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Microstructure and dielectric properties of Ag-BaTiO₃ composite ceramics

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Abstract:

Di-phase composite ceramics based on BaTiO₃ with 5 vol% of Ag filler have been prepared by sintering the mixture of powders at temperatures above the silver melting point (1000°C-1300°C/2h). As predicted by finite element calculations, the addition of metallic particles should produce a field concentration in some regions of the BaTiO₃ matrix and therefore, an enhanced dielectric response with respect to pure BaTiO₃. The role of oxygen vacancies on the dielectric relaxation mechanisms of Ag-BaTiO₃ composites has been investigated. The sintering temperature of 1200°C provided optimized ceramics with excellent dielectric properties, *i.e.* with low losses ($\tan\delta < 3\%$) and room temperature permittivity measured at 50 kHz exceeding 6500 (and above

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