

GRAIN – MATRIX MOSAIC CONTRIBUTION TO ac LOSSES IN Ni – DOPED BSCCO CYLINDERS

M.I. Adam, S.A. Halim, M.A.M. Faisal, H. Baqiah and M. Kamarulzaman
Superconductor and Thin film Laboratory, Department of Physics, Faculty of Science, 43400 UPM, Serdang, Selangor, D E. MALAYSIA

ABSTRACT

The measurements of ac susceptibility χ'' is performed to determine the characteristics of intergranular components in sintered $\text{Bi}_{1.6}\text{Pb}_{0.4}\text{Sr}_2(\text{Ca}_{1-x}\text{Ni}_x)_2\text{Cu}_3\text{O}_\delta$, ($x = 0.0 - 0.05$) polycrystalline cylinders prepared by the conventional route. Theoretical values of for idealized cylinder were calculated in the range $10 \leq k$, correspondence of the Bean and the simplified Kim critical state models. Magnetization curve for various stages in the specimens is hence approximated. It is found that Ni content in BSCCO system changes the effective volume fraction of the grains, field dependence of the intergranular critical current density, transition temperature, and the intergranular pinning property.

<http://journal.masshp.net/wp-content/uploads/Journal/2009/Jilid%201/M.I.%20Adam%20229-236.pdf>

REFERENCES

- [1]. J. R Clem, (1992). in *Magnetic Susceptibility of Superconductors and Other Spin Systems* edited by R. A. Hein, T.L. Francavilla, D. H. Liebenberg, , New York, Plenum.
- [2]. J. R Clem, (1982). *Phys. Rev. B*, 26, 2463.
- [3]. J. R Clem. and A P.Gonzalez., (1984). *Phys. Rev. B*, 30, 5041.
- [4]. S. Celebi, A. I. Malik, F. Inanir, and S. A. Halim, (2004) *J. Alloys and Compounds*, 370, 69.
- [5]. D. X. Chen, J. Nogues, and K. V. Rao, (1989). *Cryogenics*, 29, 800
- [6]. K. H Muller, (1989). *Physica C*, 159, 717.
- [7]. T. Ishida and R. B. Goldfarb, (1990). *Phys. Rev. B*, 41, 8937.
- [8]. S. Celebi, (1999). *Physica C* 316, 251.
- [9]. J. R.Clem, (1988). *Physica C* 153, 50.
- [10]. D-X. Chen and A. Sanchez, (1992). *Phys. Rev. B*, 45, 10793.
- [11]. C. P. Bean, (1964). *Rev. Mod. Phys.* 36 31.
- [12]. M.A.R.LeBlanc, G. Fillion, and J. P. Lorrain, (1986). *J. Appl. Phys.* 59, 3208.