Synthesis and Crystal Structure of $K_6Mo_{10}O_{33}$

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A new potassium molybdenum oxide, $K_6Mo_{10}O_{33}$, was synthesized by solid state reaction from the appropriate quantities of pre-dried MoO_3 and K_2MoO_4, fired at around 650 °C for 2 d. The structure has been solved by using single crystal X-ray diffraction. The compound adopts the space group *P*1, with the lattice constants a = 7.7100(5), b = 11.9659(8), c = 17.1321(12) Å, α = 86.42 (10), β = 77.18(10), γ = 74.14(10)°. The structure is built up of infinite chains of edge-sharing MoO_6 octahedra and groups of four MoO_6 octahedra forming Mo_4O_{17} units. These sub-units are connected together by common vertices.

Key words: Potassium, Molybdenum, Oxides, $K_6Mo_{10}O_{33}$, Structure Determination