

Characterization of electrical and dielectric properties of V₂O₅-added SrBi₄Ti₄O₁₅ (SBTi) ceramic matrix for temperature sensor application

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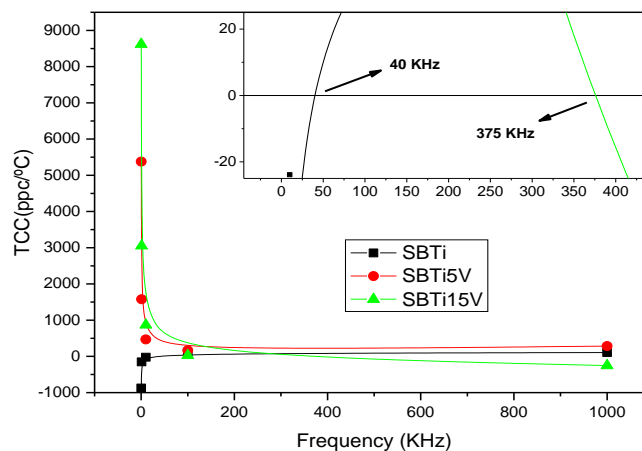
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The polycrystalline samples of SrBi₄Ti₄O₁₅ were prepared by using solid-state reaction technique. The effect of V₂O₅ oxides on SrBi₄Ti₄O₁₅ ceramics with addition of 5–15 wt. % V₂O₅ was analyzed for enhancing dielectric and microwave properties. Preliminary investigations have shown temperature-dependence relative permittivity (ϵ_r) and conductivity (σ) as a function of frequency (1 - 106 Hz) [1]. This temperature dependence suggests SrBi₄Ti₄O₁₅ ceramics a possible candidate for temperature sensor. The main application of the present sensor is for sensing the temperature in harsh and severe environments such as engine turbine and material processing systems.

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Figure 1 – The temperature capacitance coefficient (TCC) versus frequency of samples SBTi (black square), SBTi5V (red circle) and SBTi15V (Blue triangle).



References

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