Sym. E : Magnetics
SUPERCONDUCTORS

C-TUE-08

TRAPPED MAGNETIC FIELD OF A SUPERCONDUCTING BULK MAGNET IN HIGH-Te RE-Ba-Cu-O, H. FUJIMOTO, H. KAMIJO(Railway Technology Research Institute, 2-8-38 Hikari-cho, Kokubunji-shi, Yokyo 185-8540, Japan). S. I. YOO(School of Mat. Sci. & Eng., Seoul National University, Seoul, Korea), K. NAGASHIMA (Railway Technology Research Institute, 2-8-38 Hikari-cho, Kokubunji-shi, Yokyo 185-8540, Japan), M.MURAKAMI(SRL, ISTEC, 1-16-25 Shibaura, Minato-ku, Tokyo 105-0023, Japan)

Superconducting magnets made of high T_c superconductors are promising for industrial applications. It is well known that $REBa_2Cu_3O_{7-x}$ and LRE(Light Rare-Earth) $Ba_2Cu_3O_{7-x}$ superconductors prepared by melt processes have a high critical current density, J_c at 77 K and high magnetic fields. Therefore, the materials are very promising for high magnetic field application as a superconducting permanent/bulk magnet with the liquid nitrogen refrigeraton.

LREBaCuO bulks, compared with REBaCuO bulks, exhibit larger J_c in high magnetic fields and much improved irreversibility field, H_{irr}, at 77 K.

In this study, we discuss the possibility and trapped field properties of a superconducting bulk magnet. One of the applications is a superconducting magnet for the future magnetically levitated (Maglev) train.

C-TUE-09

EFFECT OF VANADIUM DOPING ON BI-2223 PHASE FORMATION, MUSTAFA YAVUZ and HIROSHI MAEDA (Tohoku University, IMR, Katahira 2-1-1, Sendai 989-Japan)

It was found that doping Bi-2223 superconductors with V considerably enhances the high-Tc phase formation. The dopent deposites at the grain boundaries in a dimension of couple of microns. There was no significant change in Tc.

C-TUE-10

We report the observation of superconductivity in 3 nm PtSi films. It is the thinnest silicide films possessing superconductivity. These films were grown by solid state epitaxy in ultra-high-vacuum chamber. All grown samples were polycrystalline structure. Resistance measurements were carried out in temperature range 0.05–4.2 K on Hall bridge fabricated by means of photolithography. Sheet resistance of this films was 100–110 Ohm per square. It is found that resistance of films decreases beginning 4.2 K. Superconductivity transition occurs at T_c=0.35 K. Earlier the superconductivity transition has been observed in 4 nm PtSi film at T_c=0.1 K. Comparable analyses of T_c value for 3 nm PtSi films and 6 nm PtSi films shows that there is no direct connection between sheet resistance of silicide films and their T_c value as the authors of earlier publications have asserted. It is shown that T_c value is substantially determined by the technological procedure of film growing.

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C-TUE-11

LINE WIDTH OF YTTRIUM IRON GARNET POLYCRYSTALS WITH IRON CONCENTRATION, **Soon Cheon BYEON, Tae Young BYUN, Hae June JE*, and Kug Sun HONG** (School of Mater. Sci. and Eng., Seoul National Univ., Seoul 151-742, Korea; *Ceramic Processing Center, Korea Institute of Science and Technology, Cheongryang P.O. Box 131, Seoul, Korea)

Yttrium iron garnet is used as a high-frequency component because of its high electrical resistivity and low loss. The composition is strictly restricted to the stoichiometric composition. But the effect of deviation from the stoichiometric composition is not clear. In this study, the effect of variation of the iron concentration was studied. ($Y_{3-x}Fe_{5+x}O_{12}$; x=-0.3～0.3)

The iron-deficient garnet(x<0) showed a greater resistivity than that of the iron-excess garnet(x>0). But the ferromagnetic resonance showed that small deviation from the stoichiometric composition did not affect to the loss. As the composition deviates from the stoichiometric composition line width increased very sharply.