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Anisotropy of Magnetic Critical Current Density HgBa2CuO4+δ

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Abstract

The anisotropy of magnetic critical current density in HgBa2CuO40 has been investigated. HgBa2CuO40 was synthesized from the mixed powders of HgO, BaO and CuO in evacuated quartz tube at 750 C for lh. As-prepared HgBa2CuO4 was annealed in flowing argon at 300!C for 6h. Pulverized sample was aligned by a magnetic field of 8T in resin. The U-loop measurements of magnetically aligned crystalline HgBa2CuO4d were performed at 4.2K. The width of hysteresis loop, M b in the a-b plane and Ac along the c-axis, were calculated. The anisotropy of the width of hysteresis loop was observed, 1 .6SIUcor b/Mcorcs3. 1 in magnetic field up to 9T. The critical current densities, Jcb in the a-b plane and Jcc along the c-axis, were determined. The Jcb at 4.2K in lT was found to be equal to 1 .6x106A/cm2.