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Abstract 2.1 Introduction; 2.2 Fibers and Yarns (1D); 2.3 Fabrication Technologies; 2.4 Films, Membranes, Sheets and Papers (2D); 2.5 Foams, Gels and Bulks (3D); 2.6 Potential Applications; 2.7 Concluding Remarks; Acknowledgments; References; Abstract; 3.1 Introduction; 3.2 Heteroatom Doping of Graphene; 3.3 Properties of Heteroatom-Doped Graphene; 3.4 Synthesis of Heteroatom-Doped Graphene; 3.5 Applications of Heteroatom-Doped Graphene; 3.6 Perspective; References; Abstract; 4.1 Introduction; 4.2 Synthesis of Chalcogenide Glasses; 4.3 Electrical, Optical and Thermal Properties; 4.4 Applications of Chalcogenides; 4.5 Conclusion; References; Abstract; 5.1 Introduction to Metal Oxides; 5.2 Growth of Metal Oxide Nanostructures; 5.3 Growth of Indium Oxide Nanostructures; 5.4 Growth of Zinc Oxide Nanostructures (ZNT); 5.5 Growth of 3-D Indium-Zinc Oxide Nanostructures; 5.6 Growth of Gallium Oxide Nanostructures; 5.7 Application: Environmental Sensors; 5.8 Summary; References; Abstract; 6.1 Nanocomposites; 6.2 Types of Nanocomposites; 6.3 Synthesis Routes for Fabricating Metal Matrix Nanocomposites; 6.4 Major Applications of Metal Matrix Nanocomposites; 6.5 Corrosion; 6.6 Corrosion Control by Metal Matrix Nanocomposites; References; Abstract; 7.1 Introduction; 7.2 Piezoelectric Nanogrinding; 7.3 Stress Analysis in a Nanogrinding Grain; 7.4 Fracture Dominated Wear Model; 7.5 Nanogrinding; 7.6 Porous Nanogrinding Tools; 7.7 Laser Dressing of Nanogrinding Tools; 7.8 Future Directions; Acknowledgements; References; Abstract; 8.1 Introduction; 8.2 Experimental Section; 8.3 Result and Discussion; 8.4 Conclusion and Future Remarks; Acknowledgments; References; Abstract; 9.1 Introduction; 9.2 Large Area Fabrication of Silicon Nanowire Arrays; 9.3 Morphology and Structure of SiNWs

Sommario/riassunto

This book provides a review of the latest research findings and key applications in the field of nanomaterials. The book contains twelve chapters on different aspects of nanomaterials. It begins with key fundamental concepts to aid readers new to the discipline of nanomaterials, and then moves to the different types of nanomaterials studied. The book includes chapters based on the applications of nanomaterials for nano-biotechnology and solar energy. Overall, the book comprises chapters on a variety of topics on nanomaterials from expert authors across the globe. This book will appeal to researchers and professional alike, and may also be used as a reference for courses in nanomaterials.
