

Optical Spectroscopy Study on SrPt₂As₂ Single Crystal

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The recent discovery of high-temperature superconductivity in iron-pnictide compounds has attracted a considerable interest in the condensed matter community. Many efforts have been made for the exploration of new superconductors in intermetallic compounds. Superconductivity at 5.2K in SrPt₂As₂ crystallizing in the CaBe₂Ge₂-type structure was reported recently [1]. There is an indication that SrPt₂As₂ experiences a charge-density-wave transition well above room temperature (but below 470K) [2]. It would be very interesting to probe the physical properties in SrPt₂As₂ single crystals. We have succeeded in synthesizing single crystals of SrPt₂As₂ by self-melting technique. Magnetization and electrical resistivity measurements confirmed T_c at 5 K. The optical spectroscopy study revealed a very high plasma frequency, which is completely different from other iron-based pnictide compounds. We will discuss the electronic properties of SrPt₂As₂ single crystals in detail.

References: [1] K. Kudo, Y. Nishikubo, and M. Nohara, *J. Phys. Soc. Jpn.* 79,123710 (2010). [2] A. Imre, A. Hellmann, G. Wenski, J. Graf, D. Johrendt, and A. Mewis: *Z. Anorg. Allg. Chem.* 633 (2007) 2037.