

The Effect of Multiple Holes on Magnetic Properties of YBCO Superconductor

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The YBa₂Cu₃O_{7-δ}(YBCO) superconductor fabricated by a top-seeded melt growth process is considered as one of the most promising high T_c superconductor due to its extremely strong levitation force and the ability of trapping high magnetic fields. In order to estimate the influence of the number of defect in YBCO, the artificial hole with 0.7 mm diameter was made by mechanical drilling on the surface along c-axis. The typical number of defect was 9, 16, 25 holes respectively. Magnetic flux mapping and levitation force test were used to verify the magnetic properties of YBCO superconductor with artificial holes at 77 K. Based on the measurements, we conclude that the magnetic field trapping capacity had tended to decrease with increasing the number of hole, whereas the levitation force was increased after manufacturing artificial holes. This research was supported by a grant (R-2005-1-393) from Electric Power Industry Technology Evaluation & Planning (ETEP), Republic of Korea.

Key words: YBCO, magnetic flux mapping, levitation force