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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 Techniques 1.4 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 Process 3.3.1 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  
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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

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