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**Meissner effect in ensemble of slightly boron-doped carbon nanotubes** J. HARUYAMA, N. MURATA, Aoyama Gakuin Univ., J. REPPERT, A. RAO, Clemson Univ., T. KORETSUNE, S. SAITO, Tokyo Institute of Technology — The small mass of carbon can promote high transition temperature ( $T_c$ ) in BCS-type superconductivity (SC). Recently, new carbon-based superconductors with order of  $T_c$  of  $\sim 10\text{K}$  [1, 2] were discovered and higher  $T_c$  has been expected. In particular, the SC in a carbon nanotube (CNT) is attracting considerable attention [3]. We reported that entirely end-bonded multi-walled CNTs, in which Luttinger liquid was suppressed, could show SC with  $T_c = 12\text{K}$ , previously [4]. In contrast, it had problem in reproducibility, because correlation with carrier doping was not clarified. Moreover, none has succeeded substitutional carrier doping into CNTs and also revealed the correlation with SC. Here, we report on the Meissner effect with  $T_c=12\text{K}$  found in thin films consisting of boron-doped single-walled CNTs [5]. We reveal that boron concentration  $< 1.5$  at.% in the CNTs and those highly homogeneous assembling to thin films are favorite to yield evident Meissner effect. This can be understood by better alignment of  $E_F$  to van Hove singularity in density of states. [1] T. E. Weller et al., *Nature Physics* 1, 39 (2005), [2] E. A. Ekimov et al., *Nature* 428, 542 (2004), [3] M. Kociak et al., *Phys. Rev. Lett.* 86, 2416 (2001), [4] I. Takesue, J. Haruyama, et al., *Phys. Rev. Lett.* 96, 057001(2006), [5] N. Murata, J. Haruyama, et al., *Phys. Rev. Lett.* 101, 027002 (2008)

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