

Development of High-T_c Superconducting Bi-2223 Tape Joints

Chen, K. ; Tai, C. H. ; Horng, Lance

Abstract

High-T_c superconducting joints between Ag-clad Bi-2223 tapes have been developed for persistent current applications. Two presintered tapes with one side of the silver stripped were lapped and then wrapped by a silver foil. The complex was uniaxially pressed followed by appropriate sintering to form a high-T_c superconducting tape joint. It was found that the ratio of critical currents through the joint to that of the tape, I_{cj}/I_c , depended on the uniaxial pressure and the sintering conduction. At liquid-nitrogen temperature 77 K, $I_{cj}/I_c=99\%$ has been achieved. Persistent current loops formed by Bi-2223 tapes have also been fabricated and tested. Joint resistance of a loop was determined to be 4×10^{-13} between the decay time of 120 and 3600 sec.