

1. Record Nr.	UNINA9910135034503321
Titolo	Advanced ceramic materials / / edited by Ashutosh Tiwari, Rosario A. Gerhardt and Magdalena Szutkowska
Pubbl/distr/stampa	Beverly, Massachusetts ; ; Hoboken, New Jersey : , : Scrivener Publishing : , : Wiley, , 2016 ©2016
ISBN	1-119-24272-X 1-119-24273-8 1-119-24259-2
Descrizione fisica	1 online resource (445 p.)
Collana	Advanced Material Series
Disciplina	620.1/4
Soggetti	Ceramic materials
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 at the end of each chapters and index.
Nota di contenuto	Cover; Title Page; Copyright Page; Contents; Preface; Part 1 Design, Processing, and Properties; 1 Development of Epitaxial Oxide Ceramics Nanomaterials Based on Chemical Strategies on Semiconductor Platforms; 1.1 Introduction; 1.2 Integration of Epitaxial Functional Oxides Nanomaterials on Silicon Entirely Performed by Chemical Solution Strategies; 1.2.1 Integration of Piezoelectric Quartz Thin Films on Silicon by Soft Chemistry; 1.2.2 Controllable Textures of Epitaxial Quartz Thin Films; 1.2.3 Integration of Functional Oxides by Quartz Templating; 1.2.4 Highly Textured ZnO Thin Films 1.3 Integration of Functional Oxides by Combining Soft Chemistry and Physical Techniques1.4 Conclusions; Acknowledgments; References; 2 Biphasic, Triphasic, and Multiphasic Calcium Orthophosphates; 2.1 Introduction; 2.2 General Definitions and Knowledge; 2.3 Various Types of Biphasic, Triphasic, and Multiphasic CaPO <sub>4</sub> ; 2.4 Stability; 2.5 Preparation; 2.6 Properties; 2.7 Biomedical Applications; 2.8 Conclusions; References; 3 An Energy Efficient Processing Route for Advance Ceramic Composites Using Microwaves; 3.1 Introduction; 3.2 Historical Developments in Materials Processing by Microwaves 3.3 Introduction to Microwave Heating Process3.3.1 Microwave-

materials Interaction Theory; 3.3.2 Microwave Heating Mechanisms; 3.4 Heating Methods by Microwaves; 3.4.1 Direct Microwave Heating; 3.4.2 Microwave Hybrid Heating; 3.4.3 Selective Heating; 3.4.4 Microwave-assisted Processing of Materials; 3.5 Advantages/Limitations of Microwave Material Processing; 3.5.1 Highly Energy Efficient Processing Method; 3.5.2 Better Quality of Processed Materials; 3.5.3 Cleaner Energy Processing; 3.5.4 Compact Processing Unit; 3.5.5 Restriction in Processing of All Varieties of Materials  
3.5.6 Restrictions in Processing of Complex Shapes  
3.5.7 Non-uniformity in Heating; 3.5.8 Human Safety Issues; 3.6 Application of Microwave Heating in Composite Processing; 3.6.1 Recent Review of Work Carried Out in MMC/CMC/ Alloys/Ceramic Processing by Microwaves; 3.6.2 Microwave Melting/Casting of Metals/Metal Matrix Composites; 3.7 Future Prospectives; 3.8 Conclusion; References; Part 2 Ceramic Composites: Fundamental and Frontiers; 4 Continuous Fiber-reinforced Ceramic Matrix Composites; 4.1 Introduction; 4.2 Parts of a CMC; 4.2.1 Fibers; 4.2.2 Interphase; 4.2.3 Matrix  
4.3 Modern Uses of CMCs  
4.4 History; 4.5 Ceramic Fibers; 4.5.1 Oxide Fibers; 4.5.1.1 Alumina Fibers; 4.5.1.2 Stabilized Alumina Fibers; 4.5.1.3 Alumina Silicate Fibers; 4.5.1.4 Other Oxide Fibers; 4.5.2 Non-oxide Fibers (SiC); 4.5.2.1 Oxidation; 4.5.2.2 Irradiation; 4.5.2.3 Sintering; 4.5.3 Carbon Fibers; 4.5.3.1 Polyacrylonitrile; 4.5.3.2 Pitch; 4.6 Interface/Interphase; 4.6.1 Requirements; 4.6.2 Non-oxide; 4.6.3 Oxide; 4.7 Matrix Materials; 4.7.1 Carbon; 4.7.2 Silicon Carbide; 4.7.3 Oxides; 4.8 Matrix Fabrication Techniques; 4.8.1 Polymer Impregnation and Pyrolysis  
4.8.2 Chemical Vapor Infiltration

---