

Synthesis, Development and Characterization of Novel Barium Titanate, Lead Lanthanum Zirconate Titanate and NiCuZn Ferrite Nanoparticle Materials

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Attractive for numerous technological applications, ferroelectronic and ferrite oxides constitute an important class of multifunctional compounds. Intense experimental efforts have been made recently in synthesizing, processing and understanding functional ferroelectric and ferritic nanostructures. This work will present the systematic characterization and optimization of barium titanate (BaTiO_3), lead lanthanum zirconate titanate (PLZT) and NiCuZn ferrite nanoparticle based ceramics. The nanoparticles have been synthesized using several solution and pH-based synthesis processing routes and employed to fabricate polycrystalline ceramic and functional nanocomposite/nanostructured components. The electric, dielectric, ferroelectric and magnetic properties of various components, fabricated from these nanoparticles, have been gauged by impedance analysis and electromechanical response and will be discussed.

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