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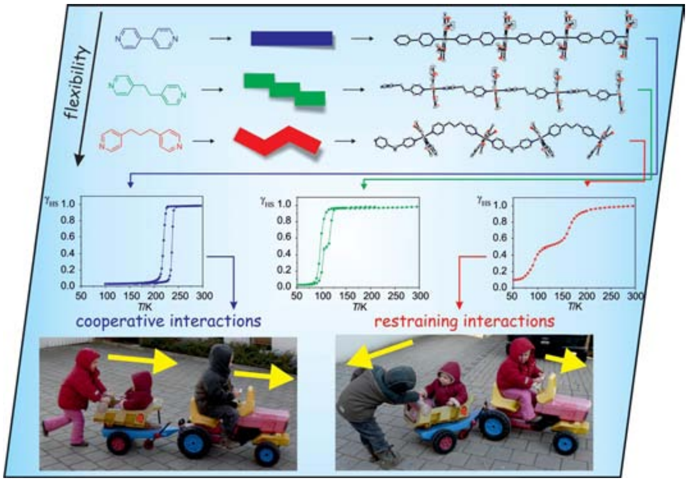
COVER PICTURE

The cover picture shows the influence of the bridging ligand in iron(II) 1D coordination polymers on the spin-transition properties of those complexes. Rigid linkers like 4,4′-bipyridine increase the cooperative interactions between the spin-crossover centres, leading to thermal hysteresis loops. In contrast to this, flexible linkers like 1,3-bis(4-pyridyl)propane support the formation of zigzag chains with restraining interactions between the 1D chains that lead to stepwise spin transitions. Details are discussed in the article by B. Weber et al. on p. 2803 ff.



CONTENTS

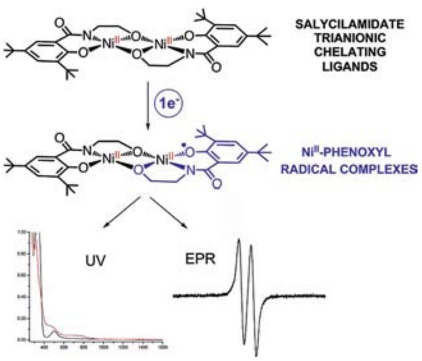
SHORT COMMUNICATIONS

Radical Complexes

L. Benisvy,* R. Wanke,
M. F. C. Guedes da Silva,
A. J. L. Pombeiro* 2791–2796

A Dianionic Dinickel(II) Complex and Its Oxidised Phenoxyl Radical States

Keywords: Nickel / Polyanionic ligands / Redox chemistry / Anions / Radicals



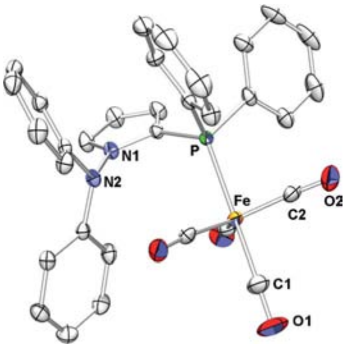
A dianionic dinickel(II) complex bearing new trianionic NO_2 ligands is reported. It displays two one-electron oxidations resulting in mono- and diphenoxyl radical complexes, as indicated by UV/Vis/NIR and EPR spectroscopic data of the electrochemically oxidised species.

Iron Phosphane Chemistry

M. Haberberger, E. Irran,
S. Enthaler* 2797–2802

Synthesis, Characterization and Catalytic Application of Iron Complexes Modified by Monodentate Phosphane Ligands

Keywords: Phosphanes / Monodentate ligands / Iron / Homogeneous catalysis



In the present study the properties of novel monodentate PAP-type ligands in coordination chemistry as well as in homogeneous catalysis by means the iron-catalyzed hydrosilylation of alkynes to the corresponding alkenes have been investigated.

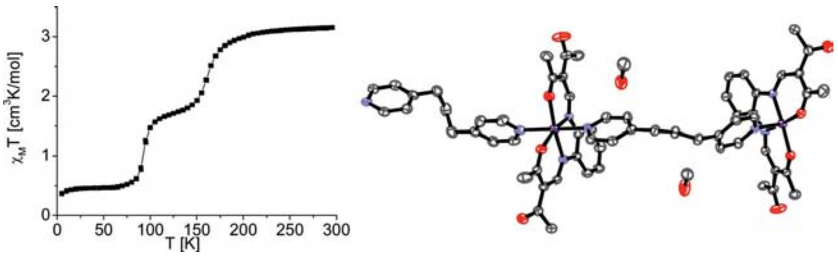
FULL PAPERS

Stepwise Spin Transitions

W. Bauer, W. Scherer, S. Altmannshofer,
B. Weber* 2803–2818

Two-Step versus One-Step Spin Transitions in Iron(II) 1D Chain Compounds

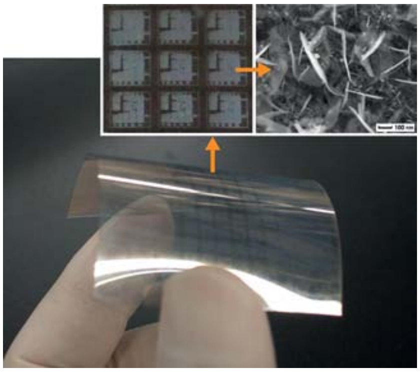
Keywords: Iron / N,O ligands / Magnetic properties / Spin crossover / X-ray structure analysis



The magnetic properties and results from X-ray structure analysis of several polymer iron(II) spin-crossover compounds are reported. The presence or absence of steps in the spin-transition curve and the widths of the hysteresis loops are related to the structure of the 1D chains and the interchain interactions.

Nanosheet Patterning

2D patterns of tin oxide nanosheets were fabricated on flexible indium tin oxide/polymer (ITO/PET) films by a site-selective chemical reaction on a super-hydrophilic surface. The films were exposed to light through a photomask to form hydrophobic and super-hydrophilic patterns. Chemical reaction to form tin oxide crystals proceeded only on the super-hydrophilic area in aqueous solutions of SnF_2.



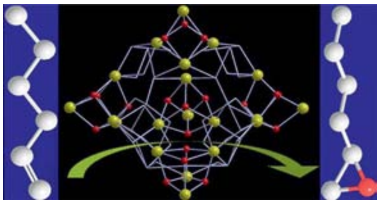
Y. Masuda,* T. Ohji,
K. Kato **2819–2825**

Site-Selective Chemical Reaction on Flexible Polymer Films for Tin Oxide Nanosheet Patterning

Keywords: Nanostructures / Tin oxide / Metal oxides / Polymers / Patterning / Site-selective deposition

Gd-Cluster-Based Catalyst

A new 3D Gd_{26} cluster has been prepared and crystallographically characterised. These clusters, connected by organic linkers, are formed by the combination of five distorted cubane cores attached to each other through six Gd^{3+} ions. The spherical cluster shell including organic ligands is around 2.32(4) nm. The compound catalyses epoxidation of olefinic substrates including α,β-unsaturated ketones in heterogeneous media.



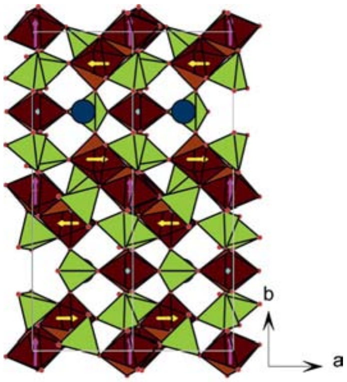
R. Sen, D. K. Hazra, M. Mukherjee,
S. Koner,* **2826–2831**

Gd_{26} Cluster Consisting of Distorted Cubane Cores: Synthesis, Structure and Heterogeneous Catalytic Epoxidation of Olefins

Keywords: Gadolinium / Cluster compounds / Hydrothermal synthesis / Epoxidation / Heterogeneous catalysis / Framework solids

Fe-Containing Molybdates

Three new complex molybdenum oxides – $Cs_2Fe_2(MoO_4)_3$, $Cs_4Fe(MoO_4)_3$ and $CsFe_5(MoO_4)_7$ – were obtained. Monoclinic $CsFe_5(MoO_4)_7$ represents a new structure type with a three-dimensional framework of isolated FeO_6 octahedra and Fe_4O_{18} units, which are connected with MoO_4 tetrahedra through corners. Its antiferromagnetic multi-k structure at 0 T is discussed.



Magnetic structure of $CsFe_5(MoO_4)_7$

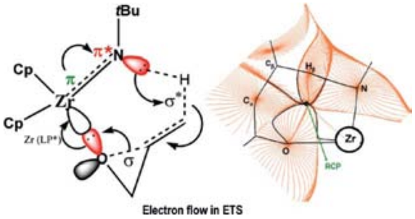
T. Namsaraeva, B. Bazarov,
D. Mikhailova,* N. Kuratieva,
A. Sarapulova, A. Senyshyn,
H. Ehrenberg **2832–2841**

Orthomolybdates in the $Cs-Fe^{II,III}-Mo-O$ System: $Cs_4Fe(MoO_4)_3$, $Cs_2Fe_2(MoO_4)_3$ and $CsFe_5(MoO_4)_7$

Keywords: Iron / Molybdenum / Magnetic properties / Multi-k structure / X-ray diffraction

Epoxide Cleavage

The detailed mechanism of epoxide ring cleavage mediated by an imidozirconocene complex and the bifunctional reactivity of the catalyst have been explored using DFT calculations. The involvement of the $1a_1$ and $2a_1$ MOs in the bifunctionality of the catalyst has been revealed.



D. Senthilnathan,
P. Venuvanalingam* **2842–2855**

Imidozirconocene-Mediated Ring Cleavage of Epoxides – Evidence for Bifunctional Reactivity from DFT

Keywords: Epoxides / Zirconium / Sandwich complexes / Density functional calculations / Reaction mechanisms

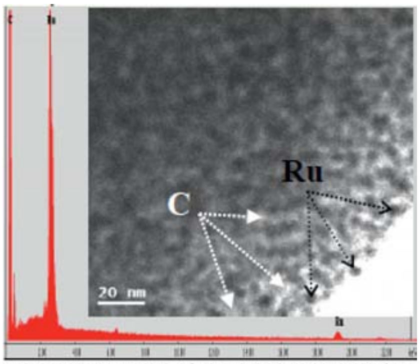
CONTENTS

Ruthenium–Carbon Catalyst

J. M. Calderon-Moreno,* V. G. Pol, M. Popa **2856–2862**

Single-Step Synthesis of Ruthenium Catalytic Nanocrystallites in a Stable Carbon Support

Keywords: Ruthenium / Carbon / Nanoparticles / Electron microscopy / Green chemistry



EDS spectrum, TEM micrograph showing C and Ru

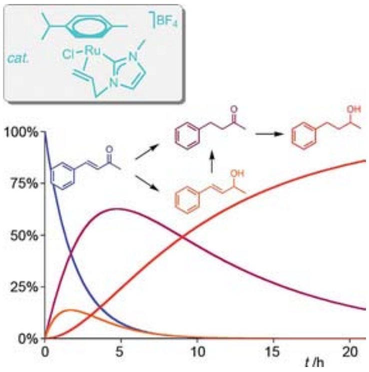
An efficient, clean, single-step process from Ru^{III} acetylacetonate yields a high loading of 2–4 nm sized metallic Ru nanocrystallites in a protective carbon support. The main advantages of the process described are the versatility, efficiency, reproducibility and ease of obtaining air-stable, monocrystalline Ru particles that are a few nanometers in size and find applications as catalysts.

Transfer Hydrogenation

S. Horn, C. Gandolfi, M. Albrecht* **2863–2868**

Transfer Hydrogenation of Ketones and Activated Olefins Using Chelating NHC Ruthenium Complexes

Keywords: Ruthenium / *N*-Heterocyclic carbene / Hydrogenation / Transfer hydrogenation / Ketones / Chemoselectivity



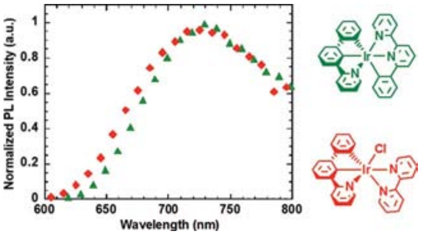
The catalytic activity of *N*-heterocyclic carbene ruthenium complexes in transfer hydrogenation is strongly influenced by the donor functionality at the carbene ligand, with olefins imparting an optimal balance between lability (catalyst precursor activation) and stability (avoiding catalyst decomposition) thereby allowing ketones and activated olefins to be transfer hydrogenated efficiently.

Near-Infrared Luminescence

Y. Koga,* M. Kamo, Y. Yamada, T. Matsumoto, K. Matsubara* **2869–2878**

Synthesis, Structures, and Unique Luminescent Properties of Tridentate C^C^N Cyclometalated Complexes of Iridium

Keywords: Synthesis design / Iridium / N ligands / Luminescence / Near-infrared emission



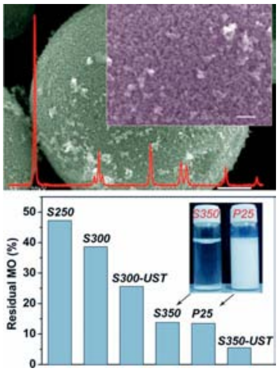
The first C^C^N cyclometalated complexes of iridium that bear tridentate pyridylbiphenylene ligands were synthesized in good yields through a directed C–C bond activation of pyridylbiphenylene. Photoirradiation of these complexes showed unique luminescent properties at long wavelengths in the near-infrared range.

High-Crystallinity Nanostructures

X. Lü, S. Ding, Y. Xie, F. Huang*................................ **2879–2883**

Non-Aqueous Preparation of High-Crystallinity Hierarchical TiO_2 Hollow Spheres with Excellent Photocatalytic Efficiency

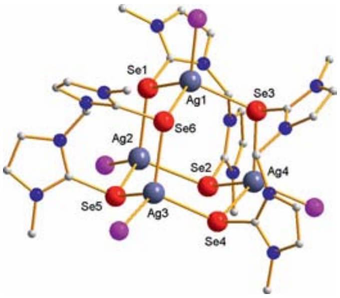
Keywords: Nanostructures / Crystal growth / Titanium / Synthetic methods / Photolysis



High-crystallinity hierarchical anatase TiO_2 hollow spheres were prepared by a high-temperature (350 °C) and non-aqueous solvothermal method in the absence of water, templates, or additives. The hollow structures were assembled from highly crystallized TiO_2 nanoparticles and exhibit photocatalytic properties that are superior to those of Degussa P25 TiO_2 under UV irradiation.

Organo-Dichalcogenone Compounds

The coordination chemistry of organochalcogenone compounds featuring two 3-methylimidazole-2-thione/selone groups towards Au(I/III), Ag^I and Cu^I has been studied. In most cases the organodichalcogenone coordinates to two metal fragments as a bidentate bridging ligand but 1,1′-methylenebis(3-methyl-imidazoline-2-selone) coordinates to silver(I) in a tetradentate bridging-chelate mode.



M. T. Aroz, M. C. Gimeno,* M. Kulcsar, A. Laguna, A. V. Lippolis 2884–2894

Group 11 Complexes with Imidazoline-2-thione or Selone Derivatives

Keywords: Gold / Silver / Copper / Selenium / N ligands / Supramolecular structures

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* Author to whom correspondence should be addressed.

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

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