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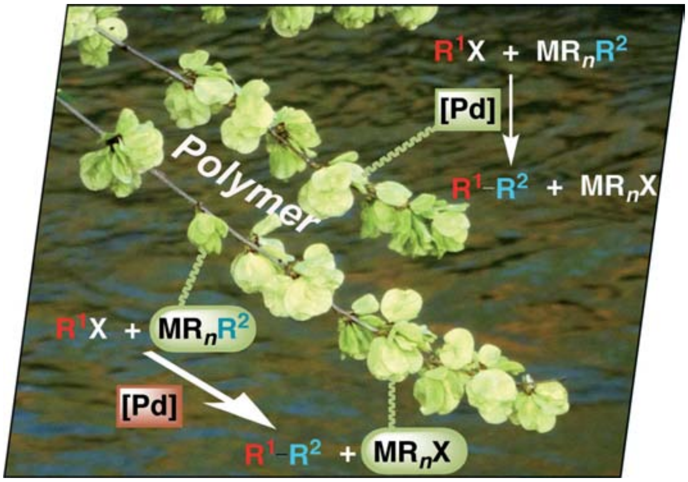
COVER PICTURE

The cover picture shows how palladium-catalyzed cross coupling reactions can be carried out in a clean and green way by attaching either the reagents (bottom) or the catalyst (upper right) to polymers, here represented as branches of a blooming tree. This is the topic of the Microreview by A. C. Albéniz and N. Carrera on p. 2347ff., where examples of polymer-supported palladium catalysts or polymer-attached reagents (specially organotin derivatives in the Stille reaction) are discussed. The water in the background of the picture suggests that this solvent can also be used in couplings where the catalyst is supported on a polymeric scaffold.



CONTENTS

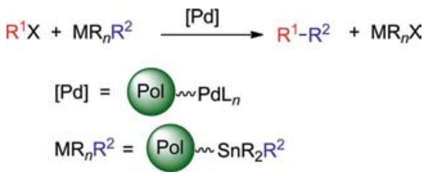
MICROREVIEW

Polymers and Green Chemistry

A. C. Albéniz,* N. Carrera 2347–2360

Polymers for Green C–C Couplings

Keywords: Polymers / Cross-coupling / Supported catalysts / Stille reaction / Stannanes / Palladium



Palladium-catalyzed cross-coupling reactions can be made greener and easier to work up by using polymers as supports for reagents and catalysts. Polymeric byproducts or the catalyst are easier to separate from the target products and can be recovered and reused. An overview of the methods used to attach palladium catalysts onto polymers and the use of polymeric tin reagents to avoid the generation of byproducts in the Stille reaction is given.

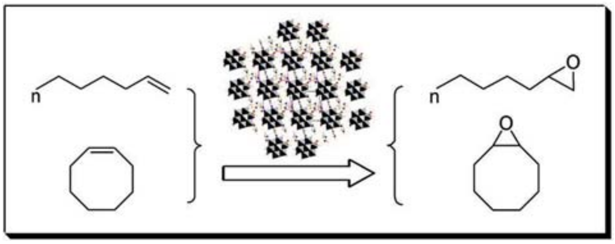
SHORT COMMUNICATION

Octamolybdate Epoxidation Catalysts

J. Du, J. Yu, J. Tang, J. Wang, W. Zhang, W. R. Thiel, M. Jia* 2361–2365

Supramolecular Assemblies Directed by Hydrogen Bonds and π–π Interactions and Based on *N*-Heterocyclic-Ligand-Modified β-Octamolybdate – Structure and Catalytic Application in Olefin Epoxidation

Keywords: Supramolecular chemistry / *N*-Heterocyclic ligands / Polyoxometalates / Epoxidation / Heterogeneous catalysis



A series of supramolecular assemblies based on POMs modified by organic ligands were synthesized by a one-step hydrothermal method. They are active catalysts for the epoxidation of olefins with *tert*-butyl hydroperoxide as the oxidant. Most interestingly, one of them exhibits very high catalytic activity and stability; it is a truly efficient heterogeneous catalyst for olefin epoxidation.

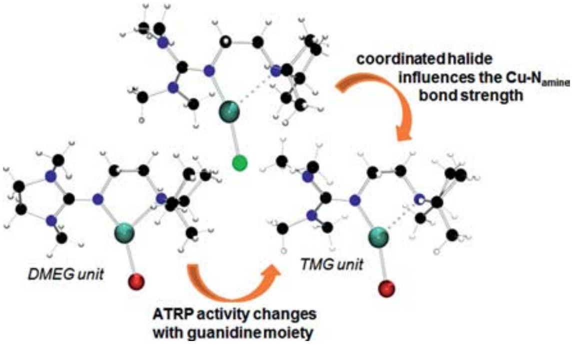
FULL PAPERS

Atom Transfer Radical Polymerisation

O. Bienemann, R. Haase, A. Jesser, T. Beschnitt, A. Döring, D. Kuckling, I. dos Santos Vieira, U. Flörke, S. Herres-Pawlis* 2367–2379

Synthesis and Application of New Guanidine Copper Complexes in Atom Transfer Radical Polymerisation

Keywords: Copper / Polymerization / Styrene / Density functional calculations



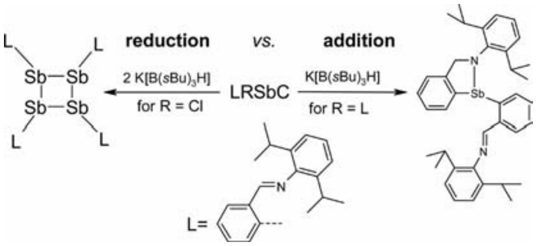
New copper(I) complexes of the guanidine–amine ligands TMGd^{i}pae and DMEGd^{i}pae were structurally characterised and theoretically investigated towards donor competition. The ligands proved to be useful in copper-mediated atom transfer radical polymerisation of styrene in bulk and MeCN solution.

Low-Valent Sb Compounds

L. Dostál,* R. Jambor, A. Růžička, P. Šimon **2380–2386**

On the Reduction of NC Chelated Organoantimony(III) Chlorides

Keywords: Chelates / Antimony / Reduction / Ligand effects



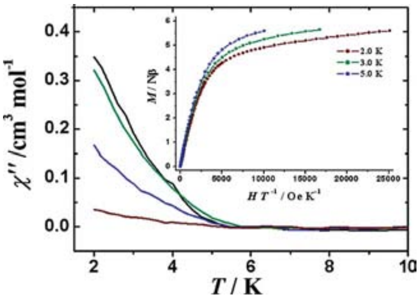
Attempts to reduce organoantimony compounds **L**SbCl$_2$ and **L**$_2$SbCl that contain the NC chelating ligand [o-C$_6$H$_4$-(CH=NC$_6$H$_3$$iPr_2$-2,6)]$^-$ by preparation from unstable hydrido precursors is described. The result of the reaction strongly depends on the structure of the precursor and proceeds as the expected reduction (**L**SbCl$_2$) or as an addition across the C=N double bond of the ligand backbone (**L**$_2$SbCl).

Lanthanide Coordination Polymers

N. Xu, C. Wang, W. Shi, S.-P. Yan, P. Cheng, D.-Z. Liao* **2387–2393**

Magnetic and Luminescent Properties of Sm, Eu, Tb, and Dy Coordination Polymers with 2-Hydroxynicotinic Acid

Keywords: Lanthanides / Magnetic properties / Coordination polymers



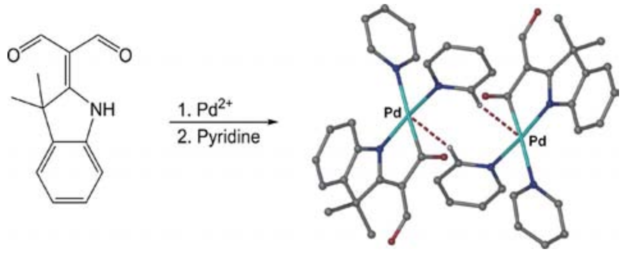
Six lanthanide(III) coordination polymers with 2-hydroxynicotinic acid were prepared under hydrothermal conditions. The crystal structures, luminescent properties, and magnetic properties were studied. The dynamic magnetic susceptibility measurements of the 2D Dy^{III} coordination polymer show slow relaxation of the magnetization.

Ambidentate Organic Ligand

H. Khaledi,* H. M. Ali, M. M. Olmstead **2394–2404**

Versatile Coordination Modes of 2-(Diformylmethylene)-3,3-dimethylindole towards Late-Transition-Metal Ions: C–H Bond Activation and Formation of Cyclic Acyl–Palladium(II) Complexes

Keywords: Ligand design / Transition metals / Coordination modes / C–H activation / Anagostic interactions



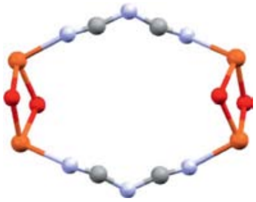
2-(Diformylmethylene)-3,3-dimethylindole shows ambidentate coordination behavior towards the selected metal ions, which results in a wide variety of mono-, di-, and polynuclear architectures. In the presence of pyridine-like ancillary ligands, aldehyde C–H bond activation occurs to give the acyl–palladium complexes.

Molecular Rectangle

A. Biswas, M. G. B. Drew, J. Ribas, C. Diaz,* A. Ghosh* **2405–2412**

Synthesis, Crystal Structures and Magnetic Properties of a Phenoxo-Bridged Dinuclear Cu^{II} Complex and a Dicyanamide Bridged Novel Molecular Rectangle Based on It

Keywords: Copper / Schiff bases / Magnetic properties



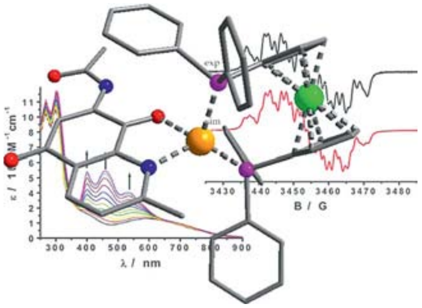
The phenoxo-bridged dinuclear Cu^{II} complex [Cu$_2$L$_2$(NCNCN)$_2$] (**1**) and the novel molecular rectangle [Cu$_4$L$_4${μ$_{1,5}$-(NCNCN)$_2$}]·(ClO$_4$)$_2$(H$_2$O)$_2$ (**2**) were synthesized and characterized.

Noninnocent Ligands

A. Paretzki, H. S. Das, F. Weisser, T. Scherer, D. Bubrin, J. Fiedler, J. E. Nycz, B. Sarkar* .... **2413−2421**

Invariant Oxidation State of Copper but not of Ruthenium in Complexes with Noninnocent *N*-(2-Methyl-5,8-dioxo-5,8-dihydroquinolin-7-yl)acetamide: A Combined Structural, Electrochemical and Spectroelectrochemical Investigation

Keywords: Copper / Ruthenium / Quinones / EPR spectroscopy / Electrochemistry / Spectroelectrochemistry / Noninnocent ligands



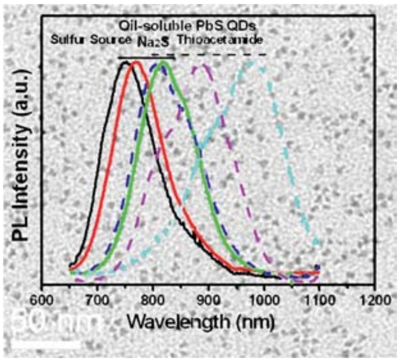
Guilty or not! Copper and ruthenium complexes are reported with a noninnocent ligand. An invariant copper oxidation state is seen in the copper complex with electron transfer occurring at the noninnocent ligand or the iron center of dppf. In contrast to this, the ruthenium center participates strongly in electron transfer and shows mixed situations.

PbS Quantum Dots

D. Deng, J. Cao, J. Xia, Z. Qian, Y. Gu,* Z. Gu,* W. J. Akers .... **2422−2432**

Two-Phase Approach to High-Quality, Oil-Soluble, Near-Infrared-Emitting PbS Quantum Dots by Using Various Water-Soluble Anion Precursors

Keywords: Lead sulfide / Quantum dots / Synthesis design / Fluorescence



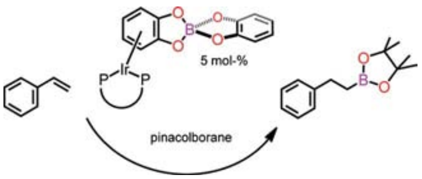
High-quality, oil-soluble PbS quantum dots (QDs) with tunable photoemission throughout the near-infrared (NIR) region (ca. 750−1000 nm) were synthesized by a two-phase approach, with use of water-soluble Na_2S and thioacetamide, which differ in reactivity, as sulfur sources.

Alkene Hydroboration Catalyst

G. M. Lee, C. M. Vogels, A. Decken, S. A. Westcott* .... **2433−2438**

Iridium Phosphane Complexes Containing Arylspiroboronate Esters for the Hydroboration of Alkenes

Keywords: Iridium / Boron / Hydroboration / Zwitterions



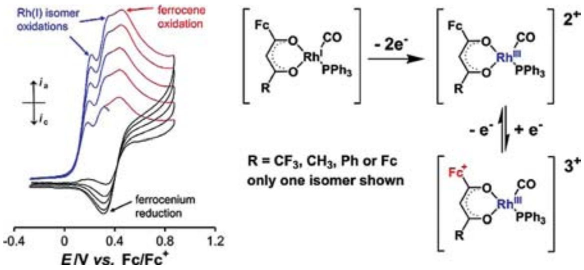
These novel organometallic zwitterionic species have the arylspiroboronate bound to the metal via a catecholato group and are active catalysts for the hydroboration of alkenes.

Fc-Containing Rh Complexes

J. Conradie, J. C. Swarts* ...... **2439−2449**

The Relationship between the Electrochemical and Chemical Oxidation of Ferrocene-Containing Carbonyl-Phosphane-β-Diketonato-Rhodium(I) Complexes − Cytotoxicity of [Rh(FcCOCHCOPh)(CO)(PPh₃)]

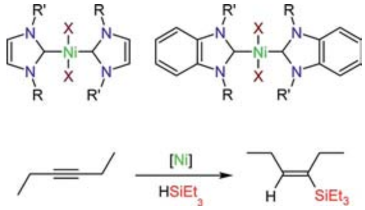
Keywords: Rhodium / Carbonyl complexes / Sandwich complexes / Cytotoxicity / Cyclic voltammetry



The peak Rh^I oxidation potential, E_{pa}, and $\chi_{R'} + \chi_R$ = the sum of the group electronegativities of the R′ and R groups of β-diketonato ligand of [Rh(R′COCHCOR)(CO)(PPh_3)] relates to the rate of oxidative addition of CH_3I to each complex with the equations $\ln k_2 = -14.721\ E_{pa} + 0.195 = -3.14(\chi_{R'} + \chi_R) + 10.0$. R′ and R are different combinations of Fc, C_6H_5, CH_3 and CF_3; k_2 = second-order rate constant.

Nickel-Catalyzed Hydrosilylation

Nickel(II) complexes bearing monodentate N-heterocyclic carbene ligands with small N-substituents were prepared and tested in the catalytic hydrosilylation of internal alkynes. The complexes are active catalysts after treatment with diethylzinc. The catalytically active compound is shown to be a homogeneous species.

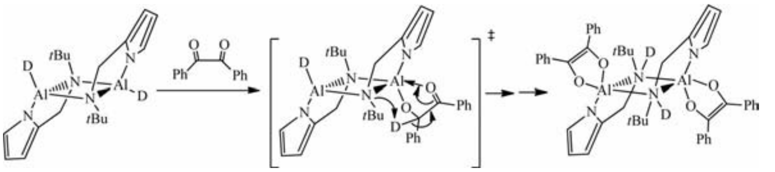


J. Berding, J. A. van Paridon,
V. H. S. van Rixel,
E. Bouwman* 2450–2458

$[NiX_2(NHC)_2]$ Complexes in the Hydrosilylation of Internal Alkynes

Keywords: Hydrosilylation / Nickel / Carbene ligands / NHC complexes / Alkynes / Homogeneous catalysis

Aluminium Hydride Catalysts



A series of dimeric aluminium derivatives containing bidentate dianionic pyrrolyl ligands and different organic substituents have been synthesized and then used in ring-opening polymerization of ε-caprolactone. The Al atom possesses either tetrahedral or square-pyramidal geometry.

Y.-C. Chen, C.-Y. Lin, W.-Y. Huang,
A. Datta, J.-H. Huang,* M.-S. Tsai,
T.-Y. Lee,* C.-Y. Tu,
C.-H. Hu 2459–2469

Reactions of Dimeric Aluminium Hydride Compounds Containing Bidentate Dianionic Pyrrolyl Ligands and Their Applications in Ring-Opening Polymerization of ε-Caprolactone 💻

Keywords: Aluminium / Hydrides / N ligands / Ring-opening polymerization

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* Author to whom correspondence should be addressed.

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