

WINTERGREEN RESEARCH, INC.

**Nanotechnology Market Opportunities, Strategies, and
Forecasts, 2004 to 2009**

Nanotechnology



Picture by Susie Eustis

MOUNTAINS OF OPPORTUNITY

**WinterGreen Research, Inc.
Lexington, Massachusetts**

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CHECK OUT THESE KEY TOPICS

NANOTECHNOLOGY MARKET FORECASTS
NANOTECHNOLOGY MARKET GROWTH FACTORS
NANO PARTICLES

Revolution in Science, Engineering, and Technology

Nanotechnology for Electronic Components
Nano Machines

NANOTECHNOLOGY FOR PRINTING

SYNTHESIZING MOLECULES

NANOTECHNOLOGY MATERIALS SCIENCE

COMPLEX BIOLOGICAL SYSTEMS

NANOTECHNOLOGY IN COMMUNICATIONS

NANOSCALE DELIVERY DEVICES

NANOTECHNOLOGY FOR HEALTH CARE

NANO MEDICINE

NANOTECHNOLOGY IN ENERGY

NANOTECHNOLOGY INSTRUMENTATION

OPPORTUNITY ABOUNDS

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Nanotechnology advances range from mundane scratchproof glass to precision drug delivery systems. Computers the size of a sugar cube based on nano-materials could hold the entire Library of Congress. The development of advanced materials based on nanotechnology depends on continued spending on research.

Nano-technology refers to man made structure less than 100 nanometers. One nanometer is one billionth of a meter. Nanoscale materials have exceptional strength and characteristics that depend on the shape of the particle.

Growth is occurring in selected markets that have already developed because of a technological advantage and strong marketing. The market catalyst is sustainable amid competitive pressures. Nanotechnology is converging with information technology, biology and social sciences. Nanotechnology is expected to reinvigorating discoveries and innovation in many areas of the economy.

Nanotechnology has applications across many, many industries. More research is needed for markets to develop to their full potential. The current nanotechnology product set is illustrative of markets that could evolve. 500 major government, university, and private R&D programs are under way.

Nanotechnology represents the prospect of using existing materials and putting them together in new ways to make new things, everything. First, it is necessary to understand the characteristics of the individual nanoparticles as distinct from atoms or macroscopic materials. Some basic science remains to be discovered.

Continued funding of basic chemical research is needed to achieve this basic chemical understanding. Over \$3 billion was spent in 2003 on nanotechnology research, at hundreds of government, university and private centers. Continued research spending is anticipated to lead to development of \$750 billion markets by 2015.

Nanotechnology products in semiconductor, energy, healthcare, materials science, and instrumentation have created existing nanotechnology markets of \$499 million in 2003 with growth expected to achieve markets of \$4.5 billion by 2009.

Companies Profiled

Market Participants

Ardesta	Argonide
Avantium	Charles River Proteomic Services
Carbon Nanotechnologies (CNI)	Enplas
FEI	Flamel Technologies
Hewlett-Packard	Hitachi
IBM Corporation	Integrated Photonics
JEOL	Labcyte
MesoSystems	Mitsubishi
Motorola	MTI MicroFuel Cells
NanoGram/NeoPhotonics	Nanolnk
Nano Opto	Nanosolar
Nanostream	Nanosys
NEC	Olympus
Perkin Elmer	Polaron
Quantum Dot	Raytheon
Shimadzu	SouthWest NanoTechnologies
Triton Systems	Zyvex

Nanotechnology and Services Strategies and Forecasts, 2004-2009

REPORT METHODOLOGY

THIS IS THE *TWO-HUNDRED AND TWENTIETH* REPORT IN A SERIES OF MARKET RESEARCH REPORTS THAT PROVIDE FORECASTS IN COMMUNICATIONS, TELECOMMUNICATIONS, THE INTERNET, COMPUTER, SOFTWARE, TELEPHONE EQUIPMENT, AND ENERGY. THE PROJECT LEADERS TAKE DIRECT RESPONSIBILITY FOR WRITING AND PREPARING EACH REPORT. THEY HAVE SIGNIFICANT EXPERIENCE PREPARING INDUSTRY STUDIES. FORECASTS ARE BASED ON PRIMARY RESEARCH AND PROPRIETARY DATA BASES. FORECASTS REFLECT ANALYSIS OF THE MARKET TRENDS IN THE SEGMENT AND RELATED SEGMENTS. UNIT AND DOLLAR SHIPMENTS ARE ANALYZED THROUGH CONSIDERATION OF DOLLAR VOLUME OF EACH MARKET PARTICIPATION IN THE SEGMENT. INSTALLED BASE ANALYSIS AND UNIT ANALYSIS IS BASED ON INTERVIEWS AND AN INFORMATION SEARCH. MARKET SHARE ANALYSIS INCLUDES CONVERSATIONS WITH KEY CUSTOMERS OF PRODUCTS, INDUSTRY SEGMENT LEADERS, MARKETING DIRECTORS, DISTRIBUTORS, LEADING MARKET PARTICIPANTS, OPINION LEADERS, AND COMPANIES SEEKING TO DEVELOP MEASURABLE MARKET SHARE. OVER 200 IN DEPTH INTERVIEWS ARE CONDUCTED FOR EACH REPORT WITH A BROAD RANGE OF KEY PARTICIPANTS AND INDUSTRY LEADERS IN THE MARKET SEGMENT.

YOU MUST HAVE THIS STUDY

Nanotechnology Market Opportunities, Strategies, and Forecasts, 2004 to 2009

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