

## YBCO bulks for preparation of strong permanent magnets

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The application of bulk high-T<sub>c</sub> superconductors (HTSC) as very strong permanent magnets attracts interests. The magnetization of YBCO bulk superconductors can be resulted in extremely strong "superconductor permanent magnets" (SPM) at the temperature of liquid nitrogen. Two relevant factors influencing the properties of the SPMs have been investigated: 1. The external magnetic field to be trapped by HTSC bulks – that depends on the mode of the magnetization. 2. The flux trapping ability of the YBCO bulks (that is, which part of the external magnetic field can be trapped by the HTSC materials) depends on and can be controlled by the composition and the preparation technique of the HTSC bulks. This paper reports on the results related to the second factor. For analyzing the influence of the material composition and structure on the trapped fields, series of HTSC bulks with different compositions were prepared by liquid phase sintering technique. The basic composition of the bulks is YBa<sub>2</sub>Cu<sub>3</sub>O<sub>y</sub> with sodium additives. For analyzing the influence of the material composition on the flux trapping ability, the base composition was combined with different additives as Ag (10 %), Pt (0.5 %). The impulse magnetizing equipment is capable to generate a critically-damped variable flux density pulse shape. A capacitor bank is discharged through an ignitron switch into a Helmholtz-coil. Using the pulse magnetization equipment magnetic induction as high as 2 Teslas could be reached, the samples were magnetized in ZFC mode. For cooling the samples LN<sub>2</sub> was used. The paper reports the preparation techniques and the first results of the measurements of the trapped fields.