Smart Textiles Markets 2016-2023

Description: In this report we identify the opportunities emerging from commercialization of smart textiles. These include textiles that are (1) fabricated from smart materials or (2) utilize sensing devices that are seamlessly integrated into the textile.

The smart textile sector has taken off in the past few years, driven by the keen interest in the Internet-of-things (IoT) and enabled by the latest smart materials and powerful sensing devices. This report provides market coverage of the potential for emerging textile products where the textile is rapidly becoming the sensor.

The report also discusses how the latest generation of smart materials is expanding the market for advanced textiles. While the focus of this report is on the opportunity for smart textiles, we also discuss how the sensor industry can benefit from the latest trends in smart textiles and also how the supply chain for smart textiles is evolving.

In putting together this report n-tech has drawn on its extensive experience in the smart materials space as well as interviews with key companies in smart textiles. This report will provide valuable insight into the smart textiles market that will benefit marketing and business development executives from various parts of the supply chain, including raw material suppliers, chemical companies, and clothing manufacturers, as well as investors in the industry.

Applications and Markets:

This report includes an analysis of applications where n-tech believes smart textiles have a real opportunity to move beyond the lab and expensive demonstrations high-volume commercial applications. Applications covered include:

- Health and Fitness: Sportswear, health monitoring, and clinical applications
- Military and Security: Uniforms for soldiers and firefighters
- Fashion: Functional clothing for the masses
- Non-clothing applications: Solar cells, automotive, and more.

Smart Textile: Materials, Manufacturing and Components:

This report provides coverage of how the following categories of materials are being used to fabricate commercially available smart textiles:

- Electrically conductive yarns and threads
- Conductive polymers
- Shape memory materials
- Color-changing materials
- Phase-changing materials
- Self-cleaning and antimicrobial materials
- Nanomaterials

We also discuss how sensors are being integrated into textiles and how these will be powered. Finally, this report provides coverage of the latest business trends in smart textile fabrication processes, including weaving, knitting, printing, and embroidery. We focus on how these processes can be used to advance integration of function into textiles.

Eight-Year Forecasts for Smart Textile Materials:

This report contains detailed forecasts of volume (in square meters and units) and revenue (in $ millions), broken down by:

- End application
- Type of material
Profiles of Key Players:

This report evaluates the product/market strategies of the leading suppliers of key materials for smart textiles. These firms include giants such as DuPont, as well as newer and smaller companies and startups that n-tech believes have compelling products that are likely to make inroads into the smart textiles market.

Contents:

Executive Summary
E.1 Market Opportunities: Blurring the Lines between Fashion, Technology, and Healthcare
E.2 Emerging Second Generation Smart Textiles: Sports, Health and Fashion
E.2.1 Tracking Motion and Ensuring Comfort: Sports and Fitness
E.2.2 Monitoring Health: Medical Applications
E.2.3 What Role will the Fashion Industry Play in Smart Clothing?
E.3 Technical Trends in Smart Materials and the Future of Smart Textiles
E.3.1 R&D Trends
E.3.2 Moving Technology into the Garment: Opportunities and Challenges for Manufacturing
E.4 Influential Firms to Watch in the Smart Textiles Sector
E.4.1 Adidas: Bringing a Brand Name to Smart Textiles
E.4.2 BASF: Possible Future Smart Textiles Powerhouse
E.4.3 BeBop Sensors: Funding for a Multifunctional Smart Textile Company
E.4.4 Clothing+/Jabil: Printing Intelligence in Smart Textiles
E.4.5 Schoeller Textiles: Functional Fabrics Get Smarter
E.4.6 OMSignal: Embedded Biometrics
E.4.7 Sensoria: More Than Smart Shirts
E.5 Summary of Eight-Year Forecasts for Smart Textiles Materials
E.5.1 Summary by Type of Material
E.5.2 Summary by Functionality
E.5.3 Summary by Application

Chapter One: Introduction
1.1 Background to this Report
1.1.1 The New Smart Fabrics: Smart Materials and Integrated Sensors
1.1.2 Integration Defining the Opportunities in Smart Materials
1.1.3 Merging Fashion and Function
1.1.4 A Bottom Line
1.2 Objectives and Scope of this Report
1.3 Methodology of this Report
1.4 Plan of this Report

Chapter Two: Materials and Technology Advances in Smart Textiles
2.1 Electrically Conductive Fabrics
2.1.1 Metallic Fibers
2.1.2 Conductive Polymers
2.2 Embedding Sensors into Textiles
2.2.1 Pressure Sensors
2.2.2 Heating and Temperature Sensing
2.2.3 Motion Sensors
2.2.4 Measuring Biometrics
2.2.5 Chemical Sensors and Biosensors
2.3 Powering Smart Textiles
2.3.1 Textile-based Solar Cells
2.3.2 Energy Harvesting and Storage
2.4 Electronics and Communication
2.4.1 Embedding Electronic Components
2.4.2 Textile Transistors
2.5 Inherently Smart Fabrics
2.5.1 Types of Color-changing Fabrics
2.5.2 Color-Changing Materials for Camouflage Uniforms
2.5.3 Smart Fabrics for Cold and Hot Weather
2.5.4 Antimicrobial Fabrics
2.5.5 Use of Shape Memory materials
2.5.6 Self-cleaning Fabrics
2.5.7 Self-Healing Fabrics
2.5.8 Nanomaterials and Other Emerging Opportunities
2.6 Manufacturing Challenges
2.6.1 Weaving and Knitting
2.6.2 Printing
2.6.3 Embroidery
2.6.4 Addressing Washability
2.6.5 Environmentally Friendly Processes
2.6.6 Merging Textile and Electronics Production
2.6.7 Smart Textiles and the Evolving Global Textile Market
2.7 Key Points from this Chapter

Chapter Three: Applications for Smart Textiles
3.1 Overlap between Health and Fitness Markets
3.2 Sports-focused Applications
3.2.1 The IP Battle in the Smart Shirt Sector
3.2.2 Sports-focused Applications beyond Biometric Shirts
3.2.3 Products for Adventurers
3.2.4 Companies to Watch in the Sportswear Industry
3.3 Medical-focused Applications
3.3.1 Smart Textiles for in-Home Monitoring of Health Conditions
3.3.2 Smart Textiles for use in Hospitals and Clinics
3.3.3 Companies to Watch in the Medical Sector
3.4 Clothing for the Military
3.4.1 Moving Technology to the Individual
3.4.2 Smart Clothing for Soldiers
3.4.3 Leveraging Medical Applications
3.4.4 Color-Shifting Textiles for the Military
3.5 Protective Clothing for First Responders and Industrial Workers
3.5.1 Smart Uniforms for Firefighters
3.5.2 Addressing the Needs of Industrial Workers
3.6 Changes in the Fashion Industry
3.6.1 Blending Design and Technology
3.6.2 Blurring the Lines between Fashion and Athletic Wear
3.7 Niche Applications for Smart Textiles
3.7.1 Safety and Security
3.7.2 Transportation
3.7.3 Architecture
3.8 Key Points from this Chapter

Chapter Four: Eight-Year Forecasts for Materials and Sensors in Smart Textiles
4.1 Forecast Methodology
4.1.1 Raw Data
4.1.2 Calculations
4.1.3 Scope of Coverage
4.2 Smart Textiles: Forecasts by Smart Material Type
4.2.1 Color-shifting Materials
4.2.2 Antimicrobial Coatings
4.2.3 Self-cleaning Coatings
4.2.4 Heating and Cooling Fabrics
4.2.5 Conductive Yarns, Threads, and Inks
4.3 Forecasts by Type of Sensor
4.3.1 Pressure Sensors
4.3.2 Biometric Sensors
4.3.3 Motion Sensors
4.3.4 Chemical Sensors and Biosensors
4.4 Forecasts by Application
4.4.1 Health and Fitness
4.4.2 Medical
4.4.3 Military
4.4.4 Fashion Industry
4.4.5 Non-Clothing Applications
Acronyms and Abbreviations Used In this Report
About the Author

List of Exhibits
Exhibit E-1: Eight-Year Forecasts for Materials and Sensors in Smart Textiles by Application, 2016-2023, $ Millions
Exhibit E-2: Eight-Year Forecasts for Fabrics and Coatings in Smart Textiles by Material, 2016-2023, $ Millions
Exhibit E-3: Eight-Year Forecasts for Sensors in Smart Textiles by Sensor Type, 2016-2023, $ Millions
Exhibit 2-1: Requirements for Active Heating and Cooling Fabrics
Exhibit 2-2: Requirements for Antimicrobial Fabrics
Exhibit 2-3: SBIR Grants Related to Antimicrobial Textiles
Exhibit 2-4: Fabrication Processes for Smart Textiles with Conductive Traces
Exhibit 3-1: Smart Shirt Suppliers
Exhibit 3-2: Patents for Smart Shirts with Biometric Monitoring
Exhibit 3-3: Nike Patents Related to Smart Textiles
Exhibit 3-4: Medical Smart Textile Products Based on Pressure Sensors
Exhibit 3-5: Medical Smart Textile Products Based on Temperature, Motion, Chemical, or Biometric Sensors
Exhibit 3-6: Examples of Smart Textile Fashion Concepts Using Light and Color
Exhibit 4-1: Eight-Year Forecast for Color-Shifting Materials in Smart Textiles, 2016-2023
Exhibit 4-2: Eight-Year Forecast for Antimicrobial Coatings in Smart Textiles, 2016-2023
Exhibit 4-3: Eight-Year Forecast for Self-Cleaning Coatings in Smart Textiles, 2016-2023
Exhibit 4-4: Eight-Year Forecast for Heating and Cooling Fabrics in Smart Textiles, 2016-2023
Exhibit 4-5: Eight-Year Forecast for Conductive Yarns, Threads and Inks in Smart Textiles, 2016-2023
Exhibit 4-6: Assumptions Made in Forecasting Various Sensors
Exhibit 4-7: Eight-Year Forecast for Pressure Sensors in Smart Textiles, 2016-2023
Exhibit 4-8: Eight-Year Forecast for Biometric Sensors in Smart Textiles, 2016-2023
Exhibit 4-9: Eight-Year Forecast for Motion Sensors in Smart Textiles, 2016-2023
Exhibit 4-10: Eight-Year Forecast for Chemical and Biosensors in Smart Textiles, 2016-2023
Exhibit 4-11: Eight-Year Forecast for Smart Textiles in Health and Fitness Applications, 2016-2023
Exhibit 4-12: Eight-Year Forecast for Smart Textiles in Medical Applications, 2016-2023
Exhibit 4-13: Eight-Year Forecast for Smart Textiles in Military Applications, 2016-2023
Exhibit 4-14: Eight-Year Forecast for Smart Textiles in Fashion Applications, 2016-2023
Exhibit 4-15: Eight-Year Forecast for Smart Textiles in Non-Clothing Applications, 2016-2023

Order by Fax - using the form below
Order by Post - print the order form below and send to

Research and Markets,
Guinness Centre,
Taylors Lane,
Dublin 8,
Ireland.
Fax Order Form
To place an order via fax simply print this form, fill in the information below and fax the completed form to 646-607-1907 (from USA) or +353-1-481-1716 (from Rest of World). If you have any questions please visit http://www.researchandmarkets.com/contact/

Order Information
Please verify that the product information is correct and select the format(s) you require.

Product Name: Smart Textiles Markets 2016-2023
Web Address: http://www.researchandmarkets.com/reports/3513692/
Office Code: SCBRRJVD

Product Formats
Please select the product formats and quantity you require:

<table>
<thead>
<tr>
<th>Format</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic (PDF) - Single User</td>
<td></td>
<td>USD 3995</td>
</tr>
<tr>
<td>Electronic (PDF) - 1 - 10 Users</td>
<td></td>
<td>USD 4995</td>
</tr>
<tr>
<td>Electronic (PDF) - Ent. Wide</td>
<td></td>
<td>USD 5995</td>
</tr>
</tbody>
</table>

Contact Information
Please enter all the information below in BLOCK CAPITALS

Title: [ ] Mr  [ ] Mrs  [ ] Dr  [ ] Miss  [ ] Ms  [ ] Prof
First Name: ______________________________________________________ Last Name: ______________________________________________________
Email Address: * ___________________________________________________
Job Title: _______________________________________________________
Organisation: _____________________________________________________
Address: _________________________________________________________
City: _____________________________________________________________
Postal / Zip Code: _______________________________________________
Country: _________________________________________________________
Phone Number: ___________________________________________________
Fax Number: _____________________________________________________

* Please refrain from using free email accounts when ordering (e.g. Yahoo, Hotmail, AOL)
Payment Information

Please indicate the payment method you would like to use by selecting the appropriate box.

☐ Pay by credit card: You will receive an email with a link to a secure webpage to enter your credit card details.

☐ Pay by check: Please post the check, accompanied by this form, to:

Research and Markets,
Guinness Center,
Taylors Lane,
Dublin 8,
Ireland.

☐ Pay by wire transfer: Please transfer funds to:

<table>
<thead>
<tr>
<th>Account number</th>
<th>833 130 83</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sort code</td>
<td>98-53-30</td>
</tr>
<tr>
<td>Swift code</td>
<td>ULSBIE2D</td>
</tr>
<tr>
<td>IBAN number</td>
<td>IE78ULSB9853308313083</td>
</tr>
<tr>
<td>Bank Address</td>
<td>Ulster Bank, 27-35 Main Street, Blackrock, Co. Dublin, Ireland.</td>
</tr>
</tbody>
</table>

If you have a Marketing Code please enter it below:

Marketing Code: ___________________________

Please note that by ordering from Research and Markets you are agreeing to our Terms and Conditions at http://www.researchandmarkets.com/info/terms.asp

Please fax this form to:

(646) 607-1907 or (646) 964-6609 - From USA
+353-1-481-1716 or +353-1-653-1571 - From Rest of World