

QB07

Superconductivity of Superconducting Precursor Using Chemical Process for Renewable Electrical Energy

Sang Heon Lee^{*1}

¹Department of Electronic Engineering, Sun Moon University, Asan, Chung Nam, 336-708, Korea

*Corresponding author: shlee@sunmoon.ac.kr, Phone: +82 41 530 2357, Fax: +82 41 530 2933

We have fabricated superconductor ceramics by chemical process. A high T_c superconductor with a nominal composition of Bi₂(Ca_{1-x}Ag_x)CuO was prepared by the organic metal salts method. The electromagnetism properties of Ag₂O doped Bi₂CaCuO superconductor were evaluated to investigate the contribution of Ag particles to magnetic effect[1]. The doped Ag is present as an isolated particle in the superconducting matrix, whereas the doped Ag₂O is reduced to Ag metal phase and is also present as an isolated particle in the matrix. The electrical resistance of the superconductor was increased by the application of the external magnetic field. But the increase in the electrical resistance continues even after the removal of the magnetic field. The possibility that the superconducting sample can be used for magnetic sensor has been examined. From the experiments, it has been found that the memorized superconductor can detect a polarity of the coming magnetic flux. This work was carried out with help of National Research Lab.(NRL) program of Korea Science and Engineering Foundation (KOSEF) and Ministry of Science and Technology, Korean government.

REFERENCES

[1] C. K. McMichael, K.B.Ma, M.A.Lamb, L.Chow, P.H.Hor, and W.K.Chu, *Appl.Phys.Lett.*, **60** 1893 (1992).

QB08

Effect of Pb Substitution for Bi on the Bi-based (2223) Superconductors Prepared by Improved Sol-gel Technique

Nguyen Thi Mua^{1,2}, Nguyen Khac Man¹, Than Duc Hien¹, Chu Duc Hien¹

¹International Training Institute For Materials Science, Ha Noi University of Technology, Ha noi, Viet Nam.

²Ha Noi University of Prevention and Fight Fire, Ha noi, Viet Nam

Three samples with nominal composition Bi_{1-x}Pb_xSr₂Ca₂Cu₃O₇(x=0.2, 0.4 and x=0.6) were prepared by the sol-gel method. The effect of Pb substitution for Bi has been investigated by X-ray diffraction, scanning electron microscopy, dc-electrical resistivity, and ac-susceptibility. Room temperature X-ray diffraction studies show that there exist two phases i.e. Bi-(2223) and Bi-(2212) in all three samples. The evaluated crystalline lattice structure of the prepared sample mainly belong to the superconductive pseudo-tetragonal. The dc-electrical resistivity data agree well with the ac-susceptibility measurement. The results show that Pb-doping play a very important role on the growth of high- T_c Bi-2223 phase and improvement of the particle boundaries.

Keywords: Sol-gel, Bi-2223, high-T_c