

Na_{2+x}Nb₆P₄O₂₆: A novel niobium phosphate bronze isotypic of the m= 3 member of the MPTBp family

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Description

A new niobium phosphate bronze Na_{2+x}Nb₆P₄O₂₆ (0 ≤ x ≤ 0.75) has been isolated. Its structure was solved by single crystal X-ray diffraction. It crystallizes in the orthorhombic system with space group P2₁2₁2. The cell parameters are a= 19.8050 (10), b= 14.3859 (7), and c= 5.3960 (4) Å. The framework is built up from ReO₃-type slabs of NbO₆ octahedra, perpendicular to a and linked by isolated PO₄ tetrahedra delimiting pentagonal tunnels running along c. The structure of this bronze corresponds to that expected for the hypothetical member m= 3 of the series of the monophosphate tungsten bronzes (MPTB p) with pentagonal tunnels (WO₃)_{2m} (PO₂)₄. Relationships with other niobium phosphate bronzes are also discussed.