

Improved Tunability of (Ba,Sr)TiO₃-Ba₄Ti₁₃O₃₀ Composite Ceramics by Infiltrate BaTiO₃

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(Ba,Sr)TiO₃-Ba₄Ti₁₃O₃₀ composite ceramics were synthesized by using mixed-phase powders of TiO₂, BaTiO₃ and SrTiO₃. The phase structure, microstructure and dielectric properties of the composite ceramics were investigated. It is found that the tunability is obviously increase by infiltrate BaTiO₃. Results shows the tunability of (Ba,Sr)TiO₃-Ba₄Ti₁₃O₃₀ composite ceramics sintered at 1200°C was increased from 3 to 4.5 (under 10 kV/cm biasing). The reason for the increase of tunability may be attributed to the increase of BST content due to the infiltrate BaTiO₃. These results show that the (Ba,Sr)TiO₃-Ba₄Ti₁₃O₃₀ composite ceramic is a promising material for tunable microwave device applications.

Keywords: (Ba,Sr)TiO₃-Ba₄Ti₁₃O₃₀, Microstructure, Dielectric properties, Tunabilities