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3.3 Enhanced Thermal Conductivity of Polymer Composites Filled with 3D Brush-Like AlN Nanowhiskers by Combustion Method3.4 Growth of Flower-Like AlN by Combustion Synthesis Assisted with Mechanical Activation; 3.5 Combustion Synthesis of AlN Porous-Shell Hollow Spheres; 3.6 Summary and Conclusions; References; Chapter 4: Combustion Synthesis and Spark Plasma Sintering of -SiAlON; 4.1 Introduction; 4.2 CS of High-Purity -SiAlON and Densification by SPS; 4.3 Physical Properties of CS-SPSed -SiAlON; 4.4 Corrosion Resistance; 4.5 Conclusions of This Chapter; References
Chapter 5: Combustion Synthesis of AlN (Al3O3N), BN, ZrN, and TiN in Air and Ceramic Application5.1 Thermochemical Features of Aluminum Particles Combustion (Theoretical Background); 5.2 Chemical Features of Metals Combustion in Air (Experimental Background); 5.3 Nitrides (Oxynitrides) Formation by Metal Powder Combustion in Air; 5.4 Application of the Synthesized Nitrides and Oxynitrides in Dense Ceramics; References; Chapter 6: Combustion Synthesis of Nitrides of Vanadium, Niobium, and Tantalum; 6.1 Introduction; 6.2 Experimental Methods of Approach; 6.3 Results and Discussion
6.4 ConclusionsReferences; Chapter 7: Synthesis of Nitrides by SHS of Ferroalloys in Nitrogen; 7.1 Introduction; 7.2 Synthesis of Silicon Nitride by Combustion of Ferrosilicon in Nitrogen; 7.3 Synthesis of Vanadium Nitride by Combustion of Ferrovanadium in Nitrogen; 7.4 Synthesis of Niobium Nitride by Combustion of Ferroniobium in Nitrogen; 7.5 Synthesis of Titanium Nitride by Combustion of Ferrotitanium in Nitrogen; 7.6 Combustion of Ferrochromium in Nitrogen and Synthesis of Chromium Nitride; 7.7 Combustion of Ferroboron in Nitrogen and Synthesis of Boron Nitride
7.8 Application Prospects of Products of Combustion of Ferroalloys in Nitrogen

Sommario/riassunto

A comprehensive overview of recent developments in the field of non-oxide ceramics with special emphasis placed on the combustion synthesis of group III-VI nitrides and oxynitrides. To ensure the widest possible perspective, the authors are experts in academia, industry, or government research, and each chapter discusses different synthetic methods and process parameters, as well as important material properties and applications. The result is invaluable reading for researchers and practitioners in the industry as well as those looking for an introduction to the field. It is equally of great i