

## The effect of sintering temperature on the formation of (Tl, Cr)-1212 superconducting ceramic from coprecipitated oxalate precursors

### ABSTRACT

TlSr1212 superconductors were synthesized by solid-state reaction using Tl-containing precursor powder prepared by coprecipitation of metal acetates with stoichiometric ratio based on  $\text{Tl}_{0.85}\text{Cr}_{0.15}\text{Sr}_2\text{CaCu}_2\text{O}_7$  composition. The samples were sintered at temperatures between 960 and 980°C for duration of 5 minutes. XRD patterns for samples sintered at 960°C showed formation of dominant 1212 phase in addition to minor 1201 phase and  $\text{SrCO}_3$  impurity. At this sintering temperature, the best superconducting behavior with  $T_C(R=0)$  of 100 K was observed for the sample sintered at 970°C. SEM investigations on the sample revealed elongated grains which belong to 1212 phase with a slight directional grain alignment. The sample with sintering temperature of 960°C showed better grains connection as compared to the rest of the samples.

**Keyword:** Coprecipitation; High temperature superconductors; Oxalic precursor