



RESEARCH ARTICLE

Advanced materials foresight: research and innovation indicators related to advanced and smart nanomaterials

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Abstract

Background: Advanced materials are most likely to bring future economic, environmental and social benefits. At the same time, they may pose challenges regarding their safety and sustainability along the entire lifecycle. This needs to be timely addressed by the stakeholders (industry, research, policy, funding and regulatory bodies). As part of a larger foresight project, this study aimed to identify areas of scientific research and technological development related to advanced materials, in particular advanced nanomaterials and the sub-group of smart nanomaterials. The study identified and collected data to build relevant research and innovation indicators and analyse trends, impact and other implications.

Methods: This study consisted of an iterative process including a documentation phase followed by the identification, description and development of a set of core research and innovation indicators regarding scientific publications, EU projects and patents. The data was extracted mainly from SCOPUS, CORDIS and PATSTAT databases using a predefined search string that included representative keywords. The trends, distributions and other aspects reflected in the final version of the indicators were analysed, e.g. the number of items in a period of time, geographical distribution, organisations involved, categories of journals, funding programmes, costs and technology areas.

Results: Generally, for smart nanomaterials the data used represent around 3.5% of the advanced nanomaterials data, while for each field analysed, they represent 4.4% for publications, 13% for projects and 1.1% for patents. The study shows current trends for advanced nanomaterials at a top-level information that can be further extended with sub-indicators. Generally, the results indicated a significant growth in research into advanced nanomaterials, including smart nanomaterials, in the last decade, leading to an increased availability

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1. Steffi Friedrichs AcumenIST SPRL, Etterbeek, Belgium		

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Table of Contents Materials Foresight On The Electronics I

1. Understanding the eBook Materials Foresight On The Electronics I
 - The Rise of Digital Reading Materials Foresight On The Electronics I
 - Advantages of eBooks Over Traditional Books
2. Identifying Materials Foresight On The Electronics I
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Materials Foresight On The Electronics I
 - User-Friendly Interface
4. Exploring eBook Recommendations from Materials Foresight On The Electronics I
 - Personalized Recommendations
 - Materials Foresight On The Electronics I User Reviews and Ratings
 - Materials Foresight On The Electronics I and Bestseller Lists
5. Accessing Materials Foresight On The Electronics I Free and Paid eBooks
 - Materials Foresight On The Electronics I Public Domain eBooks
 - Materials Foresight On The Electronics I eBook Subscription Services

- Materials Foresight On The Electronics I Budget-Friendly Options
- 6. Navigating Materials Foresight On The Electronics I eBook Formats
 - ePUB, PDF, MOBI, and More
 - Materials Foresight On The Electronics I Compatibility with Devices
 - Materials Foresight On The Electronics I Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Materials Foresight On The Electronics I
 - Highlighting and Note-Taking Materials Foresight On The Electronics I
 - Interactive Elements Materials Foresight On The Electronics I
- 8. Staying Engaged with Materials Foresight On The Electronics I
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Materials Foresight On The Electronics I
- 9. Balancing eBooks and Physical Books Materials Foresight On The Electronics I
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Materials Foresight On The Electronics I
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Materials Foresight On The Electronics I
 - Setting Reading Goals Materials Foresight On The Electronics I
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Materials Foresight On The Electronics I
 - Fact-Checking eBook Content of Materials Foresight On The Electronics I
 - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
- 14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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