

Magnetic field influence on the superconducting transition in granular (BiPb)-Sr-Ca-Cu-O superconductors

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In this work we present the studies of the influence of magnetic field on the superconducting transition in granular (Bi,Pb)-Sr-Ca-Cu-O superconductors. Special attention was devoted to the samples containing relatively small granules (smaller than 70 nm) of the 2212 superconducting phase.

The samples were obtained by the glass-ceramic technology. Temperature dependence of resistivity was measured above 2 K in the magnetic field between 0 T and 9 T. The transition into the superconducting state was observed in the samples containing the 2212 phase in the form of crystallites equal or larger than 20 nm. Typical for granular superconductors, a two-stage character of the superconducting transition has been observed. Magnetic field influences the temperature dependence of resistivity of the samples containing granules of the 2212 phase in the superconducting phase, even in case of the samples for which no transition in the R(T) plot is observed. In the studied samples the magnetoresistance was positive in the whole range of magnetic fields.