

## **Influence of ER doping on the microstructural and dielectric properties of microwave sintered calcium copper titanate**

### **ABSTRACT**

The present work reports synthesis, as well as a detailed characterization of structural, morphological and dielectric properties of Er doped  $\text{CaCu}_3\text{Ti}_{4-x}\text{Er}_x\text{O}_{12}$  (CCTEO) with  $x = 0.00, 0.02, 0.10, 0.20$  and  $0.50$  mol% ceramics were prepared by sol-gel route. The prepared samples were sintered by using microwave sintering. The phase composition and microstructure were studied by means of X-ray diffraction (XRD) and high resolution scanning electron microscopy (HRSEM). The crystal structure did not change on doping with erbium; and it remained cubic when all the six compositions were studied. At lower frequencies, it was found that the dielectric constants had a maximum value at  $0.5$  mol% of Er. This result indicates that a certain amount of Er dopant can be improve the dielectric properties of  $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$ .

**Keyword:** Ceramics; Dielectric properties; Microstructure; Microwave sintering; Sol-gel