

Magnetic Properties of Polycrystalline Tl-1223 Superconductor

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Polycrystalline Tl-1223 superconductors with a chemical composition of (Tl,Pb,Bi) (Sr,Ba)₂Ca₂Cu₃O_x were synthesized by the solid state reaction method. The optimum chemical composition was Tl_{0.8}Pb_{0.2}Bi_{0.2}Sr_{1.8}Ba_{0.2}Ca_{2.2}Cu₃O_x. The superconducting phase is characterized by X-ray diffraction pattern and the morphology of the grains in the samples was revealed by SEM.

The sample was evaluated for their superconducting properties by magnetization measurement. The critical temperature T_c is 120 K and the critical current density J_c (T=5K, 0T) is estimated to be ~10⁵A/cm² for Tl_{0.8}Pb_{0.2}Bi_{0.2}Sr_{1.8}Ba_{0.2}Ca_{2.2}Cu₃O_x.

keywords : Polycrystalline Tl-1223, magnetization.