

1. Record Nr.	UNINA9911006609203321
Autore	Ashby M. F
Titolo	Nanomaterials, nanotechnologies and design : an introduction for engineers and architects // Michael F. Ashby, Paulo J. Ferreira, Daniel L. Schodek
Pubbl/distr/stampa	Amsterdam ; ; Boston, : Butterworth-Heinemann, c2009
ISBN	9786612737558 9781282737556 1282737554 9780080941530 0080941532
Descrizione fisica	1 online resource (560 p.)
Altri autori (Persone)	SchodekDaniel L. <1941-> FerreiraPaulo J. S. G
Disciplina	620.11
Soggetti	Nanotechnology High technology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front cover; Half title page; Title page; Copyright page; Table of contents; Preface; Acknowledgments; Chapter 1: Nanomaterials and Nanotechnologies: An Overview; Why Nanomaterials?; Scale, Structure, and Behavior; Further Reading; Chapter 2: An Evolutionary Perspective; A Brief History of Materials; Nanomaterials and Nanostructures in Nature; Nanomaterials in Art and Cultural Heritage; Further Reading; Chapter 3: The Design Context; Materials in Design; Product Design, Architecture, and Engineering; Environments, Systems, and Assemblies; The Design and Development Process; A Design Vignette Further ReadingChapter 4: Material Classes, Structure, and Properties; Classes of Materials; The Internal Structure of Materials; Mechanical Behavior; Thermal Behavior; Electrical Behavior; Magnetic Behavior; Optical Behavior; Acoustic Behavior; Further Reading; Chapter 5: Material Property Charts and Their Uses; Material Property Charts; Using Charts to Select Translation, Screening, Ranking, and Documentation; Plotting Limits and Indices on Charts; Resolving

Conflicting Objectives; Further Reading; Chapter 6: Nanomaterials: Classes and Fundamentals; Classification of Nanomaterials Size Effects; Further Reading; Chapter 7: Nanomaterials: Properties; Mechanical Properties; Thermal Properties of Nanomaterials; Electrical Properties; Magnetic Properties; Optical Properties; Acoustic Properties; Special Cases; Further Reading; Chapter 8: Nanomaterials: Synthesis and Characterization; Synthesis of Nanoscale Materials and Structures; Characterization of Nanomaterials; Further Reading; Chapter 9: Design Environments and Systems; Environments and Systems; Structural and Mechanical Environments; The Thermal Environment; Electrical and Magnetic Environments; Light and Optical Environments; Sound and Acoustical Environments; Enabling Environments and Systems: Energy; Interactive, Smart, and Intelligent Systems and Environments; Nanomaterials Costs; Further Reading; Chapter 10: Nanomaterial Product Forms and Functions; Characterizing Forms and Functions; Functional Characteristics; "Smart" Behaviors; Nanoproduct Forms; Further Reading; Chapter 11: Nanomaterials and Nanotechnologies in Health and the Environment; The Context; Medical and Pharmaceutical NANOTECHNOLOGY Applications; Health Concerns; Environmental Benefits and Impacts; Further Reading; Chapter 12: The Broader Context; Industry Perspectives; The Automotive Industry; The Building and Construction Industry; Aerospace, Textiles, Sports, and Other Industries; A Closing Comment; Further Reading; Index

Sommario/riassunto

How could nanotechnology not perk the interest of any designer, engineer or architect? Exploring the intriguing new approaches to design that nanotechnologies offer, Nanomaterials, Nanotechnologies and Design is set against the sometimes fantastic sounding potential of this technology. Nanotechnology offers product engineers, designers, architects and consumers a vastly enhanced palette of materials and properties, ranging from the profound to the superficial. It is for engineering and design students and professionals who need to understand enough about the subject to apply it with rea
