SYNTHESIS AND CRYSTAL STRUCTURE OF SODIUM HETEROPOLY DECATUNGSTOTERBATE(III) Na₉[Tb(W₅O₁₈)₂]·34H₂O

Mariichak O. Yu., Rozantsev G. M., Radio S. V.
Vasyl’ Stus Donetsk National University, Ukraine
o.marijchak@donnu.edu.ua

In present study the procedure for successful synthesis of sodium heteropoly decatungstoterbate(III), Na₉[Tb(W₅O₁₈)₂]·34H₂O, from acidified up to Z=ν(H⁺)/ν(WO₄²⁻) = 0.80 solution of sodium tungstate with a ratio of ν(Tb):ν(W) = 1:10 from aqueous-acetone media was elaborated.

By FT-IR spectroscopy and elemental analysis it was shown that the anion in the synthesized salt belong to Peacock-Weakley type of anion. The crystal structure of synthesized salt was determined by single crystal X-ray diffraction analysis (see Fig. 1). The main crystallographic data are: triclinic, space group P–1 with a=12.891(4), b=13.011(4), c=19.659(5); α=95.72(3), β=92.61(3), γ=102.25(3); V=3198.63 Å³, M=3324.33 g/mol, and Z=2.

Obtained result complements existing data on the synthesis and study of the crystal structure of Tb(III)–containing heteropoly compounds with Peacock-Weakley type of anion among which only double potassium sodium acid salt K₃Na₄H₅[TbW₁₀O₃₆]·20H₂O [1], and neutral and deuterated salts Na₉[Tb(W₅O₁₈)₂]·35H₂O [2] were known.

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