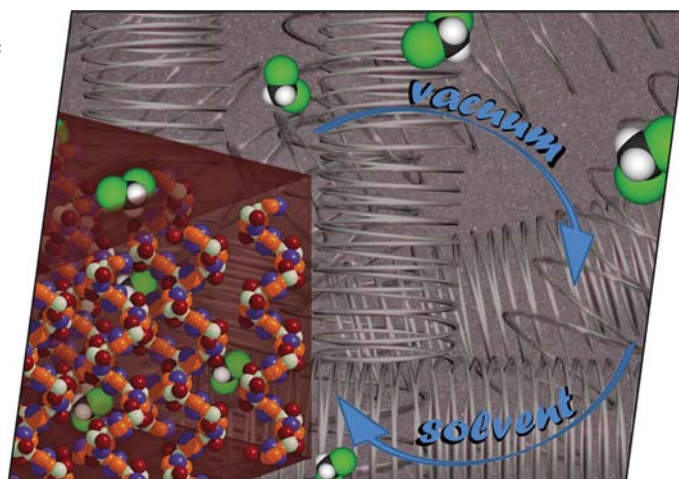


EurJIC is a journal of ChemPubSoc Europe, a union of 16 European chemical societies formed for the purpose of publishing high-quality science. All owners merged their national journals to form two leading chemistry journals, the *European Journal of Inorganic Chemistry* and the *European Journal of Organic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

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

## COVER PICTURE

The cover picture shows the porous metal-organic polymer  $[(Cp^*_2Mo_2P_4S)_3(CuI)_4]_n$ , which is composed of helical substructures with opposite handedness. The compound incorporates  $CH_2Cl_2$  molecules when it is stored under the solvent. This process is reversible under high vacuum without loss of crystallinity of the material and resembles, therefore, the reversible stretching of an elastic spring. Details of the synthesis and characterization of this and related compounds are given in the article by J. Wachter et al. on p. 785ff.



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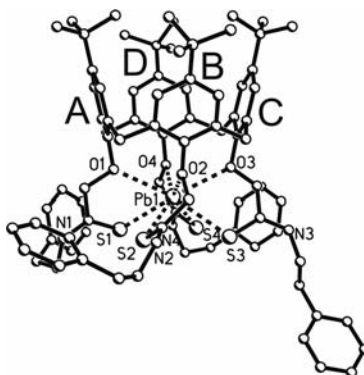
## MICROREVIEW

### Calixthioamides as Ionophores

J. Kulesza, M. Bocheńska\* ..... 777–783

Calixthioamides as Ionophores for Transition- and Heavy-Metal Cations

**Keywords:** Calixarenes / Thioamides / Transition metals / Ion-selective electrodes / Heavy metal ions



This microreview covers the complexing abilities of calix[4]arene derivatives having a pendant thioamide moiety. These compounds are highly selective for transition- and heavy-metal cations. Different methods of studying their binding properties are summarized and discussed.

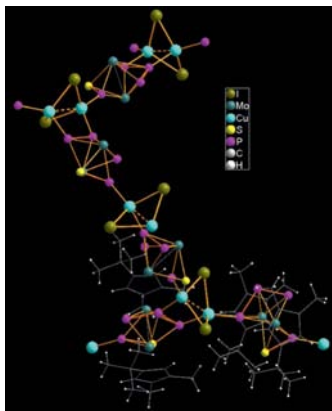
## FULL PAPERS

### Coordination Polymers

C. Gröger, H. R. Kalbitzer, M. Pronold, D. Pirayez, M. Scheer, J. Wachter,\* A. Virovets, M. Zabel ..... 785–793

Novel Metal-Organic Frameworks Incorporating  $[\text{Cp}^\circ_2\text{Mo}_2\text{P}_4\text{S}]$  ( $\text{Cp}^\circ = 1\text{-}t\text{-Bu-3,4-Me}_2\text{C}_5\text{H}_2$ ),  $\text{P}_4\text{S}_3$  and  $\text{Cu}_2\text{I}_2$  Building Blocks

**Keywords:** Metal-organic frameworks / Coordination polymers / Molybdenum / Copper / Phosphorus / Sulfur



$[\text{Cp}^\circ_2\text{Mo}_2\text{P}_4\text{S}]$  ( $\text{Cp}^\circ = 1\text{-}t\text{-Bu-3,4-Me}_2\text{C}_5\text{H}_2$ ) forms with  $\text{CuI}$  a new type of dynamic helical porous metal-organic framework, which is able to reversibly absorb  $\text{CH}_2\text{Cl}_2$  without losing its crystalline character. Introduction of  $\text{P}_4\text{S}_3$  as an additional inorganic linker into the system gives one- and two-dimensional organometallic-inorganic hybrid networks with planar  $\text{Cu}_2\text{I}_2$  rings as knots.

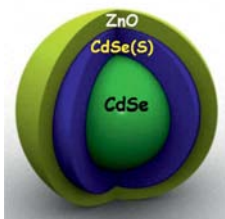
### Quantum Dots as Biological Labels

F. Aldeek, C. Mustin, L. Balan, G. Medjahdi, T. Roques-Carmes, P. Arnoux, R. Schneider\* ..... 794–801



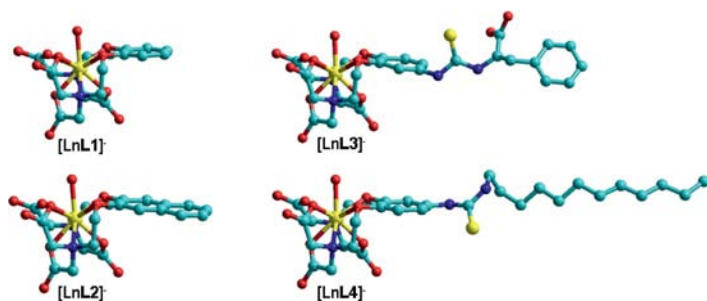
Enhanced Photostability from  $\text{CdSe(S)}/\text{ZnO}$  Core/Shell Quantum Dots and Their Use in Biolabeling

**Keywords:** Quantum dots / Synthesis design / Fluorescence



A simple experimental procedure to obtain  $\text{CdSe(S)}/\text{ZnO}$  core/shell nanocrystals was developed. Their enhanced photostability makes these quantum dots suitable for biolabeling and imaging.


## Rigidified Gadolinium Chelates



The solution properties of lanthanide(III) complexes of rigidified EGTA derivatives were investigated in aqueous media by  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectroscopy and by

$^1\text{H}$  and  $^{17}\text{O}$  NMR relaxometric techniques. Their binding affinity to human serum albumin was evaluated both experimentally and by docking simulations.

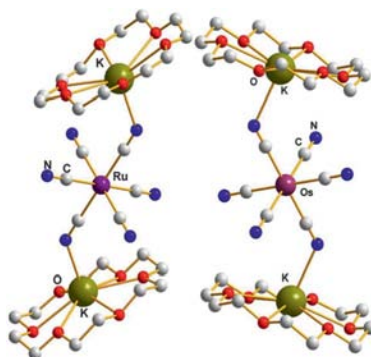
**M. Botta,\* S. Avedano, G. B. Giovenzana, A. Lombardi, D. Longo, C. Cassino, L. Tei, S. Aime\*** ..... 802–810

Relaxometric Study of a Series of Monoaqua  $\text{Gd}^{\text{III}}$  Complexes of Rigidified EGTA-Like Chelators and Their Noncovalent Interaction with Human Serum Albumin 

**Keywords:** Lanthanides / NMR spectroscopy / Imaging agents / Relaxometry

## Hexacyanides of Ru and Os

Oxidation of  $\text{K}_4\text{M}^{\text{II}}(\text{CN})_6$  ( $\text{M} = \text{Ru}, \text{Os}$ ) is easily performed by air or  $\text{H}_2\text{O}_2$  in methanol, in the presence of 18-crown-6. The corresponding paramagnetic derivatives of  $\text{Ru}^{\text{III}}$  and  $\text{Os}^{\text{III}}$  are obtained in high yield and high purity.



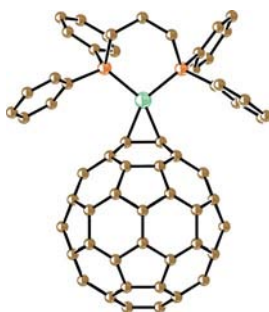
**K. E. Vostrikova,\* E. V. Peresyphkina** ..... 811–815

Facile Preparation of Paramagnetic  $\text{Ru}^{\text{III}}$  and  $\text{Os}^{\text{III}}$  Hexacyanides 


**Keywords:** Ruthenium / Osmium / Hexacyanometallates / Oxidation / 18-crown-6

## Nickel–Fullerene Complexes

The  $\eta^2$  complex of nickel bis(diphenylphosphanyl)propane with fullerene,  $\text{Ni}(\text{dppp})\cdot(\eta^2\text{-C}_{60})\cdot(\text{C}_6\text{H}_{14})_{0.84}(\text{C}_6\text{H}_4\text{Cl}_2)_{0.16}$ , was obtained by the reduction method. The crystal structure of the nickel– $\text{C}_{60}$   $\eta^2$  complex was determined for the first time to show short  $\text{Ni}-\text{C}(\text{C}_{60})$  bonds. Coordination results in a lowering of the  $\text{C}_{60}$  symmetry and noticeable  $\pi$  back-donation to the  $\text{C}_{60}$  molecule.



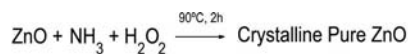
**D. V. Konarev,\* S. S. Khasanov, E. I. Yudanov, R. N. Lyubovskaya** ..... 816–820

The  $\eta^2$  Complex of Nickel Bis(diphenylphosphanyl)propane with Fullerene:  $\{\text{Ni}(\text{dppp})(\eta^2\text{-C}_{60})\}\cdot(\text{Solvent})$  Obtained by Reduction 

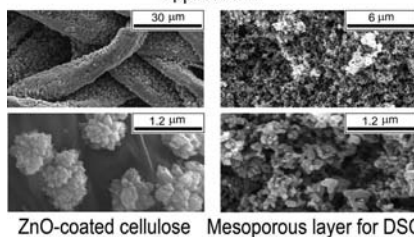
**Keywords:** Fullerenes / Nickel / Crystal growth / Solid-state structures / IR spectroscopy / UV/Vis spectroscopy / Layered compounds

## Clean ZnO Deposition

A novel ZnO precursor solution that neatly decomposes after evaporation and moderate thermal treatment is presented. The method is based on the enhanced solubility of commercial ZnO in aqueous ammonia in presence of  $\text{H}_2\text{O}_2$ . This precursor solution is useful for the low-temperature preparation of ZnO-coated cellulose and ZnO porous photoanodes for dye-sensitized solar cells.



Applications



**M. Estruga,\* I. Gonzalez-Valls, C. Domingo, M. Lira-Cantu, J. A. Ayllón\*** ..... 821–825

A Clean Low-Temperature ZnO Deposition Method for Multipurpose Applications

**Keywords:** Nanostructures / Semiconductors / Energy conversion / Zinc oxide / Low-temperature deposition

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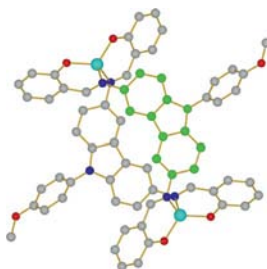
## Carbazole Cu and Zn Complexes

E. T. Spielberg, W. Plass\* ..... 826–834



Copper(II) and Zinc(II) Complexes with a Photoactive Bridging Ligand Based on Carbazole: Synthesis, Structures, Electronic and Magnetic Properties

**Keywords:** Copper / Zinc / EPR spectroscopy / Fluorescence / Magnetic properties / UV/Vis spectroscopy / Density functional calculations



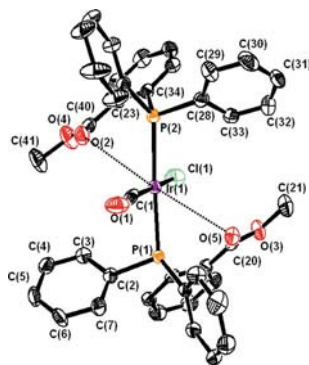
Combining photoactive bridging ligands with magnetic metal ions: Reaction of a fluorescent aryl-substituted carbazole ligand with copper(II) and zinc(II) ions results in the formation of metallacycles of the general formula  $[M_2L_2]$ . The fluorescent bridging ligand mediates antiferromagnetic exchange coupling between the copper centers.

## Vaska-Type Complexes

D. K. Dutta,\* B. Deb,  
B. J. Sarmah, J. D. Woollins,  
A. M. Z. Slawin, A. L. Fuller,  
R. A. M. Randall ..... 835–841

Electron-Rich Vaska-Type Complexes *trans*- $[\text{Ir}(\text{CO})\text{Cl}(2\text{-Ph}_2\text{PC}_6\text{H}_4\text{COOMe})_2]$  and *trans*- $[\text{Ir}(\text{CO})\text{Cl}(2\text{-Ph}_2\text{PC}_6\text{H}_4\text{OMe})_2]$ : Synthesis, Characterisation and Reactivity

**Keywords:** Iridium / Phosphanes / Carbonyl ligands / Oxygen / Oxidative addition / Vaska's complex



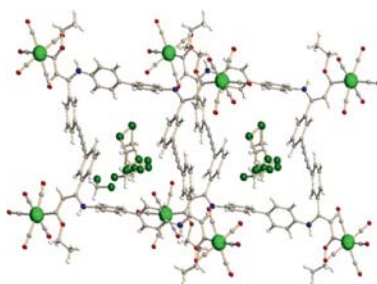
Two Vaska-type complexes *trans*- $[\text{Ir}(\text{CO})\text{Cl}(2\text{-Ph}_2\text{PC}_6\text{H}_4\text{COOMe})_2]$  (**1a**) and *trans*- $[\text{Ir}(\text{CO})\text{Cl}(2\text{-Ph}_2\text{PC}_6\text{H}_4\text{OMe})_2]$  (**1b**) are newly synthesised. Complex **1a** exhibits  $\text{Ir}\cdots\text{O}$  “secondary” interaction to generate a pseudo-hexacoordinated complex. Complex **1b** shows three times more activity in oxygen uptake than Vaska's complex, while **1a** remains unreactive.

## Assembly of Metallacyclophanes

M. P. López-Alberca, M. J. Mancheño,\*  
I. Fernández, M. Gómez-Gallego,  
M. A. Sierra,\* C. Hemmert,  
H. Gornitzka ..... 842–849

Synthesis, Structure and Electrochemistry of Macrocyclic Tetrametallic Group 6 (Fischer) Carbene Complexes

**Keywords:** Carbenes / Macrocycles / Cyclophanes / Michael additon



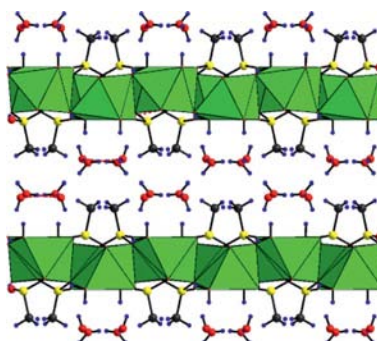
A new type of homo- and heterocyclophane metallomacrocycles with different size cavities was prepared by combining Fischer biscarbene complexes and different aromatic diamines as linkers. The structure analysis of one of these tetranuclear complexes is reported for the first time and reveals an interesting nanochannel architecture assembly.

## Layered Metal Phosphonates

L. Beneš, K. Melánová, J. Svoboda,  
V. Zima,\* A. Růžicka,  
M. Trchová ..... 850–859

Strontium Methylphosphonate Trihydrate: An Example of a New Class of Host Materials for Intercalation Reactions – Synthesis, Structure and Intercalation Behavior

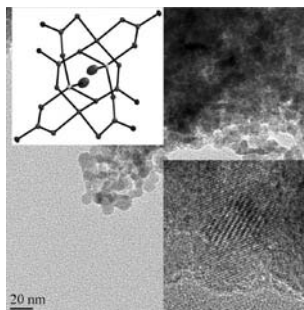
**Keywords:** Layered compounds / Intercalations / Solid-state structures / Strontium



Strontium methylphosphonate is a new layered compound that is a suitable host material for the intercalation of oxygen- and nitrogen-containing organic guests.



A new method for the preparation of heterobimetallic Co/Zn carbamate complexes and their usage as precursors of oxide nanoparticles are presented.



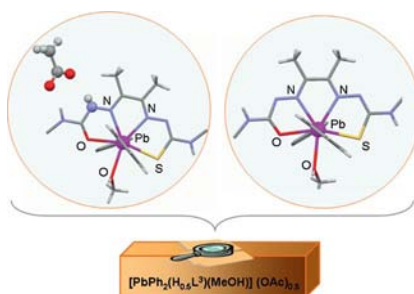
D. Domide, O. Walter, S. Behrens,  
E. Kaifer, H.-J. Himmel\* ..... 860–867

Synthesis of Heterobimetallic Zn/Co Carbamates: Single-Source Precursors of Nano-sized Magnetic Oxides Under Mild Conditions

**Keywords:** Cobalt / Zinc / Nanostructures / Heterobimetallic complexes / Carbamates

## Organolead Complexes

The reaction of diphenyllead(IV) diacetate with semicarbazone/thiosemicarbazone ligands afforded several complexes of diverse stoichiometry, which were studied in both the solid state and solution. Unexpectedly, one complex has the semicarbazone chain of the ligand formally half-deprotonated.



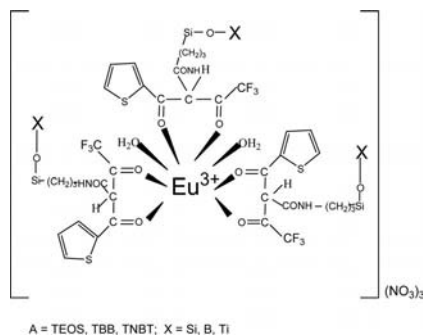
J. S. Casas,\* E. Castro-Vidal,  
M. S. García-Tasende,\* A. Sánchez,  
J. Sordo, Á. Touceda,  
E. M. Vázquez-López ..... 868–878

A Conspicuous Deprotonation in Complexes of Diphenyllead(IV) with Ligands Containing Both Semicarbazone and Thiosemicarbazone Chains

**Keywords:** Lead / Diphenyllead(IV) / O ligands / S ligands / Partial deprotonation

## Europium Hybrid Xerogels

$\beta$ -Diketone-functionalized polysilsesquioxane bridges behave as linkages in the assembly of europium ions and Si–O–M (M = B or Ti) hybrid xerogels, as they can form covalently bonded Si–O networks after the cohydrolysis and copolycondensation through their alkoxy groups.



A = TEOS, TBB, TNBT; X = Si, B, Ti

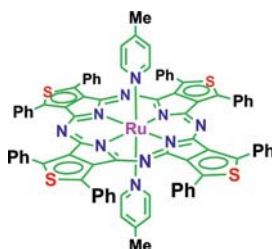
C. Wang, B. Yan,\* J.-L. Liu,  
L. Guo ..... 879–887

Photoactive Europium Hybrids of  $\beta$ -Diketone-Modified Polysilsesquioxane Bridge Linking Si–O–B(Ti)–O Xerogels

**Keywords:** Organic-inorganic hybrid composites / Europium / Luminescence / Composite xerogels

## Nonclassical Tetraazaporphyrins

The tetramerization of 2,5-diphenyl-3,4-dicyanothiophene in the presence of  $\text{Ru}^{\text{III}}\text{Cl}_3$  and 4-methylpyridine gave a tetrathienofused bis(4-methylpyridine)[1,3,5,7,9,11,13,15-octaphenyltetraazaporphyrinato]ruthenium(II) complex. The structure of this product was determined by  $^1\text{H}$  NMR, FAB-MS, and X-ray crystallography. UV/Vis and MCD spectra were recorded.



T. Kimura,\* T. Iwama, T. Namauo,  
E. Suzuki, T. Fukuda, N. Kobayashi,  
T. Sasamori, N. Tokitoh ..... 888–894

Preparation and Characterization of Nonclassical Tetraazaporphyrin, Bis(4-methylpyridine)[1,3,5,7,9,11,13,15-octaphenyltetra(3,4-thieno)tetraazaporphyrinato]ruthenium(II)

**Keywords:** Porphyrinoids / Thiophene / Phthalocyanines / Ruthenium

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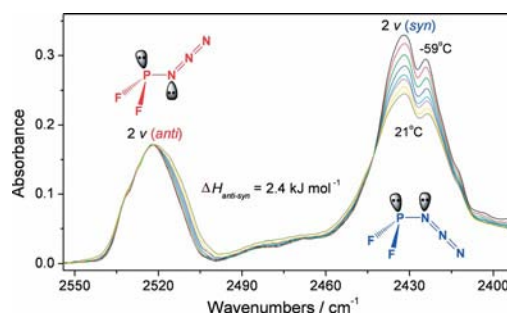
## Conformation Analysis of Phosphanes

X. Zeng, H. Beckers,\* H. Willner,  
R. J. F. Berger, S. A. Hayes,  
N. W. Mitzel ..... 895–905



Structure and Conformational Properties  
of Azido(difluoro)phosphane,  $F_2PN_3$

**Keywords:** Azides / Vibrational spectroscopy / Electron diffraction / Conformation analysis / Ab initio calculations



The *syn/anti* equilibrium of  $F_2PN_3$  was studied by Raman and temperature-dependent gas-phase and Ar-matrix isolation IR

spectroscopy, gas electron diffraction, and quantum chemical calculations.

\* 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 5 were published online on February 7, 2011