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Superconductivity in the K-Mo-O system¹ L.M.S. ALVES, C.A.M. DOS SANTOS, Escola de Engenharia de Lorena, Universidade de Sao Paulo, N. DILLEY, Quantum Design, Inc., M.D.R. MARQUES, J.A. AGUIAR, Universidade Federal de Pernambuco, Recife, PE — The rutile-type structure belongs to space group $P4_2/mnm$. Some transition metals form dioxides with variants rutile structure are known as pseudorutiles. These dioxides have interesting physical properties but they are still poorly understood. MoO_2 is one of them. Polycrystalline samples of MoO_2 can be easily prepared using stoichiometric amounts of Mo and MoO_3 through solid state reaction at temperatures near 700°C . This material is a highly conductive oxide and exhibits Mo-Mo metallic bounds along c -axis. On the other hand, previous results show that the physical properties of the MoO_2 are substantially changed with potassium doping [1]. This work unambiguously demonstrates that the K_xMoO_2 system exhibits superconductivity. Electrical resistivity and magnetization measurements were carried out from 2 to 300 K. The electrical and magnetic measurements show that the superconducting critical temperature ranges from 3 to 10 K. The phase composition responsible for the superconductivity is still under investigation.

[1] L. M. S. Alves et al., Phys. Rev. B **81**, 174532 (2010).

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Prefer Oral Session
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