

HYDROTHERMAL SYNTHESIS OF BaTiO₃ AND BaTi_{0.8}Zr_{0.2}O₃ (pure and doped) FINE POWDERS

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The classic preparation way of the electronic ceramics is the solid reaction. This method begins to yield the place to chemical preparation techniques that give powders of high purity and an uniform granulation. Barium Titanate ceramics are interesting to study because of their simple structures and the modulation of their properties when we dope them by transition elements. In fact, the substitution of the ion Ti⁴⁺ by Zr⁴⁺ modifies appreciably the dielectric and structural properties of BaTiO₃. In this work, we present a new process of the preparation of BaTiO₃ (BTO) and BaTi_{0.8}Zr_{0.2}O₃ (BZT) (pure and doped with Cu and Sb) by the hydrothermal way. This process permits us to obtain ferroelectric ceramics from cheaper precursors at relatively low temperatures. The analysis of the samples by scanning electron microscopy shows that the obtained powders are spherical grains form perfectly homogeneous (the size of the grains is about 0.2μ). The cell parameters have been determined from X-rays spectrum. The evolution of these parameters related to the synthesis conditions and the thermal processing will be discussed.