

## **ABSTRAK**

### **VARIASI DOPING Pb TERHADAP PERTUMBUHAN FASE SUPERKONDUKTOR BPSCCO-2223 PADA KADAR Ca = 2,10 MOL MENGUNAKAN METODE PENCAMPURAN BASAH**

**Oleh**

**ADE SETIAWAN**

Telah dilakukan penelitian tentang variasi doping Pb terhadap pertumbuhan fase superkonduktor BPSCCO-2223 pada kadar Ca = 2,10 mol menggunakan metode pencampuran basah. Sampel dilarutkan dengan HNO<sub>3</sub> dan aquades secara perlahan, kemudian dilakukan pengeringan pada suhu 300, 400, dan 600 °C secara bertahap. Sampel dikalsinasi selama 10 jam pada suhu 800 °C dan di-*sintering* pada suhu 865 °C selama 10 jam. Penelitian ini dilakukan untuk mengetahui pengaruh kadar doping Pb terhadap kemurnian fase superkonduktor. Hasil XRD menunjukkan penambahan kadar doping Pb berpengaruh terhadap nilai fraksi volume BPSCCO-2223. Fraksi volume tertinggi diperoleh pada kadar doping Pb sebanyak 0,4 mol yaitu sebesar 76,35 % dengan nilai derajat orientasi sebesar 26,08 %. Fraksi volume terendah terdapat pada sampel tanpa doping Pb yaitu sebesar 49,94 % dengan derajat orientasi sebesar 0 %. Hasil SEM menunjukkan bahwa penambahan doping Pb mengakibatkan sampel terorientasi ke satu arah serta ruang kosong antar lempengan (*void*) semakin berkurang. Hasil uji Meissner menunjukkan terjadi penolakan magnet (efek Meissner lemah) oleh sampel superkonduktor BPSCCO-2223 pada kadar doping Pb sebanyak 0,4 mol.

**Kata kunci:** BPSCCO-2223, derajat orientasi, doping, fraksi volume, superkonduktor

## ABSTRACT

### **THE Pb DOPING VARIATION ON THE GROWTH OF SUPERCONDUCTOR PHASE BPSCCO-2223 AT Ca LEVEL = 2,10 MOL LEVEL USING WET- MIXING METHOD**

By

**Ade Setiawan**

*Research of Pb doping variation on the growth of the superconductor phase BPSCCO-2223 at Ca level = 2,10 mol using wet-mixing method has been done. Samples were dissolved with HNO<sub>3</sub> and distilled with water slowly, then dried out at temperatures of 300, 400, and 600 °C gradually. The samples were calcined for 10 hours at 800 °C and sintered at 865 °C for 10 hours. The aim of this research is to determine the effect of Pb doping levels on the purity of superconductor phase. The XRD result shows that the addition of Pb doping levels affecting the volume fraction value of BPSCCO-2223. The highest volume fraction is obtained at 0,4 mol Pb doping level i.e. 76,35 % with the orientation degree value i.e. 26,08 %. The lowest volume fractions is found in samples without Pb doping (49,94 %) with the orientation degree is 0 %. SEM result shows that the Pb doping addition causing the sample is oriented in one direction and the empty space between slabs (voids) decreases. The Meissner test result shows a magnetic rejection (weak Meissner effect) on the BPSCCO-2223 superconductor sample with 0,4 mol Pb doping level.*

**Keywords:** BPSCCO-2223, doping, orientation degree, superconductor, and volume fraction