Joint Properties for BSCCO-2212 Superconductor with Method of Soldering

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BSCCO-2212 superconductor is a candidate for the material for the superconducting fault current limiters (SFCLs) because of their high current capacity. However, they have a weakness in mechanical strength against quench implying an abrupt high energy generation. As method for overcome those defects, metal composite is usually adopted as a stabilizer shunted with superconductor. In this study, soldering effect for the improvement of the joint properties between superconductor and metal composite were investigated. A BSCCO-2212 tube coated by Ag was firstly soldered using In-Bi solder for joining with Cu-Ni. The soldering was conducted by flow soldering and reflow soldering method. At the first soldering, In-Bi soldering was carried out, and then In-Bi reflow soldering was followed after Sn-Ag-Cu flowing soldering as the second soldering. As results, mainly Ag_xIn_y intermetallic compound was formed at the first soldering. After the second soldering, wettability was improved, and it was formed and grown as two kinds of intermetallic compound of Cu_xSn_y and Ni_xSn_y

Keywords : Bi-2212, Solder, IMC(Intermetallic Compound)

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