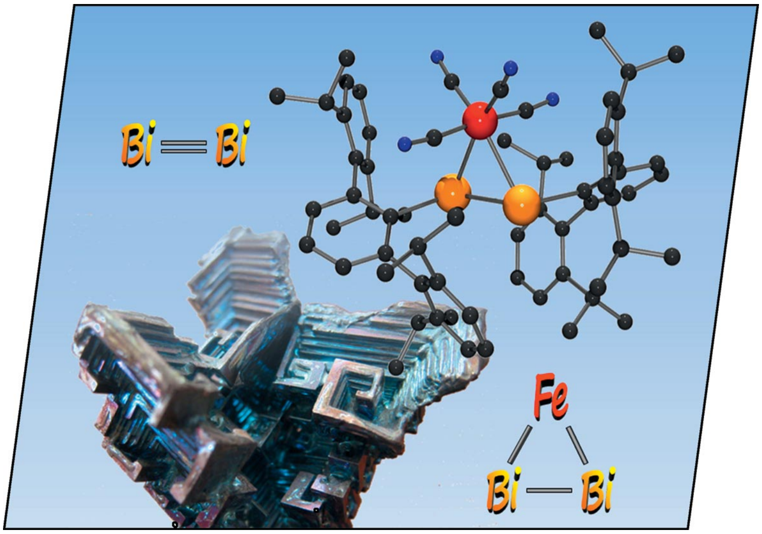
COVER PICTURE

The cover picture shows a bismuth crystal that has a similar shape to the molecular structure of the (dibismuthene)iron complex $[Fe(CO)_4(Bi_2Ar'_2)]$ [$Ar' = C_6H_3$-2,6-(C_6H_3-2,6-$i$$Pr_2$)], the first compound with a three-membered Bi_2Fe ring. The new complex was obtained from the 1:1 reaction of $Na_2[Fe(CO)_4]$ and $Ar'BiCl_2$. In a similar vein, the double-bonded dibismuthene Ar'_2Bi_2 and the single-bonded dibismuthane $Ar'_2Bi_2Cl_2$ were isolated from attempted metathesis reactions of $Ar'BiCl_2$ with $K_2Si_2(SiMe_3)_4$ and $KSi(SiMe_3)_3$, respectively. Details are presented in the article by P. P. Power et al. on p. 2515ff. We thank the Alexander von Humboldt Foundation, the Austrian Fonds zur Förderung der wissenschaftlichen Forschung, and the Max Kade Foundation for financial support of this work; Dr. J. Chris Slootweg is acknowledged for providing the picture of the bismuth crystal.



CONTENTS

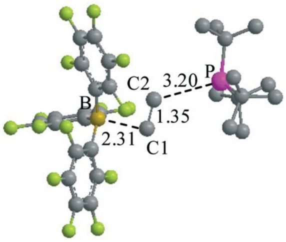
SHORT COMMUNICATIONS

Reactions of “Frustrated Lewis Pairs”

Y. Guo, S. Li* .... 2501−2505

A Novel Addition Mechanism for the Reaction of “Frustrated Lewis Pairs” with Olefins

Keywords: Density functional calculations / Transition states / Addition / Frustrated Lewis pairs / Olefins



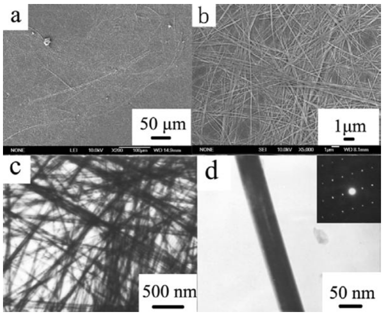
In the DFT-optimized transition state of the three-component reaction investigated in this paper, the P−C2 distance is 3.20 , the B−C1 distance is 2.31 , and the C=C bond is elongated to 1.35 from 1.33 in free C_2H_4. The transition vector clearly shows that the B−C1 and P−C2 bonds are formed by a concerted mechanism.

1D V_2O_5 Nanostructures

F. Zhou,* X. M. Zhao, Y. Q. Liu, C. G. Yuan, L. Li .... 2506−2509

Synthesis of Millimeter-Range Orthorhombic V_2O_5 Nanowires and Impact of Thermodynamic and Kinetic Properties of the Oxidant on the Synthetic Process

Keywords: Nanostructures / Crystal growth / Layered compounds



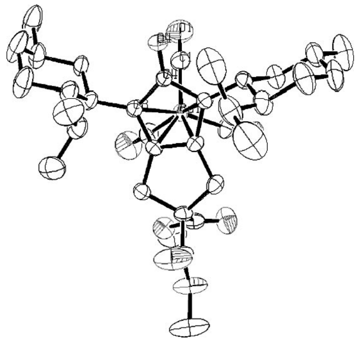
Ultralong orthorhombic V_2O_5 nanowires were synthesized by a facile hydrothermal oxidation route. Further research proves that there are certain criteria for the selection of suitable oxidizers. The optimal oxidizer should not only be thermodynamically favorable, but also kinetically favorable.

Ru Tricarbonyl Complexes

M.-s. Kim, J. W. Lee, J. E. Lee, J. Kang* .... 2510−2513

Synthesis of Enantiopure Ruthenium Tricarbonyl Complexes of a Bicyclic Cyclopentadienone Derivative

Keywords: Carbonylation / Cyclopentadienyl ligands / Half-sandwich complexes / Ruthenium



(−)-Menthone was converted stereoselectively into 3-menthylpropargyl alcohol in several steps and subsequently converted into enantiopure cyclopentadienone ruthenium carbonyl complexes. In the malonate cases, a ruthenacycle was also formed during the cyclization reaction.

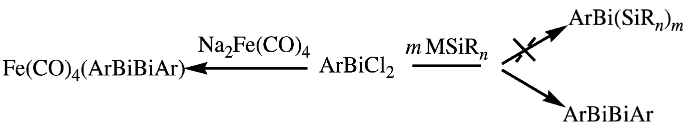
FULL PAPERS

Dibismuthene Chemistry

R. Wolf, J. Fischer, R. C. Fischer, J. C. Fettinger, P. P. Power* ... 2515−2521

Reactions of Terphenylbismuth Dihalides with $KSi(SiMe_3)_3$, $K_2Si_2(SiMe_3)_4$ and $Na_2[Fe(CO)]_4$: Reduction vs. Metathesis

Keywords: Bismuth / Terphenyl / Silicon / Iron

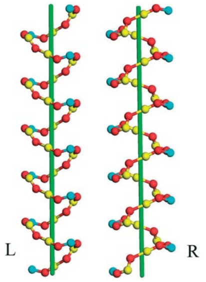


Reaction of arylbismuth dihalides with alkali metal silanides afforded dibismuthenes rather than silylbismuth species.

Reactions with Collman’s reagent readily yielded dibismuthene/$Fe(CO)_4$ complexes.

Hybrid Iodate Complexes

Four inorganic-organic hybrid compounds have been hydrothermally synthesised and subsequently characterised by single-crystal X-ray diffraction. By comparatively studying the photoluminescence properties of these compounds, we may conclude that the photoluminescence originates from ligand-centred π-π* transitions.



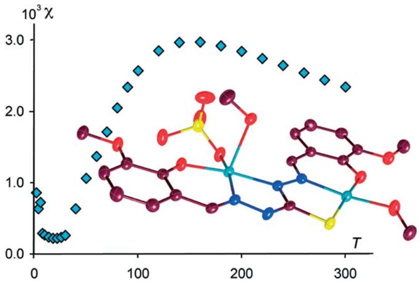
X. Liu, G. Li, B. Hu, Y. Yu, Y. Hu, M. Bi, Z. Shi,* S. Feng .... 2522−2529

Hydrothermal Synthesis, Structural Characterisations, and Photoluminescence Properties of Four Inorganic-Organic Hybrid Compounds in the Indium/Gallium Iodate Family

Keywords: Hydrothermal synthesis / Hybrid material / Indium iodate / Gallium iodate / Crystal structure / Photoluminescence

Versatile Coordination Ability

In the absence of added base, the ditopic dihydrazones prepared from 3-alkoxysalicylaldehydes and thiocarbohydrazide yield antiferromagnetic dinuclear copper(II) complexes, which in turn dimerise in a face-face fashion.



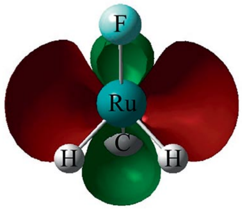
D. Dragancea, A. W. Addison,* M. Zeller, L. K. Thompson, D. Hoole, M. D. Revenco, A. D. Hunter .... 2530−2536

Dinuclear Copper(II) Complexes with Bisthiocarbohydrazone Ligands

Keywords: Thiocarbohydrazone / Copper / Antiferromagnetism / Dinuclear complexes / Schiff bases

Ruthenium Methylidyne Complexes

Excited Ru atoms insert into the C−F bond in methyl fluoride, and two α-H transfers give the methylidyne complex, whose HOMO is shown here. The reaction of Ru atoms with halomethanes and methane were investigated. The carbynes formed have a highly distorted structure, in which the HOMOs apparently play an important role.

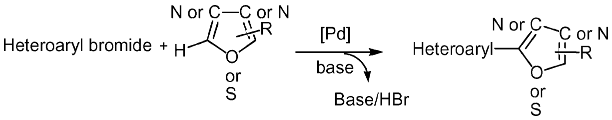


H.-G. Cho, L. Andrews* .... 2537−2549

Infrared Spectra of Insertion, Methylidene, and Methylidyne Complexes in Reactions of Laser-Ablated Ruthenium Atoms with Halomethanes and Methane

Keywords: Ruthenium complexes / Matrix isolation / Infrared spectra / Density functional calculations

Homogeneous Catalysis



Bi- or polydentate ligands based on heterocycles can be easily prepared via palladium-catalysed C−H bond activation of heteroaromatics followed by heteroarylation using heteroaryl bromides. A variety of heteroaromatics such as furans, thiophenes thiazoles or oxazole derivatives have been employed.

F. Derridj, A. L. Gottumukkala, S. Djebbar, H. Doucet* .... 2550−2559

Palladium-Catalysed Direct C-H Activation/Arylation of Heteroaromatics: An Environmentally Attractive Access to Bi- or Polydentate Ligands

Keywords: Atom economy / Homogeneous catalysis / C−H activation / Heterocycles / Palladium

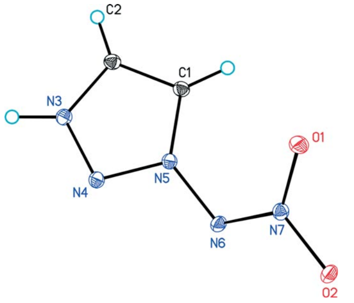
CONTENTS

Energetic Salts

Y. Huang, H. Gao, B. Twamley,
J. M. Shreeve* 2560–2568

Nitroamino Triazoles: Nitrogen-Rich Precursors of Stable Energetic Salts

Keywords: Nitroamino compounds / Energetic salts / Triazoles



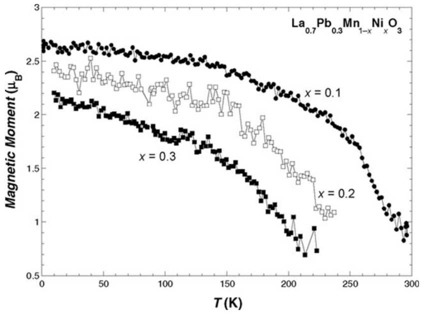
Energetic salts based on either the 1-nitroamino-1,2,3-triazolate or the 4-nitroamino-1,2,4-triazolate anion were prepared. Theoretical calculations show that some of the new salts have good detonation properties and may be potential propellants.

Ni-Doped Manganites

A. Peña, J. Gutiérrez,* J. Campo,
J. M. Barandiarán, L. Lezama,
I. Gil de Muro, T. Rojo 2569–2576

Structural, Magnetic and Magnetotransport Properties of $La_{0.7}Pb_{0.3}(Mn_{1-x}Ni_x)O_3$ $(0.1 \le x \le 0.3)$ CMR Manganites

Keywords: Manganites / Crystal structure / Neutron diffraction / Magnetization / Magnetoresistance / Metal–insulator transition



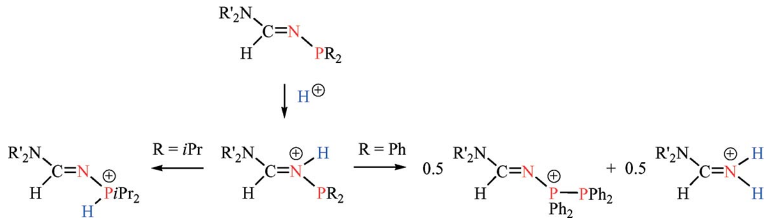
The transport and magnetic properties of $Ln_{0.7}A_{0.3}Mn_{1-y}TM^{3+}{}_yO_3$ (TM: transition metal) manganites are known to be strongly dependent upon changes in the strength of the double exchange (DE) interaction. This can also be altered by the substitution of the Mn ions by other transition-metal ions. The figure shows the temperature dependence of the refined magnetic moment value for the compositions containing Ni.

Phosphorus Formamidine Chemistry

T. D. Le, M.-C. Weyland, Y. El-Harouch,
D. Arquier, L. Vendier, K. Miqueu,
J.-M. Sotiropoulos, S. Bastin,
A. Igau* 2577–2583

N-Phosphanylformamidines (phosfam) $R_2'N-C(H)=N-PR_2$: One-Pot Synthesis and Versatile Protonation Reaction

Keywords: Phosphanes / Formamidines / Protonation / Density functional calculations / Substituent effects



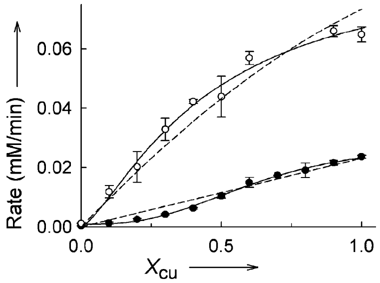
The straightforward high-yield synthesis of a new class of P^{III}-functionalized phosphorus derivatives, the *N*-phosphanylformamidines $R_2'N-C(H)=N-PR_2$ is reported. Replacing the substituent on the phosphorus atom from R=Ph to R = *i*Pr dramatically changes the course of the protonation reaction: cleavage vs. preservation of the P–N linkage.

Cu^{II} Polymer for Oxidation

V. Lykourinou, A. I. Hanafy,
G. F. Z. da Silva, K. S. Bisht,
R. W. Larsen, B. T. Livingston,
A. Angerhofer, L.-J. Ming* 2584–2592

How Well Should the Active Site and the Specific Recognition Be Defined for Proficient Catalysis? – Effective and Cooperative Polyphenol/Catechol Oxidation and Oxidative DNA Cleavage by a Copper(II)-Binding and H-Bonding Copolymer

Keywords: Catechol oxidase / Copper / Dinuclear catalysis / Polymers / Oxidation

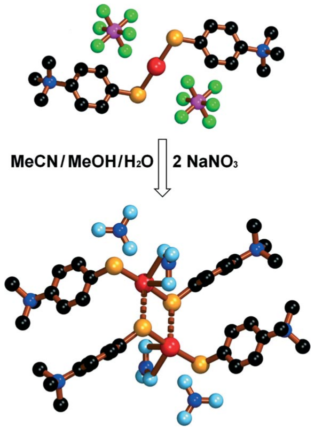


Cooperative metal binding and activity

The Cu^{II} complex of a pyridine-containing copolymer shows oxidative DNA cleavage and catechol/polyphenol oxidation with significant $(0.114-2.67)\times10^4$ and $(2.83-9.60)\times10^4$-fold rate enhancements, respectively, with and without H_2O_2 in aqueous methanol solution at pH 6.0, *showing some cooperativity*. This Cu^{II}-copolymer and its derivatives should be further explored in Cu–oxygen chemistry.

Mercury(II) Thiolates

The reaction of $[Hg(Tab)_2](PF_6)_2$ with NaCl, $NaNO_2$, or $NaNO_3$ yields six new Hg/Tab complexes, namely $[Hg(Tab)_2Cl](PF_6)$, $[\{Hg(\mu\text{-}Tab)(Tab)Cl\}_2]Cl_2\cdot H_2O$, $[\{Hg(\mu\text{-}Tab)(Tab)Cl\}_2]X_2$ (X = NO_2, NO_3), and $[\{Hg(\mu\text{-}Tab)(Tab)(\mu\text{-}X)\}_2]X_2$ (X = NO_2, NO_3). These compounds are characterized by elemental analysis, IR, UV/Vis, and ^1H NMR spectroscopy, and single-crystal X-ray diffraction techniques.



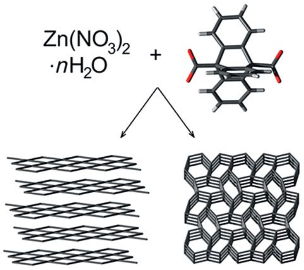
X.-Y. Tang, J.-X. Chen, G.-F. Liu, Z.-G. Ren, Y. Zhang, J.-P. Lang* **2593–2600**

Reactions of $[Hg(Tab)_2](PF_6)_2$ [Tab = 4-(trimethylammonio)benzenethiolate] with NaX (X = Cl, NO_2, NO_3): Isolation and Structural Characterization of a Series of Mono- and Binuclear Hg/Tab/X Compounds

Keywords: Mercury / S ligands / Bridging ligands

Metal-Organic Frameworks

Two new 2D and 3D coordination polymers were formed together by treating 9,10-triptycenedicarboxylic acid with zinc nitrate. The reaction conditions influenced the product ratios. The peculiarities of the compounds' structures elucidated by SXRD, e.g. related to the ability of triptycene to locate guest species between benzene rings, are discussed.



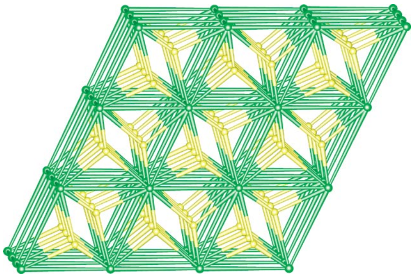
S. Vagin, A. Ott, H.-C. Weiss, A. Karbach, D. Volkmer, B. Rieger* **2601–2609**

Metal-Organic Frameworks (MOFs) Composed of (Triptycenedicarboxylato)zinc

Keywords: Coordination polymers / Metal-organic frameworks / Microporous compounds

Highly Connected MOFs

Two fascinating (3,10)-connected 2D metal–organic frameworks, which are based on pentanuclear metal cluster building blocks, are reported. They represent the highest connected topology presently known for 2D nets.



D. Xiao,* R. Yuan, Y. Chai, E. Wang* **2610–2615**

Two (3,10)-Connected 2D Networks Based on Pentanuclear Metal Clusters as Building Blocks

Keywords: Coordination polymers / Topological networks / Metal clusters / Self-assembly