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Thermodynamic and electronic properties of superconducting state of KM_2 ($M = \text{Sn, Pb}$) with the MgZn_2 -type structure SHOTA MIYAZAKI, KENJI KAWASHIMA, DAIKI HYAKUMURA, RYUTARO MATSUMURA, Aoyama Gakuin Univ, MASAAKI YOSHIKAWA, IMRA Material Co., LTD, JUN AKIMITSU, Aoyama Gakuin Univ — We discovered new superconductors of KM_2 ($M = \text{Sn, Pb}$) with the MgZn_2 -type (C14) structure (Laves phase) using the high pressure / temperature technique. The superconducting transition temperature (T_c) is to be $T_c = 3.2$ K for KSn_2 and $T_c = 3$ K for KPb_2 (These samples include small impurity phase of Sn ($T_c = 3.7$ K) and Pb ($T_c = 6.7$ K)). In order to determine the superconducting parameters, we have performed the magnetic susceptibility measurement. The magnetization versus magnetic field curves of KM_2 at 1.8 K shows a typical type-II superconducting behavior. From the density of state (DOS) calculation using the WIEN2K, the main contribution of DOS near the Fermi level (E_F) is Sn (Pb) orbitals. In particular, p -orbitals of Sn (Pb) are dominant, indicating that the p -orbital of these atoms plays an important role for the superconducting state in KM_2

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