Applied Organometallic Chemistry

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CONTENTS

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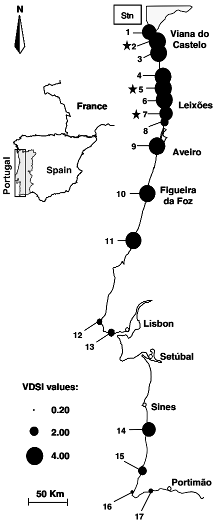
Section: Speciation Analysis and Environment

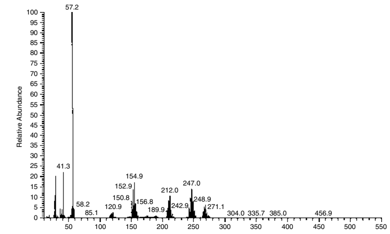
The imposex (superimposition of male characteristics onto females) and tributyltin (TBT) body burdens (b. b.) in the gastropod *Nucella lapillus* were surveyed during 2003 along the Portuguese coast. The imposex indices VDSI (vas deferens sequence index, black circles in the figure), RPSI (relative penis size index) and %*I* (percentage of affected females) were 0.20–4.04, 0.0–42.2% and 16.7–100.0%, respectively. Imposex was significantly correlated to TBT b.b., which was 23–138 ng Sn/g dry weight. The highest levels of imposex, including sterile females (asterisks in the figure), and TBT contamination were found at sites with ship port and dockyard activities.



S. Galante-Oliveira,* W. J. Langston, G. R. Burt, M. E. Pereira and C. M. Barroso 1–4

*Short communication: Imposex and organotin body burden in the dogwhelk (*Nucella lapillus L.*) along the Portuguese coast*

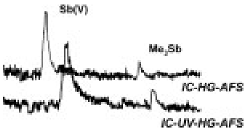
A bacterial isolate capable of utilizing tributyltin chloride (TBTC) as sole source of carbon was isolated from marine water samples. The isolate, producing a soluble green pigment, was identified as *Pseudomonas aeruginosa* strain USS25 NCIM-5224. The isolate showed maximum growth with 2 mM of TBTC in mineral salt medium. Time course results showed complete elimination of TBTC after 75 days of incubation. During the growth on TBTC, a product (280 mg) was found to accumulate, which was extracted with chloroform and detected on thin-layer chromatography. Based on the IR, NMR spectra and GC-MS analysis, the isolated product was identified as monobutyltin dichloro hydride.



U. Roy* and S. Bhosle 5–11

Microbial transformation of tributyltin chloride by Pseudomonas aeruginosa *strain USS25 NCIM-5224*

On-line UV photooxidation by peroxodisulfate was coupled to ion chromatography hydride generation atomic fluorescence spectrometry (IC-UV-HG-AFS) for the speciation of antimony. Under optimised conditions, the photodecomposition resulted in an improvement in methylantimony species sensitivity.



R. Miravet, E. Bonilla, J. F. López-Sánchez* and R. Rubio 12–19

On-line photodecomposition for the determination of antimony species

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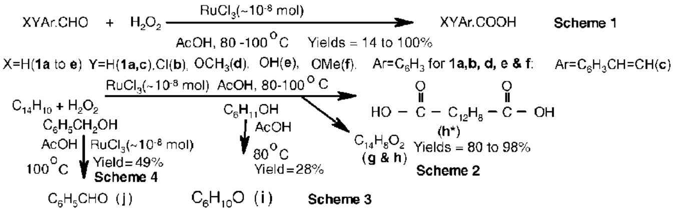
Section: Materials, Nanoscience and Catalysis

One pot Ru^{III}-H_2O_2 system is convenient, eco-friendly and oxidizes a wider range of organic compounds Traces of catalyst and regeneration of solvent make it highly economical



P. K. Tandon*, R. Baboo, A. K. Singh and Gayatri 20–23

Simple and economical conversion of organic compounds with H_2O_2 catalyzed by ruthenium(III) chloride

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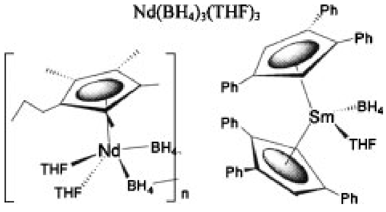
Borohydride complexes of lanthanides have been used as MMA polymerization catalysts. Syndiotactic or isotactic PMMA is obtained, depending on the molecular structure of the lanthanide complex and the experimental conditions.



D. Barbier-Baudry, F. Bouyer, A. S. Madureira Bruno and M. Visseaux* 24–31

Lanthanide borohydrido complexes for MMA polymerization: syndio- vs iso-stereocontrol

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A series of nickel complexes with β-ketoamine ligands based on pyrazolone derivatives were synthesized by condensing pyrazolone with aniline, 2-chloroaniline or naphthylamine and then reacting the produced β-ketoamine with nickel halide. The solid-state structures of these three complexes were determined by single-crystal X-ray diffraction. The bis(β-ketoamine)nickel complexes are all air-stable and can act as highly active catalyst precursors for styrene polymerization with activation of methylaluminoxane under mild reaction conditions. The activity of the catalyst for styrene polymerization is as high as 2.10×10^5 g polymer/mol Ni h. Both steric and electronic effects were found to be important and influential for catalytic activity.

F. Bao*, R. Ma, X. Lü, G. Gui and Q. Wu 32–38

Structures and styrene polymerization activities of a series of nickel complexes bearing ligands of pyrazolone derivatives

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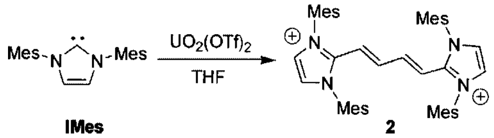
The N-heterocyclic carbene, 1,3-dimesityl-imidazol-2-ylidene (IMes) reacts with tetrahydrofuran (THF) in the presence of an oxidizing uranyl triflate complex, $UO_2(OTf)_2(thf)_3$ ($^-OTf = ^-OSO_2CF_3$), to give 1,4-bis(1,3-dimesityl-2-imidazolium)-1,3-butadiene bis(trifluoromethanesulfonate), formally understood as the coupling product of two equivalents of IMes with [CH=CH-CH=CH] $(OTf)_2$.



S. M. Oldham, B. L. Scott and W. J. Oldham Jr* 39–43

Reaction of the N-heterocyclic carbene, 1,3-dimesityl-imidazol-2-ylidene, with a uranyl triflate complex, $UO_2(OTf)_2(thf)_3$

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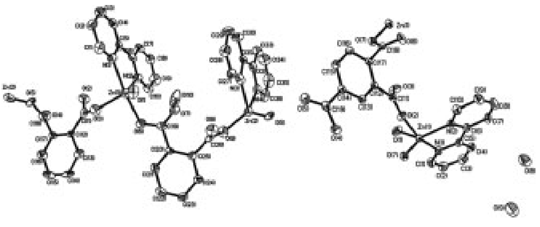
Using the principles of molecule self-assembly, two novel zinc 1D complexes $\{[Zn(phth)(bipy)(H_2O)][Zn(phth)(bipy)]\cdot H_2O\}_n$ (1) and $[Zn(1,2,4\text{-btc})(bipy)(H_2O)\cdot 2H_2O]_n$ (2) were obtained by hydrothermal reaction, especially two types of metal environment in the structure of the complex 1. The luminescent properties of them have been investigated with fluorescence excitation and emission spectra.



Y.-S. Song, B. Yan* and Z.-X. Chen 44–50

Synthesis of two luminescent coordination polymers based on self-assembly of Zn(II) with polycarboxylic acids ligands and heteroaromatic N-donor

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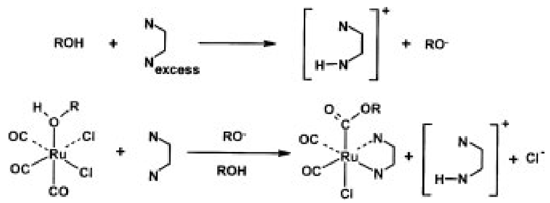
The reactions of mono and bidentate aromatic nitrogen containing ligands with $[Ru(CO)_3Cl_2]_2$ in alcohol solutions have been studied. Acid-base behavior of alcohols and aromatic polypyridines promotes the formation of several organometallic compounds. The reactivity of the new complexes have been tested in 1-hexene hydroformylation.



M. A. Moreno, M. Haukka*, M. Kallinen and T. A. Pakkanen 51–69

Reactions of $[Ru(CO)_3Cl_2]_2$ with aromatic nitrogen donor ligands in alcoholic media

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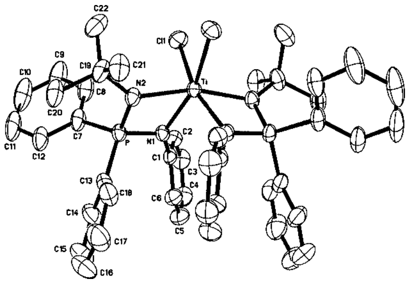
A series of titanium and zirconium complexes based on aminoiminophosphorane ligands $[Ph_2P(Nt\text{-}Bu)(NR)]_2MCl_2$ have been synthesized and characterized. The complexes are inactive for ethylene polymerization under atmospheric pressure. This is probably the result of low monomer ethylene concentration and steric congestion around the central metal.



C. Qi and S. Zhang* 70–73

Titanium and zirconium complexes with aminoiminophosphorane ligands

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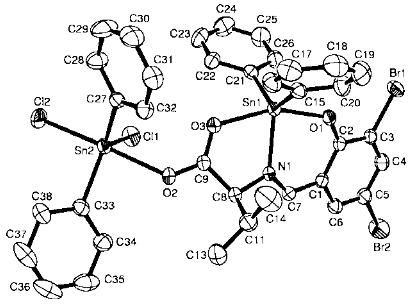
Section: Main Group Metal Compounds

Diphenyltin(IV) complexes of *N*-(3,5-dibromosalicylidene)-α-amino acid and their 1 : 1 adducts with diphenyltin dichloride were synthesized and characterized by elemental analysis, IR, and NMR (^1H, ^{13}C and ^{119}Sn) spectra and X-ray crystallography. The compounds display good cytotoxic and anti-bacterial activities.



L. Tian*, Z. Shang, X. Zheng, Y. Sun, Y. Yu, B. Qian and X. Liu 74–80

Synthesis, characterization and biological activity of diphenyltin(IV) complexes of N*-(3,5-dibromosalicylidene)-α-amino acid and their diphenyltin dichloride adducts*

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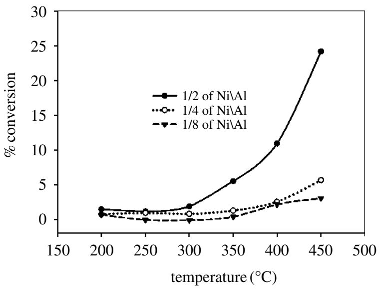
Via sol-gel process, nickel aluminate was prepared using alumatrane and nickel acetate as precursors. The surface area found was in the range of 300–450 m^2/g at 500 °C calcinations temperature with the pore distribution in the mesoporous region.



K. Utchariyajit, E. Gulari and S. Wongkasemjit* 81–88

The use of alumatrane for the preparation of high-surface-area nickel aluminate and its activity for CO oxidation

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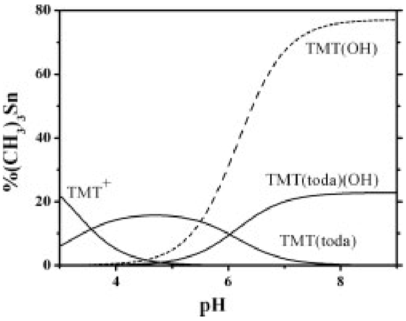
The stability of carboxylate complexes of mono-, di and trimethyltin with different ligands containing from 1 to 6 carboxylic groups was investigated. The results obtained from this systematic study allowed to formulate an empirical predictive equation to correlate complexes stability with the number of carboxylic and alcoholic groups in the ligand. Speciation models for all the system investigated are given. Distribution diagrams for some representative systems are reported and discussed in the light of speciation studies in natural waters.



A. De Robertis, A. Gianguzza, O. Giuffrè, A. Pettignano, S. Sammartano* 89–98

Interaction of methyltin(IV) compounds with carboxylic ligands. Part 1: Formation and stability of methyltin(IV)—carboxylate complexes and their relevance in speciation studies of natural waters

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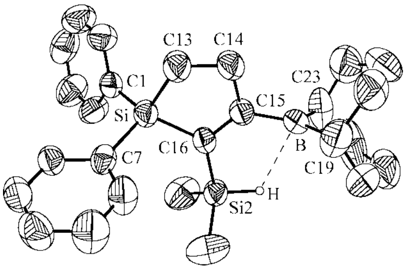
The reactions of alkyn-1-yl(vinyl)silanes $R_2Si[C{\equiv}C\text{-}Si(H)Me_2]CH{=}CH_2$ [R = Me (**1a**), Ph (**1b**)], $Me_2Si[C{\equiv}C\text{-}Si(Br)Me_2]CH{=}CH_2$ (**2a**) and of alkyn-1-yl(allyl)silanes $R_2Si[C{\equiv}C\text{-}Si(H)Me_2]CH_2CH{=}CH_2$ (R = Me (**3a**), R = Ph (**3b**)] with 9-borabicyclo[3.3.1]nonane in a 1 : 1 ratio afford in high yield **4a, b** and **5a**, and **6a, b**, respectively. In the cases of **4a, b**, potential electron-deficient Si–H–B bridges are absent or extremely weak, whereas in **6a, b** the existence of Si–H–B bridges is clearly evident from the NMR spectroscopic data. The molecular structure of **4b** was determined by X-ray analysis.



B. Wrackmeyer*, O. L. Tok, W. Milius, A. Khan and A. Badshah... .. 99–105

1-silacyclopent-2-enes and 1-silacyclohex-2-enes bearing functionally substituted silyl groups in 2-positions. Novel electron-deficient Si–H–B bridges