

Dalton Transactions

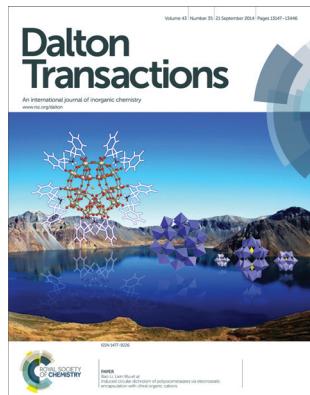
An international journal of inorganic chemistry incorporating Acta Chemica Scandinavica

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Cover

See Bao Li, Lixin Wu et al., pp. 13178–13186.

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Inside cover

See Esther Delgado et al., pp. 13187–13195.

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PERSPECTIVE

13159

An insight into fluorescent transition metal complexes

Y. Y. Chia and M. G. Tay*

Three types of fluorescent emissions were found in the transition metal complexes namely pure fluorescence, thermal activated delayed fluorescence and fluorescence-phosphorescence dual emissions. The characteristics of these fluorescent emissions are reviewed in this perspective.



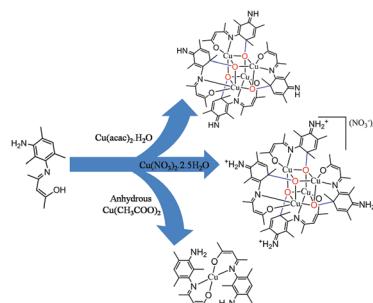
COMMUNICATIONS

13169

Novel tetranuclear copper [2 + 4] cubanes resulting from unprecedented C–O bond formation cum dearomatization

Amit Kumar, Rampal Pandey, Rakesh Kumar Gupta, Mrigendra Dubey and Daya Shankar Pandey*

The synthesis and characterization of tetranuclear copper [2 + 4] cubanes have been described. Notably, hydrated copper(II) salts/precursors reacted with various ligands to afford cubanes via copper mediated C–O bond formation, while anhydrous salt yielded the mononuclear complex.



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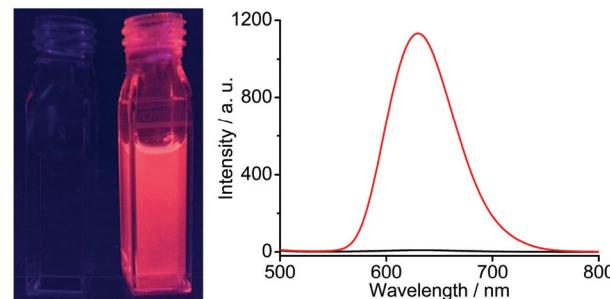
COMMUNICATIONS

13174

Remarkable luminescence enhancement of chloroplatinum(II) complexes of hexaethylene glycol methyl ether substituted 2,6-bis(benzimidazol-2'-yl)-pyridine in water triggered by PF₆⁻

Jianjun Liang, Xiaorui Zheng, Lipeng He,
Huanting Huang and Weifeng Bu*

Upon addition of hexafluorophosphate salts, the nonemissive aqueous solution of a chloroplatinum(II) complex showed a remarkable luminescence enhancement.



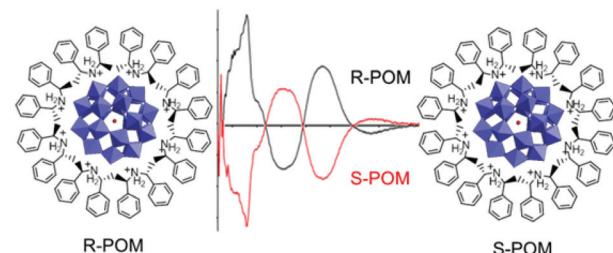
PAPERS

13178

Induced circular dichroism of polyoxometalates via electrostatic encapsulation with chiral organic cations

Yizhan Wang, Lei Shi, Yang Yang, Bao Li* and Lixin Wu*

The encapsulation of POMs with chiral organic cations via electrostatic interactions provides a facile and effective method for constructing optically pure POM-based materials.

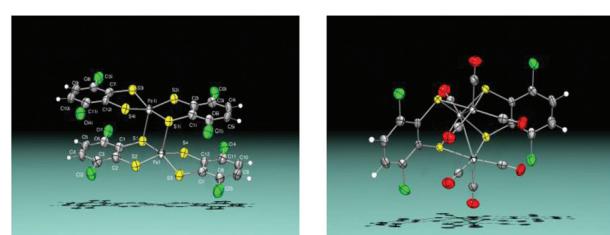


13187

New insights into the chemistry of di- and trimetallic iron dithiolene derivatives. Structural, Mössbauer, magnetic, electrochemical and theoretical studies

Sonia Bruña, Isabel Cuadrado, Esther Delgado,* Carlos J. Gómez-García, Diego Hernández, Elisa Hernández, Rosa Llusar, Avelino Martín, Nieves Menéndez, Victor Polo and Félix Zamora

The synthesis of two new iron dithiolene derivatives and the study of their physical properties are described.

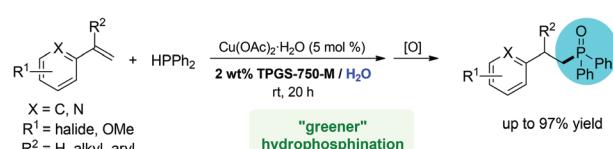


13196

Copper-catalyzed hydrophosphinations of styrenes in water at room temperature

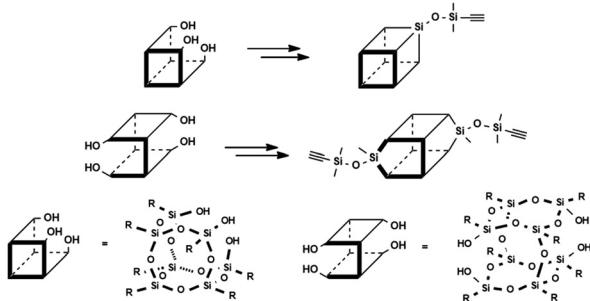
Nicholas A. Isley, Roscoe T. H. Linstadt, Eric D. Slack and Bruce H. Lipshutz*

Copper-catalyzed hydrophosphinations of styrenyl systems in water, at room temperature is herein reported, enabled by our 'designer' surfactant TPGS-750-M.



PAPERS

13201

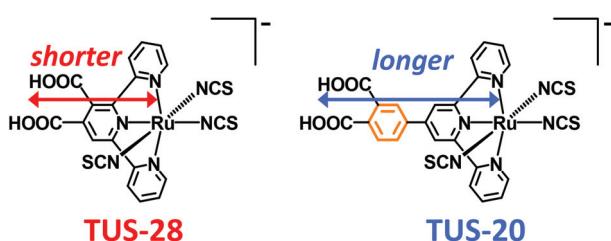


New mono- and diethynylsilsesquioxanes – efficient procedures for their synthesis

Beata Dudziec,* Monika Rzonsowska, Bogdan Marciniec, Dariusz Brzakalski and Bartosz Woźniak

An elegant method for synthesis of a series of new mono- and diethynylsilsesquioxanes is presented. These compounds are formed via an efficient and highly selective one-pot process from silsesquioxanes with reactive Si-OH groups based on sequential condensation, hydrolysis, chlorination and substitution reactions.

13208

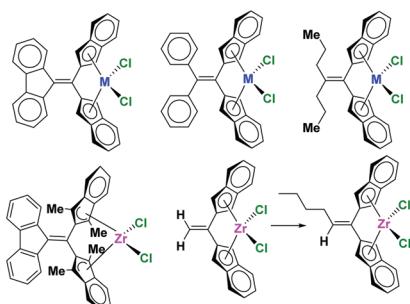


Ruthenium sensitizers having an *ortho*-dicarboxyl group as an anchoring unit for dye-sensitized solar cells: synthesis, photo- and electrochemical properties, and adsorption behavior to the TiO₂ surface

Hironobu Ozawa, Kei Fukushima, Takahito Sugiura, Ayako Urayama and Hironori Arakawa*

A novel ruthenium sensitizer with a 3',4'-dicarboxyterpyridine (**TUS-28**) has been synthesized as an improved model sensitizer of the dye-sensitized solar cells.

13219

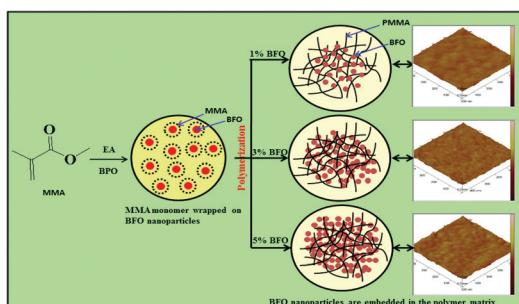


1,1-Olefin-bridged bis-(2-indenyl) metallocenes of titanium and zirconium

Jason G. M. Morton, Haif Al-Shammari, Yunshan Sun, Jiangtao Zhu and Douglas W. Stephan*

Tetrasubstituted alkenes bearing geminal 2-indenyl substituents were synthesized and metallated to form a new class of *ansa* titanium and zirconium metallocene complexes containing a single sp²-hybridized carbon bridge.

13232



Polymethyl methacrylate (PMMA)–bismuth ferrite (BFO) nanocomposite: low loss and high dielectric constant materials with perceptible magnetic properties

Mohaseen S. Tamboli, Prakash K. Palei, Santosh S. Patil, Milind V. Kulkarni, Noormahmad N. Maldar and Bharat B. Kale*

Formation mechanism of PMMA–BFO nanocomposites.

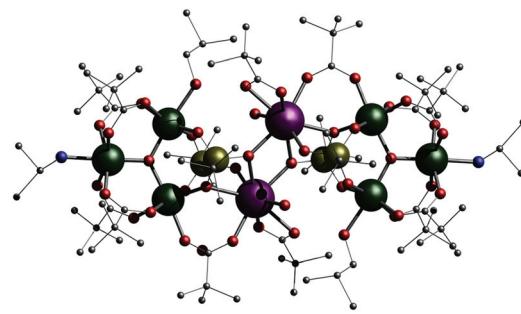
PAPERS

13242

Linking Cr₃ triangles through phosphonates and lanthanides: synthetic, structural, magnetic and EPR studies

Karzan H. Zangana, Eufemio Moreno Pineda, Iñigo J. Vitorica-Yrezabal, Eric J. L. McInnes and Richard E. P. Winpenny*

Reaction of oxo-centered Cr(III) triangles with a lanthanide salt and *t*-butylphosphonate leads to {Cr₆Ln₂} compounds. Magnetic and EPR studies show the ground state of the individual Cr triangles is $S = 3/2$ with little communication between them.

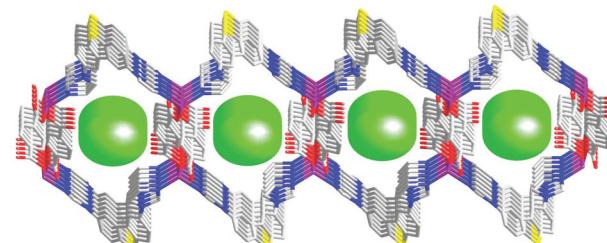


13250

Syntheses, crystal structures, and optical properties of five metal complexes constructed from a V-shaped thiophene-containing ligand and different dicarboxylate ligands

Zhi-Qiang Shi, Zi-Jian Guo and He-Gen Zheng*

Five new metal complexes constructed from the V-shaped ligand 2,8-di(1*H*-imidazol-1-yl)dibenzothiophene (DIDP) and different aromatic dicarboxylic acids have been synthesized and structurally characterized in detail. All these complexes show optical semiconductive properties.

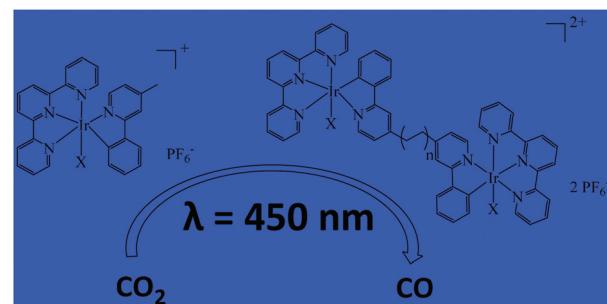


13259

Mono- and bimetallic Ir(III) based catalysts for the homogeneous photocatalytic reduction of CO₂ under visible light irradiation. New insights into catalyst deactivation

Richard O. Reithmeier, Simon Meister, Bernhard Rieger,* Armin Siebel, Martin Tschurl, Ulrich Heiz and Eberhardt Herdtweck

The photocatalytic performance for the reduction of CO₂ as well as deactivation pathways of novel mono- and bimetallic Ir(III) based catalysts are outlined.

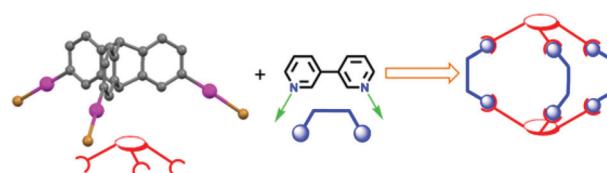


13270

Triptycene based organometallic complexes: a new class of acceptor synthons for supramolecular ensembles

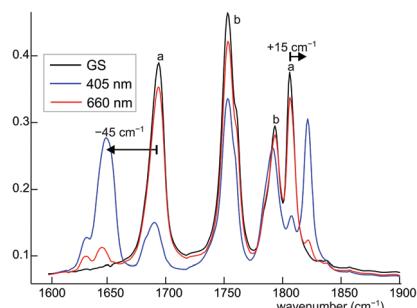
Sourav Chakraborty, Snehasish Mondal, Sourav Bhowmick, Jianqiu Ma, Hongwei Tan, Subhadip Neogi and Neeladri Das*

New triptycene based organometallic complexes have been synthesized and subsequently used for design of the triptycene motif containing nanoscalar trigonal prisms. Flexible 3,3'-bipyridine is employed as a donor unit.



PAPERS

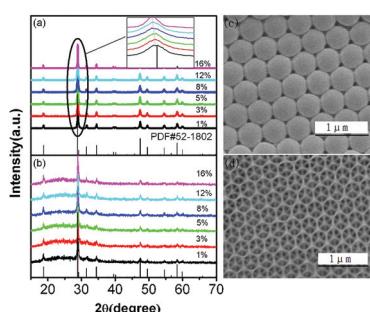
13278

**NO-binding in $\{\text{Ru}(\text{NO})_2\}^8$ -type $[\text{Ru}(\text{NO})_2(\text{PR}_3)_2\text{X}] \cdot \text{BF}_4^-$ compounds**

Anna K. E. Gallien, Dominik Schaniel,* Theo Woike and Peter Klüfers*

Electron-poor $\{\text{Ru}(\text{NO})_2\}^8$ -type dinitrosyls exhibit an $\text{Ru}^{II}(\text{NO}^+)(\text{NO}^-)$ moiety, electron-rich entities show an $\text{Ru}^0(\text{NO}^+)_2$ situation, borderline compounds show both forms as photo-excitatable species.

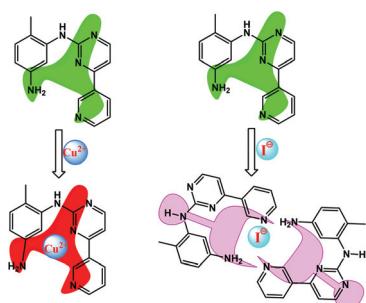
13293

**Self-assembly and modified luminescence properties of $\text{NaY}(\text{MoO}_4)_2 \cdot \text{Tb}^{3+}, \text{Eu}^{3+}$ inverse opals**

Shaobo Cui, Yongsheng Zhu, Wen Xu, Pingwei Zhou, Lei Xia, Xu Chen, Hongwei Song* and Wei Han*

Three-dimensional (3D) inverse opal photonic crystals can not only modulate the emissions of the inserted emitters, they also have the advantage of a large surface to volume ratio, the concentration quenching and energy transfer process can be greatly suppressed.

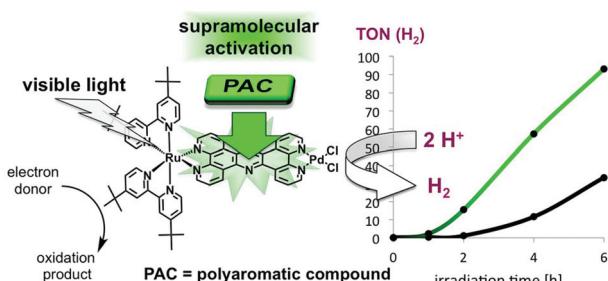
13299

**Imatinib intermediate as a two in one dual channel sensor for the recognition of Cu^{2+} and I^- ions in aqueous media and its practical applications**

Samadhan R. Patil, Jitendra P. Nandre, Devising Jadhav, Shilpa Bothra, S. K. Sahoo, Manisha Devi, Chullikkattil P. Pradeep, Pramod P. Mahulikar* and Umesh D. Patil*

An imatinib intermediate was developed for the colorimetric sensing of Cu^{2+} ions in aqueous solution.

13307

**Supramolecular activation of a molecular photocatalyst**

Michael G. Pfeffer, Christian Pehlken, Robert Staehle, Dieter Sorsche, Carsten Streb and Sven Rau*

Supramolecular activation of an intramolecular ruthenium palladium hydrogen evolving photocatalyst using polyaromatic compounds.

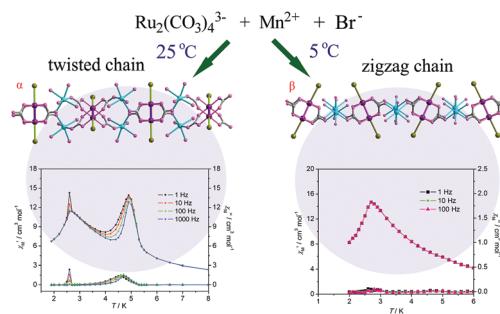
PAPERS

13316

Isomeric chain structures of $\{[\text{Mn}(\text{H}_2\text{O})_4]_2\text{-Ru}_2(\text{CO}_3)_4\text{Br}_2\}_n^{n-}$: syntheses, structural diversity and magnetic properties

Xiao-Feng Hou, Yan-Yan Jia, Jian-Hui Yang, Zhi Cao* and Bin Liu*

Isomeric (twisted and zigzag) double-chain $\{[\text{Mn}(\text{H}_2\text{O})_4]_2\text{Ru}_2(\text{CO}_3)_4\text{Br}_2\}_n^{n-}$ complexes show two-step magnetic ordering (5.0 K and 2.6 K) and metamagnetic behavior (1.2 kOe).

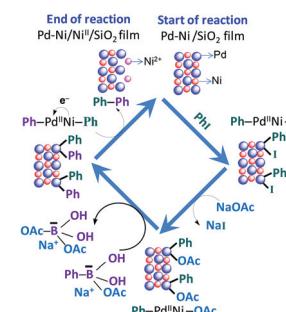


13325

Pd–Ni alloy nanoparticle doped mesoporous SiO_2 film: the sacrificial role of Ni to resist Pd-oxidation in the C–C coupling reaction

Jony Saha, Koushik Bhowmik, Indranee Das and Goutam De*

A Pd–Ni alloy nanoparticle doped mesoporous SiO_2 film shows good catalytic activity for C–C coupling with recyclability because the Ni in Pd–Ni inhibits Pd-oxidation.

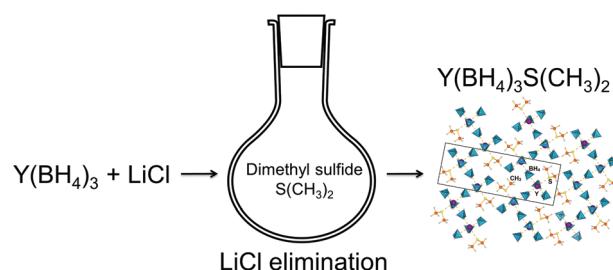


13333

Novel solvates $\text{M}(\text{BH}_4)_3\text{S}(\text{CH}_3)_2$ and properties of halide-free $\text{M}(\text{BH}_4)_3$ ($\text{M} = \text{Y}$ or Gd)

Morten B. Ley, Mark Paskevicius, Pascal Schouwink, Bo Richter, Drew A. Sheppard, Craig E. Buckley and Torben R. Jensen*

Extraction of rare earth metal borohydrides with dimethyl sulfide produces $\text{M}(\text{BH}_4)_3\text{S}(\text{CH}_3)_2$ ($\text{M} = \text{Y}$ or Gd) compounds, which eliminates halide salts.

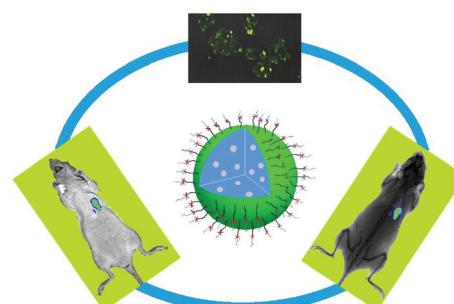


13343

One-pot synthesis of PEG modified $\text{BaLuF}_5:\text{Gd/Yb}/\text{Er}$ nanoprobes for dual-modal *in vivo* upconversion luminescence and X-ray bioimaging

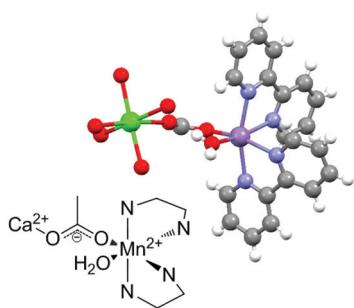
Ling Rao, Wei Lu, Tianmei Zeng, Zhigao Yi, Haibo Wang, Hongrong Liu and Songjun Zeng*

PEG-modified $\text{BaLuF}_5:\text{Gd/Yb}/\text{Er}$ nanoparticles synthesized by a hydrothermal method for *in vivo* and *in vitro* bioimaging and X-ray bioimaging.



PAPERS

13349

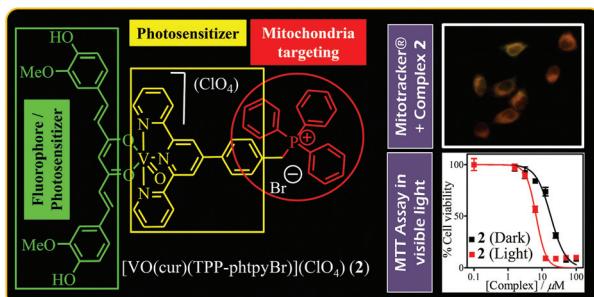


Preparation and properties of a calcium(II)-based molecular chain decorated with manganese(II) butterfly-like complexes

A. C. Benniston,* S. Melnic,* C. Turta, A. B. Arauzo, J. Bartolomé,* E. Bartolomé, R. W. Harrington and M. R. Probert

The room temperature reaction of $[\text{Mn}_2\text{O}_2(\text{bipy})_4](\text{ClO}_4)_3$ ($\text{bipy} = 2,2'$ -bipyridine) with $\text{Ca}(\text{CHCl}_2\text{COO})_2$ in methanol produced a yellow crystalline material.

13358

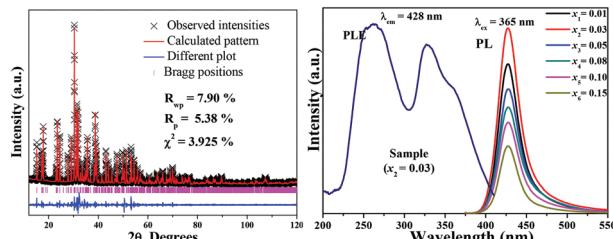


Oxovanadium(IV) complexes of curcumin for cellular imaging and mitochondria targeted photocytotoxicity

Bhabatosh Banik, Kumar Somyajit, Ganesh Nagaraju* and Akhil R. Chakravarty*

Terpyridyl-oxovanadium(IV) complex of curcumin having a triphenylphosphonium pendant shows remarkable visible light-induced photocytotoxicity in HeLa/MCF-7 cells targeting the mitochondria causing ROS-mediated apoptosis.

13370

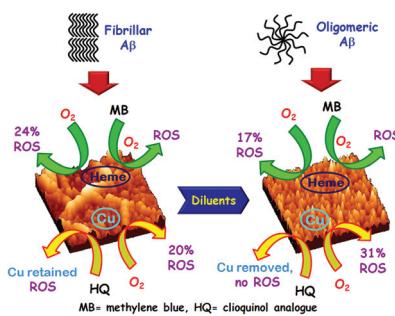


Synthesis, structure and luminescence properties of new chloro-germanate phosphors $\text{Ca}_3\text{GeO}_4\text{Cl}_2:\text{Eu}^{2+}$

Xue Chen, Zhiguo Xia* and Quanlin Liu

The crystal structure and luminescence properties of blue-emitting chloro-germanate phosphors $\text{Ca}_3\text{GeO}_4\text{Cl}_2:\text{Eu}^{2+}$ are discussed.

13377



Self-assembly of stable oligomeric and fibrillar aggregates of $\text{A}\beta$ peptides relevant to Alzheimer's disease: morphology dependent Cu/heme toxicity and inhibition of PROS generation

Kushal Sengupta, Sudipta Chatterjee, Debajyoti Pramanik, Somdatta Ghosh Dey* and Abhishek Dey*

Large and small aggregates of $\text{A}\beta$ peptides, relevant to Alzheimer's disease, are stabilized on electrodes using self-assembly.

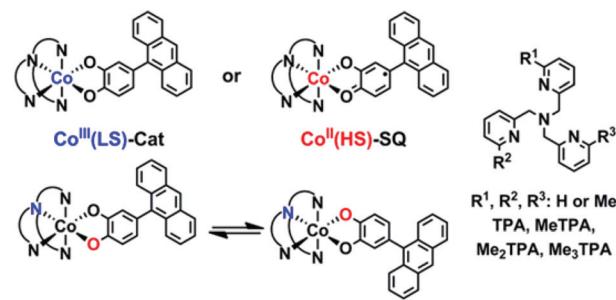
PAPERS

13384

Synthesis, magnetic properties and dynamic behavior of cobalt complexes with an anthracene-containing dioxolene ligand

Koichi Katayama, Masakazu Hirotsu,* Isamu Kinoshita and Yoshio Teki*

Magnetic properties and dynamic behavior of cobalt complexes of an anthracene-containing dioxolene ligand are affected by methyl groups on TPA.

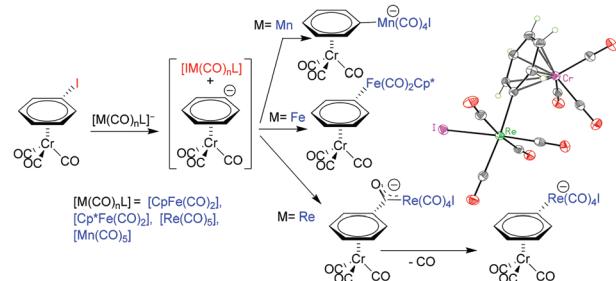


13392

A halogenophilic pathway in the reactions of transition metal carbonyl anions with $[(\eta^6\text{-iodobenzene})\text{Cr}(\text{CO})_3]$

Petr K. Sazonov,* Vasiliy A. Ivushkin, Victor N. Khrustalev, Natal'ya G. Kolotyrkina and Irina P. Beletskaya*

Formal nucleophilic substitution in $[(\eta^6\text{-iodobenzene})\text{Cr}(\text{CO})_3]$ begins with the attack of the carbonylmettleate at iodine to form the aryl carbanion and $[\text{IM}(\text{CO})_n\text{L}]^-$, which then give all of the variety of products observed.

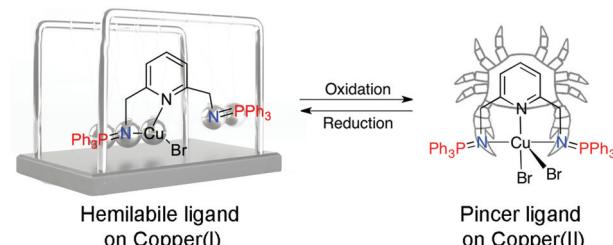


13399

Versatile coordination chemistry of a bis(methyliminophosphoranyl)pyridine ligand on copper centres

Thibault Cheisson and Audrey Auffrant*

Hemilabile behaviour vs. pincer coordination mode.

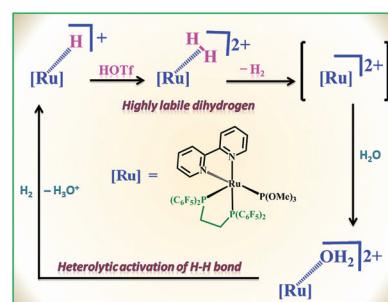


13410

Synthesis, characterization and reactivity studies of electrophilic ruthenium(II) complexes: a study of H₂ activation and labilization

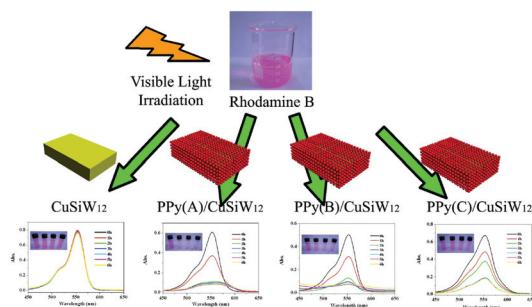
K. S. Naidu, Yogesh P. Patil, Munirathinam Nethaji and Balaji R. Jagirdar*

Synthesis of some new highly electrophilic ruthenium complexes bearing the 1,2-bis(dipentafluorophenyl phosphino)ethane ligand and their reactivity studies towards activation and labilization of molecular hydrogen are reported.



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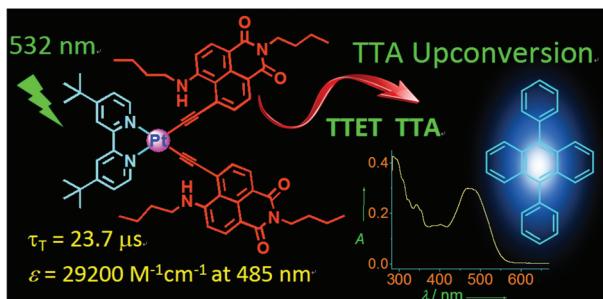


Loading of PPy on the surface of transition metal coordination polymer modified polyoxometalate (TMCP/POM): a feasible strategy to obtain visible light active and high quantum yields POM based photocatalyst

Xinxin Xu, Xin Gao, Zhongping Cui, Xiaoxia Liu* and Xia Zhang*

PPy loaded **TMCP/POM** composite materials were fabricated successfully and display better photocatalytic activity than **TMCP/POM** under visible light irradiation.

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The effect of the regioisomeric naphthalimide acetylides ligands on the photophysical properties of N^N Pt(II) bisacetylides complexes

Lianlian Liu, Caishun Zhang and Jianzhang Zhao*

N^N Pt(II) complexes containing regiosomeric naphthalimide acetylides ligands were prepared and were found to show different photophysical properties.