

Synthesis and molecular structures of *bis*(2-methylcarboranyl-carboxylato)triphenylantimony and -triphenylbismuth

© Vladimir V. Sharutin,^{1+*} Vladislav S. Senchurin,¹ Olga K. Sharutina,¹
Sergey A. Glazun,² and Vladimir I. Bregadze²

¹ Faculty of Chemistry. South-Ural State University. Lenin St., 76. Chelyabinsk, 454080. Russia.

Phone: +7 (351) 267-95-70. E-mail: vvsharutin@rambler.ru

² A.N. Nesmeyanov Institute of Organoelement Compounds Russian Academy of Sciences.
Vavilov St., 28. Moscow, 119991. Russia.

*Supervising author; ⁺Corresponding author

Keywords: *synthesis, structure, bis(methylcarboranylcarboxylato) triphenylantimony, -bismuth.*

Abstract

Interaction of triphenylantimony or triphenylbismuth with 2-methylcarboranylcarboxylate acid and hydrogen peroxide was conducted to obtain *bis*(2-methylcarboranylcarboxylato)triphenylantimony (**I**) and *bis*(2-methylcarboranylcarboxylato)triphenylbismuth (**II**), respectively. According to X-ray, metal atoms in molecules **I** and **II** have a distorted trigonal-bipyramidal coordination with the oxygen atoms of the carboxylate ligands in axial positions (Sb-O 2.127(2) Å, Bi-O 2.273(3), 2.301(3) Å). Bidentate ligands exhibit properties (O...Sb 3.129(2) Å, O...Bi 3.097(5), 2.956(5) Å). The dihedral angle between the planes of the carboxyl groups in the molecule of **I** is equal to 120°, so the carbonyl oxygen atoms are different equatorial angles opposite CSbC (110.10(15)°, 124.95(8)°, 124.95(8)°). In molecule **II** carboxyl group coplanar, carbonyl group C=O bonds have a relatively axial *cis*-orientation, resulting in the equatorial angle from the contact CBiC O...Bi which reaches 133.48(13)° (the other two angles are 112.71(15)°, 113.81(15)°).