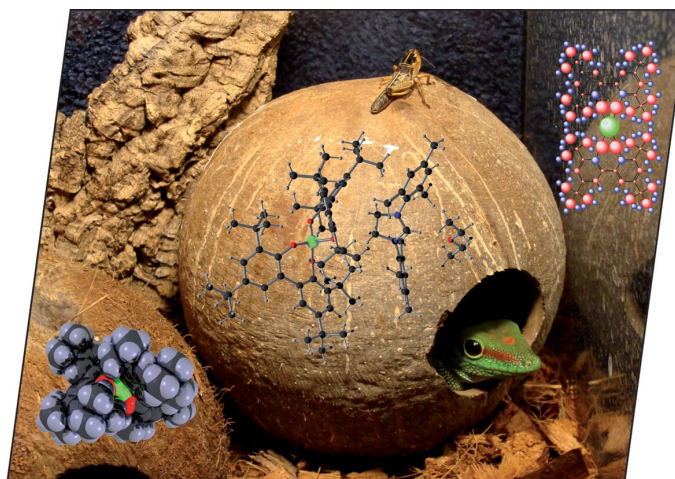


EurJIC is co-owned by 11 societies of ChemPubSoc Europe, a union of European chemical societies for the purpose of publishing high-quality science. All owners merged their national journals to form two leading chemistry journals, the *European Journal of Inorganic Chemistry* and the *European Journal of Organic Chemistry*. Three further members of ChemPubSoc Europe (Austria, Czech Republic and Sweden) are Associates of the two journals.

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

## COVER PICTURE

The cover picture shows a Madagascar day gecko (*Phelsuma madagascariensis grandis*) in a coconut with a locust on top. Gecko toes hold on to slithery and vertical surfaces due to van der Waals forces, which are also relevant for the lipophilic *altebate* anion (left space-filling model). Its sterically demanding substituents shield the nucleophilic center, making diethyl ether a better hydrogen bond acceptor in comparison (middle X-ray structure). The high symmetry and the positive (blue) partial charges on the molecular surface are reflected in the right fractal-like model. Details are discussed in the Short Communication by B. F. Straub et al. on p. 1907ff. Photograph by Michael Wrede, artwork by Bernd F. Straub.



# CONTENTS

## SHORT COMMUNICATION

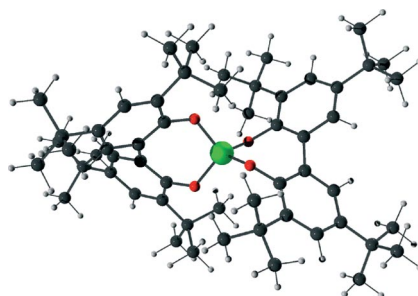
### Lipophilic Anions

B. F. Straub,\* M. Wrede, K. Schmid,  
F. Rominger ..... 1907–1911



A Lipophilic, Fluorine-Free, Thermostable, Inexpensive,  $S_4$ -Symmetric, Highly Soluble, Weakly Coordinating, Protolabile Aluminate

**Keywords:** Aluminum / Anions / Carbocations / Density functional calculations / Lipophilicity



Ease of access, high solubility in organic solvents, and high tendency towards crystallization render the “albate” anion useful, for example, for NMR spectroscopic studies and for X-ray diffraction of large cations.

## FULL PAPERS

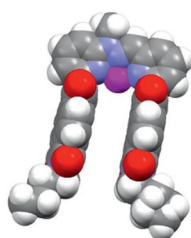
### Dynamic Tweezers

S. Ulrich, A. Petitjean,  
J.-M. Lehn\* ..... 1913–1928



Metallo-Controlled Dynamic Molecular Tweezers: Design, Synthesis, and Self-Assembly- by Metal-Ion Coordination

**Keywords:** Supramolecular chemistry / Host-guest chemistry / Self-assembly / Molecular tweezer / Molecular switch / Cooperativity



We report the design and synthesis of metallo-controlled dynamic molecular tweezers. The presence of large aromatic arms impacts the coordination-driven self-assembly due to additional supramolecular interactions. These dynamic devices can efficiently bind, in solution, coordinating and non-coordinating molecular substrates.

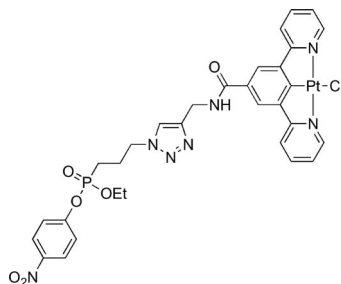
### Selective Protein Labelling

B. Wieczorek, B. Lemcke, H. P. Dijkstra,  
M. R. Egmond, R. J. M. Klein Gebbink,\*  
G. van Koten\* ..... 1929–1938



Site-Selective Ser-Hydrolase Labelling with a Luminescent Organometallic NCN–Platinum Complex

**Keywords:** Luminescence / Hydrolases / Metalloenzymes / Protein labeling / Platinum



A novel luminescent organometallic label consisting of a NCN–platinum complex attached to a phosphonate has been synthesized and tested in the labelling of serine hydrolases. The site-selective dye proved to be a photostable dye suitable for gel-electrophoresis studies.

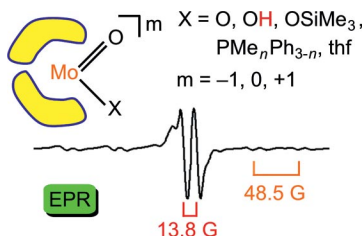
### Metalloenzyme Models

K. Heinze,\* A. Fischer ..... 1939–1947



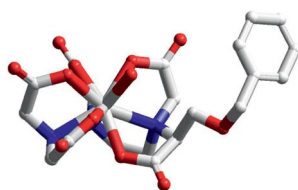
Oxidomolybdenum(IV), -(V), -(VI) Complexes with Relevance to Molybdenum Enzymes: Oxygen Atom Transfer, Redox Chemistry and EPR Spectroscopy

**Keywords:** Enzyme models / EPR spectroscopy / Molybdenum / N ligands / Oxygen atom transfer



EPR-active mononuclear molybdenum(V) complexes are prepared either by one-electron reduction of molybdenum(VI) complexes or by two-electron reduction of molybdenum(VI) complexes through oxygen atom transfer (OAT) and subsequent one-electron oxidation. Some of these species are relevant to biomimetically modelled oxygenations of natural molybdenum enzymes.

On the basis of the stability constants determined in 0.15 M NaCl, the selectivity of ligands derived from DTPA for Gd<sup>III</sup> over Zn<sup>II</sup> follows the order BOPTA > DTPA > DTPA-BMA. The rates of metal-exchange reactions of [Gd(BOPTA)]<sup>2-</sup> with Cu<sup>II</sup>, Zn<sup>II</sup>, and Eu<sup>III</sup> are 30–90% lower than the rates of similar reactions with [Gd-(DTPA)]<sup>2-</sup>.



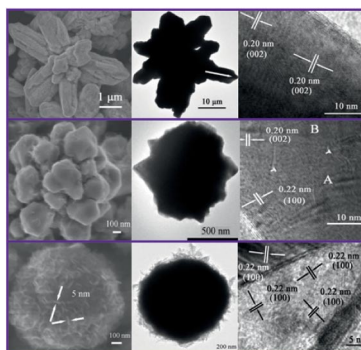
Z. Baranyai,\* Z. Pálkás, F. Uggeri,  
E. Brücher ..... 1948–1956

Equilibrium Studies on the Gd<sup>3+</sup>, Cu<sup>2+</sup> and Zn<sup>2+</sup> Complexes of BOPTA, DTPA and DTPA-BMA Ligands: Kinetics of Metal-Exchange Reactions of [Gd(BOPTA)]<sup>2-</sup>

**Keywords:** Lanthanides / Thermodynamics / Kinetics / Reaction mechanisms

## Cobalt Hierarchical Structures

Magnetic metallic Co with different hierarchical structures, such as dendritic particles, flowery particles, and flocky spheres, has been successfully prepared by using a simple solvothermal process. The intergrade from single-crystal to polycrystalline structures for flowerlike Co submicrocrystals is observed. Magnetic properties of Co hierarchical architectures depend on their morphologies.

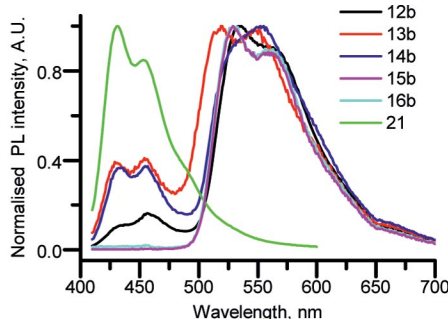
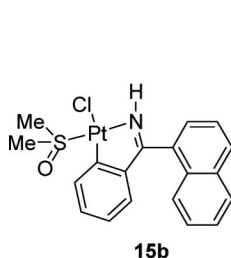


L. Duan, S. Jia, L. Zhao\* ..... 1957–1962

Synthesis and Characterization of Metallic Co with Different Hierarchical Structures Prepared by a Simple Solvothermal Method

**Keywords:** Hierarchical structures / Crystal growth / Cobalt / Magnetic properties

## Luminescent Platinum Complexes



Varying the substituents on platinum(II) complexes containing cyclometallated diaryl ketimine ligands enables tuning of the

photoluminescence properties. Applications in light-emitting devices are demonstrated.

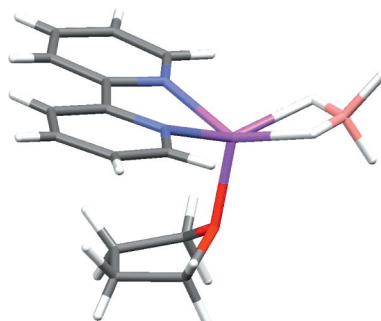
S. U. Pandya, K. C. Moss, M. R. Bryce,\*  
A. S. Batsanov, M. A. Fox,  
V. Jankus, H. A. Al Attar,  
A. P. Monkman ..... 1963–1972

Luminescent Platinum(II) Complexes Containing Cyclometallated Diaryl Ketimine Ligands: Synthesis, Photophysical and Computational Properties

**Keywords:** Platinum / Complexation / Cyclometallation / Photoluminescence / Density functional calculations / Light-emitting devices

## Tetrahydroborates

A structural study of eight new complexes of the type MBH<sub>4</sub>·L·THF and MBH<sub>4</sub> has been performed. The results indicate that bidentate amines augment the stability of LiBH<sub>4</sub> and NaBH<sub>4</sub> and also determines the complex–structure type and its prevalence in the solid state and solution.



M. Aguilar-Martínez, G. Félix-Baéz,  
C. Pérez-Martínez, H. Nöth,  
A. Flores-Parra, R. Colorado,  
J. C. Galvez-Ruiz\* ..... 1973–1982

Studies in Solution and the Solid State of Coordination Compounds Derived from LiBH<sub>4</sub>, NaBH<sub>4</sub>, and Bidentate Aromatic Amines

**Keywords:** Tetrahydroborates / Alkali metals / N ligands / Structure elucidation



# Frontiers of Chemistry: From Molecules to Systems

A One-Day Symposium

On 21<sup>st</sup> May 2010 in Paris

at the Maison de la Chimie  
(near the Eiffel Tower and Les Invalides)

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Gerhard Ertl  
Nobel Prize 2007



Jean-Marie Lehn  
Nobel Prize 1987



Roger Y. Tsien  
Nobel Prize 2008



Ada Yonath  
Nobel Prize 2009



Luisa De Cola



Alan R. Fersht



Marc Fontecave



Michael Grätzel



Michel Orrit



Nicolas Winssinger

## Posters

will be displayed also online from 1st April

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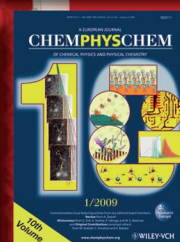
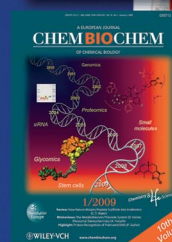


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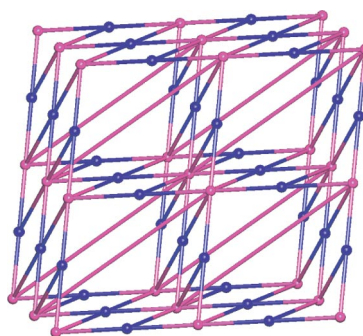
E. Amouyal, M. Che,  
F. C. De Schryver,  
A. R. Fersht, P. Göltz,  
J. T. Hynes, J.-M. Lehn

## Topics

catalysis, biochemical imaging,  
chemical biology, bionanotechnology,  
proteomics, spectroscopy, solar cells

**WILEY-VCH**

Manganese(II), cobalt(II), and zinc(II) coordination polymers were synthesized by using 1,2,4,5-benzenetetracarboxylic acid (H<sub>4</sub>btec) and 4,4'-azobispyridine (azopy) as ligands, and their crystal structures were determined by single-crystal X-ray diffraction. The magnetic properties and the cyclic voltammograms for **1–3** in the solid state were analyzed.

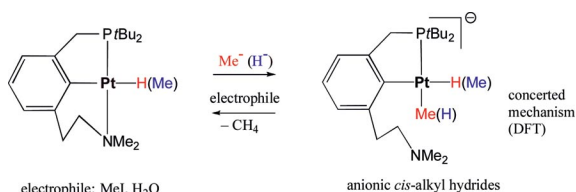


L.-M. Zhao, H.-H. Li, Y. Wu,  
S.-Y. Zhang, Z.-J. Zhang, W. Shi,  
P. Cheng,\* D.-Z. Liao,  
S.-P. Yan ..... 1983–1990

Synthesis, Crystal Structures, and Magnetic Properties of Mn<sup>II</sup>, Co<sup>II</sup>, and Zn<sup>II</sup> Coordination Polymers Containing 1,2,4,5-Benzenetetracarboxylic Acid and 4,4'-Azobispyridine

**Keywords:** Solid-state structures / Magnetic properties / Cyclic voltammetry / Coordination polymers / Mixed ligands

### Anionic Alkyl Hydride Complexes



The first *anionic* d<sup>8</sup> alkyl hydride complexes were prepared by nucleophilic attack on a hemilabile pincer-type PCN Pt<sup>II</sup> system. Only the isomer where the incoming nucleophile is *trans* to the phosphane is formed.

The anionic complex is stable towards methane reductive elimination and readily reacts with water or MeI to selectively form methane.

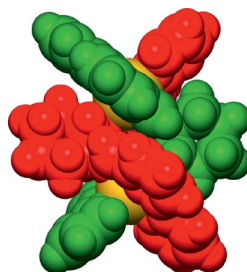
E. Poverenov, M. A. Iron, M. Gandelman,  
Y. Ben-David, D. Milstein\* .... 1991–1999

Anionic d<sup>8</sup> Alkyl Hydrides – Selective Formation and Reactivity of Anionic *cis*-Pt<sup>II</sup> Methyl Hydride

**Keywords:** Platinum / Anionic complexes / Pincer ligand / Alkyl hydride / Density functional calculations

### Facile Stereoselectivity!

The enantiopure, hexadentate ligand (*R,R*)-**3** (reduced Schiff base with a cyclohexane-1,2-diyl backbone) was synthesized. (*R,R*)-**3** exhibits enough flexibility to form either *M*-[M{(*R,R*)-**3**}]<sup>2+</sup> (major diastereoisomer) or *P*-[M{(*R,R*)-**3**}]<sup>2+</sup> in solution. [M{(*R,R*)-**3**}]<sup>2+</sup> (M = Fe, Cu, Zn) selectively crystallize in the *M*-form. Ligand (*R,R*)-**4**, the Schiff base analogue of (*R,R*)-**3**, forms [2+2] double helicates *M*-[M<sub>2</sub>{(*R,R*)-**4**}]<sub>2</sub><sup>4+</sup> (M = Ag, Zn); analogous results are obtained when (*S,S*)-**4** reacts with FeCl<sub>2</sub>. Complete stereoselectivity is observed in solution.



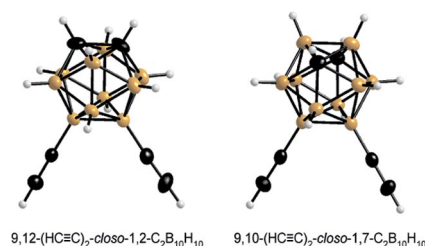
E. C. Constable,\* G. Zhang,  
C. E. Housecroft,\* M. Neuburger,  
J. A. Zampese ..... 2000–2011

Diastereoselective Assembly of Helicates Incorporating a Hexadentate Chiral Scaffold

**Keywords:** Helical structures / Stereochemistry / Chirality / N ligands / Copper / Iron / Zinc

### Carboranes

A series of dicarba-*closo*-dodecaboranes with two and one ethynyl groups was synthesized by Kumada-type cross-coupling reactions. The diethynyl-substituted clusters 9,12-(HCC)<sub>2</sub>-*closo*-1,2-C<sub>2</sub>B<sub>10</sub>H<sub>10</sub> and 9,10-(HCC)<sub>2</sub>-*closo*-1,7-C<sub>2</sub>B<sub>10</sub>H<sub>10</sub> were structurally characterized and their bonding properties were compared to values derived from density functional calculations.



A. Himmelspach,  
M. Finze\* ..... 2012–2024

Dicarba-*closo*-dodecaboranes with One and Two Ethynyl Groups Bonded to Boron

**Keywords:** Alkynes / Boron / Boranes / Carboranes / Palladium / Cross-coupling / Structure elucidation

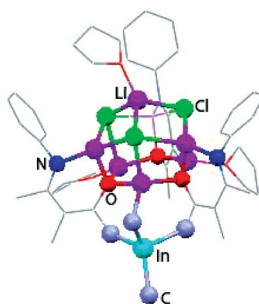
# CONTENTS

## Ketiminato Ligands

A. F. Lugo (née Gushwa),  
A. F. Richards\* ..... 2025–2035

Ketiminato-Supported LiCl Cages and  
Group 13 Complexes

**Keywords:** Lithium / Gallium / Chelates /  
N,O ligands / Cage compounds



The coordination preferences of bidentate ArL<sup>1</sup> and tridentate L<sup>2</sup> were investigated with several group 13 precursors, affording a range of products. Aside from the expected *N,O*-chelation, a monomeric adduct (for gallium) and two novel LiCl cages were synthesized. In addition, the isolation of a bimetallic (In, Li) cage shows the versatility of ketiminato ligands and highlights their diverse coordination modes.

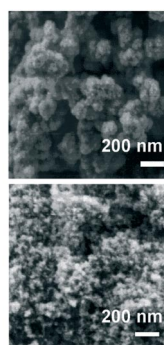
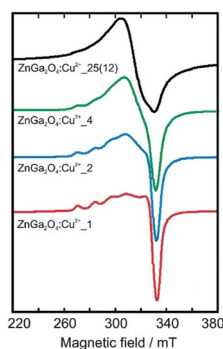
## Nanostructured Zinc-Copper Gallates

F. Conrad, Y. Zhou, M. Yulikov,  
K. Hametner, S. Weyeneth, G. Jeschke,  
D. Günther, J.-D. Grunwaldt,  
G. R. Patzke\* ..... 2036–2043



Microwave-Hydrothermal Synthesis of  
Nanostructured Zinc-Copper Gallates

**Keywords:** Zinc / Copper / Gallium / Micro-  
wave chemistry / Nanoparticles / Spinel  
phases / Hydrothermal synthesis



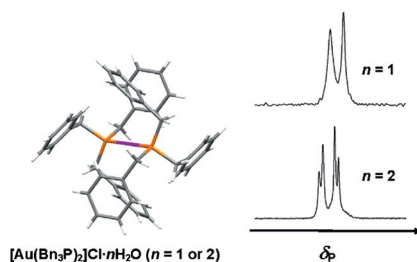
Nanostructured ZnGa<sub>2</sub>O<sub>4</sub>:Cu<sup>2+</sup> spinels are easily accessible with microwave-hydrothermal methods. This convenient and flexible method provides nanoscale zinc gallates with tunable copper contents in a single step.

## Phosphane Gold(I) Complexes

E. W. Ainscough,\* G. A. Bowmaker,\*  
A. M. Brodie,\* G. H. Freeman,  
J. V. Hanna, P. C. Healy, W. T. Robinson,  
B. W. Skelton, M. E. Smith, A. N. Sobolev,  
A. H. White ..... 2044–2053

Structural and Spectroscopic Characteri-  
sation of Linearly Coordinated Gold(I) Tri-  
benzylphosphane Complexes

**Keywords:** Gold / Phosphane ligands



A series of tribenzylphosphane, two-coordinate gold(I) complexes have been synthesised and their structures determined by single-crystal X-ray crystallography. The <sup>31</sup>P CP MAS NMR spectra are reported. The observation of <sup>2</sup>*J*(PP) coupling in the spectrum of the dihydrate, [Au(PBn<sub>3</sub>)<sub>2</sub>]Cl·2H<sub>2</sub>O, is consistent with the presence of noncentrosymmetric cations in this complex.

\* Author to whom correspondence should be addressed.

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

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