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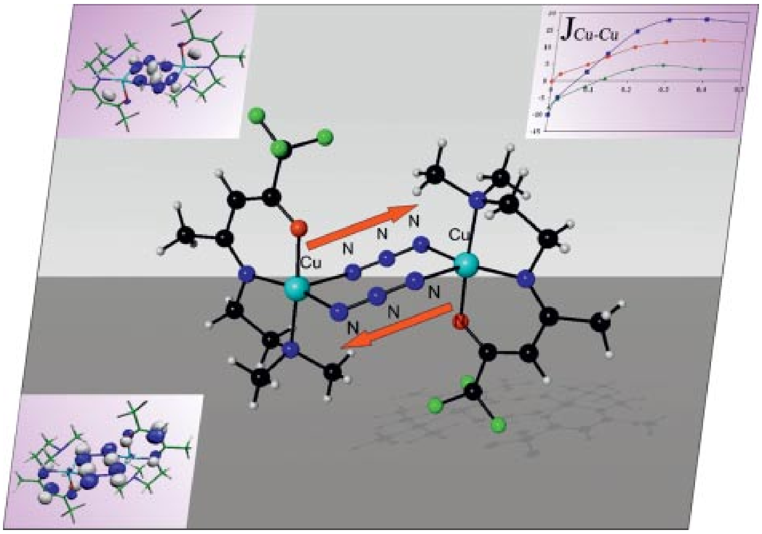
The EUChemSoc Societies have taken the significant step into the future by merging their traditional journals, to form two leading chemistry journals, the *European Journal of Inorganic Chemistry* and the *European Journal of Organic Chemistry*. Three further EUChemSoc Societies (Austria, Czech Republic and Sweden) are Associates of the two journals.

COVER PICTURE

The cover picture shows the shearing-like distortion, which was found to play a dominant role in the control of magnetic properties of Cu^{II} azido complexes. From ab initio calculations, it was demonstrated that the smaller the shearing amplitude, the larger the antiferromgnetic character. A practical route to enhance ferromagnetism is suggested in the light of this theoretical analysis. Details are discussed in the article by D. Luneau, V. Robert et al. on p. 4434ff.



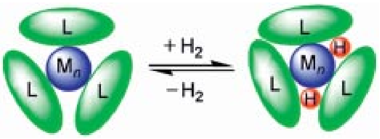
MICROREVIEW

Hydrogen on Metal Clusters

A. S. Weller,* J. S. McIndoe* ... 4411−4423

Reversible Binding of Dihydrogen in Multimetallic Complexes

Keywords: Hydrides / Homogeneous catalysis / Heterogeneous catalysis / Cluster compounds / Hydrogen



The reversible attachment of hydrogen to metal complexes, especially multimetallic systems, constitutes a technologically and academically important area ranging from commodity chemical synthesis (catalysis) through to the storage of hydrogen. In this contribution, the binding of dihydrogen in multimetallic cluster complexes is reviewed.

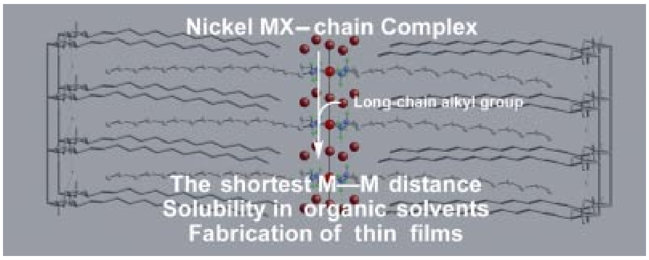
SHORT COMMUNICATION

Halogen-Bridged Ni^{III} Nanowires

H. Ohtsu,* S. Takaishi, K. Imamura, A. Ishii, K. Tanaka, M. Hasegawa, M. Yamashita* .... 4425−4428

Remarkable Functions of Long-Chain Alkyl Groups in Halogen-Bridged Nickel(III) Nanowire Complexes

Keywords: Nickel / Nanostructures / Long-chain alkyl groups / Average-valent compounds / Thin films



The long-chain alkyl groups of new bidentate ligands make it possible to generate nickel MX−chain complexes exhibiting the shortest Ni^{III}−Ni^{III} distance among all MX−chain compounds reported. Dissolution in organic solvents occurs without dissociation of the MX−chain units, and the successful fabrication of thin films is reported.

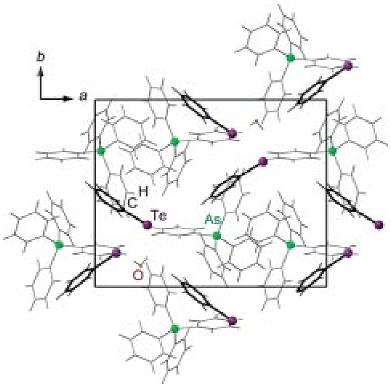
FULL PAPERS

Tellurostannates

E. Ruzin, W. Massa, S. Dehnen* .... 4429−4433

Treating $[K_4(H_2O)_{0.5}][SnTe_4]$ with PPh_4^+ or $AsPh_4^+$: Formation of a Highly Air-Stable Tellurostannate Salt, a Tellurolate with One-Coordinate Te Atoms, and a Polytelluride Salt with ${}^{\infty}_{1}[Te_4(H_2O)_2]^{2-}$ Chains

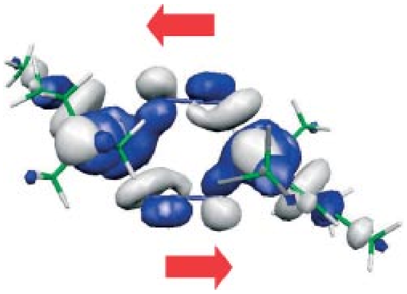
Keywords: Arsonium salts / Phosphonium salts / Tellurolate / Tellurostannate / Polytelluride / X-ray diffraction



Beyond a simple cation exchange! By treating orthotellurostannates with EPh_4Cl (E = P, As), one obtains air-stable tellurodistannate **1** by partial replacement of the strongly interacting K^+ by the much more weakly interacting $[PPh_4]^+$ cations, or tellurophenolate **2** (see figure) with a one-coordinate Te atom upon As−C bond cleavage. Oxidation of the air-sensitive $[Sn_2Te_6]^{4-}$ and Te^{2-} anions in solution produces tetratelluride salt **3** with strands of H_2O-bridged $[Te_4]^{2-}$ units.

Molecular Magnetism

Prediction of the magnetic properties of binuclear Cu^{II} compounds containing asymmetric azide bridges remains a challenge. A combination of correlated ab initio calculations and the analysis of the experimental data shows that the asymmetry of the coordination of the azido bridge is a determining factor in the tuning of the coupling constant value.



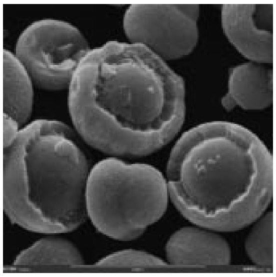
M. Angels Carvajal, C. Aronica, D. Luneau,* V. Robert* 4434–4437

Shearing-Like Distortion in Binuclear End-to-End Cu^{II} Azido Compounds: An Ab Initio Study of the Magnetic Interactions

Keywords: Magnetic properties / Azido bridge / Ab initio calculations

Selenium Microwires

The formation of Se microwire networks by hydrothermal treatment in tungstosilicic acid solution is described. The kinetics of crystallization of the Se assembly is studied as a function of reaction time.

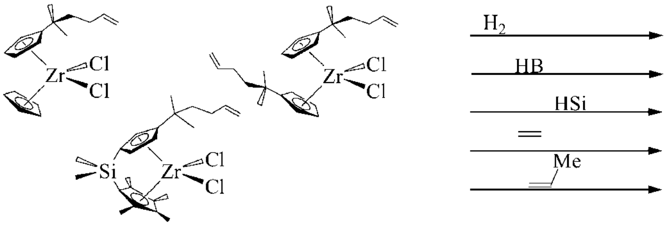


L. Yang, Y. Shen,* A. Xie, J. Liang 4438–4444

Oriented Attachment Growth of Three-Dimensionally Packed Trigonal Selenium Microspheres into Large-Area Wire Networks

Keywords: Nanostructures / Self-assembly / Selenium

Zirconocene Complexes



New zirconocene and *ansa*-zirconocene complexes containing pendant alkenyl substituents and their respective hydrogenation, hydroboration and hydrosilylation products have been studied as catalysts for ethylene and propylene polymerisation.

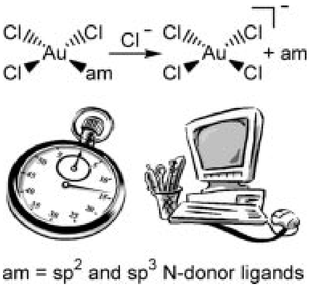
S. Gómez-Ruiz, D. Polo-Cerón, S. Prashar,* M. Fajardo, A. Antiñolo, A. Otero 4445–4455

Synthesis and Reactivity of Alkenyl-Substituted Zirconocene Complexes and Their Application as Olefin Polymerisation Catalysts

Keywords: Zirconium / Metallocenes / Polymerisation / Homogeneous catalysis / Cyclopentadienyl ligands

Inorganic Reaction Mechanisms

The kinetics of the process $AuCl_3(am) + Cl^- \rightarrow AuCl_4^- + am$ (am = pyridines with different π systems and sp^3 amines) have been studied in methanol at 25 °C. The reactivity of the considered N-donors is different and follows the order sp^3 N-donors > "normal" pyridines > "π-extended" pyridines. This result, with the support of ground-state DFT calculations on the $AuCl_3(am)$ derivatives, is explained on the basis of an Au–N bond enforcement due to an increased π-back-donation contribution.



B. Pitteri,* M. Bortoluzzi 4456–4461

Displacement of Neutral Nitrogen Donors by Chloride in $AuCl_3(am)$ (am= Pyridines and Amines): Kinetics and DFT Calculations Show the Effects of Basicity and π-Acceptor Ability

Keywords: Gold / Kinetics / Nitrogen donors / Reaction mechanisms / DFT

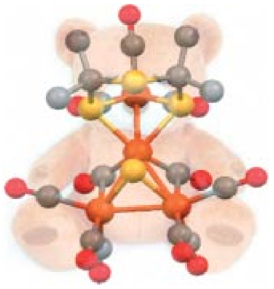
CONTENTS

[Fe-only] Hydrogenase Models

J. Windhager, H. Görls, H. Petzold,
G. Mloston, G. Linti,*
W. Weigand* 4462–4471

Reactions of 1,2,4-Trithiolanes with Nonacarbonyldiiron: Sulfurdithiolatodiiron and -tetrairon Complexes as Mimics for the Active Site of [Fe-only] Hydrogenase

Keywords: Iron / Cluster compounds / S ligands / Hydrogenases / Density functional calculations



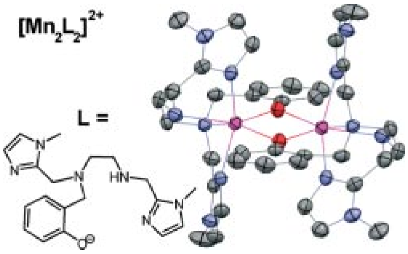
The synthesis of novel structural models for the active site of [Fe-only] hydrogenase is described starting from 1,2,4-trithiolane and its derivatives. The products are characterised by spectroscopic methods and X-ray structure analyses. Density functional calculations are reported for a representative example of the unusual tetranuclear iron clusters formed.

SOD Mimics

F. Cisnetti, A.-S. Lefèvre, R. Guillot,
F. Lambert, G. Blain,
E. Anxolabéhère-Mallart,
C. Policar* 4472–4480

A New Pentadentate Ligand Forms Both a Di- and a Mononuclear Mn^{II} Complex: Electrochemical, Spectroscopic and Superoxide Dismutase Activity Studies

Keywords: Manganese(II) / Enzyme models / SOD mimic / N,O ligands / Bioinorganic chemistry



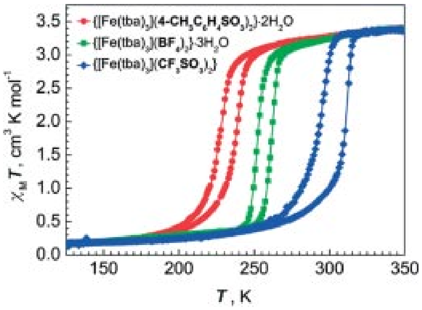
A new 1,2-ethanediamine-centered pentadentate ligand that contains imidazole and phenol moieties is presented and a dinuclear $Mn^{II}-Mn^{II}$ complex of this ligand characterized (X-ray diffraction, electrochemistry, EPR spectroscopy). This complex forms a mononuclear complex, whose SOD-like activity has been evaluated, in aqueous solution.

Spin-Crossover in Fe^{II} Complexes

M. Seredyuk, A. B. Gaspar,*
M. C. Muñoz, M. Verdaguer, F. Villain,
P. Gütlich* 4481–4491

Cooperative Spin-Crossover Behaviour in Polymeric 1D Fe^{II} Coordination Compounds: $[\{Fe(tba)_3\}X_2]\cdot nH_2O$

Keywords: Spin crossover / Bistability / Cooperative effects / Iron(II) complexes / Substituted triazoles



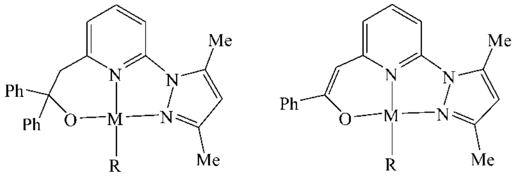
The synthesis and physical characterisation of new 1D cooperative spin-crossover polymers with general formula $[\{Fe(tba)_3\}X_2]\cdot nH_2O$ [tba = *N*-(4*H*-1,2,4-triazol-4-yl)benzamide; X = $CF_3SO_3^-$, BF_4^- and 4-$CH_3C_6H_4SO_3^-$] is reported.

C–C Coupling

Z.-X. Wang,* Z.-Y. Chai 4492–4499

Palladium(II) and Nickel(II) Complexes Bearing N,N,O-Chelate Ligands: Syntheses, Characterization and Catalysis in Heck and Kumada Coupling Reactions

Keywords: N,N,O ligands / Palladium / Nickel / Chelates / Homogeneous catalysis / C–C coupling



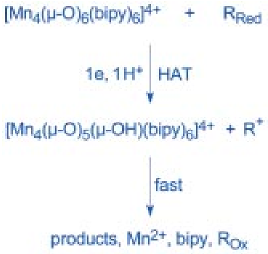
A **B**

M = Ni, Pd

Novel N,N,O-tridentate ligands and their nickel and palladium complexes **A** and **B** are synthesized and characterized, and the catalytic behavior of these complexes in the Heck and Kumada reactions is evaluated.

Proton-Coupled Electron Transfer

$[Mn_4(\mu\text{-}O)_6(bipy)_6]^{4+}$ ($\mathbf{1}^{4+}$) and the oxo-bridged protonated species $\mathbf{1}H^{5+}$ quantitatively oxidise nitrite and hydroxylamine to nitrate and nitrous oxide, respectively, with $\mathbf{1}H^{5+}$ reacting much faster. A hydrogen atom transfer (HAT) mechanism (1e, $1H^+$; electroprotic) seems feasible (R_{Red} = N^{III} or N^{-I}, R_{Ox} = N^{V} or N^{I}, bipy = 2,2′-bipyridine).



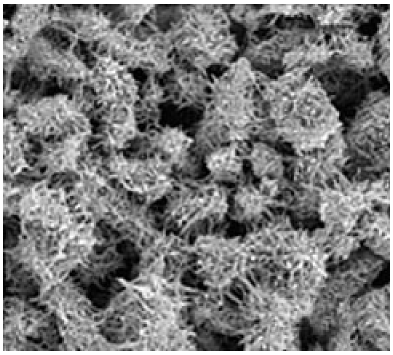
S. Das, S. Mukhopadhyay* ... **4500–4507**

Oxidation of N^{III} and N^{-I} by an $\{Mn_4O_6\}^{4+}$ Core in Aqueous Media: Proton-Coupled Electron Transfer

Keywords: Kinetics / Mechanisms / Manganese / Oxidation / Nitrogen

Indium Oxyhydroxides

InOOH with a hierarchical 3D architecture assembled from uniform single-crystalline nanowires was synthesized by an ultrasonic-assisted solvothermal route.

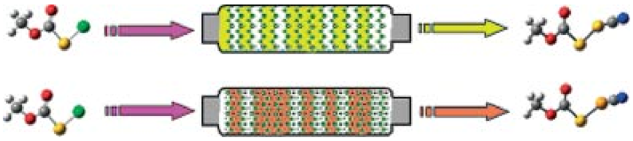


L. Chen, X. Ma, Y. Liu,
Y. Zhang, W. Wang, Y. Liang,
Z. Zhang* **4508–4513**

3D Architectures of InOOH: Ultrasonic-Assisted Synthesis, Growth Mechanism, and Optical Properties

Keywords: Indium / Mechanism / UV/Vis spectroscopy / Solvothermal synthesis

Dichalcogens



Two novel dichalcogens, $CH_3OC(O)SSCN$ and $CH_3OC(O)SSeCN$, have been generated in a convenient way by gas–solid reactions between $CH_3OC(O)SCl$ and AgSCN or AgSeCN. Photoelectron spectroscopy and theoretical calculations have been performed to investigate their electronic and geometrical structure. Their HOMOs correspond to the electron mainly localized on the S 3p or Se 4p lone pair MOs: $\{38a(n_{S(SCN)})\}^{-1}$ and $\{47a(n_{Se})\}^{-1}$, respectively.

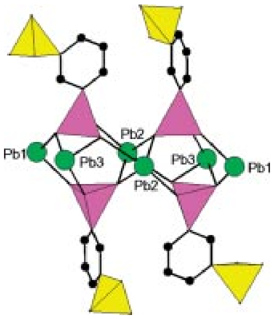
L. Du, L. Yao, M. Ge* **4514–4519**

Two Novel Species, (Methoxycarbonyl)sulfenyl Thiocyanate and (Methoxycarbonyl)sulfenyl Selenocyanate: Spectroscopic Characterization by Photoelectron Spectroscopy, and Quantum Chemical Investigation

Keywords: Ab initio calculations / Dichalcogens / Electronic structure / Photoelectron spectroscopy

Metal Phosphonates

Five new lead(II) sulfonate-phosphonates, namely $[Pb_3(L)_2(H_2O)_2]\cdot 4H_2O$ (**1**), $[Pb(HL)(phen)]\cdot H_2O$ (**2**), $[Pb_6(L)_4(phen)_8]\cdot 3H_2O$ (**3**), $[Pb_6(L)_4(phen)_{10}]\cdot 2H_2O$ (**4**), and $[Pb_6(L)_4(4,4'\text{-bipy})(H_2O)_2]\cdot 2H_2O$ (**5**; H_3L = $m\text{-}HO_3S\text{-}C_6H_4\text{-}PO_3H_2$), have been prepared and structurally characterized. They exhibit novel 0D, 2D, or 3D structures. Compounds **3** and **4** are the first cage compounds of Pb^{II} phosphonates.



Z.-Y. Du, H.-B. Xu, X.-L. Li,
J.-G. Mao* **4520–4529**

A New Approach to Novel Cluster Compounds of Lead(II) Phosphonates

Keywords: Lead / Sulfonate-phosphonates / Solvothermal synthesis / Cluster compounds

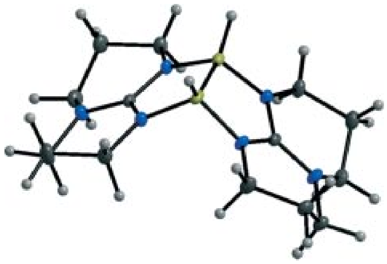
CONTENTS

Boron Hydrides

O. Ciobanu, P. Roquette, S. Leingang, H. Wadepohl, J. Mautz, H.-J. Himmel* 4530–4534

Synthesis and Characterization of a New Guanidine–Borane Complex and a Dinuclear Boron(II) Hydride with Bridging Guanidinate Ligands

Keywords: Hydrides / Boron / Low oxidation states / Hydrogen elimination



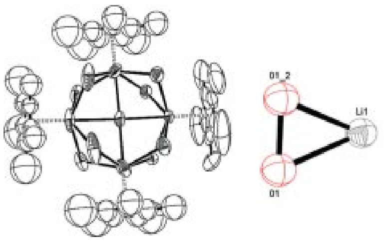
Dihydrogen elimination from a guanidine–borane complex followed by dimerization and further H_2 elimination leads to the formation of a new dinuclear B^{II} hydride.

Isolated LiO_2 Cation

E. Barnea, C. Averbuj, M. Kapon, M. Botoshansky, M. S. Eisen* 4535–4540

Synthesis and Crystal Structure of New Early-Lanthanide Organometallic Clusters

Keywords: Organolanthanide halide clusters / Lithium / Bridging ligands



Lanthanide clusters are formed when catecholborane reacts with the corresponding $Cp^*_2LnCl{\cdot}LiCl$ (Ln = Nd, Sm). For Nd, in the presence of oxygen, a tetranuclear anion containing the isolated LiO_2 cationic motif is formed.