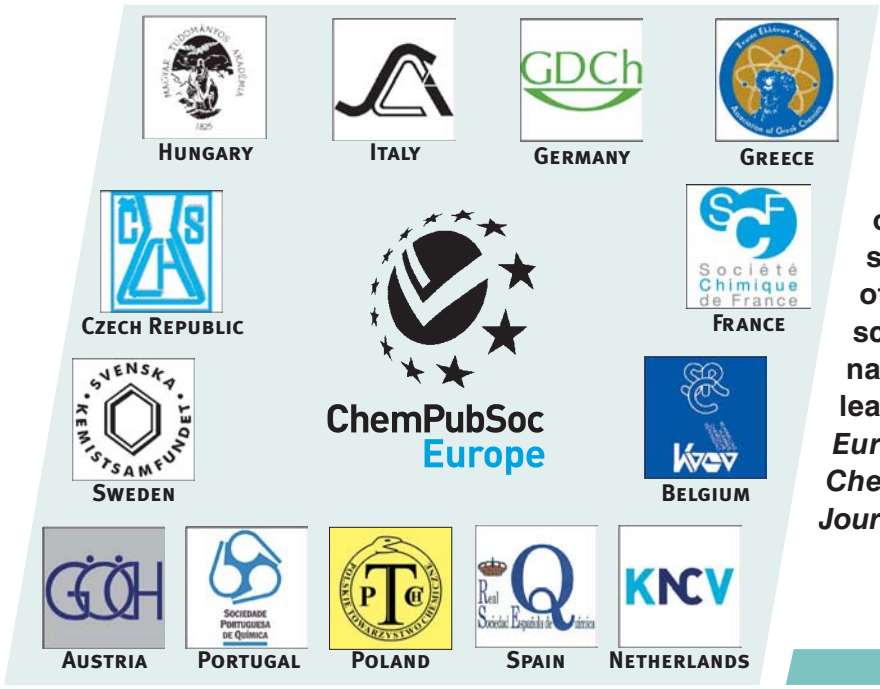
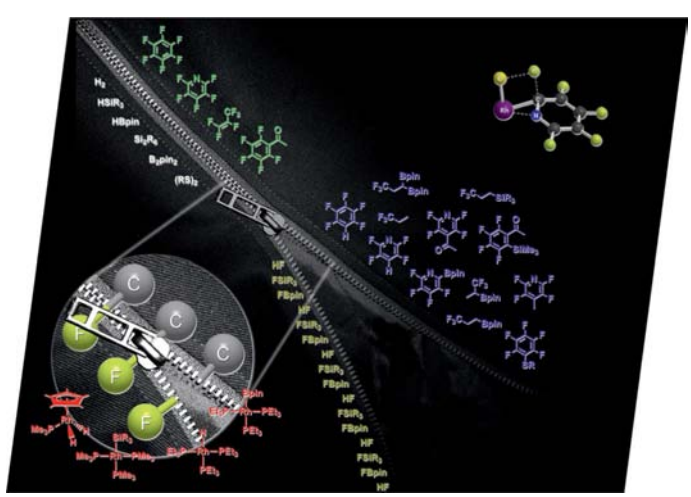


EurJIC is a journal of ChemPubSoc Europe, a union of 16 European chemical societies formed for the purpose of publishing high- quality science. All owners merged their national journals to form two leading chemistry journals, the *European Journal of Inorganic Chemistry* and the *European Journal of Organic Chemistry*.

Other ChemPubSoc Europe journals are *Chemistry – A European Journal*, *ChemBioChem*, *ChemPhysChem*, *ChemMedChem*, *ChemSusChem* and *ChemCatChem.*

COVER PICTURE

The cover picture shows C−F bond-cleavage reactions at highly fluorinated substrates by rhodium complexes. The thermodynamic driving force is provided by the formation of strong element−fluorine bonds such as H−F, Si−F or B−F bonds. Details are presented in the Microreview by T. Braun and F. Wehmeier on p. 613ff.



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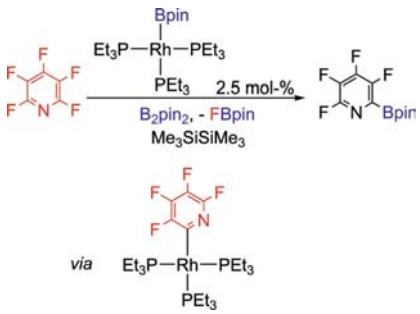
MICROREVIEW

Rhodium's Role in C−F Activation

Keywords: C−F activation / Fluoroorganics / Fluorine / Rhodium / Homogeneous catalysis

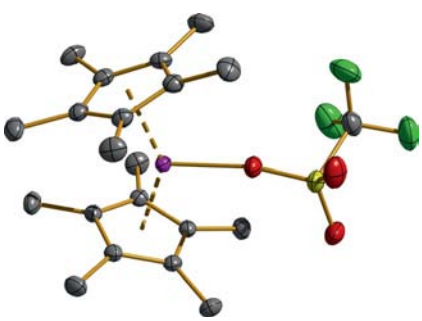


Rhodium-mediated C−F bond activation reactions of fluorinated arenes and alkenes are presented. On the basis of these C−F bond cleavage steps, stoichiometric and catalytic derivatization reactions of the activated molecules are discussed.

SHORT COMMUNICATIONS

Titanocenes

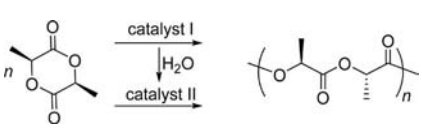
Keywords: Titanocene / Oxidation / Iron compounds / EPR spectroscopy / Density functional calculations



The (alkyne)titanocene complex $Cp^*_2Ti(\eta^2\text{-}Me_3SiC_2SiMe_3)$ reacts selectively with $Fe(OTf)_3$ to give the paramagnetic monotriflate species $Cp^*_2Ti(OTf)$. In the reaction of the latter with water further oxidation of the titanium center to give $Cp^*_2Ti(OH)(OTf)$ takes place.

Heterobimetallic Complexes

Keywords: Ring-opening polymerization / Heterometallic complexes / Zinc / Lactides

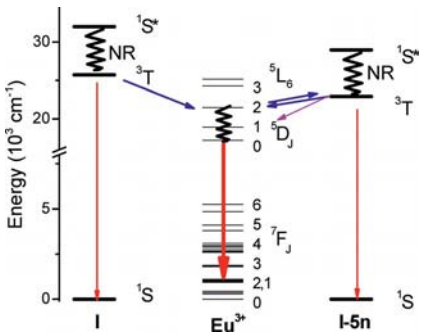


Two heterobimetallic complexes, $[(TBBP)_2Zn][(Na)_2(THF)_4]$ (**3**) and $[(TBBP)_2Zn][(Li)_2(THF)_4]$ (**4**), were synthesized, which catalyze the polymerization of L-lactide in a controlled fashion. Complex **3** initiates the ring-opening polymerization of unsublimed L-lactide in air, even in the presence of H_2O, to yield a high conversion and with a controllable molecular weight.

FULL PAPERS

Relating Spectra and Structure

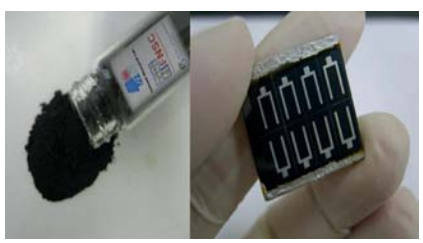
The relationships between crystal structures, physical constants and electronic spectroscopic data have been investigated for substituted 1,10-phenanthroline complexes of europium. No clear trends relating second-rank crystal field parameters with crystallographic data or Taft constants were found. Emission quantum yields for the complexes are similar, except for the nitro-substituted ligands.



Keywords: Luminescence / Electronic structure / Absorbance / Europium

Solar Cells

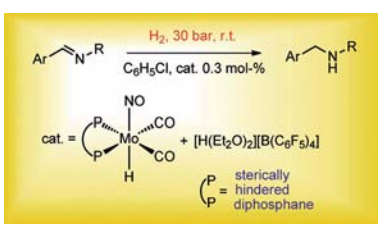
Large quantities of high-purity $CuIn_xGa_{1-x}Se_2$ and $CuIn_xGa_{1-x}S_2$ nanoparticles were synthesized by employing a sonochemical method under ambient conditions. The $CuInGaSe_2$ nanocrystal ink was used in the solution-based fabrication of thin film photovoltaic devices with a conversion efficiency of 2.62%.



Keywords: Sonochemical synthesis / Thin films / Nanoparticles / Electron microscopy / Solar cells / Photovoltaics

Ionic Imine Hydrogenation

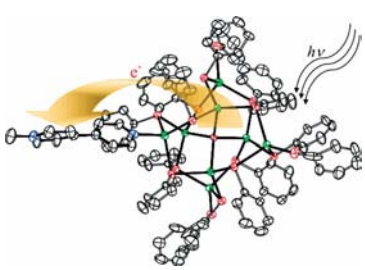
Hydrides of the type $[Mo(P\cap P)(CO)_2(NO)H]$ (P∩P = sterically hindered diphosphane) combined with $[H(Et_2O)_2][B(C_6F_5)_4]$ have been shown to efficiently hydrogenate various imines at room temperature and 30 bar H_2 pressure. The highest TOF was 123 h^{-1}, which was achieved in the hydrogenation of PhCH=N(α-naphthyl) using $[Mo(dippe)(CO)_2(NO)H]$ [dippe = 1,2-bis(diisopropylphosphanyl)-ethane] as a precatalyst.



Keywords: Molybdenum / Hydrogenation / Imines / Hydrides

Charge Transfer

The hybrid cluster complex $Cd_8S(SPh)_{15}(MeQ)\cdot CH_3CN$ (**1**) (MeQ^+ = *N*-methyl-4,4′-bipyridinium) has been synthesized and characterized by X-ray crystallography and spectroscopy, which can serve as an excellent model for understanding charge-transfer dynamics at organic molecule-nanoparticle interface.



Keywords: Charge transfer / Organic-inorganic hybrid composites / Cluster compounds / Nanostructures / Cadmium / Thiolate ligands

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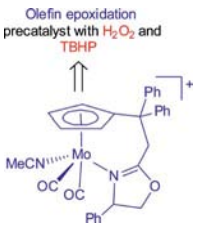
Olefin Epoxidation

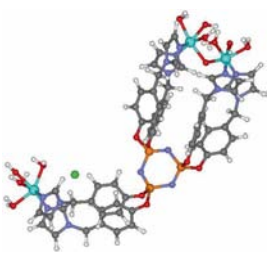


Chiral Cationic $[Cp'Mo(CO)_2(NCMe)]^+$ Species – Catalyst Precursors for Olefin Epoxidation with H_2O_2 and *tert*-Butyl Hydroperoxide

Keywords: Molybdenum / Tungsten / Cyclopentadienyl / Oxazoline / Epoxidation

The chiral molybdenum cationic complex $[Cp^{ox}Mo(CO)_2(NCMe)]^+$ (**5**) bearing a cyclopentadienyl group tethered to an oxazoline ring was synthesized and applied to olefin epoxidation using H_2O_2 and TBHP. The involvement of both C- and O-centred radicals in the olefin epoxidation with **5** as a catalyst was supported by radical trap experiments.

Phosphoester Hydrolysis

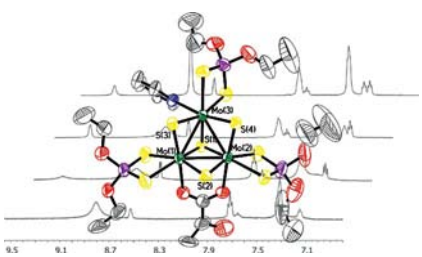


Metal Complexes of a Multidentate Cyclophosphazene with Imidazole-Containing Side Chains for Hydrolyses of Phosphoesters – Bimolecular vs. Intramolecular Dinuclear Pathway

Keywords: Copper / Zinc / Hydrolysis / Homogeneous catalysis / Enzyme models

Cu^{II} complexes of an imidazole-containing cyclophosphazene multidentate ligand exhib$_2$Im$_6$Cpz and Cu$_3$Im$_6$Cpz exhibit an intramolecular dinuclear pathway; whereas CuIm$_6$Cpz has an intermolecular dinuclear pathway. Cu$_3$Im$_6$Cpz also shows a higher activity than the untethered Cu^{II}(*N*-methylimidazole)$_2$ complex.

Chirality in Mo Clusters

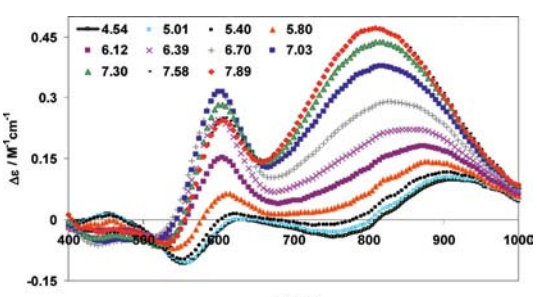


Cuboidal Mo_3S_4 and Mo_3NiS_4 Complexes Bearing Dithiophosphates and Chiral Carboxylate Ligands: Synthesis, Crystal Structure and Fluxionality

Keywords: Clusters / Phosphorus / Molybdenum / Nickel / X-ray diffraction / NMR spectroscopy

The synthesis and crystal structures of group 6 cubane-type clusters bearing dithiophosphato and carboxylato bridging ligands of general formula $[M_3S_4(\mu\text{-Lac})(dtp)_3(py)]$ (M = Mo, W; Lac = lactate) and $[Mo_3(Nipy)S_4(\mu\text{-OAc})(dtp)_3(py)]$ are reported. Variable-temperature $^{31}P\{^1H\}$ and ^1H NMR experiments allowed the fluxional behaviour of these complexes to be elucidated.

Vanadium Solution Speciation



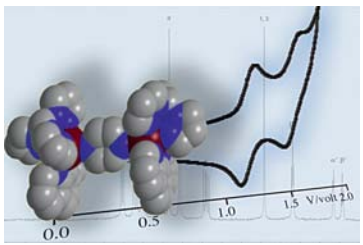
Vanadium(IV) and -(V) Complexes of Reduced Schiff Bases Derived from Aromatic *o*-Hydroxyaldehydes and Tyrosine Derivatives

Keywords: N,O ligands / Vanadium / Structure elucidation / Coordination modes / Potentiometry

The reduced Schiff bases of salicylaldehyde and pyridoxal with L-Tyr and *o*-tyrosine were characterized and found to be much more stable than the corresponding Schiff bases. The complexation with oxovanadium in aqueous solution was studied by spectroscopic techniques and pH potentiometry. Mainly 1:1 complexes are formed, the $V^{IV}O$ complexes with the *o*-Tyr-derived ligands are more stable than those with L-Tyr.

Achiral Polypyridyl Complexes

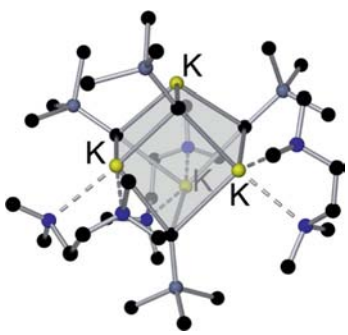
Six novel pyrazine- and 4,4′-bipyridine-bridged dinuclear achiral complexes containing $[Ru(tpm)(L\text{-}L)]^{2+}$ units [tpm = tris(1-pyrazolyl)methane; L-L = 2,2′-bpy, phen, biq] have been synthesized and characterized fully. The electrochemical and photophysical behavior of these complexes have been investigated and interpreted. Mixed-valence Ru^{II}/Ru^{III} species have been studied by spectroelectrochemistry.



Keywords: Ruthenium / Mixed-valent compounds / Electrochemistry / Dinuclear complexes / Polypyridine complexes

Organoalkali Metal Compounds

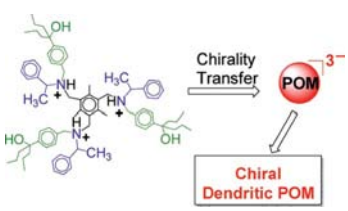
The synthesis of [(trimethylsilyl)methyl]sodium $[NaCH_2SiMe_3]$ is reported, together with structures of complexes of [(trimethylsilyl)methyl]sodium and -potassium with bi- and tridentate ligands TMEDA and PMDETA. The polymeric complexes $[(TMEDA)NaCH_2SiMe_3]$ and $[(PMDETA)KCH_2SiMe_3]$ form helical chains, whereas $[(TMEDA)_3(KCH_2SiMe_3)_4]$ forms pseudo-tetramers.



Keywords: Aggregation / Carbanions / Sodium / Potassium / N-donor ligands

Chiral Dendritic Polyoxometalates

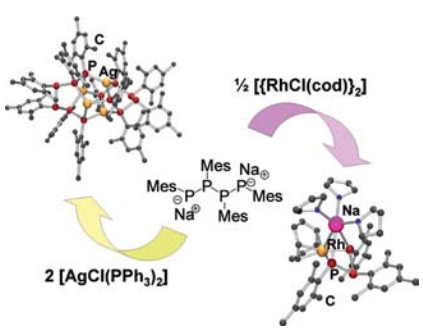
Chiral dendritic POMs have been prepared by assembling enantiopure tripodal dendritic amines and acidic POM units. Solution UV/Vis, CD and VCD studies of the dendritic POMs, as well as their efficiency in the oxidation of sulfides to sulfoxides with enantiomeric excess, indicate significant induced optical activity in the POM cluster. These reactions confirm chirality transfer to the POM unit.



Keywords: Asymmetric catalysis / Chirality / Dendrimers / Polyoxometalates / Oxidation

Phosphorus-Rich Anions

$[\{RhCl(cod)\}_2]$ and $[AgCl(PPh_3)_2]$ react with the linear dianionic ligand $(P_4Mes_4)^{2-}$ with the breaking and making of P–P bonds to give $[Na(thf)_3][Rh(P_3Mes_3)(cod)]$ (**2**) (with Na–Rh interactions) and $[Ag_4(P_6Mes_6)_2]$ (**5**) (with intramolecular argentophilic interactions) as the major products, respectively.



Keywords: Metal–metal interactions / P ligands / Rhodium / Silver / Sodium

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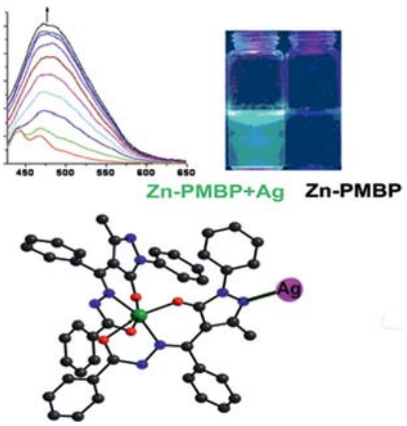
Supramolecular Assemblies

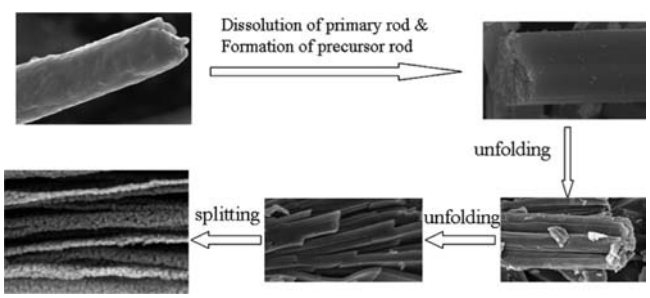
Keywords: Fluorescent probes / Silver / N ligands / Zinc / Supramolecular chemistry



A 2-pyrazoline-functionalized zinc complex (Zn-PMPB) with conformationally adaptable receptors, which show fluorescence enhancement on the basis of available pyrazolyl N–Ag^{+} ion interaction, has been designed. The photochemical properties of the complex show that its use as a luminescent probe for cations would effectively construct a higher level recognition system by synergistic effect.

Porous Structures

Keywords: Titanium / Nanostructures / Solvothermal synthesis / Microporous materials / Raman spectroscopy



A single-layer polycrystalline anatase TiO_2 nanosheet with a porous structure was synthesized through a simple solvothermal synthetic method, followed by calcination. The material showed great potential as a convenient and powerful surface-enhanced Raman scattering substrate.

* Author to whom correspondence should be addressed.

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

If not otherwise indicated in the article, papers in issue 4 were published online on January 26, 2011

