

IN THIS ISSUE

ISSN 1144-0546 CODEN NJCHES 29(11) 1361-1484 (2005)

In this issue...

Chemical Science – a ‘snapshot’ of the latest news and developments across the chemical sciences. See p. C81
www.rsc.org/chemicalscience



Cover

See Kilian Muñiz, page 1371.
 The cover shows the mechanistic representation of an enantioselective alkene diamination employing a bisimido osmium reagent, which was developed at the Kekulé-Department of Bonn University. The background displays a view of the August-Kekulé-statue and the traditional Bonn Chemistry Department, which was designed by August Wilhelm von Hofmann and erected in 1864 as the world's largest chemistry department at that time.
 Image reproduced by permission of Kilian Muñiz, *New J. Chem.*, 2005, **29**, 1371.

CHEMICAL SCIENCE

C81

Drawing together the research highlights and news from all RSC publications, *Chemical Science* provides a ‘snapshot’ of the latest developments across the chemical sciences showcasing newsworthy articles, as well as the most significant scientific advances.

Chemical Science

November 2005/Volume 2/Issue 11

www.rsc.org/chemicalscience

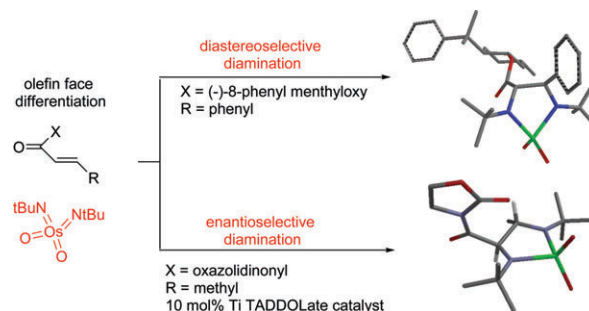
PERSPECTIVE

1371

The development of asymmetric diamination of alkenes with imido-osmium reagents

Kilian Muñiz*

The development of the first protocols for the asymmetric diamination of alkenes are summarised, including a discussion on the general reaction parameters and on the general structure of the reaction products.



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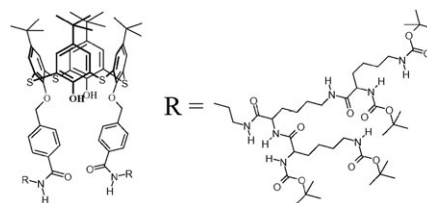
LETTERS

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Lysine dendrimers based on thiacalix[4]arene core moieties as molecular scaffolds for supramolecular host systems

Dietmar Appelhans,* Mario Smet, Galina Khimich, Hartmut Komber, Dieter Voigt, Pavel Lhoták, Dirk Kuckling and Brigitte Voit

Cone-type 2nd generation lysine dendrimer can be used as supramolecular host.

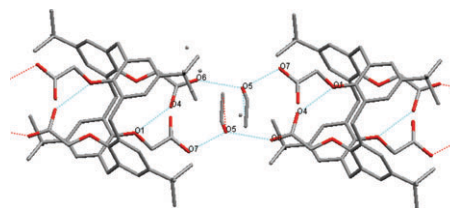


1390

Fibriform one-dimensional hydrogen-bonded network composed of 1,2-*alt* calix[4]arene tetra acetic acid

Wei Wang, Shuling Gong,* Yuanyin Chen and Jianpin Ma

1,2-*alt* *p*-*tert*-Butylcalix[4]arene tetraacid can self-assemble *via* hydrogen-bonds into a one dimensional network with channel of diameter *ca.* 0.5 nm, and ethanol molecules were incorporated into the network.

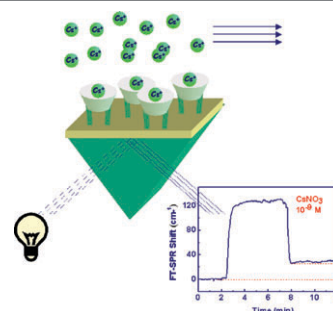


1393

Ordered anchored cavities at work: a new and rapid SPR-based method for the detection of trace amounts of Cs⁺

Giuseppe Arena,* Annalinda Contino, Roberta D'Agata, Carmelo Sgarlata and Giuseppe Spoto*

Fourier transform-surface plasmon resonance (FT-SPR) using Au(111) chips modified by a 1,3-alternate calix[4]arene-crown-6 derivative is proposed as a tool to detect Cs⁺ at the *ppb* level.

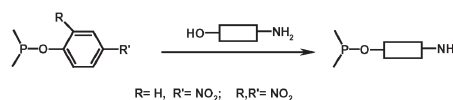


1396

Highly selective *O*-phosphitylation of amino alcohols using P^{III} reagents containing 4-nitro and 2,4-dinitro aryloxy leaving groups

Wojciech Dabkowski,* Alfred Ozarek and Izabela Tworowska

Design of *O*-chemoselective phosphitylating reagents containing aryloxy leaving groups.

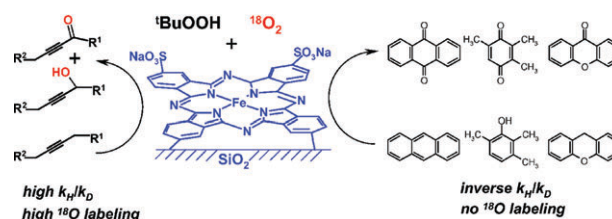


1400

Mechanistic diversity of the selective oxidations mediated by supported iron phthalocyanine complexes

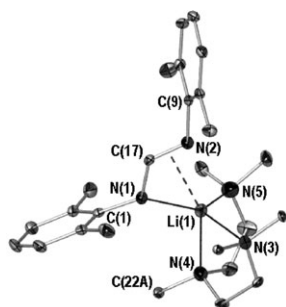
Céline Pérollier, Corinne Pergrale-Mejean and Alexander B. Sorokin*

Iron phthalocyanines relevant to porphyrin complexes provide efficient catalytic oxidations with very different mechanistic features as evidenced by ¹⁸O labelling and kinetic isotope effect studies.



LETTERS

1404



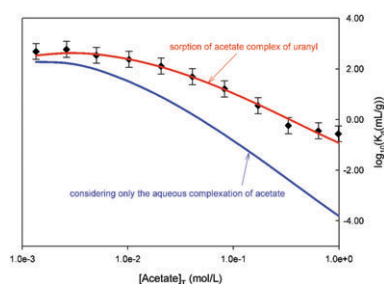
Bulky formamidinate complexes of lithium: the first examples of $\eta^2:\eta^1\text{-C}\equiv\text{N},\text{N}'$ metal amidinate coordination

Marcus L. Cole, Aaron J. Davies, Cameron Jones and Peter C. Junk*

The lithium complexes $[\text{Li}\{\text{N}(\text{Ar})\text{CHN}(\text{Ar})\}(\text{pmdeta})]$, where $\text{Ar} = 2,6\text{-R}_2\text{C}_6\text{H}_3$ ($\text{R} = \text{Me}, \text{Et}$ and $i\text{Pr}$), are reported. Two compounds display the new metal-amidinate coordination mode $\eta^2:\eta^1\text{-C}\equiv\text{N},\text{N}'$.

PAPERS

1409

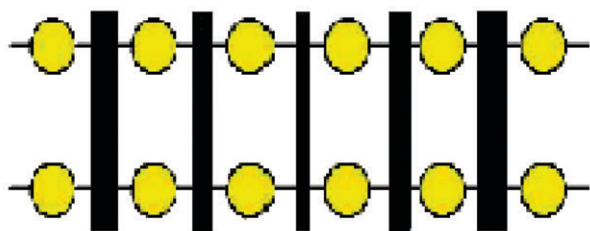


Effect of aqueous acetic, oxalic and carbonic acids on the adsorption of uranium(VI) onto α -alumina

Cyrille Alliot, Pierre Vitorge, Lionel Bion and Florence Mercier

The synergic effect of acetate on uranium(VI) adsorption onto α -alumina: result of the sorption of uranium cationic complexes.

1416

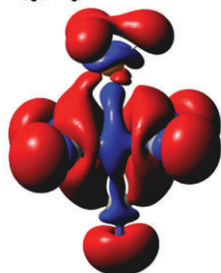
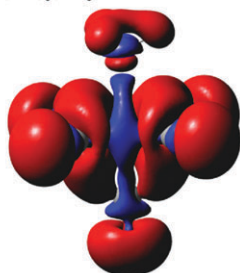


Doubly-linked 1D coordination polymers derived from 2 : 2 metallamacrocyclic $\text{Ni}(\text{II})$ complexes with bipodal acylthiourea and *exo*-bidentate *N*-donor bridging ligands: toward potentially selective chemical sensors?

Oren Hallale, Susan A. Bourne* and Klaus R. Koch*

On exposure to various solvents, one coordination compound with ligand 1,2-di(4-pyridyl)ethylene undergoes a rapid and fully reversible colour change, making it a potential chemical sensor.

1424

 $\text{Mo}(\text{CO})_5(\text{PH}_3)$  $\text{Mo}(\text{CO})_5(\text{NH}_3)$ 

Insight into metal–phosphorus bonding from analysis of the electronic structure of redox pairs of metal–phosphine complexes

Tom Leyssens,* Daniel Peeters, A. Guy Orpen and Jeremy N. Harvey*

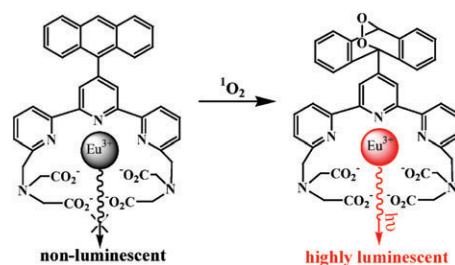
Metal–phosphine bonds involve back-bonding, as shown by structural effects upon oxidation and finite difference Fukui function.

1431

Synthesis and time-resolved fluorimetric application of a europium chelate-based phosphorescence probe specific for singlet oxygen

Bo Song, Guilan Wang, Mingqian Tan and Jingli Yuan*

This new $^1\text{O}_2$ phosphorescence probe has been used for highly sensitive time-resolved luminescence detection of $^1\text{O}_2$ generated from horseradish peroxidase catalyzed oxidation of indole-3-acetic acid, and photosensitization of 5,10,15,20-tetrakis (*N*-methyl-4-pyridyl)-21*H*,23*H*-porphine.

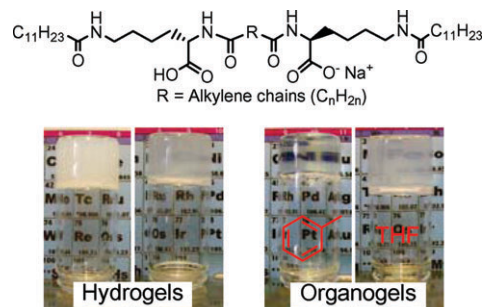


1439

Novel dumbbell-form low-molecular-weight gelators based on L-lysine: their hydrogelation and organogelation properties

Masahiro Suzuki,* Manami Nanbu, Mariko Yumoto, Hirofusa Shirai and Kenji Hanabusa

New L-lysine-based, dumbbell-form, low-molecular-weight gelators, in which two L-lysine derivatives are linked by alkylene spacers, function as amphiphilic gelators that can gel both aqueous solutions and organic solvents.

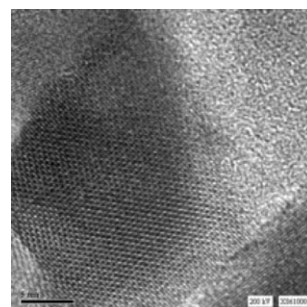


1445

The sonochemical and microwave-assisted synthesis of nanosized YAG particles

Yana Letichevsky, Lena Sominski, Jose Calderon Moreno and Aharon Gedanken*

Nanoparticles of YAG were prepared by sonochemistry and by microwave radiation. The advantages of the processes are their simplicity, the short reaction time and cheap preparation of the YAG structure.

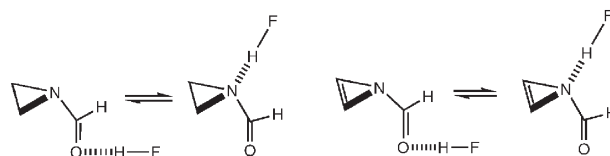


1450

A theoretical study of the influence of nitrogen angular constraints on the properties of amides: rotation/inversion barriers and hydrogen bond accepting abilities of *N*-formylaziridine and -azirine

Ibon Alkorta,* Carlos Cativiela, José Elguero, Ana M. Gil and Ana I. Jiménez

MP2/6-311++G** calculations have been carried out on *N,N*-dimethylformamide, *N*-formylaziridine and *N*-formylazirine. The results provide a picture of the influence of ring strain on the properties of amides.

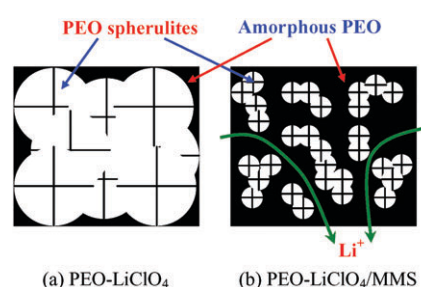


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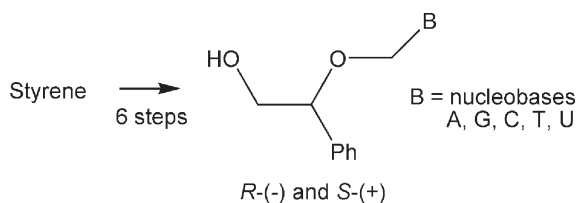
Conductivities and transport properties of microporous molecular sieves doped composite polymer electrolyte used for lithium polymer battery

Jingyu Xi, Yuxia Bai, Xinping Qiu,* Wentao Zhu, Liquan Chen and Xiaozhen Tang

Compared with the continuous crystalline PEO formed by the connections of adjacent large PEO spherulites in PEO- LiClO_4 , there exists in PEO- LiClO_4 /MMS composite polymer electrolyte a much more continuous amorphous PEO, which is very important for the transporting of Li^+ .



1461

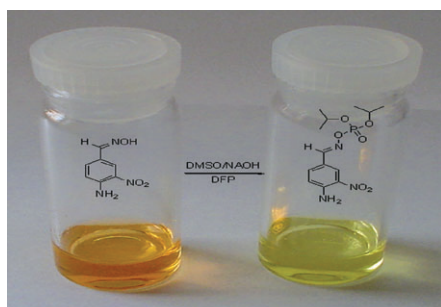


Synthesis, conformation and antiviral activity of nucleoside analogues with the (2-hydroxy-1-phenylethoxy)methyl glycone—a family of nucleoside analogues related to d4T and aciclovir

David F. Ewing,* Virginie Glaçon, Christophe Len* and Grahame Mackenzie

A family of ten nucleoside analogues, with similarities to d4T and aciclovir, has been obtained from the (2-hydroxy-1-phenylethoxy)methyl glycone. Some antiviral activity is observed.

1469

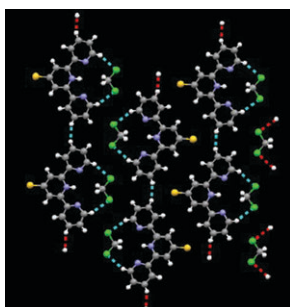


Colorimetric detection of chemical warfare simulants

Karl J. Wallace, Jeroni Morey,* Vincent M. Lynch and Eric V. Anslyn*

Two simple chromogenic indicators containing different supernucleophilic moieties have been synthesized. Upon phosphorylation with two chemical warfare agent (CWA) simulants, a colour change is observed.

1475



2,2':6',2''-Terpyridine-4'(1'H)-thione: a missing link in metallosupramolecular chemistry

Edwin C. Constable,* B. A. Hermann, Catherine E. Housecroft, Markus Neuburger, Silvia Schaffner and Lukas J. Scherer

2,2':6',2''-Terpyridine-4'(1'H)-thione has been prepared and a representative alkylation with an electrophilic Fréchet dendrimer is presented. Oxidation yields a disulfide which forms a tetranuclear [4 + 4] metallomacrocycle with iron(II).


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