SUPERCONDUCTING PROPERTIES OF $Bi_2Sr_2Ca_4Cu_5O_y$

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In order to investigate the effect of incorporating extra Cu-O layers into the structure of high temperature superconducting cuprates, properties of samples with nominal composition $Bi_2Sr_2Ca_4Cu_5O_y$ have been studied. Samples were prepared by solid state sintering of the powders and pellets made from high purity oxides and carbonates. Electrical resistivity and magnetic susceptibility data exhibits an onset of superconductivity transition at 100 K and zero resistivity transition at 70 K. X-ray diffraction pattern suggests that addition of extra CuO inhibits the formation of the 110 K phase and gives rise to impurity phases and that it is unlikely that the number of Cu-O layers in the structure can be increased by the conventional solid state sintering process.

References: 1. Michel, C., Hervieue, M., Borel, M.M.,Grandin,A., Deslandes F., Provost J. & Raveau B.; Z. Phys. B68 (1987) 421.
2. Maeda, H., Tanaka, Y., Fukutum, M. & Asano,T. Jpn.J.Appl.Phys.27 (1988) L209.