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Synthesis and structure of the triphenylbismuth dicarboxylates

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Abstract

Interaction of triphenylbismuth and carboxylic acid in the presence of hydrogen peroxide resulted in obtaining triphenylbismuth *bis*(2-methoxybenzoat) (**I**) (43%), triphenylbismuth *bis*(cyclopropancarboxylate) (**II**) (53%), triphenylbismuth *bis*(4-nitrophenylacetate) (**III**) (37%) and triphenylbismuth *bis*(2-nitrobenzoate) (**IV**) (46%). According to the X-ray data bismuth atoms in **I**-**IV** have a distorted trigonal-bipyramidal environment (without additional coordination of the carbonyl oxygen atoms with an atom of Bi) with phenyl ligands in equatorial positions. Lengths of Bi-C bonds are 2.195(6)-2.221(2) Å, distances Bi-O and Bi···O=C are 2.292(2) and 2.728 (2) Å (**I**); 2.297(1) and 2.704(1) Å (**II**); 2.255(2) and 2.953(4) Å (**III**); 2.284(3)-2.301(3) and 2.876(5)-2.973(5) Å (**IV**). One of the equatorial angles of the contact Bi···O=C is significantly increased, which leads to a decrease in the other two angles (151.9°, 104.05°, 104.05° in **I**, 152.69°, 103.66°, 103.66° in **II**, 140.03°, 109.99°, 109.98° in **III**, 140.5°, 111.1°, 108.3° in **IVA** and 140.3°, 110.6°, 109.0° in **IVB**). Molecules **I**, **II**, **III** are centrosymmetric, the twofold axis passes through the atoms of bismuth and carbon (C(21, 24) – for **I**, **II** and C(31, 34) – to **III**) of one of the phenyl substituents.