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EurJIC is co-owned by 11 societies of ChemPubSoc Europe, a union of European chemical societies for the purpose of publishing high-quality science. All owners merged their national journals to form two leading chemistry journals, the *European Journal of Inorganic Chemistry* and the *European Journal of Organic Chemistry*. Three further members of ChemPubSoc Europe (Austria, Czech Republic and Sweden) are Associates of the two journals.

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COVER PICTURE

The cover picture shows a novel chiral palladacycle, which was readily prepared from *p*-xylene and then resolved through the separation of its (*S*)-prolinate diastereomeric derivatives. The catalytic ability of the newly synthesized palladacycle was demonstrated in the preparation of a new diester-substituted diphosphane ligand by an asymmetric hydrophosphanation reaction, which proceeded with excellent selectivity. Details are discussed in the article by P.-H. Leung et al. on p. 4427ff. The key molecule is depicted as superimposed over the image of the Chinese Heritage Centre building at the Nanyang Technological University, Singapore, and is meant to represent the contributions of Asian authors/readers to the *European Journal of Inorganic Chemistry*.

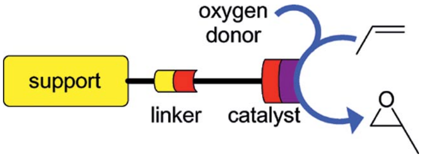
MICROREVIEW

Heterogenized Epoxidation Catalysts

S. Shylesh, M. Jia,
W. R. Thiel* 4395–4410

Recent Progress in the Heterogenization of Complexes for Single-Site Epoxidation Catalysis

Keywords: Heterogenous catalysis / Immobilization / Mesoporous materials / Organic-inorganic hybrid composites / Epoxidation



Heterogenization of single-site catalysts gives catalytically active materials with well defined active sites and allows separation from the reaction mixture by simple filtration. This microreview summarizes the recent developments in the heterogenization of molybdenum, tungsten, manganese and rhenium olefin epoxidation catalysts.

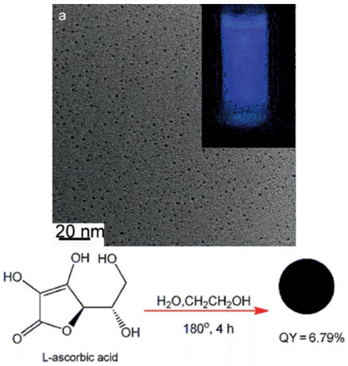
SHORT COMMUNICATIONS

Fluorescent Carbon Nanoparticles

B. Zhang, C.-y. Liu,* Y. Liu ... 4411–4414

A Novel One-Step Approach to Synthesize Fluorescent Carbon Nanoparticles

Keywords: Fluorescence / Carbon / Nanoparticles / Quantum dots / Hydrothermal synthesis



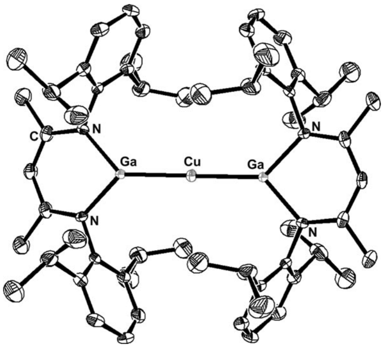
We have developed a one-step route to synthesize water-soluble fluorescent carbon nanoparticles (CNPs) by a hydrothermal method for the first time. The particles are monodisperse and have higher photoluminescence efficiencies (6.79%) under no further surface modification.

First Linear Cu–Ga–Diketiminate

G. Prabusankar, S. Gonzalez-Gallardo,
A. Doddi, C. Gemel, M. Winter,
R. A. Fischer* 4415–4418

Linear Coinage Metal Complexes Stabilized by a Group 13 Metalloid Ligand

Keywords: Gallium / Copper / Silver / Reduction / Metal–metal interactions



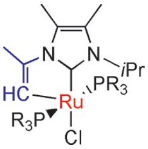
Linear cationic copper(I) and silver(I) complexes supported by gallium(I)-β-diketiminate were synthesized and characterized by using spectroscopic techniques. The X-ray single-crystal diffraction study of copper(I)–gallium(I)–β-diketiminate reveals the first structurally characterized linear copper(I) molecule stabilized by a metalloid group 13 ligand.

C–H Activation

R. Wolf,* M. Plois 4419–4422

Triple Alkyl C–H Bond Activation Mediated by Ruthenium(II): Preparation of Isopropenyl-Substituted Carbene Complexes

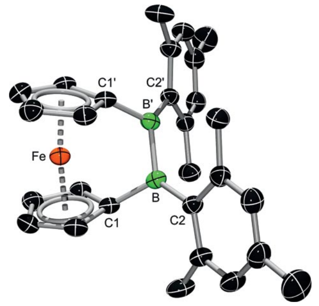
Keywords: Ruthenium / N-Heterocyclic carbene / NHC / Nitrogen heterocycles / C–H activation



The synthesis of metalated isopropenyl carbene complexes starting from an isopropyl-substituted N-heterocyclic carbene provides a rare example for the ruthenium-mediated activation of three alkyl C–H bonds.

Borametalloarenophanes

The syntheses and X-ray diffraction analyses of a new strained [2]boraferrocenophane containing mesityl groups at boron and an unstrained diborane(4) derivative with two ferrocenyl substituents are described.



H. Braunschweig,* A. Damme, T. Kupfer 4423–4426

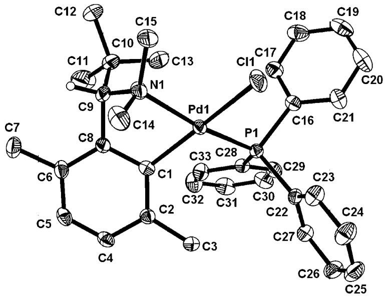
New [2]Boraferrocenophane and Diferrocenyldiborane(4) Derivatives

Keywords: Sandwich complexes / Boron / Ferrocene / *ansa*-Complexes / [2]Boraferrocenophane / Diborane(4)

FULL PAPERS

Chiral Palladacycles

A novel chiral organopalladium complex was synthesized and further applied in asymmetric hydrophosphanation reactions. An optically pure C_2-symmetrical diphosphane ligand containing two ester functional groups at the two chiral carbon stereogenic centers was prepared by using this newly synthesized *ortho*-palladated complex.



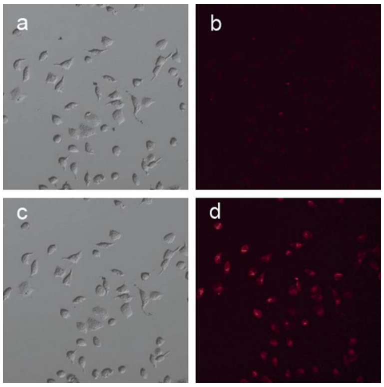
Y. Ding, Y. Zhang, Y. Li, S. A. Pullarkat, P. Andrews, P.-H. Leung* 4427–4437

Synthesis of a Chiral Palladacycle and Its Application in Asymmetric Hydrophosphanation Reactions

Keywords: Asymmetric synthesis / Palladium / Chiral resolution / Phosphane ligands / Metallacycles

Hg(II) Fluorescent Sensors

A "turn-on"-type Hg^{2+} fluorescence sensor based on rhodamine was synthesized and characterized by UV/Vis and fluorescence spectroscopy. The excellent selectivity and sensitivity give this sensor great potential in environmental and biological systems. The successful application of this sensor in living yeast and in HeLa cells further confirms its biological value.

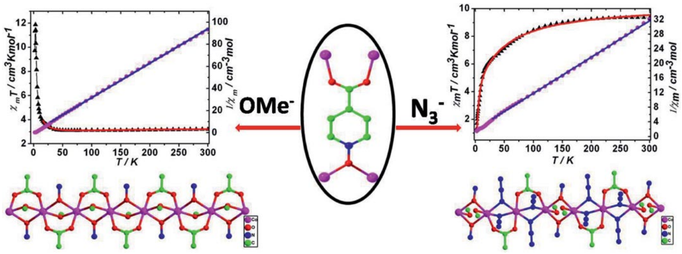


L. Jiang, L. Wang, B. Zhang, G. Yin,* R.-Y. Wang* 4438–4443

Cell Compatible Fluorescent Chemosensor for Hg^{2+} with High Sensitivity and Selectivity Based on the Rhodamine Fluorophore

Keywords: Rhodamine-B / Fluorescence / Mercury / Bioimaging / Sensors

Cobalt Isonicotinate Complexes



Two new Co^{II} complexes with isonicotinate *N*-oxide and azide/methoxy ligands were synthesized. The isonicotinate *N*-oxide ligands assume the infrequent μ-4 bridging mode, and the structures and magnetic properties of the complexes depend on the short bridging azide or methoxy ligand used.

F.-C. Liu,* M. Xue, H.-C. Wang, J. Ou-Yang* 4444–4449

Two Cobalt Compounds Based on Azide/Methoxy and Isonicotinate *N*-Oxide Ligands Exhibiting Ferromagnetic and Antiferromagnetic Interactions

Keywords: O ligands / Azides / Cobalt / Magnetic properties / Structure elucidation

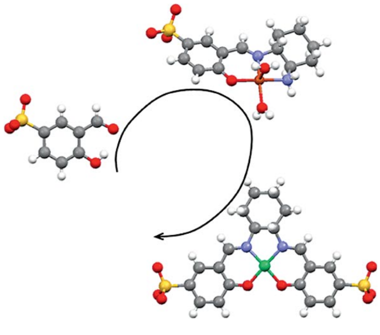
CONTENTS

Chiral Salen Sulfonates

É. Delahaye, M. Diop, R. Welter, M. Boero, C. Massobrio, P. Rabu,* G. Rogez* 4450–4461

From Salicylaldehyde to Chiral Salen Sulfonates – Syntheses, Structures and Properties of New Transition Metal Complexes Derived from Sulfonato Salen Ligands

Keywords: Salen sulfonates / Chirality / Structure elucidation / Ferromagnetic coupling / Density functional calculations



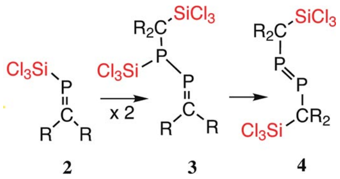
Five new sulfonato salen chiral and nonchiral complexes have been synthesized and characterized. The crystal structures of the Ni complexes, as well as those of three other compounds resulting from the partial hydrolysis of the complexes, have been obtained; among the latter, there is a sulfonato-bridged copper(II) dinuclear complex showing a small intramolecular ferromagnetic interaction.

Silylated Phosphaalkenes

C. Mitrofan, R. M. Bîrzoi, D. R. Bugnariu, J. Mahnke, A. Riecke, E. Dürr (née Seppälä), W.-W. du Mont,* P. G. Jones, H. Marsmann* 4462–4469

Reactions of the Disilane $Me_3SiSiCl_3$ with *P*-Chlorophosphaalkenes: Transient and Persistent Per-Silylated Phosphaalkenes

Keywords: Disilanes / Phosphaalkenes / Diphosphenes / Dichlorosilylene / ^{29}Si-NMR



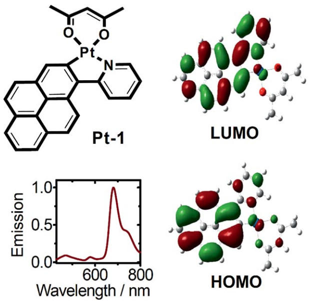
Reactions of *P*-chlorophosphaalkenes $R_2C{=}PCl$ (**1a**: R = Me_3Si, **1b**: R = $PhMe_2Si$, **1c**: R = $i$$PrMe_2Si$) with the disilane $Me_3SiSiCl_3$ (**5**) furnish by Me_3SiCl elimination as first spectroscopically detectable products the new transient (**2a**, **2b**) and persistent (**2c**) per-silylated phosphaalkenes $R_2C{=}PSiCl_3$; **2c** was characterised by its ^{29}Si- and ^{31}P-NMR patterns.

Phosphorescent Pt Complexes

W. Wu, W. Wu, S. Ji, H. Guo,* J. Zhao* 4470–4482

Observation of Room-Temperature Deep-Red/Near-IR Phosphorescence of Pyrene with Cycloplatinated Complexes: An Experimental and Theoretical Study

Keywords: Sensors / Phosphorescence / Platinum / Fluorescence / Density functional calculations



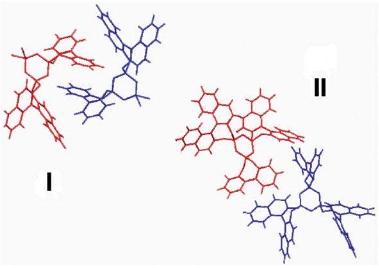
Pyrene-containing cycloplatinated complexes have been synthesized, the pyrene moiety directly cyclometallated or linked to a ppy ligand through a C–C or C≡C bond. Deep-red/near-IR pyrene-localized ^{3}IL (supported by DFT calculations) phosphorescence beyond 600 nm was observed, overcoming the previous limitation of direct cyclometallation for the phosphorescence of pyrene.

Chiral Pockets

J. L. García Álvarez, M. E. Amato, G. M. Lombardo, G. A. Carriedo,* F. Punzo* 4483–4491

Self-Organization by Chiral Recognition Based on *ad hoc* Chiral Pockets in Cyclotriphosphazenes with Binaphthoxy and Biphenoxy Substituents: An X-ray, NMR and Computational Study

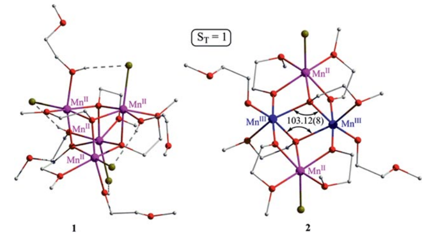
Keywords: Spiro compounds / Phosphazenes / Chiral recognition / X-ray diffraction / NMR spectroscopy / Molecular mechanics



The interactions in molecules of **I** and **II**, investigated in the solid state, solution and the gas phase, are driven by the preferential supramolecular interactions of a biphenoxy system on one molecule with the chiral pocket formed between the biphenoxy and binaphthoxy rings on an adjacent molecule. Thus, these intermolecular interactions may be regarded as self-organization by chiral recognition.

Tetranuclear Manganese Complexes

The synthesis and characterization of two tetranuclear manganese species, with $[Mn_4^{II}(\mu_3\text{-}O)_4]$ (**1**) and defect dicubane $[Mn_2^{II}Mn_2^{III}(\mu_3\text{-}O)_2(\mu\text{-}O)_4]$ (**2**) species, are reported. In mixed-valence metal complex **2**, the conjunction of antiferromagnetic and antiferromagnetic interactions between the manganese centers result in an unusual $S_T = 1$ ground state.



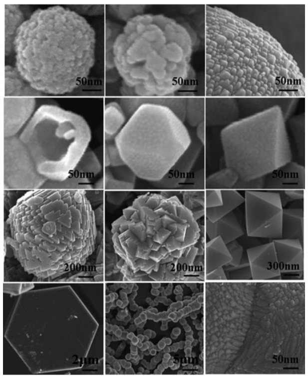
L. B. Jerzykiewicz, J. Utko, M. Duczmal, P. Starynowicz, P. Sobota* **4492–4498**

Tetranuclear Manganese Complexes with $[Mn^{II}_4]$ and $[Mn^{II}_2Mn^{III}_2]$ Units: Syntheses, Structures, Magnetic Properties, and DFT Study

Keywords: Manganese / Metal alkoxides / Synthetic methods / X-ray diffraction / Magnetic properties

Magnetite Crystals

Monodisperse Fe_3O_4 crystals with various morphologies have been synthesized by a simple hydrothermal method in an ethylene glycol (EG)/NaOH system without adding any surfactants. The magnetic properties of the as-synthesized samples vary as the morphology and the grain size change, which reveals tunable properties.

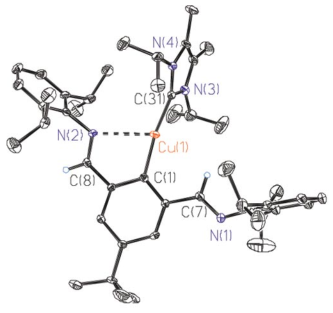


R. Liu, Y. Zhao, R. Huang, Y. Zhao, H. Zhou* **4499–4505**

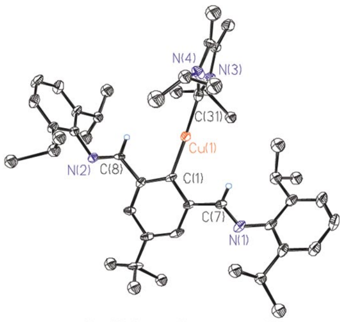
Shape Evolution and Tunable Properties of Monodisperse Magnetite Crystals Synthesized by a Facile Surfactant-Free Hydrothermal Method

Keywords: Self-assembly / Crystal growth / Surfactant-free / Magnetite / Magnetic properties

Organocopper(I) Complex



1a (red crystal)



1b (light yellow crystal)

A new mononuclear bis(imino)arylcopper(I) N-heterocyclic carbene complex has been synthesized that exhibits two types of solid-state structures. Its reaction with N_3(1-ad) has been investigated and revealed an aryl group transfer reactivity pattern mediated at the Cu^I center with the support of the N-heterocyclic carbene.

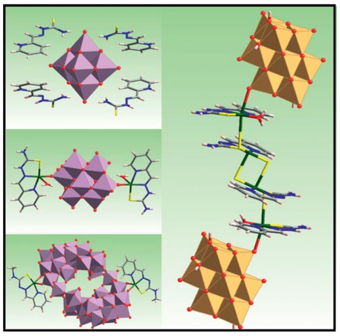
D. An, J. Wang, T. Dong, Y. Yang, T. Wen, H. Zhu,* X. Lu,* Y. Wang **4506–4512**

Mononuclear Bis(imino)arylcopper(I) N-Heterocyclic Carbene Complex: Synthesis, Structure, and Reaction with Organic Azide

Keywords: Copper / Carbenes / Weak interactions / Azides / Density functional calculations

Polyoxometallate–Thiosemicarbazones

This report describes the synthesis and analysis of new polyoxometallate–thiosemicarbazone and –thiosemicarbazone-copper(II) hybrid compounds derived from pyridine-2-carbaldehyde thiosemicarbazone (HL) and pyridine-2-carbaldehyde N^4-methylthiosemicarbazone. The different POMs obtained are $[Mo_6O_{19}]^{2-}$, $[Mo_8O_{26}]^{2-}$, $\{Mo_{36}\}$ and $[H_4V_{10}O_{26}]^{2-}$



R. Gil-García, R. Zichner, V. Díez-Gómez, B. Donnadieu, G. Madariaga, M. Insausti, L. Lezama, P. Vitoria, M. R. Pedrosa, J. García-Tojal* **4513–4525**

Polyoxometallate–Thiosemicarbazone Hybrid Compounds

Keywords: Copper / Molybdenum / Polyoxometallates / Thiosemicarbazone complexes / Vanadium

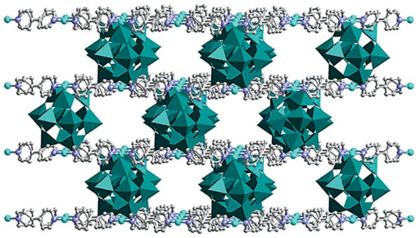
CONTENTS

Selective Oxidation with MOFs

F. Yu, P.-Q. Zheng, Y.-X. Long, Y.-P. Ren, X.-J. Kong,* L.-S. Long,* Y.-Z. Yuan,* R.-B. Huang, L.-S. Zheng 4526–4531

Polyoxometalate-Based Metal-Organic Frameworks as Heterogeneous Catalysts for Selective Oxidation of Ethylbenzene

Keywords: Polyoxometalates / Metal-organic frameworks / Heterogeneous catalysis / Oxidation



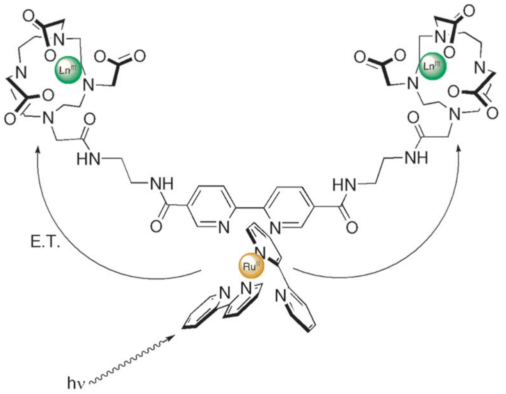
Investigation on the catalytic activity of four polyoxometalate-based metal-organic frameworks reveals that the oxidation of the substrate was performed in the pore of the framework and the valence of the metal ion in the polyoxometalates significantly affects the catalytic activity of the 3D framework.

f–d Coordination Conjugates

M. Vázquez López,* S. V. Eliseeva, J. M. Blanco, G. Rama, M. R. Bermejo, M. E. Vázquez, J.-C. G. Bünzli* 4532–4545

Synthesis and Photophysical Properties of Ln^{III}–DOTA–Bipy Complexes and Ln^{III}–DOTA–Bipy–Ru^{II} Coordination Conjugates

Keywords: Lanthanides / Ruthenium / Luminiscence / Energy transfer / Supramolecular chemistry



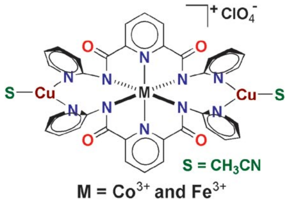
The synthesis and comparative photophysical characterization of a series of visible and NIR-emitting Ln^{III} complexes and Ln^{III}–Ru^{II} coordination conjugates are reported. The photophysical data demonstrate the existence of energy transfer in all the Ln^{III} complexes and in the Nd^{III}–Ru^{II} conjugate.

Copper in Cleft

A. P. Singh, R. Gupta* 4546–4554

Copper(I) in the Cleft: Syntheses, Structures and Catalytic Properties of $\{Cu^+–Co^{3+}–Cu^+\}$ and $\{Cu^+–Fe^{3+}–Cu^+\}$ Heterobimetallic Complexes

Keywords: Heterometallic complexes / Copper / Cobalt / Iron / Oxidation / Clefts



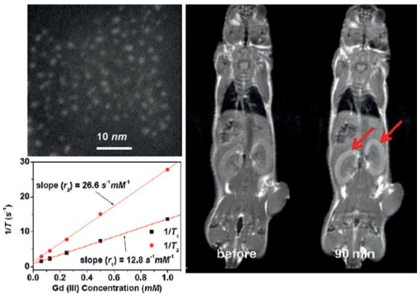
This work shows the synthesis and characterization of $\{Cu^+–M^{3+}–Cu^+\}$ (M^{3+} = Co and Fe) heterobimetallic complexes utilizing Co^{3+} and Fe^{3+} coordination complexes as the building blocks. The $\{Cu^+–M^{3+}–Cu^+\}$ complexes have been shown for the oxidation of hindered phenols to afford C–C-coupled as well as de-alkylated products.

Nanoparticles as MRI Agents

E. Sook Choi, J. Young Park, M. Ju Baek, W. Xu, K. Kattel, J. Hyun Kim, J. Jun Lee, Y. Chang,* T. Jeong Kim, J. Eun Bae, K. Seok Chae, K. Jin Suh, G. Ho Lee* 4555–4560

Water-Soluble Ultra-Small Manganese Oxide Surface Doped Gadolinium Oxide (Gd_2O_3@MnO) Nanoparticles for MRI Contrast Agent

Keywords: Colloids / Imaging agents / Nanoparticles / Nanotechnology



Aqueous solutions of lactobionic acid coated ultra-small Gd_2O_3@MnO nanoparticles (d = 1–2 nm) may be used as both T_1 and T_2 MRI contrast agents because of their high relaxivities. Its capability as a T_1 MRI contrast agent was proved in vivo.

CORRECTION

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* Author to whom correspondence should be addressed.

💻 Supporting information on the WWW (see article for access details).