

[物質生命化学]

33-22 Cation Doping into the Superconducting Bi-Sr-Ca-Cu-O Ceramics Using the Solid Oxide Electrochemical Doping Method

物質生命化学科 助手 鎌田 海
大学院自然科学研究科 前期課程 矢鳴 由美
教授 松本 泰道

Electrochemical cation doping into the bismuth oxide superconductor ($\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_y$, BSCCO) was carried out using the solid oxide electrochemical doping (SOED) method, where electrolysis system consists of Anode(Ag)/M- β "- Al_2O_3 /BSCCO/Na- β "- Al_2O_3 /Cathode (Ag). Various cations (Ag^+ , K^+ , Zn^{2+}) were doped together with substitution for Sr^{2+} in BSCCO. The doping occurred only in the grain boundaries of the ceramics when the monovalent cations were used as the dopant. On the other hand, Zn^{2+} was doped in the grain bulk as well as the grain boundaries under the same electrolysis condition. This doping mechanism is briefly discussed.

(Electrochemistry, Vol. 68, No. 6, p. 540-542, (2000).)