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Title:Microwave dielectric properties of Ba(Zn<inf>1/3</inf>Ta <inf>2/3</inf>)O<inf>3</inf> ceramics doped with Nb<inf>2</inf>O<inf>5</inf>, MnO<inf>2</inf> or V<inf>2</inf>O<inf>3</inf>
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Abstract:Dielectric materials with a high permittivity (Ε<inf>r</inf>), a high quality factor (Q) and a low temperature coefficient of the resonant frequency (τ<inf>f</inf>) have become very important for the miniaturization of microwave devices, such as filters or antennas. In this work, Ba(Zn <inf>1/3</inf>Ta<inf>2/3</inf>)O<inf>3</inf> (BZT) ceramics doped with Nb <inf>2</inf>O<inf>5</inf>, MnO<inf>2</inf> or V<inf>2</inf>O<inf>3</inf> were obtained by the conventional solid-state reaction method. We report on the compositional, structural and morphological characterization of BZT resonators, as well as on the influence of the dopant (type and quantity) and sintering temperature on their dielectric properties. The best microwave dielectric properties (Ε<inf>r</inf> ∼ 28.4 and Q × f ∼ 236 THz) were achieved in the case of 1% V<inf>2</inf>O<inf>3</inf> doping and 1600 °C sintering temperature. 
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Main heading:Sintering
Controlled terms:Ceramic materials - Dielectric materials - Doping (additives) - Manganese oxide - Microwave devices - Natural frequencies - Niobium oxide - Permittivity - Solid state reactions - Zinc
Uncontrolled terms:A. Ceramics - D-dielectric properties - Electronic materials - High permittivity - High quality factors - Low temperature coefficients - Microwave dielectric properties - Morphological characterization - Sintering temperatures - Solid state reaction method
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