

First Observation of Superconductivity by Uniaxial Strain in (TMTTF)₂X-Salt

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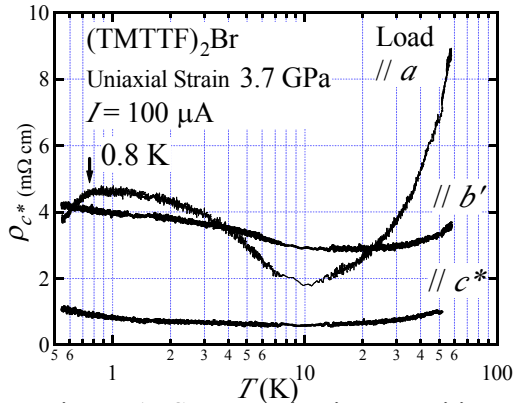


Figure 1. Superconducting transition of (TMTTF)₂Br under uniaxial strain.

The hydrostatic pressures of 2-7 GPa [1-4] played an important role to prove the linkage from (TMTTF)₂X to (TMTSF)₂X in the Jérôme's temperature-pressure phase diagram [5]. However, the true meaning in physics in the pressure-axis has attracted attention. To approach this problem, the uniaxial strain is a powerful method. But only one report on the observation of superconductivity is seen by uniaxial strain not in (TMTTF)₂X-salt but in (TMTSF)₂X[6]. The purpose of the present paper is to show ***the first observation of superconductivity by uniaxial strain in (TMTTF)₂X-salts***, where X is Br. The onset- T_c was 0.8 K for 3.7 GPa (300 K) strain. Superconductivity was confirmed by the resistance recovery by magnetic field application.

What is remarkable is that superconductivity is observed in (TMTTF)₂ Br ***only with the a-axis strain*** but not in other directions. Three samples are located in the same pressure bomb which allows the fair comparison of the strain. As seen in Fig. 1, the *a*-axis strain favors superconductivity, but is the least efficient to suppress SDW. We recall the same tendency in (TMTSF)₂PF₆[6].

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