Crystallographic study of superconducting serious $Nd_{1+x}Ba_{2-x}Cu_3O_y$ (x=0.0,0.2,0.4,0.6), prepared at 850°C and 860°C

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The structural properties of superconducting serious $Nd_{1+x}Ba_{2-x}Cu_3O_y$ (x=0.0, 0.2, 0.4, 0.6), prepared at 850°C and 860°C, were studied. For this aim, four powder mixtures with suitable proportions of Nd_2O_3, BaO and CuO were prepared and heated at temperature 850° and next the produced samples were reheated at 860°C, in free atmosphere for 48h, in both cases. The creation and the evolution of the phases, as a function of the quantity x, was studied by analysis of XRD measurements. The phase characterization was realized with a suitable program, using the PDF2 data-base. Farther, the Powder Profile Analysis (Rietveld's method) was used for the phase structure refinement and the exact determination of the phase percentages. Four crystal phases, $NdBa_2Cu_3O_7$ [1], Nd_2BaCuO_5 [2], $BaCuO_2$ [3] and CuO [4], were defined for the samples prepared at 850°C, while only the first three of these were defined for the samples prepared at 860°C. The creation and percentages of the crystal phases in the samples were discussed, as a function of the temperature and the quantity x.

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Keywords: superconductors, crystal structure, Rietveld's method