Abstract Submitted
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Superconductivity in the misfit compound of $(LaSe)_{1.14}(NbSe_2)$: STM/S, calorimetric and magnetization studies[1] P. SAMUELY, P. SZABO, J. KACMARCIK, Z. PRIBULOVA, Slovak Academy of Sciences, T. SAMUELY, Safarik University, J.G. RODRIGO, Univesidad Autonoma de Madrid, C. MARCENAT, CEA/GrenobleINAC/SPSMS/LATEQS, T. KLEIN, Institut Neel, CNRS, L. CARIO, Institut des Matériaux Jean Rouxel — $(LaSe)_1.14(NbSe_2)$ is a low temperature superconductor with T_c around 1.2 K belonging to the family of the lamellar chalcogenides. Electron transfer from the LaSe to the $NbSe_2$ slab results in a natural layered system of the insulating LaSe and (super) conducting $NbSe_2$ sheets. In our previous investigations of the anisotropic transport [P. Szabó et al., Phys. Rev. Lett. 86, 5990 (2001)] indications have been found that this system behaves as a stack of Josephson-coupled superconducting $NbSe_2$ sheets separated by insulating LaSe layers. We test this hypothesis by STM/S measurements at subkelvin temperatures and in magnetic fields. Superconducting energy gap obtained by STM opens at the same temperature and field where the interlayer resistivity starts to increase before drop to zero value. Before any conclusions are made homogeneity of the superconducting parameters is to be tested. STM indicates large areas without any gap but calorimetric measurements have shown the bulk superconductivity and magnetization revealed extremely low pinning.

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