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EFFECT OF SINTERING TIME ON THE TRANSPORT CURRENT DENSITY OF Ag-SHEATHED $(Bi_{1.6}Pb_{0.4})Sr_2Ca_2Cu_3O_y$ SUPERCONDUCTOR TAPES

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ABSTRACT

The effect of heat treatment on the critical current density, j_c was studied for monofilament tape samples without intermediate rolling. $Bi_{1.6}Pb_{0.4}Sr_2Ca_2Cu_3O_{7+\delta}$ polycrystalline ceramic powder was prepared by co-precipitation technique. The tape samples were prepared using standard powder-in-tube method and were sintered at 850˚C at different sintering time. XRD result shows the peaks (*00l*) that belong to the 2223 phase which appear with the increase in sintering time. The electrical transport and magnetic properties of the tapes werewas characterized from 60 K to 77 K in zero magnetic fields and in magnetic field up to 0.6 T at 77 K. The transport critical current density, j_c for the tape sintered for 24 hour is 2400 A/cm^{-2} and is 6000 A/cm^{-2} for tape sintered for 100 hour. This showed that j_c increases with the increasing of the sintering time.

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