9.7 cm

Magnetic characterisation of individually superconducting CuO_2 double layers in Bi-2212

M.Mößle, P.Popovich, C.Back, D.Kölle, R.Kleiner
Physikalisches Institut - Experimentalphysik II,
Universität Tübingen, Auf der Morgenstelle 14,
D-72076 Tübingen, Germany

The critical temperature of the high temperature superconductor $Bi_2Sr_2CaCu_2O_{8+x}$ (BSCCO) strongly depends on the carrier concentration, which is controlled by the oxygen content x. This fact allows to realize an ultrathin superconducting layer near the surface of an overdoped BSCCO single crystal by strongly reducing the oxygen content of its surface. If the gradient in oxygen concentration is strong enough this layer might be as thin as only one CuO_2 double layer. In order to perform electrical transport measurements with current flow along the superconducting layers four Ag electrodes were evaporated on the crystal surface. The measurements show that above the critical temperature of the bulk crystal (T_c = 60 K) a very thin layer with a T_c up to 90 K is superconducting. We investigated the I-V characteristics in magnetic fields up to 5 T and various angles between the sample surface and the magnetic field vector.

13.4 cm

Subject category :

1. Correlated Electrons and High Temperature Superconductors

Presentation mode :
poster

Corresponding author :
Paul Popovich

Address for correspondence :
Physikalisches Institut - Experimentalphysik II,
Universität Tübingen, Auf der Morgenstelle 14,
D-72076 Tübingen, Germany

Email address :
popovich@brahms.pit.physik.uni-tuebingen.de