

FABRICATION AND TRANSPORT PROPERTIES OF In-DOPED Tl1212/Ag SINGLE-CORE DIP-COATED TAPES

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ABSTRACT

Superconducting powder from high purity chemicals with nominal composition of $Tl_{0.9}Bi_{0.1}Sr_{1.9}In_{0.1}Ca_{0.9}Y_{0.1}Cu_2O_7$ were used to fabricate Tl-1212/Ag superconducting tapes using the dip-coating (DC) method. The tapes were subjected to reannealing under different heating conditions where some of the tapes were subjected to intermediate mechanical rolling. Results showed that annealing temperature and annealing duration together with intermediate mechanical rolling (IR) could be optimized to increase T_c and 1212 phase formation and J_c of In-substituted Tl-1212/Ag tapes. The highest J_c was observed for the tape, which was reannealed at 910 °C for a total duration of 60 minutes and subjected to IR. The increased J_c could be due to the densification of superconducting core and increase in 1212 phase after thermomechanical treatment.

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