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Current Distributions in YBCO Bulk Superconductor Exposed to Time-varying Magnetic Fields

시변 자장에 노출된 YBCO 벌크 초전도체 내부에서의 전류밀도 분포

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We fabricated 43mm-long YBCO bulk superconductor which has a square cross sectional area of 6x6 mm^2. The sample's magnetization curve was obtained with the typical magnetization method, and the experimental ac losses were obtained using the magnetization curve. We also calculated the ac losses of the sample using critical state model, which showed some discrepancies to the observed results. To explain the discrepancies between them, we calculated the current distributions inside the sample numerically. This paper describes the numerically calculated results, and compare them with the experimentally obtained data.