Dielectric Characteristics of CaLa₄(Ti₀.₉Sn₀.₁)₄O₁₅ Ceramics at Microwave Frequencies

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The microwave dielectric properties and the microstructures of CaLa₄(Ti₀.₉Sn₀.₁)₄O₁₅ ceramics prepared by conventional solid-state route have been studied. The dielectric constant values (εᵣ) obtained at 42.3 ~ 43.8. The Q×f values of 24,000 ~ 37,000 GHz can be obtained when the sintering temperatures are in the range of 1430 ~ 1510°C. The CaLa₄(Ti₀.₉Sn₀.₁)₄O₁₅ ceramic, sintered at 1490°C, exhibits microwave dielectric properties with a dielectric constant of 43.8, and Q×f value of 37,000 GHz. CaLa₄(Ti₀.₉Sn₀.₁)₄O₁₅ ceramics, which have better sintering behavior (decrease in sintering temperature ~ 100°C) and dielectric constant than pure CaLa₄Ti₄O₁₅ ceramics, are candidates for applications in microwave devices.

Dependence of dielectric constant and Q×f value on sintering temperature for CaLa₄(Ti₀.₉Sn₀.₁)₄O₁₅ ceramics