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Synthesis and structure of dodecatungstenphosphate tetraphenylphosphonium $[(C_6H_5)_4P]_3[PW_{12}O_{40}]$

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Abstract

Interaction of tetraphenylphosphonium bromide with dodecatungstenphosphoric acid in water was synthesized and structurally characterized salt $[(C_6H_5)_4P]_3[PW_{12}O_{40}]$. Phosphorus atoms in the two types of crystallographically independent cations $[(C_6H_5)_4P]^+$ have a distorted tetragonal coordination (distances P-C 1.74(4)-1.83(3) Å; angles CPC 107.2(15)-110.9(15)°). In centrosymmetric anions $[PW_{12}O_{40}]^{3-}$ (inversion center – phosphorus atom) W-O, W-O(μ_2) and W-O(μ_4) equal to 1.63(4)-1.71(4), 1.87(4)-1.98(4) and 2.48(3)-2.50 (3) Å.