

Synthesis, Characterization and Reactivity of a Diorganotin Thiocarboxylate: Dimethyl(thioacetato)-tin(IV) Chloride and its Reactions with Nucleophiles Exhibiting Desulfurization

Neetu Singh^a, Subrato Bhattacharya^a, Heinrich Nöth^b, and Peter Mayer^b

^a Department of Chemistry, Faculty of Science, Banaras Hindu University, Varanasi 221005, India

^b Department of Chemistry, University of Munich, Butenandtstraße 5 – 13, D-81377 Munich, Germany

Reprint requests to Dr. S. Bhattacharya. Fax: +91-542-2368127. E-mail: s_bhatt@bhu.ac.in or Prof. Dr. H. Nöth. Fax: +4989-2180-77455. E-mail: H.Noeth@lrz.uni-muenchen.de

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Dimethyl(thioacetato)tin chloride (**1**) was synthesized by the reaction of dimethyltin dichloride with thioacetic acid in the presence of triethylamine. Compound **1** was subjected to hydrolysis under different reaction conditions in order to obtain sulfido/hydrosulfidotin compounds. Except for one case where the product was hexamethyl-1,3,5-trithia-2,4,6-tristannacyclohexane, (Me₂SnS)₃ (**4**), all other reactions led to desulfurization, and the products obtained were organostannoxane compounds, dinuclear tetramethyl-oxo-dichloroditin, {Me₂SnCl₂.Me₂SnO}₂ (**2**), and tetraacetatodioxo-tetra(dimethyltin), (Me₂Sn)₄O₂(O₂CMe)₄ (**3**). These complexes have been characterized by ¹H, ¹³C, ¹¹⁹Sn NMR and FTIR spectroscopy, and compounds **2–4** also by X-ray crystallography. Density functional calculations were performed to explain the structure and reactivity of the compounds.

Key words: Organotin Compounds, Stannoxane, Thiocarboxylate, Hydrolysis, Desulfurization