

Critical currents of thallium based tape

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The thallium based superconducting tape was prepared by the “powder in tube” technique from the high quality of the $(\text{Tl}_{0.6}\text{Pb}_{0.24}\text{Bi}_{0.16})(\text{Ba}_{0.1}\text{Sr}_{0.9})_2\text{Ca}_2\text{Cu}_3\text{O}_y$ superconductor. The critical temperature of this tape ($T_c = 118$ K) was determined from the a.c. susceptibility measurements. The critical currents as a function of temperature were obtained from the absorption part of a.c. susceptibility measurements using the Bean’s model. This dependence was fitted to take advantage the Ginzburg – Landau strong-coupling limit approach. Using the fit parameters, the critical current at 77 K was calculated.