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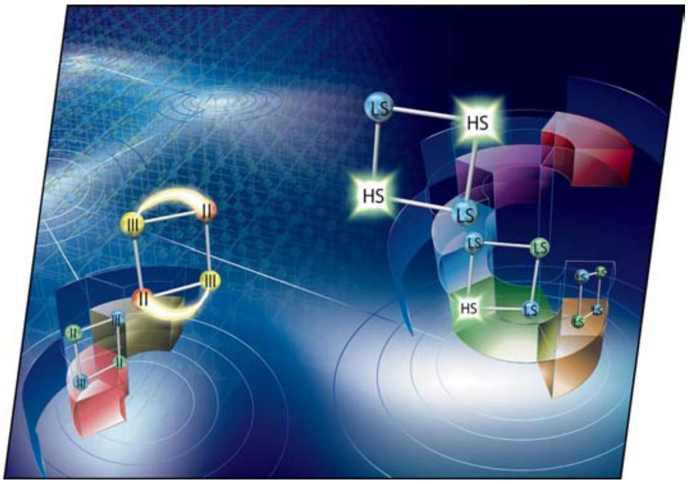
COVER PICTURE

The cover picture shows two examples of the diverse physical properties observed in cyanide-bridged molecular square complexes: multistep spin crossover and electron transfer coupled spin transition. Cyanide-bridged squares can be considered to be the building blocks of Prussian Blue, which forms the backdrop of the image, and their discrete nature can allow easy access to multistable functionalities. The Microreview by H. Oshio et al. on p. 3031ff. discusses the syntheses and physical properties of cyanide-bridged molecular squares since the discovery of the first high-spin example in 1999.



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MICROREVIEW

Cyanide-Bridged Squares

G. N. Newton, M. Nihei,
H. Oshio* 3031–3042

Cyanide-Bridged Molecular Squares – The Building Units of Prussian Blue

Keywords: Cyanide ligands / Heterometallic complexes / Spin crossover / Electrochemistry / Electron transfer

Cyanide-bridged molecular square complexes are the building blocks of Prussian blue and can be controllably synthesized to be homo- or heterometallic. They have shown remarkable electrochemistry, spin-state control, spin-crossover behavior, and electron-transfer-coupled spin transitions. The recent developments in the field are discussed in this microreview.

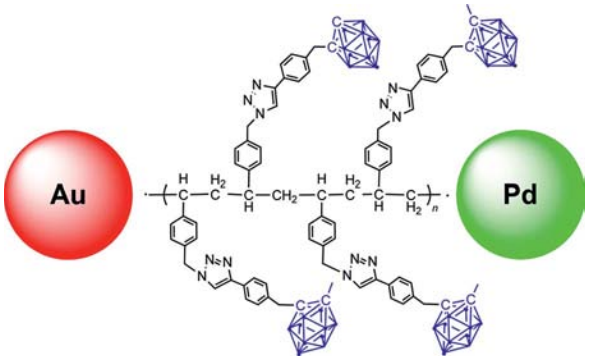
FULL PAPERS

Carborane–Polymer–Nanoparticle

L. Liang, A. Rapakousiou, L. Salmon,
J. Ruiz, D. Astruc,* B. P. Dash,
R. Satapathy, J. W. Sawicki,
N. S. Hosmane* 3043–3049

“Click” Assembly of Carborane-Appended Polymers and Stabilization of Gold and Palladium Nanoparticles

Keywords: Carboranes / Polymers / Click chemistry / Polystyrene / Nanoparticles



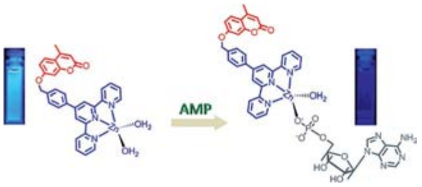
“Click” *o*-carborane-appended polystyrene polymers were assembled and stabilize gold and catalytically active palladium nanoparticles.

Chemosensor for AMP

P. Das, A. Ghosh, M. K. Kesharwani,
V. Ramu, B. Ganguly,*
A. Das* 3050–3058

Zn^{II}–2,2′:6′,2′′-Terpyridine-Based Complex as Fluorescent Chemosensor for PPi, AMP and ADP

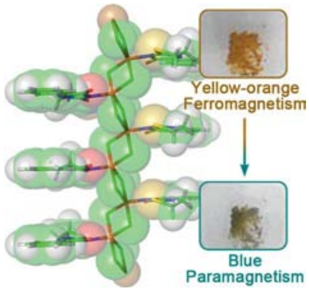
Keywords: Chemosensors / Zinc / Density functional calculations / Fluorescent probes / Bioinorganic chemistry



A new Zn^{II}-based receptor (**L_1Zn**) has shown unusual specificity towards different phosphates (PPi, AMP and ADP) in mixed solvent media with different proportions of protic solvent-like water.

Metastable Coordination Networks

An orange–yellow coordination network and a blue mononuclear complex were obtained from the reaction of $CuCl_2 \cdot 2H_2O$ and thiazolo-1,2,4-triazine derivatives, which have multiple donor atoms (N, O, and S). Although the network polymer was rapidly transformed into the mononuclear complex in the solid state and solution, these structures were characterized by X-ray diffraction and magnetic studies.



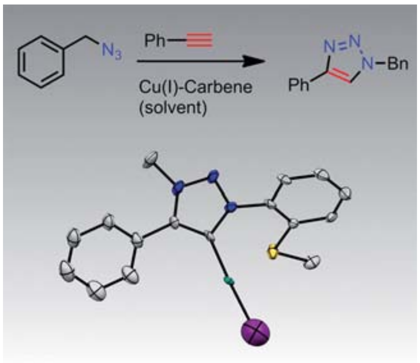
A. Hori,* T. Kikuchi, K. Miyamoto, T. Okano, C. Kachi-Terajima, H. Sakaguchi 3059–3066

Transformation of a Cu^{II} Thiazolo-1,2,4-triazine Derivative from a Metastable Coordination Network to a Monomer in Solution and Vapor Conditions

Keywords: Coordination modes / Copper / Magnetic properties / Metastable compounds / Solvatochromism

Carbene Catalysts

Cu^{I} complexes of normal and abnormal carbene ligands derived from their respective benzimidazolium and 1,2,3-triazolium salts are shown to be highly efficient catalysts for Huisgen [3+2] cycloadditions between azides and alkynes. A copper loading of as low as 0.05 mol-% was achieved. Internal alkynes and "super" bulky azides could also be converted to 1,2,3-triazoles by a click reaction.



S. Hohloch, C.-Y. Su, B. Sarkar* 3067–3075

Copper(I) Complexes of Normal and Abnormal Carbenes and Their Use as Catalysts for the Huisgen [3+2] Cycloaddition between Azides and Alkynes

Keywords: Copper / Carbenes / Cycloaddition / Homogeneous catalysis / 1,2,3-Triazole / Benzimidazole

Superacidic Systems

Trifluoromethanesulfonic anhydride reacts with superacidic solutions HF/SbF_5 to form its corresponding salt $CF_3SO_3H_2^+SbF_6^-$, which is the protonated form of trifluoromethanesulfonic acid. The salt has been characterized by vibrational spectroscopy and single-crystal structural analysis. The experimental data were also compared to quantum chemical calculations for the $CF_3SO_3H_2(HF)_2^+$ cation.

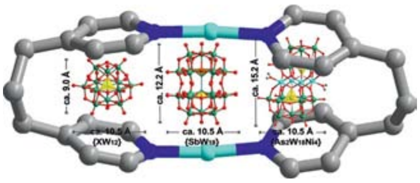
T. Soltner, N. R. Goetz, A. Kornath* 3076–3081

The Protonation of CF_3SO_3H: Preparation and Characterization of Trifluoromethyldihydroxyoxosulfonium Hexafluoridoantimonate, $CF_3SO_3H_2^+SbF_6^-$

Keywords: Superacidic systems / Protonation / Structure elucidation / Sulfonium salts

Molecular Assemblies

Four supramolecular assemblies have been prepared by the combination of different polyoxometalate anions and the flexible organic ligand 1,3-bis(4-pyridyl)propane (bpp). The structure-directing effect of anions play a significant role in the fabrication of these inorganic-organic arrangements.



Z. Han,* Y. Wang, X. Song, X. Zhai, C. Hu* 3082–3090

Molecular Assemblies Based on Polytungstate Clusters and the Flexible Organic Ligand 1,3-Bis(4-pyridyl)propane

Keywords: Polyoxometalates / Copper / Ligand flexibility / Anions / Supramolecular chemistry

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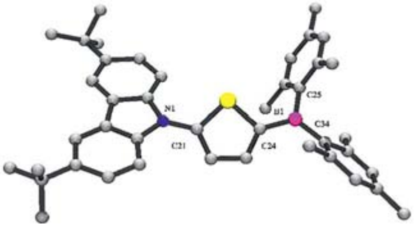
Conjugated Organoboranes

L. Weber,* J. Halama,
L. Böhling, A. Chrostowska,*
A. Dargelos, H.-G. Stammler,
B. Neumann 3091–3101

N-Aryl- and *N*-Thienylcarbazoles with Dimesitylboryl and 1,3,2-Benzodiazaborolyl Functions

Keywords: Boron / Carbazoles / Density functional calculations / Photophysics



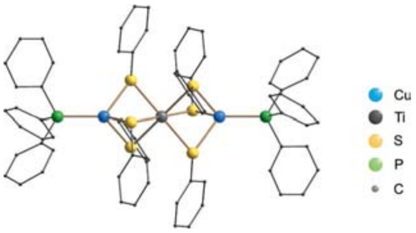
The study of *N*-(dimesitylboryl)carbazole **1** and *N*-phenyl- and *N*-thienylcarbazoles with dimesitylboryl groups **2** and **3** or 1,3,2-benzodiazaborolyl units **4**–**6** shows that the benzodiazaborolyl group does not contribute to the frontier orbitals in **4**–**6**. The LUMOs of **1**–**3** are mainly represented by the $2p_z$ orbitals of the Mes_2B unit, whereas the HOMO is located on the carbazole part of the molecules.

Early–Late Heterometallic Complexes

V. Andrushko, H. Sommer, D. Himmel,
D. Fenske, A. Eichhöfer* 3102–3110

Syntheses, Structures, and Properties of Trinuclear Copper(I)/Titanium(IV) Thiolate Complexes

Keywords: Copper / Titanium / Sulfur / Cluster compounds / Density functional calculations



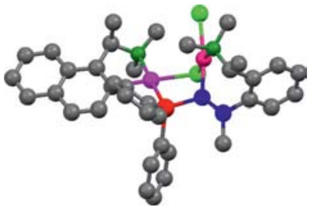
The paper presents the synthesis and structural characterization of two early–late heterometallic titanium copper thiolato complexes along with the characterization of their optical and thermal properties.

Bimetallic Complexes

S. Chen, S. A. Pullarkat, Y. Li,
P.-H. Leung* 3111–3121

Synthesis of Homo- and Hetero-Bimetallic Arsenic Complexes by Means of Regioselective Monoinsertion of Alkynylarsane into the Pd–C Bond of a Palladacycle

Keywords: Insertion / Arsenic / As ligands / Palladium / Platinum / Metallacycles / Bimetallic complexes



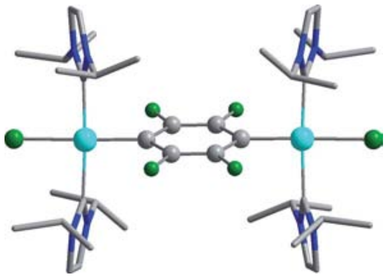
A variety of new chiral homo- or heterobimetallic arsenic functionalized complexes were synthesized by means of the regioselective monoinsertion of alkynylarsane into the Pd–C bonds of α-methyl *N*,*N*-dimethyl benzylamine palladacycles, which was promoted by the cyclometallated template.

C–F Bond Activation

T. Schaub, P. Fischer, T. Meins,
U. Radius* 3122–3126

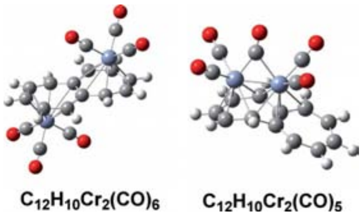
Consecutive C–F Bond Activation of Hexafluorobenzene and Decafluorobiphenyl

Keywords: Carbenes / Nickel / N-heterocyclic carbenes / Carbene ligands / C–F bond activation



A rare example of consecutive C–F bond activation of hexafluorobenzene and decafluorobiphenyl is reported. The reactions of $[Ni_2(iPr_2Im)_4(COD)]$ (**1**) with these substrates afford at elevated temperatures the complexes $[1,4\text{-}\{Ni(iPr_2Im)_2(F)\}_2(C_6F_4)]$ (**3**) and $[4,4'\text{-}\{Ni(iPr_2Im)_2(F)\}_2(C_{12}F_8)]$ (**5**). These compounds react cleanly with chlorotrimethylsilane and (isopropyl)(trimethylsilyl)selenane.

The lowest energy $C_{12}H_{10}Cr_2(CO)_6$ structures have each heptalene ring bonded to an independent $Cr(CO)_3$ unit with Cr···Cr distances too long for direct bonding. The lowest energy $C_{12}H_{10}Cr_2(CO)_5$ structure has a Cr≡Cr triple bond and an eight-carbon heptafulvene subunit coordinated to the carbonyl-bridged $Cr_2(CO)_4(\mu\text{-}CO)$ unit leaving an uncomplexed *cis*-1,3-diene subunit in the heptalene ligand. The global minima for $C_{12}H_{10}Cr_2(CO)_n$ (n = 4, 3) complexes are predicted to have single four-electron donor bridging η^2-μ-CO groups as well as Cr–Cr bonds.



H. Li, H. Feng,* W. Sun, Q. Fan, Y. Xie, R. B. King* **3127–3137**

Binuclear Carbonylheptalenechromium Complexes: Partition of Heptalene into a Complexed Heptafulvene Subunit and an Uncomplexed 1,3-Diene Subunit for Coordination to a Multiply Bonded Pair of Chromium Atoms

Keywords: Chromium / Carbonyl complexes / Metal–metal bonding / Density functional calculations

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* Author to whom correspondence should be addressed.

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