

FABRICATION OF $Tl_{0.9}Bi_{0.1}Sr_{1.9}In_{0.1}Ca_{0.9}Y_{0.1}Cu_2O_7$ AND $YBa_2Cu_3O_{7-\delta}$ SUPERCONDUCTOR COATED TAPES

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ABSTRACT

In this paper, preparation of Y123 and Tl1212 thick films on silver substrate using a simple coating procedure are reported. In this procedure $YBa_2Cu_3O_{7-\delta}$ and $Tl_{0.9}Bi_{0.1}Sr_{1.9}In_{0.1}Ca_{0.9}Y_{0.1}Cu_2O_7$ superconductors were synthesized using the conventional solid state method and transformed into slurry by mixing with appropriate amounts of organic binder, dispersant and solvent. The slurry was then transferred on silver substrates. The resulting thick film was annealed at low temperature for 2-3 hours to remove the organic material. It was then subjected to thermal treatment before electrical resistance measurements (dc) using the four-point-probe method. The Y123 and Tl1212 coated tapes showed metallic normal state behaviors with critical temperature T_c zero of 62 K and 72 K, respectively. The critical current (I_c) of the Y123 and Tl1212 tapes measured at 40 K were 390.5 mA and 864.5 mA respectively.

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