

ABSTRACT

VARIATION OF SINTERING TEMPERATURE IN THE SYNTESIS OF Bi-2212 SUPERCONDUCTOR WITH Pb DOPANT (BPSCCO-2212) ON THE CONTENT OF Ca=1,10

By

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Synthesis of BPSCCO-2212 superconducting materials with CaCO_3 1,10 mole fraction has been done using solid reaction method. Synthesis conducted with calcination for 10 hours at temperature of 800°C and sintering for 20 hours with sintering temperature variations (T_s) 815°C , 820°C , 825°C , dan 830°C . Sintering temperature variation was performed to determine the effect on the level of purity of the Bi-2212 superconducting phase is formed (volume fraction (Fv), the degree of orientation (P), and impurity (I)). The samples were characterized using XRD (X-Ray Diffraction) and SEM (Scanning Electron Microscopy). XRD analysis results showed variation of sintering temperature tended to increase the value of the volume fraction (Fv). Value of the volume fraction (Fv) on $T_s=815^\circ\text{C}$ obtained 72,39%, $T_s=820^\circ\text{C}$ obtained 74,56%, $T_s=825^\circ\text{C}$ obtained 87,34%, and $T_s=830^\circ\text{C}$ obtained 90,10%. While the value of the degree of orientation (P) at $T_s=815^\circ\text{C}$ obtained 53,13%, $T_s=820^\circ\text{C}$ obtained 55,97%, $T_s=825^\circ\text{C}$ obtained 59,31%, and $T_s=830^\circ\text{C}$ gained 42,43%. Volume fraction (Fv) is relatively well contained in sintering samples at temperatures 830°C is 90,10%. While the degree of orientation (P) is relatively well contained in the sample with $T_s=825^\circ\text{C}$ was 59,31%.

Key words: superconductors, BPSCCO-2212, sintering temperature, volume fraction, the degree of orientation.