intel
- Invitrogen
- Isonics
- JMAR Techs
- JEOL
- Keithley Instruments
- Komag
- Kopin Cp
- L'Oréal
- Lucent Technologies
- Lumera
- Luminox®
- Matsushita Electric Industrial
- MFIC
- Mitsubishi
- Mitsui
- MIV Therapeutics
- Motorola
- mPhase Technologies
- Nanometrics
- Nanophase Technology
- NEC
- Novavax
- Obducat AB
- Oxonica
- Philips Research Laboratories
- Procter & Gamble
- pSivida
- Qiagen
- Raymor Industries
- Raytheon
- Rohm & Hass
- Samsung
- Schott AG
- Siemens
- Skyepharma PLC
- Sony
- Spire
- STMicroelectronics
- Symyx Technologies
- Taiwan Semiconductor Manufacturing
- Tegal
- Texas Instruments
- Toshiba
- Toyota Motor
- Ultratech
- US Global Nanospace
- Veeco Instrument
- Westaim
- Xerox

**Disclaimer:** The list is prepared for general information only. Neither the information, nor any opinion expressed, constitutes an endorsement regarding the safety of the products or the investment merit of the companies. For questions about this list, contact IANano president Lloyd Tran at 916-529-4119, [www.ianano.org](http://www.ianano.org). IANano is located at 2386 Fair Oaks Blvd., Sacramento, CA 95825

# Revolutionizing Health Care

## MIV Therapeutics Inc. Targets \$150+ Billion Medical Device Market

MIV Therapeutics (OTCBB: MIVT) is a publicly held diversified, advanced stage research and development company aggressively pursuing commercialization of the next generation of fully biocompatible coatings for stents and other implantable medical devices, innovative new drug delivery systems designed for the targeted treatment of cardiovascular and other chronic diseases, and novel stroke-prevention devices. The winner of the prestigious 2005 Frost and Sullivan Award for Innovative Technology in the Field of Medical Coatings, MIVT continues to develop products and technologies which have potential to be major breakthroughs in the lucrative field of localized drug delivery technologies.

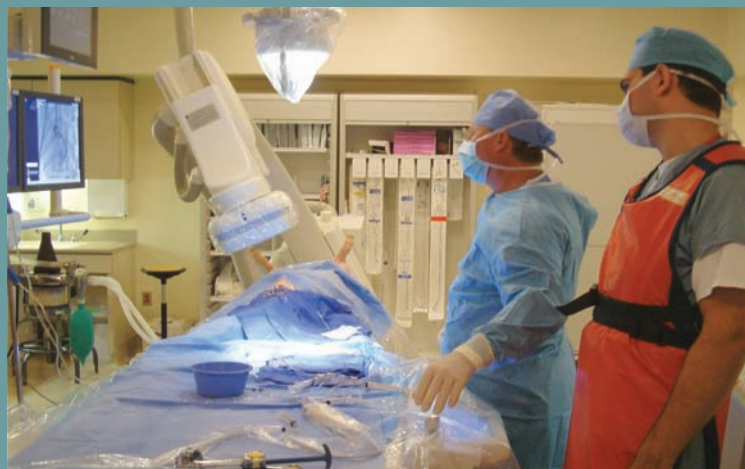
## MIVT Prepares to Capitalize on Its R&D Efforts

MIVT products utilize fully biocompatible, proprietary Hydroxyapatite (HAp) coating technologies, representing a noticeable improvement over traditional polymer-plus-drug coatings currently available on the market. HAp is the principal mineral component of human hard tissue (bone and teeth) and as such is seen as the body's own. An extensive range of animal studies have demonstrated HAp's extraordinary safety and biocompatibility, making it an excellent candidate for advanced drug-eluting stent coatings. This year MIVT is expected to begin human clinical trials with its first market-ready product, a drug-eluting system combined with an ultra-thin Hydroxyapatite coating formulation specifically designed to protect surrounding tissue from contact with the bare metal of an implanted stent. Successful human clinical trials will confirm expectations that MIVT would receive CE Mark clearance for Europe and other regulated markets in 2007, followed by FDA and the US 18 months later.

MIVT's coating technologies are also expected to deliver superior solutions in orthopedic and other implantable device applications which could be commercialized significantly sooner than the cardiovascular application market.

## MIVT's Innovative Drug Delivery Systems Confirm Potential for a Major Breakthrough in Biomedical Technology Solutions

MIVT's cutting-edge drug delivery systems represent the latest advances in nanotechnology that offer truly unique drug delivery and drug-eluting characteristics expected from a new generation of pharmaceutical solutions. The nano- to micro-sized drug-carrying particles provide an unprecedented, highly versatile platform particularly suitable for the localized delivery of a variety of drugs designed to treat a broad range of medical conditions. The company's drug delivery technologies make it potentially ideal for medical applications that vary from coatings of a broad range of implantable devices to patient-friendly, target-specific drug delivery



systems. This includes complex, localized drug delivery solutions designed to treat many diseases, from cancer to HIV to cardiovascular disease. The demand for advanced drug-elution technologies continues to occupy an increasingly large share of an attractive global biotechnology marketplace.

## MIVT Expands Its Technological Horizon into Stroke Prevention

The Aortic Embolic Protection Device (AEPD) is progressing ahead of schedule at MIVT's subsidiary in Israel, SagaX Inc. This novel filter/deflector device is designed specifically to prevent cardioembolic stroke by diverting particles in the bloodstream that might otherwise cause Cardioembolic Stroke. MIVT has obtained excellent results in preclinical studies, paving the way for full-scale animal and human clinical trials.

A first generation AEPD device is expected to become commercialized within 14 months (subject to regulatory approval). Recent reports indicate that the global market for implantable stroke prevention devices is expanding rapidly worldwide, and will grow into a \$500 million to \$1 billion market segment in the next few years.

## "MIVT's Innovative Technology Offers Blockbuster Potential"

*SISM Research Analyst —Dr. Ernest C. Schlotter*

MIVT trades on the OTC Bulletin Board under the stock symbol MIVT  
[www.mivtherapeutics.com](http://www.mivtherapeutics.com)



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THERAPEUTICS INC.