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

Synthesis, Characterization, and Biocidal Studies of the Newly Synthesized Di- and Triorganotin(IV) Complexes with n-Butylhydrogen Phthalate

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**Abstract:** Di-(1, 3, 8) and triorganotin(IV) complexes (2, 5, 7) with the general formula  $R_nSnL_{4-n}$ , where R = Me, Et, n-Bu, n-Oct, Ph, and Bz, and L = the  $n-C_4H_9OCOC_6H_4COO^-$  monoanionic ligand have been synthesized by the reaction of the silver salt of the n-butylhydrogen phthalate with di- and triorganotin chloride in dry chloroform. However, di-n-butyl- and di-n-octyltin(IV) derivatives (4 and 6, respectively) were synthesized by the reaction of the corresponding organotin(IV) oxide with n-butylhydrogen phthalate in dry toluene. All the synthesized complexes were characterized by elemental analysis, FT-IR, multinuclear ( $^1H$ ,  $^{13}C$ ,  $^{119}Sn$ ) NMR, and mass spectrometric techniques to assess the binding mode of the n-butylphthalate ( $n-C_4H_9OCOC_6H_4COO^-$ ) anion. The diorganotin(IV) derivatives were found to adopt distorted octahedral and triorganotin(IV) n-butylphthalates and to have linear, polymeric trigonal bipyramidal structures in which n-butylphthalate is a monoanionic bidentate coordinating through the C(O)O group. The biocidal activity and  $LD_{50}$  values of the synthesized compounds are also reported. Some complexes exhibited good activity comparable to that of standard drugs. Furthermore, triorganotin(IV) derivatives exhibited significantly better activity than the diorganotin(IV) derivatives.

**Key Words:** Organotin(IV) complexes, n-butylhydrogen phthalate, spectral characterization, biological activity

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