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Superconducting properties of YBaCuO bulk ceramics using melt process

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Superconducting properties of CeO₂ doped and undoped YBCO superconductors were evaluated to investigate the effect of pinning center on the magnetization properties. The variation ΔM with doping was maximum for 5 wt% doping and decrease with further doping. The result indicates that ΔM is proportional to the number of magnetic flux lines passing through the sample. The CeO₂ was converted to fine BaCeO₃ particles which were trapped in YBCO superconductor during the reaction sintering. The trapped fine particles, BaCeO₃ may be acted as a flux pinning center. Numerous pinning centers existing in the CeO₂ doped sample react with the external magnetic field and trap the magnetic flux. This research was supported by the Korea Electric Power Corporation [Grant number: R16XA01].

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