

## ABSTRAK

### PENGARUH WAKTU SINTERING TERHADAP PEMBENTUKAN FASE SUPERKONDUKTOR BPSCCO-2212 PADA KADAR Ca = 1.10 MENGUNAKAN METODE PENCAMPURAN BASAH

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Penelitian ini dilakukan untuk mengetahui pengaruh waktu sintering terhadap pembentukan fase superkonduktor BPSCCO-2212 pada kadar Ca 1,10 dengan menghitung tingkat kemurnian fase yang terbentuk dan melihat struktur mikronya. Variasi waktu sintering yang digunakan adalah 10, 20, 30 dan 40 jam menggunakan metode pencampuran basah. Sampel dikalsinasi pada suhu 800 °C selama 10 jam dan disintering pada suhu 830 °C. Hasil karakterisasi XRD menunjukkan fraksi volume tertingginya diperoleh pada sampel BPSCCO/40jam sebesar 86,72%.. Sedangkan, fraksi volume terendah adalah BPSCCO-2212/30jam sebesar 53,07%. Hasil uji SEM menunjukkan bahwa struktur mikro bahan BPSCCO-2212 belum terorientasi dan masih banyak *void* (ruang kosong antar lempengan) berdasarkan hasil derajat orientasi yang dihasilkan dengan nilai tertinggi diperoleh pada sampel BPSCCO-2212/30jam yaitu sebesar 13,59%, sedangkan derajat orientasi terendah diperoleh pada BPSCCO-2212/20jam yaitu sebesar 7,67.

**Kata kunci:** Superkonduktor BPSCCO-2212, waktu sintering, fraksi volume, dan derajat orientasi.

## ABSTRACT

### THE EFFECT OF SINTERING TIME TO PHASE FORMATION OF SUPERCONDUKTOR OF SUPERCONDUCTOR BPSCCO-2212 WITH Ca=1,10 USING THE WET MIXING METHOD

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*This research was conducted to determine the effect of sintering time to phase formation of superconducting BPSCCO-2212 with Ca content 1,10 by calculating the level of purity of the phases formed and looking at the microstructure. The variation of sintering time were 10, 20, 30 and 40 hours using wet mixing method. The sample were calcinated with 800 °C for 10 hours and sintered at temperature 830 °C. The XRD's characterization result showed highest volume fraction obtained in BPSCCO-2212/40 hours was 86,72% while, the lowest volume fraction of BPSCCO-2212/30 hours was 53,07%. The relative high orientation degree of BPSCCO-2212/30 hours was 13,59% and while the lowest orientation degree of BPSCCO-2212/20 hours is 7,67%. The SEM's characterization result shows that all samples have not been oriented and there are still many voids (empty space between the plates) based on the results of the degree of orientation produced with the highest value obtained in the sample BPSCCO-2212/30hours which is 13.59%, while the lowest degree of orientation is obtained at BPSCCO-2212/20hours which is equal to 7.67.*

**Keywords:** Degree of orientation, sintering time, superconductors BPSCCO-2212, and volume fraction