

The Global Market for Nanotechnology in Aerospace

<https://marketpublishers.com/r/G6732524309EN.html>

Date: January 2017

Pages: 52

Price: US\$ 616.00 (Single User License)

ID: G6732524309EN

Abstracts

Technology innovation in aerospace is increasingly focused on creating products to reduce costs (e.g. fuel efficiency, maintenance, and repair), and increase safety and comfort. A major trend is creating multi-functional composite materials to carry out tasks generally performed by several elements.

The embedding of carbon-based nanomaterials, such as CNTs and more recently graphene nanoplatelets, has been investigated as a possible solution for a large number of challenges related to aerospace structures.

Nanomaterials are utilised in the aerospace industry for improved (or tailored) properties that improve their functional performance (e.g. mechanical or electrical properties) or that deliver multi-functional properties (e.g. lightweight conductive nanocomposites).

The bulk of R&D into aerospace applications of nanotechnology and nanomaterials at present focuses on structural reinforcement of composite materials. Nanomaterials will potentially allow for the development of lighter, high-performance, robust and cost-efficient, multi-functional aircraft.

Nanomaterials have the potential to outperform carbon fiber, imparting significantly improved structural, protective and functional properties. Using nanomaterials either as a strengthening ply with polymer matrix type laminates or as a fiber in traditional composite systems, shows enormous potential in aerospace applications. This would lead to fuel savings, cutting costs for airlines and passengers and reducing carbon emissions.

CNTs have been incorporated into the NASA Juno spacecraft and other aerospace component applications. Nanocomp Technologies CNT sheet, EMSHIELD, was incorporated as a surface layer on several critical components of the Juno spacecraft,

launched in August 2011, to provide protection against electrostatic discharge (ESD).

Coatings are generally used in the aerospace industry for protecting the structures and surfaces of the aircraft from harsh environments. In aerospace applications, nanocoatings have been developed for:

§ Improving the life span, reliability and durability of components.

§ Self-cleaning.

§ Erosion, sliding and wear resistance.

§ Anti-fouling.

§ Improving surface quality.

§ De-icing.

§ Improved thermal performance and flame retardancy.

§ Corrosion resistance against pitting, peeling, oxidation and heat.

Nanocoatings reduce maintenance, decrease life cycle costs, and increase readiness by limiting equipment downtime through exhibiting considerably more protection than conventional coatings. A number of aerospace companies and agencies are developing CNTS and graphene coatings to add special characteristics to aircraft frames and interior and engine parts and component surfaces.

Contents

1 EXECUTIVE SUMMARY

2 RESEARCH METHODOLOGY

- 2.1 COMMERCIAL IMPACT RATING SYSTEM
- 2.2 MARKET CHALLENGES RATING SYSTEM.

3 INTRODUCTION.

- 3.1 Properties of nanomaterials.
- 3.2 Categorization

4 NANOMATERIALS REGULATIONS

- 4.1 Europe.
 - 4.1.1 REACH
 - 4.1.2 Biocidal Products Regulation.
 - 4.1.3 National nanomaterials registers.
 - 4.1.4 Cosmetics regulation
 - 4.1.5 Food safety
- 4.2 United States
 - 4.2.1 Toxic Substances Control Act (TSCA).
- 4.3 Asia
 - 4.3.1 Japan
 - 4.3.2 South Korea
 - 4.3.3 Taiwan.
 - 4.3.4 Australia.

5 NANOTECHNOLOGY IN AEROSPACE AND AVIATION.

5.1 MARKET DRIVERS AND TRENDS

- 5.1.1 Safety
- 5.1.2 Reduced fuel consumption and costs
- 5.1.3 Increased durability
- 5.1.4 Multi-functionality.
- 5.1.5 Need for new de-icing solutions
- 5.1.6 Weight reduction

5.1.7 Need for improved lightning protection materials

5.2 APPLICATIONS

5.2.1 Composites.

5.2.2 Coatings.

5.3 MARKET SIZE AND OPPORTUNITY

5.3.1 Total market size.

5.3.2 Nanotechnology opportunity

5.4 MARKET CHALLENGES

6 APPLICATION AND PRODUCT DEVELOPERS 36-50 (40 COMPANY PROFILES)

7 REFERENCES.

List Of Tables

LIST OF TABLES

Table 1: Categorization of nanomaterials.

Table 2: National nanomaterials registries in Europe.

Table 3: Nanomaterials regulatory bodies in Australia

Table 4: Applications in aerospace composites, by nanomaterials type and benefits thereof

Table 5: Types of nanocoatings utilized in aerospace and application

Table 6: Applications in aerospace coatings, by nanomaterials type and benefits thereof.

Table 7: Nanomaterials in the aerospace market-applications, stage of commercialization and estimated economic impact

Table 8: Market opportunity assessment for nanotechnology in aerospace

Table 9: Potential addressable market for nanotechnology-enabled applications in aerospace.

Table 10: Market challenges rating for nanotechnology and nanomaterials in the aerospace market.

List Of Figures

LIST OF FIGURES

Figure 1: Potential addressable market for nanotechnology-enabled applications in aerospace

I would like to order

Product name: The Global Market for Nanotechnology in Aerospace

Product link: <https://marketpublishers.com/r/G6732524309EN.html>

Price: US\$ 616.00 (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/G6732524309EN.html>