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Magnetic and Electronic Phase Diagram of $Sr_2VFeAsO_{3-d}$ YUJIRO TOJO, TAIZO SHIBUYA, TETSURO NAKAMURA, KOICHIRO SHOJI, MASANORI MATOBA, Dep. APPI, Keio University, SHINTARO YASUI, MITSURU ITOH, MSL, Tokyo Institute of Technology, SHINJI KITAO, MAKOTO SETO, RRI, Kyoto University, YOICHI KAMIHARA, Dep. APPI, Keio University, RESEARCH GRANTS FROM KEIO UNIV. COLLABORATION, MSL COLLABORATIVE RESEARCH PROJECT COLLABORATION, JOINT USAGE IN KRRI COLLABORATION — $Ae_2MFePnO_3$ (so-called 21113 systems) with perovskite-type layers such as Ae_2MO_3, where Ae denotes alkaline earth metals, M does Sc, Ti, Cr, V and other transition metal atoms and Pn does As and P shows superconductivity at T <46 K. $Sr_2VFeAsO_{3-d}$ is a representative compound in 21113 systems. [Zhu et al, Phys. Rev. B (2009); Ogino et al, Supercond. Sci. Technol. (2009); Ogino et al, Supercond. Sci. Technol. (2009)] Although the oxygen deficiency (d) as a function of T_c is still controversial in $Sr_2VFeAsO_{3-d}$, many samples have been reported as superconductors with T_c = 24-37 K. In this study, a polycrystalline $Sr_2VFeAsO_{3-d}$ (d = $\sim$ 0.1- 0.6) were prepared by a solid state reaction using an alumina tube in a sealed silica tube. DC electrical resistivity was measured by a four-probe technique. Magnetization measurements were performed on a superconducting quantum interference device. ^{57}Fe Mossbauer spectra were obtained using conventional equipment. The electronic and magnetic phase diagram of $Sr_2VFeAsO_{3-d}$ is elucidated.

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