ScPtP and LaPtP – Two Phosphides with “Inverse” TiNiSi-Type Structure

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Single crystals of ScPtP (orthorhombic, $a = 6.437(1)$, $b = 4.291(1)$, $c = 7.550(2)$ Å) were grown by reaction of the elements in molten lead (1000 °C), whereas LaPtP (orthorhombic, $a = 7.268(1)$, $b = 4.532(1)$, $c = 7.864(2)$ Å) was prepared by heating mixtures of the elements at 900 °C. Both phosphides were investigated by single crystal X-ray diffraction. Their crystal structures belong to the TiNiSi-type ($Pnma$; $Z = 4$), but the positions of the Ni and Si atoms are exchanged. Therefore the Pt atoms are located in the centers of trigonal prisms and the P atoms are coordinated by four Pt atoms in the shape of distorted tetrahedra.

Key words: Phosphide, Scandium, Lanthanum, Platinum, Crystal Structures