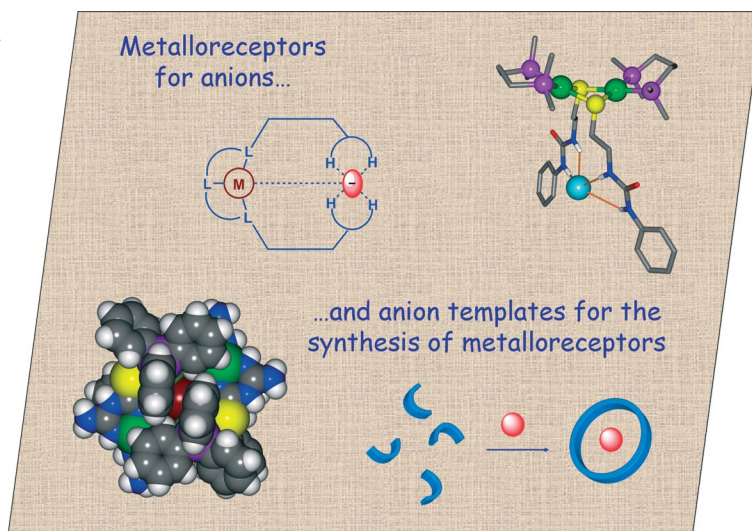




The EUChemSoc Societies have taken the significant step into the future by merging their traditional journals, to form two leading chemistry journals, the *European Journal of Inorganic Chemistry* and the *European Journal of Organic Chemistry*. Three further EUChemSoc Societies (Austria, Czech Republic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

## COVER PICTURE

**Cover Picture:** Metalloreceptors for the molecular recognition of anions or anion templates for the synthesis of metalloreceptors? Both! This figure shows the crystal structures of two metallohosts with the corresponding anionic guest “trapped” within the hydrogen-bonding clefts. In one case (structure shown at the top), the complex was prepared without the need for an anion template. Once formed, this dipalladium complex with urea-containing ligands binds a range of different anions in competing solvents. The structure shown at the bottom of the figure is that of a tetrametallohost, which only forms in the presence of the appropriate anionic template. This microreview on p. 357ff aims to give an overview of the research carried out in the author’s group in the area of anion recognition and templation in coordination chemistry.



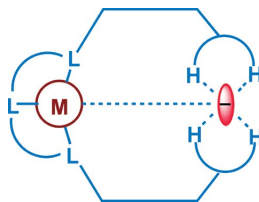
## MICROREVIEW

### Anion Recognition

R. Vilar\* ..... 357–367

Anion Recognition and Templatation in Coordination Chemistry

**Keywords:** Anions / Molecular recognition / Templates / Supramolecular chemistry / Metal complexes



Metal complexes containing ligands with hydrogen bonding functionalities have been shown to be excellent molecular receptors for anion recognition. This is due to the unique structural and functional properties of metals. This microreview gives an overview of the work carried out in this area by the author's research group. In addition, the templating role of anions for the synthesis of metallo-assemblies is discussed.

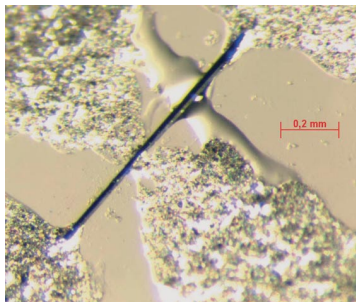
## SHORT COMMUNICATIONS

### Microporous Semiconductors

D. Sendor, B. P. T. Fokwa,  
R. Dronskowski, U. Simon\* ..... 369–372

Electrical and Optical Properties of Cetineite-Type Rb-, Sr-, and Ba-Oxoselenoantimonates(III)

**Keywords:** Nanostructures / Electrical properties / Optical properties / Photoconductivity



Hydrothermal reactions allow to synthesize large single-crystals of the zeolite-like cetineite-type phases (Rb;Se), (Sr;Se) and (Ba;Se). Electrical and optical measurements confirm a trend in the optical gap, giving insight into structure-property relations.

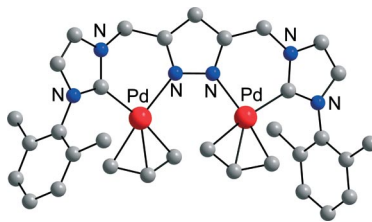
### Palladium–NHC Complexes

U. J. Scheele, M. John, S. Dechert,  
F. Meyer\* ..... 373–377



Pyrazole-Bridged NHC Ligands and Their Dimetallic (Allyl)palladium Complexes

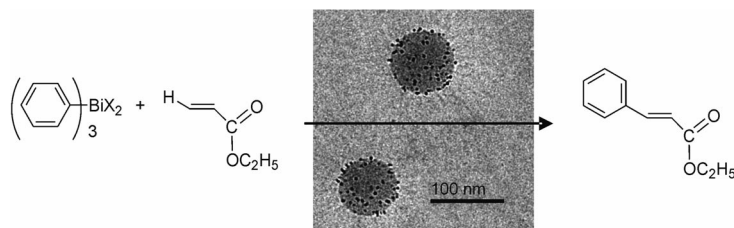
**Keywords:** N-Heterocyclic carbenes (NHC) / Palladium / Pyrazole / Dimetallic complexes / Bridging ligands / X-ray crystal structures



Dinuclear pyrazolato/NHC hybrid ligands have been developed, in which two (allyl)palladium fragments are in close proximity and predestined for cooperative reactivity. Two different relative allyl orientations within the dimetallic pocket are observed by X-ray crystallography, and their slow interconversion is studied by NMR spectroscopy.

## FULL PAPERS

### C–C Coupling Reactions



Organobismuth C–C coupling reactions catalyzed by palladium nanoparticles immobilized in spherical polyelectrolyte brushes

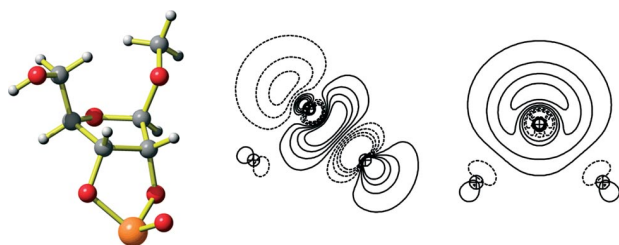
lead to Heck-type products under mild conditions with a low Pd loading relative to that used in other catalyst systems.

Y. B. Malysheva, A. V. Gushchin, Y. Mei, Y. Lu, M. Ballauff, S. Proch, R. Kempe\* ..... 379–383

C–C Coupling Reaction of Triphenylbismuth(V) Derivatives and Olefins in the Presence of Palladium Nanoparticles Immobilized in Spherical Polyelectrolyte Brushes

**Keywords:** Bismuth / Cross-coupling / Heck-type products / Nanoparticles / Palladium / Polyelectrolytes

### p-Block Carbohydrate Chemistry



Carbohydrate derivatives of selenium(IV) were prepared and characterised by multinuclear NMR spectroscopy and single-crystal X-ray diffraction. Experimental results are complemented with data from

density functional calculations and natural-bond-orbital (NBO) analyses. The figure shows a methyl riboside of the SeO core and two NBO isocontour plots.

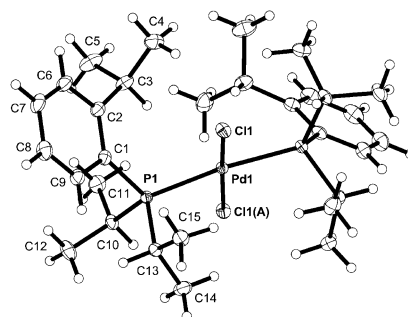
P. Klüfers,\* M. M. Reichvilser ... 384–396

Toward Carbohydrate Derivatives with a Markedly Acidic Centre: Structures and Reactions of Selenium(IV) Diolates

**Keywords:** Selenium / Carbohydrates / Density functional calculations / X-ray diffraction / Coordination induced shift

### Suzuki Coupling Reactions

Various unactivated aryl chlorides are coupled with phenylboronic acids resulting in high yields using palladium complexes of aryl(alkyl)phosphanes as catalysts under microwave irradiation.



S. Vuoti,\* J. Autio, M. Laitila, M. Haukka, J. Pursiainen ..... 397–407

Palladium-Catalyzed Suzuki–Miyaura Cross-Coupling of Various Aryl Halides Using *ortho*-Alkyl-Substituted Arylphosphanes and (*ortho*-Alkylphenyl)alkylphosphanes under Microwave Heating

**Keywords:** Alkylphosphane / Palladium complex / Microwave-assisted synthesis / Cross-coupling

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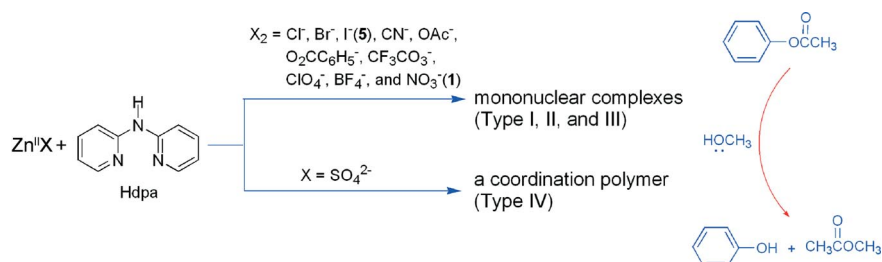
## Anion Effects

H. Kwak, S. H. Lee, S. H. Kim, Y. M. Lee,  
E. Y. Lee, B. K. Park, E. Y. Kim,  
C. Kim,\* S.-J. Kim, Y. Kim\* ..... 408–415



Construction of  $Zn^{II}$  Compounds with a Chelating 2,2'-Dipyridylamine (Hdpa) Ligand: Anion Effect and Catalytic Activities

**Keywords:** Amines / Nitrogen heterocycles / Anion effects / Transesterification / Catalytic activities / Zinc



Chelating ligands with a bipyridyl moiety form mostly mononuclear complexes of different types (I, II and III), and the combination of this ligand with a sulfate anion can produce polymeric species (Type IV).

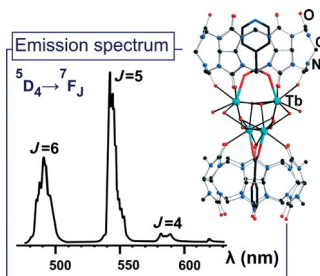
Homogeneous catalyst **1** and heterogeneous hydrogen-bonded polymer **5** catalyzed the transesterification of a variety of esters with different alcohols.

## Lanthanide Cucurbituril Complexes

O. A. Gerasko, E. A. Mainicheva,  
M. I. Naumova, O. P. Yurjeva,  
A. Alberola, C. Vicent, R. Llusar,  
V. P. Fedin\* ..... 416–424

Tetranuclear Lanthanide Aqua Hydroxo Complexes with Macrocyclic Ligand Cucurbit[6]uril

**Keywords:** Lanthanides / Carboxylate ligands / Macrocyclic ligands / Solid-state structures



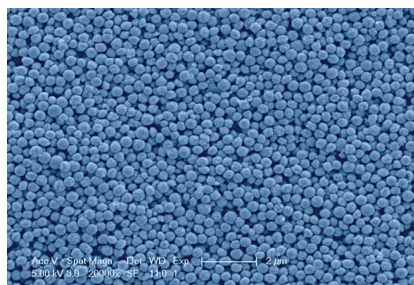
Tetranuclear lanthanide(III) complexes were prepared by heating of aqueous solutions of  $LnCl_3$ , cucurbit[6]uril ( $C_{36}H_{36}N_{24}O_{12}$ ), and 4-cyanopyridine. The formation of sandwich complexes results from the combined influence of the tetradentate coordination of  $Ln_4$  by the portals of CB[6] and the chelating effect of the carboxylate ligands.

## Magnetic $Fe_3O_4$ Nanostructures

G. Xi,\* C. Wang, X. Wang ..... 425–431

The Oriented Self-Assembly of Magnetic  $Fe_3O_4$  Nanoparticles into Monodisperse Microspheres and Their Use as Substrates in the Formation of  $Fe_3O_4$  Nanorods

**Keywords:** Iron oxides / Magnetic nanocrystals / Crystal growth / Nanorods / Self-assembly

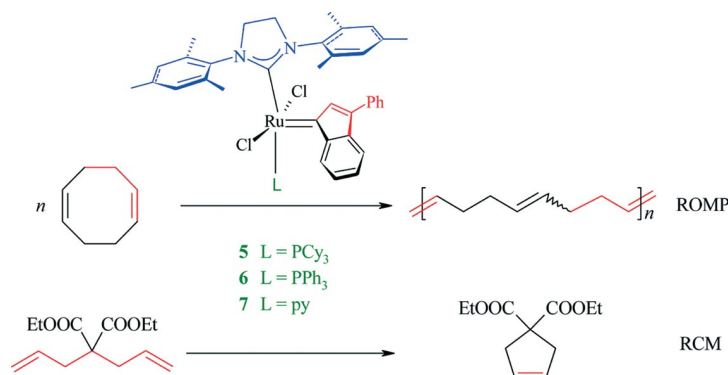


A solvothermal route for the size-controlled synthesis of ferromagnetic sub-micrometer  $Fe_3O_4$  spheres is described. The formation of small nanoparticles and their subsequent oriented assembly lead to microspheres with a remarkable “single-crystalline” feature. The spherical  $Fe_3O_4$  aggregates could serve as substrates to grow  $Fe_3O_4$  nanorods, which provides an alternative method for the preparation of  $Fe_3O_4$  1D nanostructures.

S. Monsaert, R. Drozdak,\* V. Dragutan,  
I. Dragutan, F. Verpoort\* ..... 432–440

Indenylidene-Ruthenium Complexes Bearing Saturated N-Heterocyclic Carbenes: Synthesis and Catalytic Investigation in Olefin Metathesis Reactions

**Keywords:** Carbene ligands / Homogeneous catalysis / Metathesis / N-Heterocyclic carbenes / Ruthenium



The synthesis and characterization of a series of Ru-indenylidene complexes, **5**, **6** and **7**, with saturated N-heterocyclic carbenes is reported. A comparative study with their benzylidene analogues led to a better

understanding of the influence of the carbene ligand on the activity of the catalysts in olefin metathesis reactions and the observation of an intermolecular inhibition in Grubbs' third-generation catalyst.

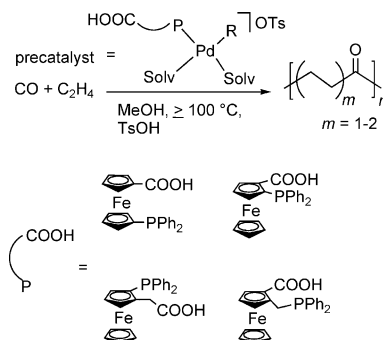
## CO–Ethylene Copolymerization

C. Bianchini, A. Meli, W. Oberhauser,\*  
A. M. Segarra, E. Passaglia, M. Lamač,  
P. Štěpnička\* ..... 441–452

Palladium(II) Complexes with Phosphanylferrocenecarboxylate Ligands and Their Use as Catalyst Precursors for Semialternating CO–Ethylene Copolymerization

**Keywords:** Phosphanylferrocenecarboxylate ligands / Palladium / Semialternating ethylene–CO copolymerization / High-pressure NMR spectroscopy

Neutral Pd( $\kappa^2P, \kappa^2O$ -P~O)( $\kappa^3C, C, C$ -carboxycloenyl) complexes, where P~O is either a chiral or achiral chelating phosphanylferrocenecarboxylate ligand, have been employed as catalyst precursors for CO–ethylene copolymerization in MeOH in the presence of an excess of *p*-toluenesulfonic acid (TsOH). Low molecular weight semialternating polyketones featuring a maximum of 4.3% extra-ethylene insertion have been obtained. Pd- $\beta$ -chelates with the formula [Pd(CH<sub>2</sub>CH<sub>2</sub>COR)( $\kappa^1P$ -P~OH)(solvent)]<sup>+</sup> have been intercepted as catalyst resting states by high pressure NMR spectroscopy under catalytic conditions.

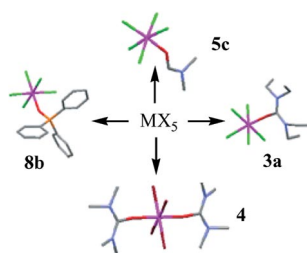


## Group 5 Metal Adducts

F. Marchetti, G. Pampaloni,\*  
S. Zacchini ..... 453–462

Complexes of Niobium(V) and Tantalum(V) Halides with Ligands that Contain N–C=O and P=O Functionalities: A Synthetic and Structural Study

**Keywords:** Niobium / Tantalum / Halides / Amide / P=O ligands / X-ray structure



The reactions of niobium and tantalum pentahalides with dialkylureas, amides, and P=O-containing compounds afford hexacoordinate complexes of the general formula MX<sub>5</sub>(L), the only exception being [TaBr<sub>4</sub>(TMU)<sub>2</sub>][TaBr<sub>6</sub>].



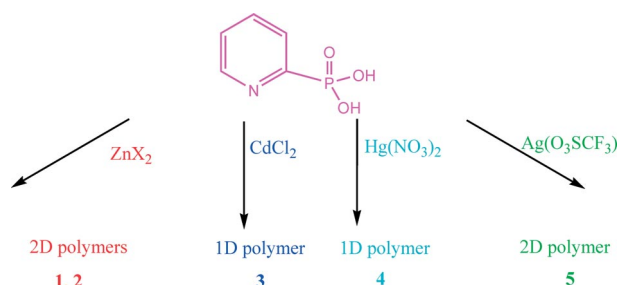
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## Metal Phosphonate Polymers

J. A. Fry, C. R. Samanamu,  
J.-L. Montchamp,\*  
A. F. Richards\* ..... 463–470

A Mild Synthetic Route to Zinc, Cadmium, and Silver Polymers with (2-Pyridyl)-phosphonic Acid: Synthesis and Analysis

**Keywords:** Metal phosphonates / Metal polymers / X-ray crystal structures



(2-Pyridyl)phosphonic acid is used to prepare novel polymers containing zinc, cadmium, mercury, and silver. The polymers are obtained under mild conditions and in high yields from aqueous reaction mixtures. The zinc and silver form two-dimensional networks, while mercury and cad-

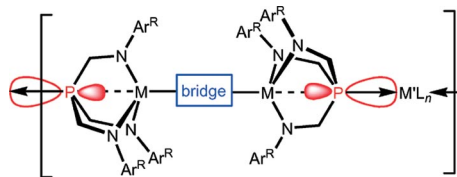
mium crystallize as highly symmetrical one-dimensional polymers. Thermal stability and weight loss were examined by TGA. Room-temperature luminescence was probed and found to be negligible except in the case of silver, which displays argentophilic interactions in the solid state.

## Organometallic Polymers

H. Han, S. A. Johnson\* ..... 471–482

Bridged Dinuclear Tripodal Tris(amido)-phosphane Complexes of Titanium and Zirconium as Diligating Building Blocks for Organometallic Polymers

**Keywords:** Tripodal ligands / Phosphane ligands / Titanium / Zirconium / Polymers



The use of appropriate bridging ligands allows the preparation of bimetallic diligating phosphane ligands that can be used as

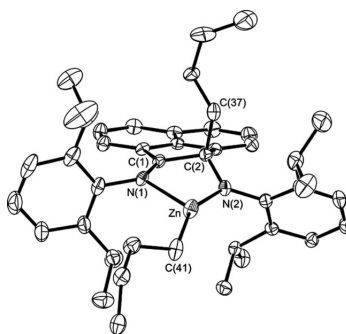
building blocks in the assembly of inorganic and organometallic polymers.

## Zinc Chelates

I. L. Fedushkin,\* A. N. Tishkina,  
G. K. Fukin, M. Hummert,  
H. Schumann ..... 483–489

Zinc Complexes with the Chelating Amido-Imino Ligand [1-*n*-Butyl-2-(2,6-diisopropylphenyl)iminoacena-phen-1-yl]-2,6-diisopropylphenylamide (L): Synthesis, Molecular Structure and Reactivity of [(L)-ZnCl]<sub>2</sub>, (L)Zn-*n*Bu and (L)ZnN(SiMe<sub>3</sub>)<sub>2</sub>

**Keywords:** Zinc / N ligands / Structure elucidation



Zinc complexes containing a chiral amido-imino ligand have been prepared and characterized by single-crystal X-ray analysis. Unexpectedly, the nucleophilicity of the alkyl group in the *n*Bu-Zn derivative (see the right side of the figure) turned out to be lower than that of the amido ligand. Thus, the reactions with acidic substrates do not proceed with alkane elimination but with protonation of the ligand.

## CORRECTION

M. Albrecht,\* S. Mirtschin, O. Osetska,  
S. Dehn, D. Enders, R. Fröhlich, T. Pape,  
F. E. Hahn ..... 491

Pentadentate Ligands for the 1:1 Coordination of Lanthanide(III) Salts

**Keywords:** Hydrazone / Lanthanides / Coordination compounds / Chelating ligands / Helical compounds

If not otherwise indicated in the article, papers in issue 2 were published online on December 20, 2007