

Low Cost Process for Fabrication of Silver Stabilizer Layer on Coated Conductor Using Organic Silver Complexes

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Silver stabilizing layer of coated conductor has been prepared by dip coating method using organic silver complexes containing 10 wt% silver as a starting material. Coated silver complex layer was dried in situ with hot air and converted to crystalline silver by post heat treatment in flowing oxygen atmosphere. A continuous silver layer with dense microstructure, good surface coverage and proper thickness of 240 nm is obtained by multiple dip coating and heat treatment. The film heat treated at a relatively low temperatures of 200 ~ 500 °C showed good mechanical adhesion and crystallography. The contact resistivity between superconducting YBCO layer and silver layer prepared by dip coating was measured as $0.67 \times 10^{-13} \Omega\text{m}^2$.

Additional deposition of copper layer with the thickness of 20 μm was possible by electroplating. The critical current measured with the specimen prepared by dip coating and sputtering on same quality YBCO layer showed similar value of ~140 A and proved its ability to replace sputtering method in industrial production of coated conductor.

Keywords : Organic silver complexes, dip coating, coated conductor, silver stabilizer layer