



RESEARCH ARTICLE

# Advanced materials foresight: research and innovation indicators related to advanced and smart nanomaterials [version 1; peer review: 1 approved]

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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

## Open Peer Review

Approval Status

1

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1. Steffi Friedrichs , AcumenIST SPRL, Etterbeek, Belgium

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# Materials Foresight On The Electronics I

**Rapra Technology**



## **Materials Foresight On The Electronics I:**

Materials Foresight on the Electronics Industry, 1998 This report considers the market sectors served by electronics and assesses future market trends The compatibility between industrial requirements and current levels of research and development is assessed Opportunities for material equipment development at various stages in the manufacturing cycle of electronic devices are highlighted with emphasis on high value added areas areas critical to current and future growth and new materials which could open up major new markets **Materials World**, 2004 *A National Policy for Materials* United States. Congress. House. Committee on Science and Technology. Subcommittee on Science, Research, and Technology, 1978 **Libraries and Electronic Publishing** Ahmed H. Helal, Joachim W. Weiss, 1992 The goal of the Essen symposium was to bring together internationally recognized librarians and library automation specialists to discuss new developments in electronic publishing All 16 papers included in this collection were presented at the conference 1 Barriers to the Introduction of New Technology J Andrew Braid 2 Nudging a Dinosaur in Order To Avoid Library Extinction Richard M Dougherty 3 Are Libraries Ready for Electronic Document Delivery Johan van Halm 4 Electronic Journals and Document Delivery Chances and Risks Ulrich Korwitz 5 The Global Library The Impact of High Speed Networks on Libraries Bonnie Postlethwaite 6 Integrated CD ROM Retrieval Networks How To Automate the Post Processing of Downloaded Export Files Christian Heinisch 7 Identification of Electronic Documents The Diversification for Document Supply and Its Consequences for Document Description Achim Osswald 8 Full Text Imperatives for the National Library of Scotland Bernard Gallivan 9 Electronic Publishing Possibilities Barriers and Environment in Slovenia and Past Yugoslavia Nada Cucnik Majcen 10 State of Art and Current Trends in Library Automation in Scandinavia Hans Eric Malmberg and Elisabeth Ehrnstrom 11 Libraries and Electronic Publishing Issues for Academic Library Administrators To Address Donna L McCool and Maureen Pastine 12 Use of Library Material in Both Paper and Electronic Media in a University Library Sigrid Reinitzer 13 Information Services for the Public Jennifer Walton 14 Optical Disk Based Document Delivery at the Congressional Research Service of the Library of Congress Ruth Wust 15 Hypermedia in the Library Design Guidelines Based on Assessment Tests Eva Bertha and Erich J Schwarz 16 Conclusions and Comments Maurice B Line The publication also contains an introductory preface the agenda of the seminar a list of participants and a list of participating vendors KRN **The British National Bibliography** Arthur James Wells, 1999 **American Wholesalers and Distributors Directory** Gale Group, 2001-08 *Electronic Business Today*, 1995 Introductory DC/AC Electronics Nigel P. Cook, 2005 This time honored book now in its sixth edition improves on its charter to offer comprehensive and current coverage of DC AC electronics and Semiconductor Devices and Circuits along with all prerequisite mathematics in a learner friendly easily accessible format The presentation includes many historical vignettes and margin timelines mini math review sections circuit simulation icons and circuit analysis tables and much more For electrical engineers and computer technicians *The Electronics Journal*, 1913 **Automotive Supplier**

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