Thematic Section: Preparative Research.

Subsection: Organoelemental Chemistry.

Registration Code of Publication: 14-38-5-155

Publication is available for discussion within the functioning of the permanent internet-Conference "New methods of synthesis, structure and application of organoelemental compounds" http://butlerov.com/synthesys/

Contributed: August 20, 2014.

Synthesis and crystal structure of tetrabutylphosphonium tetrabromoaurate [Bu₄P]⁺[AuBr₄]⁻

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Keywords: tetrabutylphosphonium tetrabromoaurate, synthesis, structure.

Abstract

Reaction of hydrate tetrabromoauratehydrogen acid with tetrabutylphosphonium bromide resulted in obtaining the complex $[Bu_4P]^+[AuBr_4]^-$ (I). According to X-ray data, the crystal of complex I represented tetrahedral cations $[Bu_4P]^+$ (bond lengths P-C 1.75(3)-1.83(3) Å, angles CPC 108.7(16)°-114.8(14)°) and somewhat distorted square planar anions $[AuBr_4]^-$ (cis-angles BrAuBr 89.52(7)°-90.40(6)°, trans-angles BrAuBr 179.60(7), 179.84(10)°), bond lengths Au-Br 2.3909(18)-2.4126(15) Å).