

Novel Ceramic Materials

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The book presents a number of novel ceramic materials that have great potential for advanced technological applications, such as microwave devices, communication instruments and memory devices.

Keyword: Materials Science, Structural Characteristics, Piezoelectric Ceramics, Zirconia Ceramics, Doped NiO Ceramic Nanostructures, Novel Ceramics, BST Ceramics (Barium-Strontium-Titanates), Manganite Ceramics, Ce-Doped LaMnO_3 And Sb-Doped NKN (Sodium-Potassium-Niobates), Ferrite Structures Materials, Multi-Ferroic Structures Materials, XRD (X-Ray Diffraction), SEM (Scanning Electron Microscopy), EDX (Energy Dispersive X-Ray Analysis), Uvvisible Spectroscopy, And VSM (Vibrating Sample Magnetometer), Rietveld Analysis, Surface Morphology, Optical Properties, Magnetic Properties, Electron Density Distribution

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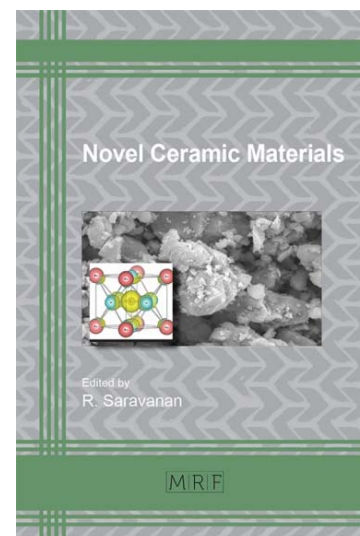
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Summary:

The book presents a number of novel ceramic materials that have great potential for advanced technological applications, such as microwave devices, communication instruments and memory devices.

The materials covered include piezoelectric ceramics, zirconia ceramics, doped NiO ceramic nanostructures, BST ceramics (Barium-Strontium-Titanates), manganite ceramics, Ce-doped LaMnO_3 and Sb-doped NKN (Sodium-Potassium-Niobates), as well as materials with ferrite structures, and with multi-ferroic structures

The materials were characterized experimentally by means of XRD (X-ray diffraction), SEM (Scanning electron microscopy), EDX (Energy Dispersive X-ray analysis), UV-Visible Spectroscopy, and VSM (Vibrating sample magnetometer). The results are discussed in terms of the structural characteristics of the various crystal structures, their special surface morphology, and their optical and magnetic properties.

Of particular interest is the determination of the electron density distribution (on the basis of XRD data and computerized evaluations). These data elucidate the atomic/electronic structure of the materials and make us understand the specific characteristics of these novel ceramics.