

Bioinspired and Nanoengineered Surfaces: Technologies, Applications and Global Markets

<https://marketpublishers.com/r/BE34CF280B5EN.html>

Date: March 2018

Pages: 212

Price: US\$ 1,250.00 (Single User License)

ID: BE34CF280B5EN

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.

Contents

CHAPTER 1 INTRODUCTION

Motivation
Study Goal and Objectives
Scope of Report
Intended Audience
Sources of Information
Methodology
Geographic Breakdown
Analyst's Credentials
Related BCC Research Reports

CHAPTER 2 SUMMARY AND HIGHLIGHTS

CHAPTER 3 TECHNOLOGY OVERVIEW

Summary
Biomimetic and Nanoengineered Surfaces
Definition
Fabrication Techniques
Properties
Solid Liquid Interactions
Solid-Vapor Interactions
Solid-Solid Interactions
Adhesion
Biological Interactions
Optical Interactions
Other Interactions
Research and Development of Biomimetic NES Systems
Wetting and Adhesion Management
Optical Applications
Other Applications of Bioinspired Surfaces
Research and Development of Synthetic NES Systems
Commercial Developments and Applications of NES Systems
Biological and Biomedical
Automotive
Aviation, Marine and Military

Electronics
Energy and Environmental
Materials: Architectural and Industrial
Optics
Textiles
Other
Market Sectors, Size and Growth Trends
Patent Analysis
Importance of Patents
Search Strategy
USPTO Ten-year Search Trend
U.S. vs. Foreign Patent Activity
Patent Portfolios and Applications of Leading Organizations

CHAPTER 4 NANOENGINEERED SURFACES MARKET APPLICATIONS: BIOLOGICAL AND BIOMEDICAL; AEROSPACE, MARINE AND MILITARY; AND AUTOMOTIVE

Summary
Commercial Initiatives in Biological and Biomedical Markets
Near Term
Potential Longer-term Commercial Initiatives
Entry and Growth in Biological and Biomedical Markets
Antibacterial Sterilization
Commercial Initiatives and Status in Automotive Markets
Near Term
Potential Longer-term Commercial Initiatives
Markets, Entry and Growth in Automotive Sector
Glass
Paint Protective Coatings
Plastics
Five-year Global Market Projection
Commercial Initiatives in Aerospace, Marine and Military Markets
Near Term
Potential Longer-term Commercial Initiatives
Markets, Entry and Growth
Aviation
Marine
Military

Five-year Global Market Projection for Aviation, Marine and Military NES Applications

CHAPTER 5 NANOENGINEERED SURFACES MARKET APPLICATIONS: ELECTRONICS; ENERGY AND ENVIRONMENTAL; AND MATERIALS

Summary

Commercial Initiatives in Electronics Applications

Near Term

Potential Longer-term Commercial Initiatives

Markets, Entry and Growth in Electronics Applications

Audio/Hearing Aids

Mobile Communication Devices: Smartphones/Headsets, E-Readers, Laptops, Sensors, Tablets and Wearables

Five-year Global Market Projection in Electronics

Commercial Initiatives in Energy and Environmental Markets

Near Term

Potential Longer-term Commercial Initiatives

Markets, Entry and Growth in Energy and Environmental Uses

Battery Technology

Fuel Cells

Heat Exchangers

Oil and Gas Flow Equipment and Lubrication

Solar Panels

Water Harvesting

Five-year Global Market Projection

Commercial Initiatives in Materials Market Applications

Near Term

Potential Longer-term Commercial Initiatives

Markets, Entry and Growth in Materials

Aluminum for Commercial and Residential Buildings

Architectural Concrete

Glass for Commercial and Residential Windows

Other Miscellaneous Materials and Market Applications

Five-year Global Market Projection for Building Materials

CHAPTER 6 MARKET APPLICATIONS FOR NANOENGINEERED SURFACES: OPTICS; TEXTILES; AND OTHER MARKETS

Summary

Commercial Initiatives in Optical Market Applications
Near Term
Potential Longer-term Commercial Initiatives
Markets, Entry and Growth in Optics
Mobile Device Accessories Market
Mobile Security Market
Nanophotonic Materials
Optical Components
Vision/Surveillance
Five-year Global Market Projection for Optics Applications
Commercial Initiatives in Textile Applications
Near Term
Incumbent Market Products and Challenges
Potential Longer-term Commercial Initiatives
Markets, Entry and Growth in Textile Applications
Indoor Fabrics
Outdoor Apparel
Five-year Global Market Projection in Textile Applications
Commercial Initiatives in Other Applications
Near Term
Potential Longer-term Commercial Initiatives
Markets, Entry and Growth in Other Market Applications
Consumer Packaging
Liquid Processing Equipment
Sensors
Five-year Global Market Projection in Other Markets

CHAPTER 7 GEOGRAPHIC SEGMENTATION OF MARKET APPLICATIONS

Summary
NES Developments in Biological/Biomedical Markets
NES Developments in Automotive Markets
NES Developments in Aerospace, Marine and Military Markets
NES Developments in Electronic Markets
NES Developments in Energy and Environmental Markets
NES Developments in Materials Markets
NES Developments in Optical Markets
NES Developments in Textile Markets
NES Developments in Other Markets

Number of Companies and Geographic Distribution

CHAPTER 8 INDUSTRY STRUCTURE

Summary

Industry Structure

Major Players

North American Companies

Foreign Companies

Company Profiles

ACULON INC.

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

ALCHEMY

AMERICAN ENVIRONMENTAL SYSTEMS INC.

ARCONIC ARCHITECTURAL PRODUCTS

ARTEKYA LTD. CO.

BIGSKY TECHNOLOGIES LLC

BIOTOMO PTY LTD.

CLEAR-TONE HEARING AID LABS INC.

DELMIC BV

DEVAN CHEMICALS NV

DIAMON-FUSION INTERNATIONAL INC.

DRYWIRE

ENTEGRIS INC.

EUROPLASMA NV

FABRICOR WORKWEAR PTY LTD.

FURUKAWAKIKOU CORP. LTD.

General Electric Global Research

HZO INC.

INTEGRICOTE INC.

INTEGRAN TECHNOLOGIES INC.

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.
TELAZTEC LLC
TERA-BARRIER FILMS PTE. LTD.
TOTO USA INC.
TRIPLEO PERFORMANCE SOLUTION
ULTRATECH INTERNATIONAL INC.

CHAPTER 9 APPENDIX: ABBREVIATIONS, ACRONYMS, SYMBOLS AND UNITS

Abbreviations and Acronyms
Symbols and Units

List Of Tables

LIST OF TABLES

Summary Table: Global Market for Nanoengineered Surfaces, by Main Application Sector, Through 2022

Table 1: Techniques Used to Fabricate Nanoengineered Surfaces

Table 2: Properties Exploited by Bioinspired Nanoengineered Surfaces (NES)

Table 3: Wetting and Adhesion Applications of Biomimetic Analogs: Bioinspired from Plant Species

Table 4: Wetting and Adhesion Applications of Biomimetic Analogs: Bioinspired from Insects, Reptiles and Marine Species

Table 5: Optical Applications of Biomimetic Analogs: Bioinspired from Insects, Reptiles and Marine Species

Table 6: Other Applications of Biomimetic Analogs: Bioinspired from Various Species

Table 7: Applications of Synthetic Nanoengineered Surfaces

Table 8: Main Industrial Application Sectors and End Uses Identified for Nanoengineered Surface Technologies

Table 9: Global Market for Nanoengineered Surfaces, by Main Application Sector, Through 2022

Table 10: Application Interests of Leading IP Portfolio Holders: Superhydrophobics

Table 11: Application Interests of Leading IP Portfolio Holders: Superhydrophilics

Table 12: Main Commercial Biological/Biomedical Developments and Market End Uses for Nanoengineered Surface Technologies

Table 13: Potential Longer-term Commercial Biological/Biomedical Developments for Nanoengineered Surface Technologies

Table 14: Global Market for Biological and Biomedical Applications, Through 2022

Table 15: Main Commercial Automotive Developments and End-use Applications for Nanoengineered Surface Technologies

Table 16: Potential Longer-term Commercial Automotive End Uses for Nanoengineered Surfaces

Table 17: Global Market for Automotive Applications, Through 2022

Table 18: Main Commercial Aerospace, Marine and Military End-use Applications for Nanoengineered Surfaces Technologies

Table 19: Potential Longer-term Commercial Aerospace, Marine and Military End Uses for Nanoengineered Surfaces

Table 20: Global Market for Aviation, Marine and Military Applications, Through 2022

Table 21: Main Commercial Electronics End Use Applications for Nanoengineered Surfaces Technologies

Table 22: Potential Longer-term Commercial Electronics End Uses for Nanoengineered Surfaces

Table 23: Global Market for Electronic Nanoengineered Surfaces, Superhydrophobic Coating Applications, Through 2022

Table 24: Main Commercial Energy and Environmental End-use Applications for Nanoengineered Surfaces Technologies

Table 25: Potential Longer-term Commercial Energy Market End Uses for Nanoengineered Surfaces

Table 26: Potential Longer-Term Commercial Environmental Market End Uses for Nanoengineered Surfaces

Table 27: Global Market for Energy and Environmental Nanoengineered Surfaces Applications, Through 2022

Table 28: Main Commercial Materials Market End Use Applications for Nanoengineered Surfaces Technologies

Table 29: Potential Longer-term Materials Market End Use Applications for Nanoengineered Surfaces Technologies

Table 30: Global Market for Nanoengineered Surfaces Applications in Building Materials, Through 2022

Table 31: Main Commercial Optical Market End-use Applications for Nanoengineered Surfaces Technologies

Table 32: Potential Longer-term Commercial Optical Market End Uses for Nanoengineered Surfaces

Table 33: Global Market for Nanoengineered Surfaces Applications in Optics, Through 2022

Table 34: Main Commercial Textile Market End-use Applications for Biomimetic and Nanoengineered Surface Technologies

Table 35: Commercial Fluorine and Fluorine-free Textile Waterproofing Finishes

Table 36: Leading Producers of Water-resistant Outdoor Apparel

Table 37: Potential Longer-term Commercial Textile Market End Uses for Nanoengineered Surfaces

Table 38: Global Market for Nanoengineered Surfaces Applications in Textiles, Through 2022

Table 39: Main Commercial Other Market End Use Applications for Nanoengineered Surfaces Technologies

Table 40: Potential Longer-term Commercial Other Market End Uses for Nanoengineered Surfaces

Table 41: Global Market for Nanoengineered Surfaces Applications in Others, Through 2022

Table 42: Nanoengineered Surfaces Developments in Commercial

Biological/Biomedical Market, by Company and Country

Table 43: Global Market for Nanoengineered Surfaces in Biomedical Applications, by Region, Through 2022

Table 44: Nanoengineered Surfaces Developments in Commercial Automotive Market, by Company and Country

Table 45: Global Market for Nanoengineered Surfaces in Automotive Applications, by Region, Through 2022

Table 46: Nanoengineered Surfaces Developments in Commercial Aerospace, Marine and Military Markets, by Company and Country

Table 47: Global Market for Nanoengineered Surfaces in Aviation, Marine and Military Applications by Region, Through 2022

Table 48: Nanoengineered Surfaces Developments in Electronics Markets, by Company and Country

Table 49: Global Market for Nanoengineered Surfaces in Electronic Applications, by Region, Through 2022

Table 50: Nanoengineered Surfaces Developments in Energy and Environmental Markets, by Company and Country

Table 51: Global Market for Nanoengineered Surfaces in Energy and Environmental Applications, by Region, Through 2022

Table 52: Nanoengineered Surfaces Developments in Commercial Materials Markets, by Company and Country

Table 53: Global Market for Nanoengineered Surfaces in Building Materials, by Region, Through 2022

Table 54: Nanoengineered Surfaces Developments in Optical Markets, by Company and Country

Table 55: Global Market for Nanoengineered Surfaces in Optics, by Region, Through 2022

Table 56: Nanoengineered Surfaces Developments in Textile Markets, by Company and Country

Table 57: Global Market for Nanoengineered Surfaces in Textile Applications, by Region, Through 2022

Table 58: Nanoengineered Surfaces Developments in Other Markets, by Company and Country

Table 59: Global Market for Nanoengineered Surfaces in Other Applications, Through 2022

Table 60: Global Distribution of Companies with Active NES Commercial Interests, by Country, October 2017

Table 61: North American Companies Commercially Developing NES Applications

Table 62: Foreign Organizations Developing NES Applications

List Of Figures

LIST OF FIGURES

Summary Figure: Global Market for Nanoengineered Surfaces, by Main Application Sector, 2016-2022

Figure 1: Global Market for Nanoengineered Surfaces, by Main Application Sector, 2017-2022

Figure 2: Global Commercial Growth Market for Nanoengineered Surfaces, 2017-2022

Figure 3: Superhydrophobic Patents Issued: 2007-2017

Figure 4: Superhydrophilic Patents Issued: 2007-2017

Figure 5: U.S. vs. Foreign Superhydrophobic Patents Issued: 2007-Sept. 19, 2017

Figure 6: U.S. vs. Foreign Superhydrophilics Patents Issued: 2007-Sept. 19, 2017

Figure 7: Major Superhydrophobic IP Portfolios: 2007-Sept. 19, 2017

Figure 8: Major Superhydrophilic IP Portfolios: 2007-Sept. 19, 2017

Figure 9: Geographical Distribution of Companies with Active NES Commercial Interests by Country, October 2017

I would like to order

Product name: Bioinspired and Nanoengineered Surfaces: Technologies, Applications and Global Markets

Product link: <https://marketpublishers.com/r/BE34CF280B5EN.html>

Price: US\$ 1,250.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/BE34CF280B5EN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

****All fields are required**

Customer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970

