Applied Organometallic Chemistry

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Section: Bioorganometallic Chemistry

A. Zablotskaya*, I. Segal, Y. Popelis, E. Lukevics, S. Baluja, I. Shestakova and I. Domracheva 721–728

Silyl modification of biologically active compounds. 12. Silyl group as true incentive to antitumour and antibacterial action of choline and colamine analogues

Antitumour and antimicrobial properties of a series of triorganylsilyl(β-dialkylaminoethoxy)silanes synthesized were investigated. Their cytotoxicity was tested *in vitro* on two monolayer tumour cell lines: HT-1080 (human fibrosarcoma), MG-22A (mouse hepatoma), and normal mouse fibroblasts (NIH 3T3). Their antibacterial and antifungal activity was investigated against two Gram-positive, *Bacillus cereus* ATCC 11778 and *Staphylococcus aureus* ATCC 25923, two Gram-negative, *Proteus mirabilis* NCIM 2241 and *E. coli* ATCC 25922, and two fungi strains *Candida tropicalis* ATCC 4563 and *Candida albicans* ATCC 2091. On the basis of the biological activity data against tumour cell lines and all the test bacterial/fungal strains, it has been demonstrated that silylation stimulates the overall pharmacological potency appearance or enhancement.

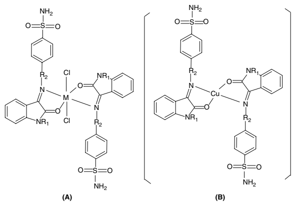
$$R^1R^2R^3SiH + HOCH_2CH_2NR_2 \longrightarrow R^1R^2R^3SiOCH_2CH_2NR_2 \longrightarrow [R^1R^2R^3SiOCH_2CH_2NMeR_2]^+I^-$$

$R^1, R^2, R^3 = CH_3, C_2H_5, C_3H_7, C_4H_9, C_6H_5, C_7H_{15}, C_8H_{17}, C_{10}H_{21}, C_{11}H_{23}, C_{16}H_{33},$

$R = CH_3, C_2H_5$

Z. H. Chohan*, A. U. Shaikh and M. M. Naseer 729–739

Metal-based isatin-bearing sulfonamides: their synthesis, characterization and biological properties



M = Co (II), Ni (II) or Zn (II)

Series of antibacterial/antifungal isatin-bearing sulphonamides and their cobalt (II), copper (II), nickel (II) and zinc (II) metal complexes have been synthesized and screened for *in-vitro* antibacterial activity against *Bacillus cereus, Corynebacterium diphtheriae, Escherichia coli, Klebsiella pneumoniae, Proteus mirabilis, Pseudomonas aeruginosa, Salmonella typhi, Shigilla dysentriae*, and *Staphylococcus aureus* and, for *in-vitro* antifungal activity against *Trichophyton schoenleinii, Candid glabrata, Pseudallescheria boydii, Candida albicans, Aspergillus niger, Microsporum canis* and *Trichophyton mentagrophytes*. The brine shrimp bioassay was also carried out to study their *in-vitro* cytotoxic properties.

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Identification statement

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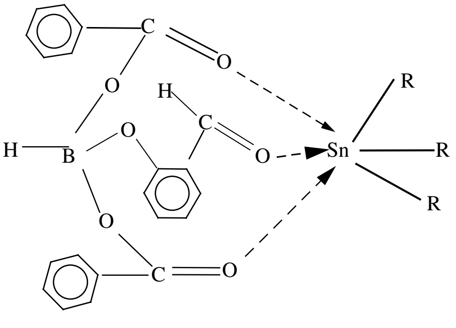
Heteroscorpionate (Potassium hydrobis(benzoato)(salicylaldehyde)borate) along with organotin (IV) complexes were papered and it was reveal that. They have shown significant growth inhibition on microbes without hampering the soil quality.



(R= Phenyl, Butyl and methyl)

R. Joshi, G. S. Sharma, V. Kumar, A. Adil Hashmi*, S. Kumar, R. Achila and M. Ejaz Hussain 740–746

Synthesis, spectral and biological studies of organotin(IV) complexes of heteroscorpionate

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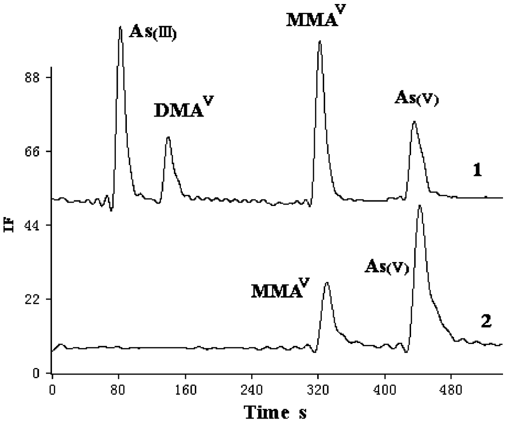
Section: Speciation Analysis and Environment

Reaction mechanism of inorganic As(III) with methyl iodide is an oxidative carbonium-transfer process. The effects of pH and salinity on methylation may be explained from a thermodynamic point of view. Redox potential switch was important to methylation reaction in the aquatic environment. Methylation reaction had good correlation with first-order reaction kinetics for both As(III) and methyl iodide.



B. Chen, T. Wang, B. He, C. Yuan, E. Gao and G. Jiang* 747–753

Model methylation reaction of arsenic(III) with methyl iodide in aquatic system

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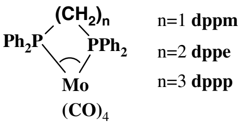
Section: Materials, Nanoscience and Catalysis

The polymerization of methyl methacrylate catalyzed by bidentate phosphine molybdenum tetracarbonyl complexes has been studied. The activity of these catalysts depends on the length of the $(CH_2)_n$ bridge of diphosphine ligand.



A. Menteş*, M. E. Hanhan and B. Hazer 754–757

Free radical polymerization of methyl methacrylate initiated by the diphosphine Mo(0) complexes

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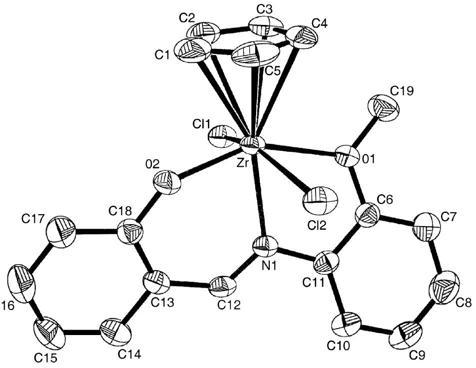
A series of novel zirconium-complexes **1–6** bearing mono-Cp and tridentate Schiff base [ONO] ligands are prepared. The molecular structure of complex **1** is further confirmed by X-ray diffraction study. When activated by excess methylaluminoxane, complexes **1–6** exhibit high catalytic activities for ethylene polymerization. The influence of polymerization temperature on the activities of ethylene polymerization is investigated, and these complexes show high thermal stability. Complex **6** is also active for the copolymerization of ethylene and 1-hexene with low 1-hexene incorporation ability.



Q. Chen and J. Huang* **758–765**

Synthesis of novel zirconium complexes bearing mono-Cp and tridentate Schiff base [ONO] ligands and their catalytic activities for olefin polymerization

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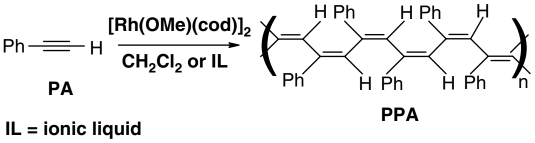
Dimeric rhodium(I) complex $[Rh(OMe)(cod)]_2$ was found to be an active catalyst of phenylacetylene polymerization to poly(phenylacetylene) (PPA) in ionic liquids containing imidazolium or pyridinium cations. The highest yield of PPA (92%) was obtained in 1-butyl-4-methylpyridinium tetrafluoroborate as reaction medium. The yield of PPA in imidazolium ionic liquids containing BF_4^- or PF_6^- anions increased to 83–99% when Et_3N or cycloocta-1,5-diene were added as co-catalysts. In 1-methyl-3-octylimidazolium chloride (MOI · Cl) polymerization rate was much lower than in other ionic liquids, although the highest M_w (72 400) was obtained. Spectroscopic studies confirmed that $[Rh(OMe)(cod)]_2$ reacted with MOI · Cl forming new carbene Rh(I) complex, which can participate in the polymerization process.



W. Gil, A. M. Trzeciak* and J. J. Ziółkowski **766–770**

Catalytic Polymerization of phenylacetylene with dimeric $[Rh(OMe)(cod)]_2$ complex in ionic liquids

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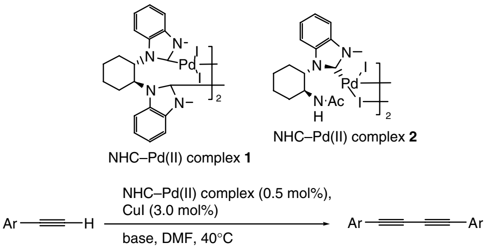
Two NHC–Pd(II) complexes synthesized from *trans*-cyclohexane-1,2-diamine were fairly effective in the NHC–Pd(II) complex/Cu co-catalyzed terminal alkyne homocoupling reaction to give the corresponding symmetrical 1,4-disubstituted 1,3-diynes in good yields under mild conditions.



M. Shi* and H.-X. Qian **771–774**

NHC–Pd(II) complex–Cu(I) co-catalyzed homocoupling reaction of terminal alkynes

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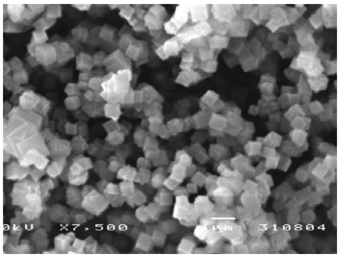
A 0.1–0.2 μm Na A zeolite was successfully synthesized, using silatrane and alumatrane precursors via the sol–gel process, seeding and microwave techniques. The best condition for synthesizing the smallest size and the most homogeneous NaA zeolite is to use the composition of $SiO_2 : Al_2O_3 : 3Na_2O{:}410H_2O$ with 3 wt% crystal seed at 80 °C microwave heating for 6 h.



0.1-0.2 μm Na A zeolite

N. Kuanchertchoo, S. Kulprathipanja, P. Aungkavattana, D. Atong, K. Hemra, T. Rirksomboon and S. Wongkasemjit* **775–783**

Preparation of uniform and nano-sized NaA zeolite using silatrane and alumatrane precursors

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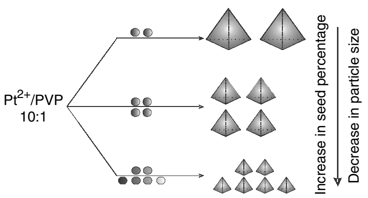
One-pot dual size- and shape-selective synthesis of tetrahedral Pt nanoparticles is achieved using the pre-prepared Pt nanoparticles as the ‘external seeds’, and controlling the slow diffusional growth under hydrogen reduction in the presence of PVP as the capping agent.



S. Kinge* and H. Bönnemann **784–787**

One-pot dual size- and shape-selective synthesis of tetrahedral Pt nanoparticles

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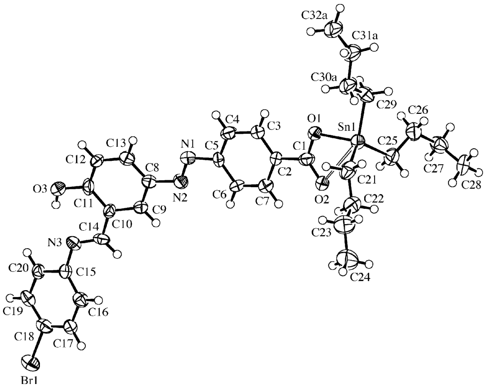
Section: Main Group Metal Compounds

The triorganotin(IV) complexes of 4-[(*E*)-2-(3-formyl-4-hydroxyphenyl)-1-diazenyl]benzoic acid and 4-{(*E*)-4-hydroxy-3-[(*E*)-4-(aryl) iminomethyl]phenyldiazenyl} benzoic acids (aryls = 4–CH_3, 4-Br, 4-Cl, 4-OCH_3) have been synthesized and characterized by ^{1}H, ^{13}C, ^{119}Sn NMR, IR and ^{119m}Sn Mössbauer spectroscopic techniques in combination with elemental analysis and crystal structures. Toxicity studies of the tri-*n*-butyltin(IV) complexes on the second larval instar of the *Aedes aegypti* and *Anopheles stephensi* mosquito larvae are also reported.)



T. S. Basu Baul*, K. S. Singh, A. Lyčka, A. Linden, X. Song, A. Zapata and G. Eng **788–797**

*Synthesis, characterization and crystal structures of triorganotin(IV) complexes of 4-[(E)-2-(3-formyl-4-hydroxyphenyl)-1-diazenyl]- and 4-{(E)-4-hydroxy-3-[(E)-4-(aryl)iminomethyl]phenyldiazenyl}-benzoic acids and toxicity studies of their tri-*n*-butyltin(IV) derivatives on the* Aedes aegypti *and* Anopheles stephensi *mosquito larvae*

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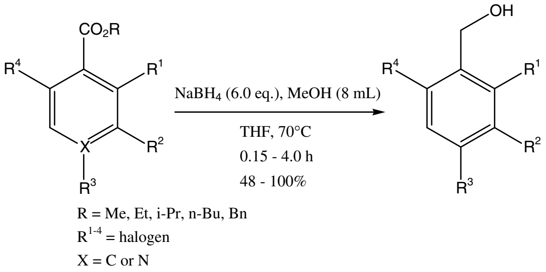
Owing to the importance of sodium borohydride in modern organic synthesis, the aim of this review is to highlight recent methodologies mediated by this reagent in the reduction of different classes of compounds.



M. V. N. De Souza* and T. R. A. Vasconcelos 798–810

Recent methodologies mediated by sodium borohydride in the reduction of different classes of compounds

Book Review

J. Rourke 811

Organometallics

Book Review

R. O. Jenkins 812

Chemical biology: a practical course