

The Magnetic Properties of YBCO Superconductor Depending on Artificial Holes with Different Diameters

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We have studied the effect of artificial holes with different diameters on the magnetic properties of $\text{YBa}_2\text{Cu}_3\text{O}_7$ (YBCO) superconductor. YBCO superconductor was fabricated by the top-seeded melt growth process. The artificial holes were made by mechanical drilling on the surface along c-axis. Typical holes diameters were 0.5, 0.7 and 1.0mm respectively. Magnetic flux mapping and levitation force test were used to verify the magnetic properties of YBCO superconductor with artificial holes at 77 K. Result of magnetic flux mapping suggests that the magnetic flux density had tended to decrease with increasing holes diameters. Based on the result of levitation force test, the maximum repulsive force had a tendency to increase with the size of the artificial holes. From the observation of the profile, it can be concluded that the magnetic properties of YBCO superconductor are strongly influenced by the size of artificial hole.

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