Comparison and analysis of the samples with same synthesis of Bi-Sr-Ca-Cu-O, prepared by different ways of heating

Basilis Papadopoulos[1], C. Stergiou[2], A. Stergiou[1], [1]*Department of Physics,* [2]*Department of Electrical & Computer Engineering, Aristotle University of Thessaloniki (A.U.Th.). Thessaloniki, Greece.* E-mail: stergiou@auth.gr

For the study of superconducting materials, produced by different ways of heating, five mixtures with proportions 2:2:2:3 of Bi_2O_3, $SrCO_3$, $CaCO_3$, CuO were prepared. The four of them were heated, directly, at 860^o, 870^o, 880^o and 890^o C, individually, while the last one, gradually, at the same temperatures. All the samples were heated in free atmosphere, for 48h.

The crystalline phases, created in the eight cases, were studied by XRD measurements and characterized, using the PDF2 database. Further, the Powder Profile Analysis (Rietveld's method) was used for the crystallographic study of the samples. The phase $Bi_2CaSr_2Cu_2O_8$, with space group Amaa and mean unit cell parameters a=5.4028, b=5.3923 c=30.6559 [1], was the main phase for all the samples, with a percentage greater than 80%. Some other phases with percentage 5-15% for the different samples were defined, say the Bi_2SrCuO_5, with structure analogous of Dy_2BaCuO_5 [2] (Pnma space group and mean unit cell parameters a=12.2020, b=5.6732, c=7.1357).

Results of the samples synthesis for each of the processes were discussed.

[1] Petricek V., Gao Y., Lee P., Coppens P., *Powder Diffraction,* 1994, **9**, 28-37. [2] Salinas-Sanchez A., Garcia-Munoz J.L., Rodriguez-Carvajal J., Saez-Puche R., Martinez J.L., *J. of Solid State Chemistry*, 1992, **100**, 201-211.

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