No: B8-04-304

The effect of Mn on the microstructure and properties of $BaSrTiO_3$ with B_2O_3-Li_2CO_3

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Abstract

Integration of ferroelectric tunable components into dielectric layers of low temperature co-fired ceramic (LTCC) systems enables the realization of more functional MCMs for telecommunication applications. A composition designed for the low temperature sintering of ferroelectric BST material has been developed based upon previous work. Small amount of manganese is introduced to modify the properties of ferroelectric $BaSrTiO_3$ LTCC compositions. The effects of manganese on sintering behaviour, microstructure, relative permittivity, dissipation factor and tunability are studied. Manganese enhances the sintering of the BST due to an increase in the amount of oxygen vacancies and which yields an improvement in the electrical properties of BST.

Keywords: A. Firing; B. Microstructure-final; C. Dielectric properties; LTCC material

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