APPLIED ORGANOMETALLIC CHEMISTRY
Appl. Organometal. Chem. 2005; **19**: 183
Published online in Wiley InterScience (www.interscience.wiley.com). DOI:10.1002/aoc.748

Crystallographic report

Polymeric [3-(triphenylgermyl)-3-*o*-methoxyphenylpropionato]trimethyltin(IV)

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Received 9 June 2004; Revised 13 July 2004; Accepted 14 July 2004

The polymeric chains of $[Sn(CH_3)_3(C_{28}H_{25}O_3Ge)]_n$ contain trimethyltin moieties bridging two neighboring 3-(triphenylgermyl)-3-*o*-methoxypropionate ligands via carboxyl groups. The germanium atom has a distorted tetrahedral geometry and the tin atom has a distorted trigonal-bipyramidal geometry, the latter with three methyl groups in the equatorial plane and oxygen atoms defining the axial positions. Copyright © 2004 John Wiley & Sons, Ltd.

KEYWORDS: crystal structure; polymeric; triorganotin; organogermanium; bimetallic carboxylate

COMMENT

The structural chemistry of triorganotin carboxylates ranges from isolated monomeric to three-dimensional network structures.[1] In the crystal structure of polymeric $[Sn(CH_3)_3(C_{28}H_{25}O_3Ge)]_n$ (Fig. 1), in which two independent formula units comprise the asymmetric unit, the germanium atom is in a distorted tetrahedral geometry and that of the tin atom is distorted trigonal bipyramidal, with the equatorial plane being defined by the three methyl carbon atoms and with oxygen atoms occupying the axial positions. Each trimethyltin moiety bridges two neighboring carboxylate ligands and each carboxylate group binds two trimethyltin moieties, leading to the formation of a polymeric structure.

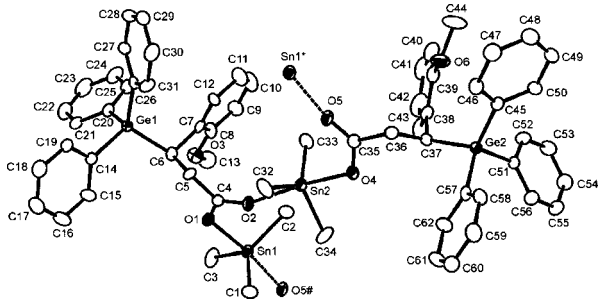

Figure 1. Linear polymeric structure of $[(CH_3)_3Sn(C_{28}H_{25}O_3Ge)]_n$, hydrogen atoms are omitted. Key geometric parameters: Sn1–O1 2.173(3), Sn1–O5# 2.373(3), Sn2–O2 2.413(4), Sn2–O4 2.175(3) Å; O1–Sn2–O5# 171.96(13), O2–Sn2–O4 174.44(13)°. Symmetry operation #: $x-1, y, z$.

EXPERIMENTAL

$[Sn(CH_3)_3(C_{28}H_{25}O_3Ge)]_n$ was synthesized from the 1:1 reaction between $(CH_3)_3SnCl$ and $(C_6H_5)_3GeCH(o\text{-}CH_3OC_6H_4)CH_2COOH$ as per the literature method,[2] and the crystals were isolated from $CHCl_3$/petroleum ether (3/1); m.p.t 437–439 K. Anal. found: C, 57.58; H, 5.26. Calc. for $C_{31}H_{34}GeO_3Sn$: C, 57.65; H, 5.31. IR (KBr): ν(Sn–C) 567, ν_s(CO) 1393, ν_{as}(CO) 1585 cm^{-1}. Data were collected at 173(2) K on a Nonius Kappa CCD diffractometer. $C_{31}H_{34}O_3GeSn$, $M = 645.86$, orthorhombic, space group $P2_12_12_1$, $a = 9.444(1)$, $b = 17.396(2)$, $c = 35.733(5)$ Å, $V = 5870.5(12)$ $Å^3$, $Z = 8$, $R = 0.036$ (5870 reflections with $I \geq 2\sigma(I)$, $\theta_{max} = 27.5°$), $wR = 0.073$ (all 7422 data). The methoxyphenyl group was disordered over two sites with unequal site occupancy factors; both fractions of its phenyl ring were constrained as regular hexagons with C–C 1.39 Å and C–C–C 120° during refinements. Programs used: SHELXL-97 and ORTEP II. CCDC deposition number: 240311.

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Contract/grant sponsor: Higher Education Commission Islamabad, Pakistan; Contract/grant number: 20-9/Acad-R/2003.

REFERENCES

1. Tiekink ERT. *Appl. Organometal. Chem.* 1991; **5**: 1.
2. Ahmed S, Ali S, Ahmad F, Bhatti MH, Badshah A, Mazhar M, Khan MK. *Synth. React. Inorg. Met. Org. Chem.* 2002; **32**: 1725.