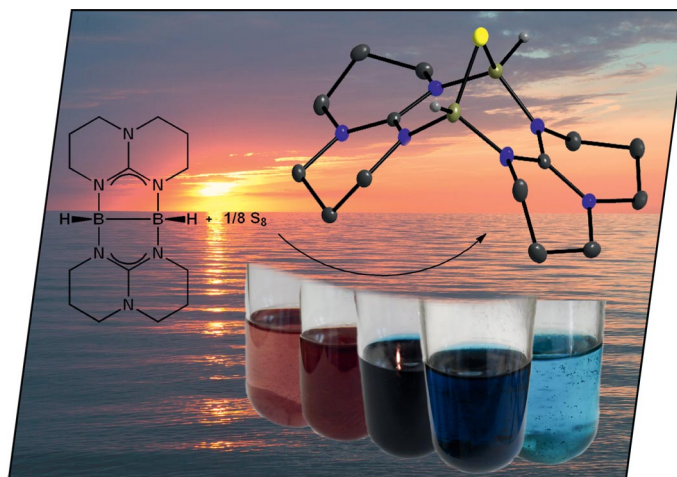


**EurJIC** is a journal of ChemPubSoc Europe, a union of 16 European chemical societies formed for the purpose of publishing high-quality science. All owners merged their national journals to form two leading chemistry journals, the *European Journal of Inorganic Chemistry* and the *European Journal 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 crystal structure of the product of oxidative insertion of sulfur into the B–B bond of the doubly base-stabilized diborane(4)  $[\text{HB}(\mu\text{-hpp})_2]$  (hpp = 1,3,4,6,7,8-hexahydro-2*H*-pyrimido[1,2-*a*]pyrimidine). The colours observed in the course of this reaction are similar to those of the sunset at Flügge beach on the island Fehmarn shown in the background. While the sunset colours are caused by refraction of sunlight, oligosulfide intermediates such as  $\text{S}_8^{2-}$  and  $\text{S}_3^{2-}$  are responsible for the colours visible during the reaction. The photographs of the flask show the reaction mixture in toluene solutions after 3, 12, 68 and 200 min and after 18 h. Details are discussed in the article by H.-J. Himmel et al. on p. 5201ff. The authors thank Andreas Schuster for the design of the cover picture.



## SHORT COMMUNICATION

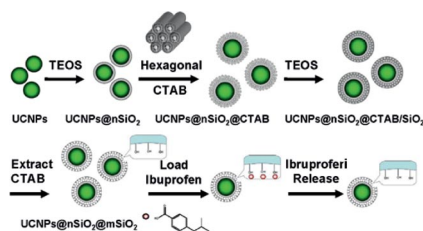
### Nanocomposites for Drug Delivery

Y. Yang, Y. Qu, J. Zhao, Q. Zeng, Y. Ran,  
Q. Zhang, X. Kong,\*  
H. Zhang\* ..... 5195–5199



Fabrication of and Drug Delivery by an Upconversion Emission Nanocomposite with Monodisperse  $\text{LaF}_3\text{:Yb,Er}$  Core / Mesoporous Silica Shell Structure

**Keywords:** Upconversion / Mesostructure / Drug delivery / Luminescence / Nanoparticles



Nanocomposites with a  $\text{LaF}_3\text{:Yb,Er}$  core and a mesoporous silica shell structure have been developed. These multifunctional photoluminescent composite materials were tested as drug carriers to investigate their drug storage/release properties. The green upconversion photoluminescence of these  $\text{LaF}_3\text{:Yb}^{3+}, \text{Er}^{3+}@\text{nSiO}_2@\text{mSiO}_2$  nanocomposites is useful for tracking and monitoring the drug release.

## FULL PAPERS

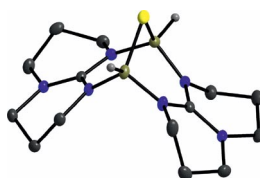
### B–B Bond Reactivity

N. Schulenberg, O. Ciobanu, E. Kaifer,  
H. Wadepohl,  
H.-J. Himmel\* ..... 5201–5210



The Doubly Base-Stabilized Diborane(4)  $[\text{HB}(\mu\text{-hpp})]_2$  (hpp = 1,3,4,6,7,8-hexahydro-2H-pyrimido[1,2-a]pyrimidine): Synthesis by Catalytic Dehydrogenation and Reactions with  $\text{S}_8$  and Disulfides

**Keywords:** Boron / Hydrides / Sulfur / Guanidines



Catalytic dehydrogenation of  $[\text{H}_2\text{B}(\mu\text{-hpp})]_2$  leads to the doubly base-stabilized diborane(4)  $[\text{HB}(\mu\text{-hpp})]_2$ . Oxidative sulfuration of the B–B bond in  $[\text{HB}(\mu\text{-hpp})]_2$  gives  $[\text{HB}(\mu\text{-hpp})]_2(\mu\text{-S})$ . A mixture of sulfuration and substitution products is formed for reactions with disulfides.

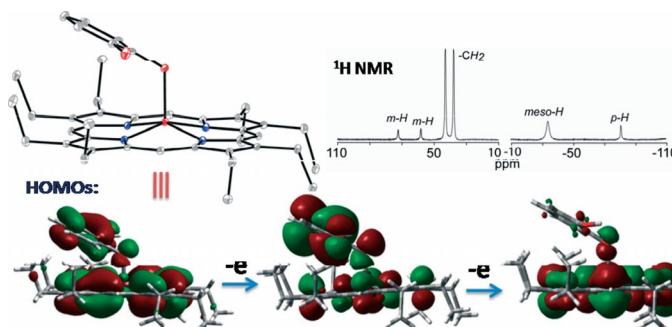
### Catecholate Binding

A. Chaudhary, R. Patra,  
S. P. Rath\* ..... 5211–5221



Binding of Catechols to Iron(III)–Octaethylporphyrin: An Experimental and DFT Investigation

**Keywords:** Catecholate binding / Hydrogen bonds / Spectroelectrochemistry / Density functional calculations / Structure elucidation

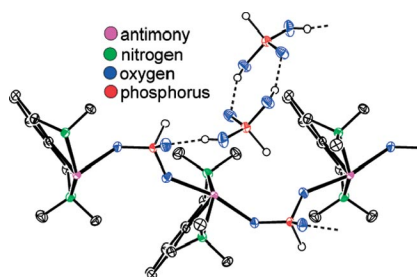


The synthesis, X-ray structures, and properties of new heme analogues  $\text{Fe}^{\text{III}}\text{-(OEP)(L)}$  (L: Hcat, 4- $\text{NO}_2$ -Hcat, 4-*t*Bu-Hcat, and sal) are reported, in which catechol binds in an  $\eta^1$ -fashion as an axial

ligand. Spectroelectrochemical studies of one- and two-electron oxidations are also reported. Experimental findings are supported by DFT calculations.

## Antimony and Bismuth Phosphites

The syntheses of molecular organoantimony and organobismuth phosphinate, phosphite and mixed phosphite-phosphonate complexes, where the central antimony or bismuth ion is stabilized by the NCN pincer-type ligand  $[2,6-(\text{Me}_2\text{NCH}_2)_2-\text{C}_6\text{H}_3]^-$ , are described. The decomposition pathway for bismuth phosphinate complexes is also reported.



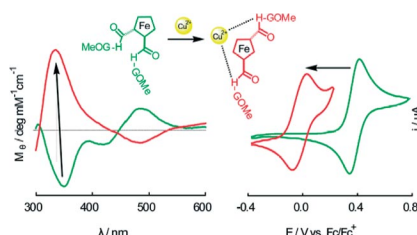
T. Svoboda, R. Jambor, A. Růžicka,  
Z. Padělková, M. Erben,  
L. Dostál\* ..... 5222–5230

NCN Chelated Organoantimony(III) and Organobismuth(III) Phosphinates and Phosphites: Synthesis, Structure and Reactivity

**Keywords:** Antimony / Bismuth / Phosphorus / Chelates / X-ray diffraction

## Bioorganometallic Metal Chelators

Metal coordination enables control over ferrocene helicity. Synthesis of a 1,1'-ferrocenyl-histidine conjugate is reported. Metal coordination to the His imidazoles drastically alters the helicity of the ferrocene group from a *P*-helical to an *M*-helical conformation.



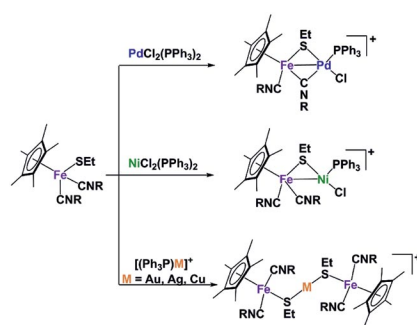
L.-Y. Cheng, Y.-T. Long,\* H. Tian,  
H.-B. Kraatz\* ..... 5231–5238

Spectroscopic and Electrochemical Investigations into the Interactions of Metal Ions with a Ferrocenyl-Histidine Peptide Conjugate

**Keywords:** Cyclic voltammetry / NMR spectroscopy / N ligands / Metal recognition / Chiral induction

## Heteronuclear Complexes

A new series of heteronuclear thiolate iron complexes including heterobinuclear Fe-SEt-M (M = Pd or Ni) units and heterotrinuclear Fe-SEt-M-SEt-Fe (M = Au, Ag, or Cu) species with isocyanide ligands have been prepared, and their characterizations are also investigated.



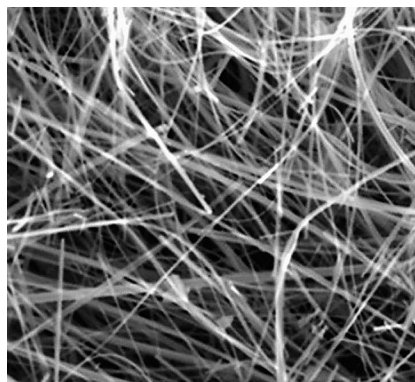
P. Chen, Y. Peng, C. Jia,  
J. Qu\* ..... 5239–5246

Synthesis of a New Family of Heteronuclear Thiolate Iron Complexes that Contain Isocyanide Ligands

**Keywords:** Transition metals / Heteronuclear complexes / Isocyanide ligands / Thiolate ligands

## Vanadium Oxide Nanorods

We describe methods of hydrothermal synthesis of vanadium oxide nanorods produced from polycrystalline  $\text{V}_2\text{O}_5$ . Analysis of the sensor properties of the nanorods revealed a significant response to triethylamine with a short response time, about 32 s, with a sensitivity of 30%.



A. V. Grigorieva,\* S. M. Badalyan,  
E. A. Goodilin, M. N. Rumyantseva,  
A. M. Gaskov, A. Birkner,  
Yu. D. Tretyakov ..... 5247–5253

Synthesis, Structure, and Sensor Properties of Vanadium Pentoxide Nanorods

**Keywords:** Vanadium oxides / Nanostructures / Hydrothermal synthesis / Resistive-type gas sensor

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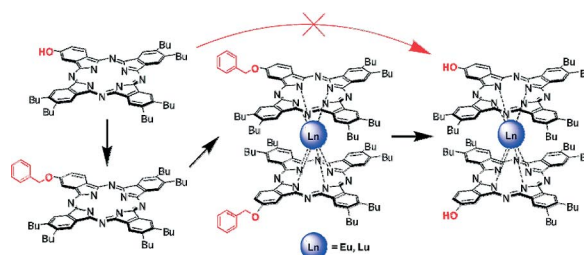
## Sandwich Complexes

V. E. Pushkarev,\* A. Yu. Tolbin,  
N. E. Borisova, S. A. Trashin,  
L. G. Tomilova\* ..... 5254–5262



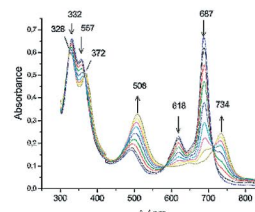
A<sub>3</sub>B-Type Phthalocyanine-Based Homo-  
leptic Lanthanide(III) Double-Decker  $\pi$ -  
Radical Complexes Bearing Functional  
Hydroxy Groups: Synthetic Approach,  
Spectral Properties and Electrochemical  
Study

**Keywords:** Phthalocyanines / Lanthanides /  
Sandwich complexes / Double-decker com-  
plexes /  $\pi$  radicals



Stable, phenolic hydroxy group containing  
 $\pi$ -radicals: Directly inaccessible hydroxy-  
substituted lanthanide(III)–bis(phthalocy-  
anine) sandwich complexes were obtained  
from the corresponding benzyloxy-pro-

TECTED precursors. A combination of spec-  
troscopic and electrochemical methods un-  
ambiguously showed that these promising  
structural building blocks are stable  $\pi$ -rad-  
ical species.

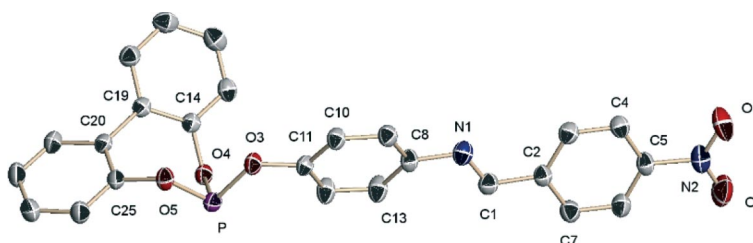


## Phosphite-Substituted Chromophores

M. B. Murphy-Jolly,\* S. B. Owens Jr.,  
J. L. Freeman, G. M. Gray,\*  
C. M. Lawson,  
D. P. Shelton ..... 5263–5271

Syntheses, Crystal Structures and Photo-  
physical Measurements of Phosphite-Sub-  
stituted Schiff Base and Azobenzene Li-  
gands

**Keywords:** Nonlinear optics / Schiff bases /  
Azo compounds / P ligands / Transition  
metals



A novel class of phosphite-containing chro-  
mophores, O<sub>2</sub>N-1-C<sub>6</sub>H<sub>4</sub>-4-CH=N-1-C<sub>6</sub>H<sub>4</sub>-  
4-OP(OC<sub>6</sub>H<sub>4</sub>)<sub>2</sub> (2) and O<sub>2</sub>N-1-C<sub>6</sub>H<sub>4</sub>-4-X=  
N-1-C<sub>6</sub>H<sub>4</sub>-4-OP(OC<sub>10</sub>H<sub>6</sub>)<sub>2</sub> [X = CH (3),  
N (4)], and their transition-metal com-

PLEXES, *cis*-Mo(CO)<sub>4</sub>(2)<sub>2</sub> (5), PdCl<sub>2</sub>(2)<sub>2</sub> (6),  
and *cis*-Mo(CO)<sub>4</sub>(3)<sub>2</sub> (7) were synthesized  
and fully characterized. Second-order NLO  
properties of the ligands and complexes  
were investigated by HRS measurements.

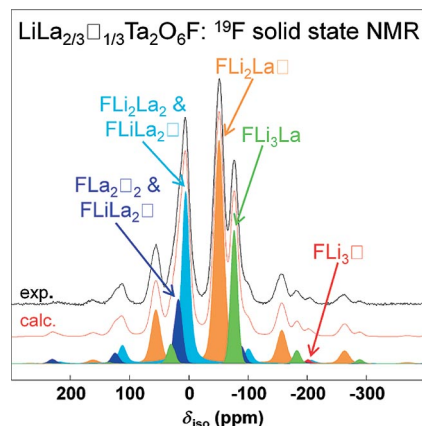
## Oxyfluoride Pyrochlores

C. Galven, C. Legein,\* M. Body,  
J.-L. Fourquet, J.-Y. Buzaré, F. Le Berre,\*  
M.-P. Crosnier-Lopez ..... 5272–5283



New Oxyfluoride Pyrochlores Li<sub>2–x</sub>La<sub>(1+x)/3</sub>–  
□<sub>(2x–1)/3</sub>B<sub>2</sub>O<sub>6</sub>F (B = Nb, Ta): Average and  
Local Structure Characterization by XRD,  
TEM and <sup>19</sup>F Solid-State NMR Spec-  
troscopy

**Keywords:** Pyrochlores / Local structure / X-  
ray diffraction / NMR spectroscopy / Elec-  
tron microscopy / Structure elucidation



Average and local orders are character-  
ized by XRD, TEM and <sup>19</sup>F solid-state NMR  
spectroscopy in two new oxyfluoride pyro-  
chlores Li<sub>2–x</sub>La<sub>(1+x)/3</sub>□<sub>(2x–1)/3</sub>B<sub>2</sub>O<sub>6</sub>F (B =  
Ta, Nb). The local environments of the F<sup>–</sup>  
ions, surrounded by Li<sup>+</sup>, La<sup>3+</sup> ions and  
vacancies that occupy the same crystallo-  
graphic site, are identified and quantified.

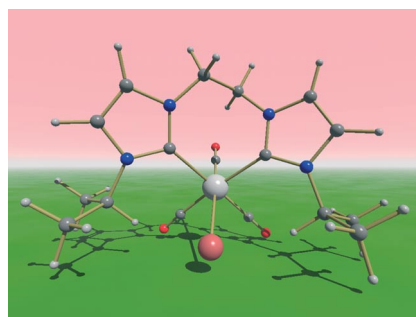
## Biscarbene Complexes of Rhenium

O. Hiltner, F. J. Boch, L. Brewitz,  
P. Härter, M. Drees, E. Herdtweck,  
W. A. Herrmann,\*  
F. E. Kühn\* ..... 5284–5293



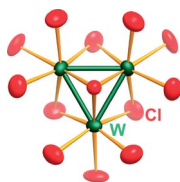
Bridged *fac*-Tricarbonylrhenium(I)–Bis-  
carbene Complexes: Synthesis, Characteri-  
zation, and Molecular Dynamics

**Keywords:** Carbonyl ligands / N ligands /  
Carbene ligands / Rhenium / Density func-  
tional calculations



Six new Re complexes with chelating N-  
heterocyclic carbene (NHC) ligands were  
synthesized and fully characterized. NMR  
techniques and DFT calculations were used  
to explain their dynamical behavior.

Ionic liquids (IL) are shown to be suitable reaction media for the convenient room-temperature synthesis of transition metal clusters. The new cluster compound  $\text{Sn}[\text{SnCl}][\text{W}_3\text{Cl}_{13}]$  comprises a  $[\text{W}_3\text{Cl}_{13}]^{3-}$  cluster with  $C_{3v}$  symmetry as well as an unusual  $[\text{SnCl}]^+$  cation. The compound is a paradigm of a material displaying extreme structural polarity.



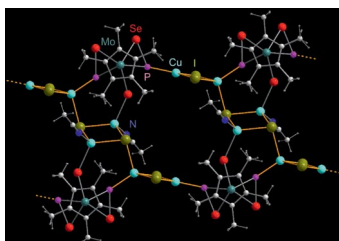
E. Ahmed, M. Groh,  
M. Ruck\* ..... 5294–5297

Room-Temperature Synthesis of the Highly Polar Cluster Compound  $\text{Sn}[\text{SnCl}][\text{W}_3\text{Cl}_{13}]$

**Keywords:** Cluster compounds / Ionic liquids / Tungsten / Merohedral twinning / Bijvoet differences

## Coordination Polymers

New coordination polymers  $[(\text{Cp}^*_2\text{Mo}_2\text{P}_2\text{Se}_3)(\text{CuX})_3(\text{CH}_3\text{CN})]_n$  ( $\text{Cp}^* = \text{C}_5\text{Me}_5$ ;  $\text{X} = \text{Cl}, \text{Br}, \text{I}$ ) have been prepared. A competitive coordination of Cu towards P and Se is observed that is completed by weak intermolecular  $\text{Se}\cdots\text{Se}$  interactions to give 2D networks. Addition of  $\text{P}_4\text{Se}_3$  as a competitive reagent gave  $[(\text{Cp}^*_2\text{Mo}_2\text{P}_2\text{Se}_3)(\text{P}_4\text{Se}_3)(\text{CuX})_2]_n$ , a new type of organometallic–inorganic hybrid polymer.



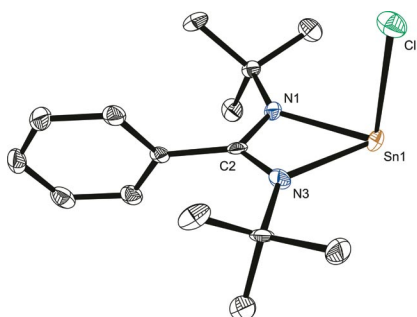
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J. Wachter,\* M. Zabel ..... 5298–5303

A New Building Block for Organometallic–Inorganic Hybrid Polymers: The Mixed Group 15/16 Element Ligand Complex  $[\text{Cp}^*_2\text{Mo}_2(\mu, \eta^{2:2}\text{-PSe})_2(\mu\text{-Se})]$  ( $\text{Cp}^* = \text{C}_5\text{Me}_5$ )

**Keywords:** Phosphorus / Selenium / Copper / Coordination modes / Polymers

## Tin Compounds

This article addresses the synthesis and characterization of amidinato-stabilized monomeric chlorostannylene. Furthermore, the chlorostannylene was converted into its amide and triflate derivatives by substitution reaction. To verify the Lewis basicity of chlorostannylene it was treated with  $\text{Fe}_2(\text{CO})_9$ , whereupon it formed the Lewis acid–base adduct.



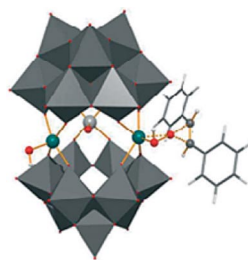
S. S. Sen, M. P. Kritzer-Kosch,  
S. Nagendran, H. W. Roesky,\* T. Beck,  
A. Pal, R. Herbst-Irmer ..... 5304–5311

Synthesis of Monomeric Divalent Tin(II) Compounds with Terminal Chloride, Amide, and Triflate Substituents

**Keywords:** Tin / N ligands / NMR spectroscopy / X-ray diffraction

## Alkene Epoxidation

Experimental and theoretical studies on the epoxidation of a range of alkenes with aqueous  $\text{H}_2\text{O}_2$  and dititanium-containing 19-tungstodiarсенate(III)  $[\text{Ti}_2(\text{OH})_2\text{As}_2\text{W}_{19}\text{O}_{67}(\text{H}_2\text{O})]^{8-}$  (**1**) as catalyst revealed a mechanism that involves a reversible interaction between  $\text{H}_2\text{O}_2$  and the  $\text{Ti}-\text{OH}$  group of **1** to produce a titanium hydroperoxo complex followed by electrophilic oxygen atom transfer to the alkene.



B. G. Donoeva, T. A. Trubitsina,  
N. S. Antonova, J. J. Carbó,\* J. M. Poblet,  
G. Al-Kadmany, U. Kortz,  
O. A. Kholdeeva\* ..... 5312–5317

Epoxidation of Alkenes with  $\text{H}_2\text{O}_2$  Catalyzed by Dititanium-Containing 19-Tungstodiarсенate(III): Experimental and Theoretical Studies

**Keywords:** Polyoxometalates / Titanium / Epoxidation / Density functional calculations / Hydrogen peroxide

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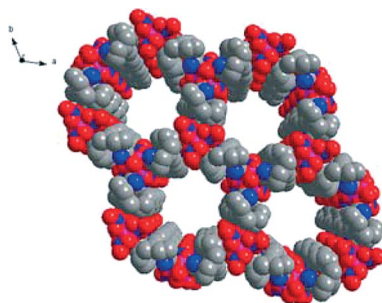
## Ln Metal–Organic Frameworks

Q. Wang, K.-Z. Tang, W.-S. Liu,  
Y. Tang,\* M.-Y. Tan ..... 5318–5325



Synthesis, Crystal Structures, and Luminescent Properties of Noninterpenetrating (6,3) Type Network Lanthanide Metal–Organic Frameworks Assembled by a New Semirigid Bridging Ligand

**Keywords:** Lanthanides / Metal–organic frameworks / Semirigid bridging ligands / Homometallic compounds / Luminescence



A new semirigid bridging ligand, 2,5-dimethyl-1,4-bis[{(2'-benzylaminoformyl)-phenoxy}methyl]benzene (L), was designed to assemble a series of rare noninterpenetrating (6,3) type network metal–organic frameworks with lanthanide cations, namely  $[\{Ln_2(NO_3)_6L_3\} \cdot (H_2O)_2 \cdot (CHCl_3)]_n$ . The luminescent properties of the  $Sm^{III}$ ,  $Eu^{III}$ ,  $Tb^{III}$ , and  $Dy^{III}$  MOFs were studied in detail.

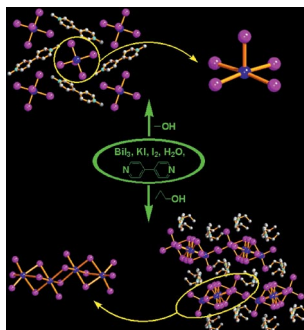
## Viologen Iodobismuthates

Y. Chen, Z. Yang, C.-X. Guo, C.-Y. Ni,  
Z.-G. Ren, H.-X. Li,  
J.-P. Lang\* ..... 5326–5333



Iodine-Induced Solvothermal Formation of Viologen Iodobismuthates

**Keywords:** Semiconductors / Solvothermal synthesis / Bismuth / Iodine / Viologens



Four viologen iodobismuthate complexes were generated from the solvothermal reactions of  $BiI_3$ ,  $I_2$ ,  $KI$ , 4,4'-bipyridine, alcohols and a small amount of water in MeCN. The optical, electrical conductivity and dielectric properties of the products were investigated.

\* 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 32 were published online on November 2, 2010