

# Bioinspired and Nanoengineered Surfaces: Technologies, Applications and Global Markets

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## Abstracts

### Report Scope:

The scope of this report is the global market for all products based on bioinspired and nanoengineered surfaces.

An overview of current technology explores pioneering R&D including unique capillary and optical interaction properties, various fabrication methods as well as first-generation commercial application five-year revenue projections for biomimetically inspired NES. In addition, an analysis of superhydrophobic and superhydrophilic patents identifies the most active global players.

Chapter 4—Market applications for the biological/biomedical, automotive, aerospace/marine/military sectors. In particular, it identifies five-year commercial revenue projections and potential market developments in these segments. The biological/biomedical market includes oil/water repellency, antibacterial surface treatments, antibiofouling, dry adhesion and synthetic gradient refractive index optics. The automotive market includes glass, exterior paint and plastics with an emphasis on water/dirt/insect repellency, and antifrost, antifog and antireflective surface treatments. The aerospace market focuses on protection coatings; water, ice, dirt and corrosion repellency and optical pilot laser protection. The marine and military markets focus on antibiofouling and drag reduction, and anti-fog windshields and anti-ice visors, respectively.

Chapter 5—Market applications for the electronics, energy/environmental and materials sectors. In particular, it identifies five-year commercial revenue projections and potential market developments in these segments. The focus of the electronics market is

superhydrophobic waterproofing and oleophobicity for mobile communication devices such as cell phones and tablets as well as hearing aids. The energy/environmental market includes long shelf life batteries, fuel cell components, HVAC heat exchanger coils, oil and gas flow equipment lubricants, oil/water separation and remediation, rigid and flexible solar panels, water harvesting, and wind and steam turbines. The materials market segment includes self-cleaning aluminum and cement/concrete, as well as glass, plastic architectural building materials and sanitary ceramics/tileware.

Chapter 6—Market applications for the optics, textiles and other segments. In particular, it identifies five-year commercial revenue projections and potential market developments in these segments. The optics segment includes antireflective and 3D mobile device displays while textiles includes indoor and outdoor waterproofing such as high-performance sports apparel, consumer packaging, sensors, and liquid processing/manufacturing.

Chapter 7—Geographic segmentation of market applications. This chapter focuses on the geographic segmentation of companies involved in the nine segments detailed in chapters 4, 6 and 6. Although U.S. companies predominate in NES developments in all commercial market sectors, there is wide global interest.

Chapter 8—Industry structure. More than 60 companies have been identified as having significant development operations involving the commercial exploitation of nanoengineered surfaces. These companies are targeting a variety of market sectors and a broad range of applications. Detailed profiles of their specific market interests and current status are outlined.

Report includes:

63 tables

An overview of the global market for nanoengineered surfaces, with coverage of the evolution and inspiration through biomimetics and bioinspired designs

Analyses of global market trends, with data from 2016, 2017, and projections of compound annual growth rates (CAGRs) through 2022

Discussion of fabrication techniques, and properties such as solid-liquid interfaces, solid-solid interfaces, solid-vapor interfaces, biological interfaces, and

optical interfaces

Examination of applications in terms of end uses and commercial prospects in the areas of biomedical, solar energy, electronics and displays, industrial process management, metal corrosion and wear, personal care such as cosmetics and hearing aids, photonics, protective coatings, and sensors

Patent analyses

Company profiles of major players in the market, including Agency For Science, Technology And Research (A\*Star), General Electric Global Research, Italcementi S.P.A, Liquipel Llc , Slips Technologies Inc., and Ultratech International Inc.

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ACULON INC.

Agency for Science, Technology and Research (A\*STAR)

ALCHEMY

AMERICAN ENVIRONMENTAL SYSTEMS INC.

ARCONIC ARCHITECTURAL PRODUCTS

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BIOTOMO PTY LTD.

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DELMIC BV

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General Electric Global Research

HZO INC.

INTEGRICOTE INC.

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ITALCEMENTI S.P.A

LIGHTMOTIF B.V.

LIQUIGLIDE INC.

LIQUIPEL LLC

L OREAL INTERNATIONAL

LOTUS LEAF COATINGS

MAGNOLIA SOLAR INC.

METAMATERIAL TECHNOLOGIES INC.



MMT TEXTILES LTD.  
MPHASE TECHNOLOGIES, INC.  
NANEX Company  
NANOFILM LTD.  
NANOMECH INC.  
NANONEX CORP.  
NANOPHOS A.E.  
NANOPOOL GMBH  
NANOSHELL LTD.  
NANOTEC-USA  
NANOTEX INC.  
NANOTOUCH MATERIALS LLC  
NANOVEU PTE. LTD.  
NANOWAVES  
NBD NANOTECHNOLOGIES INC.  
NEI CORP.  
NGIMAT CO.  
P2i LTD.  
POLYMERPLUS LLC  
PURETI GROUP LLC  
ROLITH INC.  
SCHOELLER TEXTIL AG  
SCHOTT AG  
SLIPS TECHNOLOGIES INC.  
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