

**SUPERCONDUCTING PROPERTIES OF YTTRIUM, Y
SUBSTITUTION IN BSCCO-2223**

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ABSTRACT

SUPERCONDUCTING PROPERTIES OF YTTRIUM, Y SUBSTITUTION IN BSCCO-2223

In this study, the $\text{Bi}_{1.6-x}\text{Y}_x\text{Pb}_{0.4}\text{Sr}_2\text{Ca}_2\text{Cu}_3\text{O}_\delta$ has been made with Yttrium concentration, $x = 0.00, 0.02, 0.05, 0.10, 0.15, 0.20$. The samples were prepared by using solid state method by mixing powders of Bi_2O_3 , Y_2O_3 , PbO , SrCO_3 , CaCO_3 and CuO . The samples were characterized by X-ray diffraction and electrical resistivity measurement by four point probe. It was found that further addition of Yttrium decreased the critical temperature, T_c and critical current density, J_c . All the samples have $T_{c \text{ zero}}$ in the range of 50K to 97K. The decreasing of T_c value due to the decreasing of the hole concentration and transport properties of the samples. The J_c value was measured to be 0.947 A/cm^2 for pure sample and decrease to 0.266 A/cm^2 for $x= 0.02$ at 77K. The crystallographic structure of all the samples form in orthorhombic shape.

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