Particle Size Effect on the BaTio3 Powder Quality by the Solid State Reaction

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Abstract

15 nm to 284nm of TiO2, 226nm of BaCO3 powders and barium nitrate with citric acid were used to synthesize the BaTiO3 by solid state reaction. The effect of particle size on the dielectric properties of BaTiO3 was discussed in this paper. According the test results, the synthesis temperature of cubic BaTiO3 was not affected by the particle sizes of TiO2. The synthesis temperature of BaTiO3 with barium nitrate could be reduced to 620 줩 C. The transformation temperature from cubic to tetragonal of BaTiO3 was decreased with decreasing the TiO2 particle sizes. BaTi2O5 was found at the materials using 15 nm TiO2 powder. Ba2Ti9O20 was formed at the material with barium nitrate without citric acid adding.