

Effects of Heat-treatment Temperature on the Critical Current of BSCCO Superconductor

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Fault Current Limiter (FCL) and Centrifugal Melting Process (CMP) fabricated $\text{Bi}_2\text{Sr}_2\text{Ca}_1\text{Cu}_2\text{O}_x$ (Bi-2212) tubes. Bi-2212 powder was melted in a Pt crucible and solidified in a rotating steel mold. The tube and rod-type Bi-2212 samples were heat-treated at various temperatures in flowing oxygen. The current-voltage curves at 77K of the samples were obtained by transport measurement, and the microstructure was investigated by scanning electron microscope. It is found that critical current (I_c) of the Bi-2212 samples was dependent on the heating schedule regarding the grain growth of the Bi-2212 plates. The high I_c was obtained by the combination of slow cooling and isothermal holding of the samples at 850~880°C which is just below of the partial melting temperature of Bi-2212.

Keywords : $\text{Bi}_2\text{Sr}_2\text{Ca}_1\text{Cu}_2\text{O}_x$ (Bi-2212), Centrifugal Melting Process, Fault Current Limiter

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