

Effects of Metallic Cu/Ag Precoating Layers on the Contact Properties Between In-Bi Solder and Bi₂₂₁₂

J. H. Jang^a, C. J. Kim^b, O. B. Hyun^c, H. W. Park^a

^a *Korea University of Technology and Education, Cheonan, Korea*

^b *Korea Atomic Energy Research Institute, Daejeon, Korea*

^c *Korea Electric Power Research Institute, Daejeon, Korea*

In this study, Bi₂₂₁₂ superconductor and Cu-Ni metal was soldered by In-Bi at low temper in order to improve the contact properties. For the improvement of the contact properties between superconductor and solder, Ag was precoated on the surface of the superconductor by the electroplating. Ag coating layers were quantitatively analyzed by tape testing method with electroplating current density and Ag layer thickness variation. Peel test strength was improved when Cu was precoated on the superconductor. The shear strength of the contact was also correlated with the electroplating current density and the Ag layer thickness. The shear strength increased as the electroplating current density and the Ag layer thickness increased. In the case of Cu/Ag multi-Precoating, the contact strength was further increased compare to the Ag Precoating case. The effect of the annealing at 250~500 °C was also studied for the Ag precoated samples. The interface was studied by SEM & EDS, and correlated with the contact properties.

Keywords : Superconductor, soldering, Bi₂₂₁₂, electroplating, Cu, Ag, Precoating