

**Cover (far left)**

Complexity of catalysis in sulfur ylide-mediated epoxidations. As in the Escher picture, one can often rationalise a small subset of reactions (water flows) by considering a selection of appropriate factors. If all of the factors responsible for control are not being considered in the analysis, or are poorly understood (like the incorrect perspectives in the Escher picture) it is impossible to rationalise all of the data. (pp. 2639–2643).

M.C. Escher's "Waterfall" © 2003 Cordon Art B.V. – Baarn – Holland. All rights reserved.

**Inside cover (left)**

3D photonic crystal lattices prepared by a self-assembly colloidal crystallisation process. The optical properties of these lattices point to their application as functional photonic bandgap optical circuit components (pp. 2644–2651).

# contents

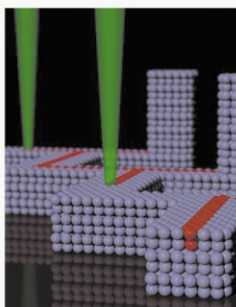
## FOCUS ARTICLE

2639

### The photonic opal – the jewel in the crown of optical information processing

Geoffrey Ozin

Nina Hall discusses the work of Geoffrey Ozin's research group at the University of Toronto, where it has recently developed a self-assembly colloidal crystallization process for the fabrication of photonic crystals, pointing to the cost-effective production of functional photonic bandgap optical circuit components.



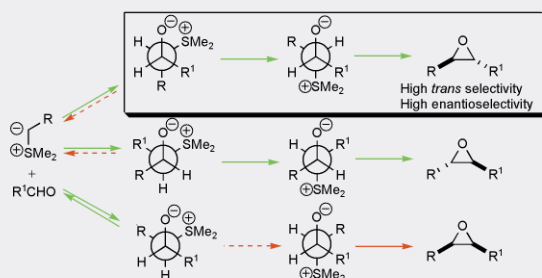
## FEATURE ARTICLE

2644

### The complexity of catalysis: origins of enantio- and diastereocontrol in sulfur ylide mediated epoxidation reactions

Varinder K. Aggarwal\* and Jeffery Richardson

As in the Escher picture, one can often rationalise a small subset of reactions (water flows) by considering a selection of appropriate factors. Once all of the factors responsible for control are used in the analysis it is possible to rationalise the vast array of results in the literature. However, like the Escher picture shown, it is not possible to make sense of the whole picture if all of the factors are not used or are poorly understood.



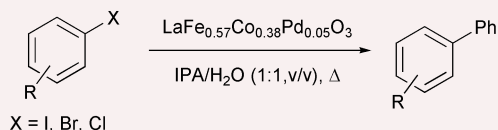
## COMMUNICATIONS

2652

### Palladium-containing perovskites: recoverable and re-useable catalysts for Suzuki couplings

Martin D. Smith, Antonia F. Stepan, Chandrashekar Ramarao, Paul E. Brennan and Steven V. Ley\*

Palladium-containing perovskites ( $\text{LaFe}_{0.57}\text{Co}_{0.38}\text{Pd}_{0.05}\text{O}_3$ ) have been exploited as recoverable and re-useable catalysts in Suzuki coupling reactions; residual levels of Pd after removal of the catalyst by filtration are low (2 ppm) despite evidence that the reaction is occurring *via* a homogeneous process.



Chemical Communications  
<http://www.rsc.org/chemcomm>

#### EDITORIAL STAFF

Managing editor

Sarah Thomas

Assistant editors

Sula Armstrong Amanda Hardy

Caroline Evans Lorna Jack

Publishing assistants

Jayne Drake Lois Kershaw

Jayne Gough Gareth Packham

Crystallographic data editor

Kirsty Anderson

Team Leader, Serials Production

Helen Saxton

Production editorial staff

Michelle Canning Carole Nerney

Sandra Jones Michael Smith

Hamish Kidd Ziva Whitelock

Kathryn Lees Ken Wilkinson

Lee Martin

Graphics

Scott Ollington

Editorial secretary (production)

Sarah James

Publisher, Journals and Reviews

Adrian Kybett

*Chemical Communications* (print: ISSN 1359-7345; electronic: ISSN 1364-548X) is published 24 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF. All orders accompanied by payment should be sent directly to Turpin Distribution Services Ltd, Blackhorse Road, Letchworth, Herts, UK SG6 1HN. 2003 Annual (print + electronic) subscription price: £878; US\$1450. 2003 Annual (electronic) subscription price: £790; US\$1305. Customers in Canada will be subject to a surcharge to cover GST. Customers in the EU subscribing to the electronic version only will be charged VAT. If you take an institutional subscription to any RSC journal you are entitled to free, site-wide web access to that journal. You can arrange access via Internet Protocol (IP) address at [www.rsc.org/ip](http://www.rsc.org/ip). Customers should make payments by cheque in sterling payable on a UK clearing bank or in US dollars payable on a US clearing bank. Periodicals postage paid at Rahway, NJ, USA and at additional mailing offices. Airfreight and mailing in the USA by Mercury Airfreight International Ltd., 365 Blair Road, Avenel, NJ 07001, USA. US Postmaster: send address changes to *Chemical Communications*, c/o Mercury Airfreight International Ltd., 365 Blair Road, Avenel, NJ 07001. All despatches outside the UK by Consolidated Airfreight.

PRINTED IN THE UK.

Advertisement sales: Tel +44 (0)1223 432243; Fax +44 (0)1223 426017; E-mail [advertising@rsc.org](mailto:advertising@rsc.org)

© The Royal Society of Chemistry, 2003. Apart from fair dealing for the purposes of research or private study, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publisher or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency in the UK. US copyright law applicable to users in the USA. The Royal Society of Chemistry takes reasonable care in the preparation of this publication but does not accept liability for the consequences of any errors or omissions.

© The paper used in this publication meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper).

Royal Society of Chemistry: Registered Charity No. 207890.

#### EDITORIAL BOARD

Chairman

**Andrew B. Holmes**, Cambridge, UK  
E-mail: [abh1@cam.ac.uk](mailto:abh1@cam.ac.uk)

**Frank Allen**, CCDC, Cambridge, UK  
E-mail: [allen@ccdc.cam.ac.uk](mailto:allen@ccdc.cam.ac.uk)

**Jerry L. Atwood**, Columbia, MO, USA

E-mail: [rsc.chemcomm@missouri.edu](mailto:rsc.chemcomm@missouri.edu)

**Shankar Balasubramanian**, Cambridge, UK  
E-mail: [sb10031@cam.ac.uk](mailto:sb10031@cam.ac.uk)

**Makoto Fujita**, Tokyo, Japan

E-mail: [mfujita@appchem.t.u-tokyo.ac.jp](mailto:mfujita@appchem.t.u-tokyo.ac.jp)

**Alois Fürstner**, Mülheim, Germany

E-mail: [fuerstner@mpi-muelheim.mpg.de](mailto:fuerstner@mpi-muelheim.mpg.de)

**Donald Hilvert**, Zurich, Switzerland

E-mail: [hilvert@org.chem.ethz.ch](mailto:hilvert@org.chem.ethz.ch)

**Wolfgang Hölderich**, Aachen, Germany

E-mail: [Hoelderich@rwth-aachen.de](mailto:Hoelderich@rwth-aachen.de)

**Mir Wais Hosseini**, Strasbourg, France

E-mail: [hosseini@chimie.u-strasbg.fr](mailto:hosseini@chimie.u-strasbg.fr)

**Barbara Imperiali**, Cambridge, MA, USA

E-mail: [chemcomm@mit.edu](mailto:chemcomm@mit.edu)

**Roeland J. M. Nolte**, Nijmegen, The Netherlands

E-mail: [nolte@sci.kun.nl](mailto:nolte@sci.kun.nl)

**Dermot O'Hare**, Oxford, UK

E-mail: [chemcomm@chem.ox.ac.uk](mailto:chemcomm@chem.ox.ac.uk)

**Colin Raston**, Perth, Australia

E-mail: [clraston@chem.uwa.edu.au](mailto:clraston@chem.uwa.edu.au)

**David Rice**, Reading, UK

E-mail: [c.foote@reading.ac.uk](mailto:c.foote@reading.ac.uk)

**Ian Rothwell**, West Lafayette, IN, USA

E-mail: [chemcomm@purdue.edu](mailto:chemcomm@purdue.edu)

**Clément Sanchez**, Paris, France

E-mail: [clem@ccr.jussieu.fr](mailto:clem@ccr.jussieu.fr)

**James D. White**, Corvallis, OR, USA

E-mail: [james.white@orst.edu](mailto:james.white@orst.edu)

#### SCIENTIFIC EDITORS

The Scientific Editors welcome enquiries from potential authors regarding the submission and scientific content of papers. For the submission of manuscripts please

see <http://www.rsc.org/chemcomm>

**Professor Dermot O'Hare**

Inorganic Chemistry Laboratory

University of Oxford

Oxford, UK

E-mail: [chemcomm@chem.ox.ac.uk](mailto:chemcomm@chem.ox.ac.uk)

**Professor Donald Hilvert**

Laboratory of Organic Chemistry

ETH Zentrum, Zurich, Switzerland

E-mail: [hilvert@org.chem.ethz.ch](mailto:hilvert@org.chem.ethz.ch)

**Professor Mir Wais Hosseini**

Lab de Chimie de Coordination Organique

Université Louis Pasteur, Strasbourg, France

E-mail: [hosseini@chimie.u-strasbg.fr](mailto:hosseini@chimie.u-strasbg.fr)

**Professor Alois Fürstner**

Max-Planck-Institut für Kohlenforschung

Müllheim/Ruhr, Germany

E-mail: [fuerstner@mpi-muelheim.mpg.de](mailto:fuerstner@mpi-muelheim.mpg.de)

#### ASSOCIATE EDITORS

Manuscripts from the Americas should be submitted to the appropriate Associate Editor. Manuscripts from other regions should be submitted to the Cambridge Editorial Office. For information on how to submit your manuscript see <http://www.rsc.org/chemcomm>

Manuscripts from the Americas

SUPRAMOLECULAR

**Professor Jerry L. Atwood**

123 Chemistry Building

University of Missouri

Columbia, MO, USA

E-mail: [rsc.chemcomm@missouri.edu](mailto:rsc.chemcomm@missouri.edu)

CHEMICAL BIOLOGY

**Professor Barbara Imperiali**

Department of Chemistry

Massachusetts Institute of Technology

Cambridge, MA, USA

E-mail: [chemcomm@mit.edu](mailto:chemcomm@mit.edu)

INORGANIC, ORGANOMETALLIC AND MATERIALS

**Professor Ian Rothwell**

Department of Chemistry

Purdue University,

West Lafayette, IN, USA

E-mail: [chemcomm@purdue.edu](mailto:chemcomm@purdue.edu)

ORGANIC

**Professor James D. White**

Department of Chemistry

Oregon State University

Corvallis, OR, USA

E-mail: [james.white@orst.edu](mailto:james.white@orst.edu)

Manuscripts from all other regions

**Dr Sarah Thomas**

*Chemical Communications*

Royal Society of Chemistry

Thomas Graham House

Science Park, Milton Road

Cambridge, UK. CB4 0WF

Tel (+44) (0) 1223 420066

Fax (+44) (0) 1223 420247

E-mail: [chemcomm@rsc.org](mailto:chemcomm@rsc.org)

#### EDITORIAL ADVISORY BOARD

**Takuzo Aida**, Tokyo, Japan

**Dario Braga**, Bologna, Italy

**Duncan W. Bruce**, Exeter, UK

**Jillian M. Buriak**, Edmonton, Canada

**David H. G. Crout**, Warwick, UK

**Marcetta Darensbourg**, College Station, TX, USA

**Gautam R. Desiraju**, Hyderabad, India

**Pierre H. Dixneuf**, Rennes, France

**Gregory C. Fu**, Cambridge, MA, USA

**Tohru Fukuyama**, Tokyo, Japan

**Lutz Gade**, Strasbourg, France

**George W. Gokel**, St Louis, MO, USA

**Karl J. Hale**, London, UK

**Amir Hoveyda**, Boston, MA, USA

**Kazuyuki Kuroda**, Tokyo, Japan

**Jérôme Lacour**, Geneva, Switzerland

**E. W. 'Bert' Meijer**, Eindhoven, The Netherlands

**Albert I. Meyers**, Fort Collins, CO, USA

**Jason Micklefield**, Manchester, UK

**Achim Müller**, Bielefeld, Germany

**Maurizio Prato**, Trieste, Italy

**Richard J. Puddephatt**, London, ON, Canada

**Christopher A. Reed**, Riverside, CA, USA

**Jonathan Sessler**, Austin, TX, USA

**David C. Sherrington**, Glasgow, UK

**Jonathan W. Steed**, London, UK

**Herbert Waldmann**, Dortmund, Germany

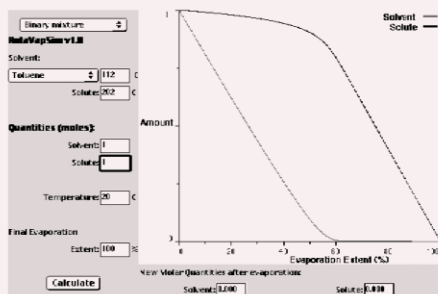
**Henry N. C. Wong**, Hong Kong, PR China

Authors may reproduce/republish portions of their published contribution without seeking permission from the RSC, provided that any such republication is accompanied by an acknowledgement in the form: (Original Citation) – Reproduced by permission of the The Royal Society of Chemistry.

2654

**Rotavap simulation and the estimation of boiling points**

Craig R. Stewart and Jonathan M. Goodman\*

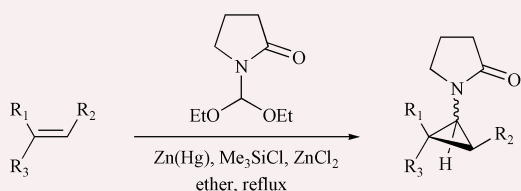


A Java applet that predicts solute losses during evaporation from a binary or ternary mixture has been developed which gives good agreement with experiment and can be used to estimate the boiling points of solutes: <http://www.ch.cam.ac.uk/magnus/rotavap/>

2656

**The generation and trapping of organozinc carbenoids from *N*-diethoxymethyl amides: a new amidocyclopropanation reaction**

Guillaume Bégis, David Cladingboel and William B. Motherwell\*

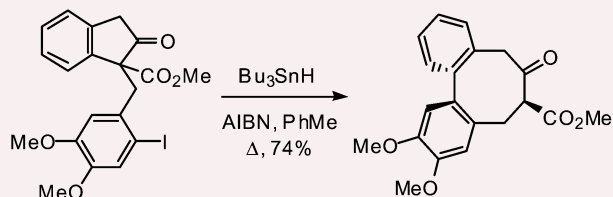


Amidocyclopropanes are readily prepared by reaction of *N*-diethoxymethyl amides with alkenes in the presence of zinc amalgam, zinc chloride and chlorotrimethylsilane.

2658

**Medium ring synthesis by radical *ipso*-substitution**

David C. Harrowven,\* Nathalie L'Helias, Jonathan D. Moseley, Nigel J. Blumire and Stuart R. Flanagan

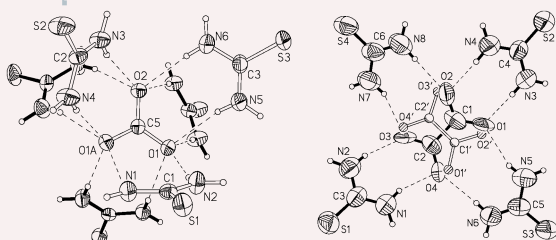


A new route to medium ring synthesis is described in which a radical *ipso*-substitution reaction features as a key step.

2660

**Carbonate and oxalate dianions as prolific hydrogen-bond acceptors in supramolecular assembly**

Chi-Keung Lam and Thomas C. W. Mak\*

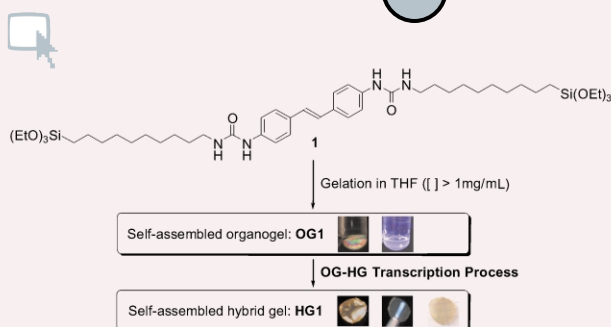


The carbonate ion in  $[(C_2H_5)_4N^+]_2 \cdot CO_3^{2-} \cdot 7(NH_2)_2CS$  is surrounded by twelve convergent hydrogen bonds from six thiourea molecules, forming a biconcave twin propeller-like building block, whereas the disordered oxalate ion in  $[(n-C_3H_7)_4N^+]_2 \cdot C_2O_4^{2-} \cdot 4(NH_2)_2CS$  serves as a hub for binding four thiourea molecules to form a cross-shaped structural motif.

2662

**Vapour diffusion hydrolysis of a self-assembled silylated organogel, the OG–HG transcription process: a new way to cast and handle fluorescent silsesquioxane**

Olivier J. Dautel, Jean-Pierre Lère-Porte, Joël J. E. Moreau\* and Michel Wong Chi Man

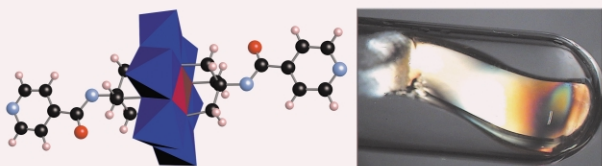


A new general method, the **OG–HG (OrganoGel–Hybrid Gel) process**, involving the transcription of the anisotropic organisation of organo(bis-trialkoxo)silanes in an organogel into a hybrid silica resulting from controlled hydrolysis, has been developed.

2664

**Assembly of a polyoxometalate into an anisotropic gel**

Sophie Favette, Bernold Hasenknopf,\* Jacqueline Vaissermann, Pierre Gouzerh and Cécile Roux

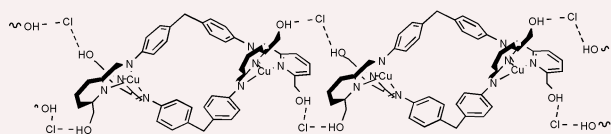


A flexible, transparent and birefringent gel is produced by the coordination of a Pd complex to a functionalized polyoxomolybdate.

2666

**Aggregation of metallo-supramolecular architectures by metallo-assembled hydrogen bonding sites**

Arnaud Lavalette, Floriana Tuna, Guy Clarkson, Nathaniel W. Alcock and Michael J. Hannon\*

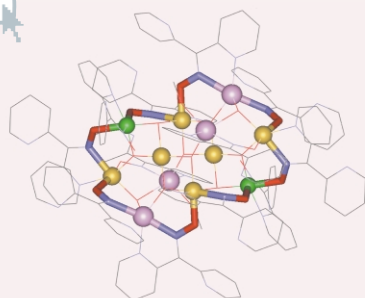


Metal–ligand interactions both create supramolecular architectures and assemble multiple hydrogen bond sites at their periphery. The choice of anion selects for self- or anion-mediated- H-bond aggregation to afford polymeric arrays.

2668

**A cationic 24-MC-8 manganese cluster with ring metals possessing three oxidation states  $[\text{Mn}^{\text{II}}_4\text{Mn}^{\text{III}}_6\text{Mn}^{\text{IV}}_2(\mu_4\text{-O})_2(\mu_3\text{-O})_4(\mu_3\text{-OH})_4(\mu_3\text{-OCH}_3)_2(\text{pko})_{12}](\text{OH})(\text{ClO}_4)_3$** 

Catherine Dendrinou-Samara, Curtis M. Zaleski, Andri Evagorou, Jeff W. Kampf, Vincent L. Pecoraro\* and Dimitris P. Kessissoglou\*

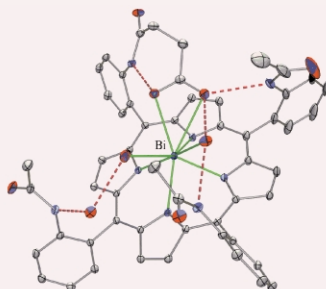
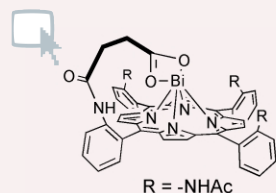


A rare molecule containing manganese ions in three oxidation states, the title complex has twelve Mn exhibiting antiferromagnetic exchange interactions. The complex is the first metallacrown to form a 24-MC-8 topology.

2670

**Structural characterisation of the first mononuclear bismuth porphyrin**

Bernard Boitrel,\* Zakaria Halime, Lydie Michaudet, Mohamed Lachkar and Loïc Toupet

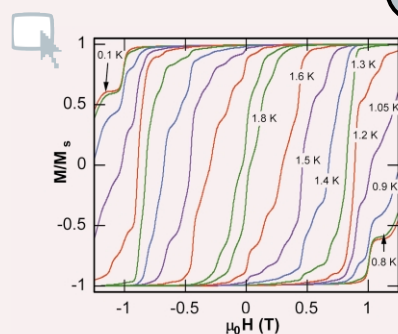


The first example of a non-dimeric bismuth porphyrin is reported. Owing to a built-in flexible carboxylate arm, an intramolecular counter-anion is delivered to the metal centre.

2672

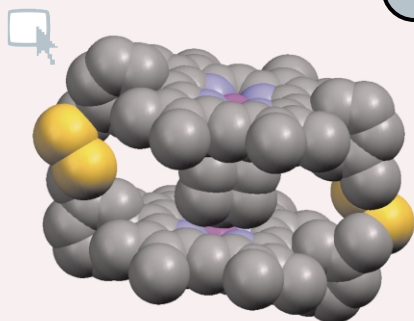
**Single-molecule magnets: control by a single solvent molecule of Jahn–Teller isomerism in  $[\text{Mn}_{12}\text{O}_{12}(\text{O}_2\text{CCH}_2\text{Bu}^t)_4(\text{H}_2\text{O})_4]$** 

Mònica Soler, Wolfgang Wernsdorfer, Ziming Sun, John C. Huffman, David N. Hendrickson and George Christou\*



Pure forms of the faster- and slower-relaxing  $\text{Mn}_{12}$  single-molecule magnets have been obtained. They differ only in one solvent molecule of crystallization. Isomerization from the faster- to the slower-relaxing form occurs on solvent loss.

2674



### Dynamic combinatorial libraries of metalloporphyrins: templated amplification of disulfide-linked oligomers

Amy L. Kieran, Andrew D. Bond, Ana M. Belenguer and Jeremy K. M. Sanders\*

Use of thiol–disulfide exchange in a dynamic combinatorial library of metalloporphyrins has led to the isolation of a bis-disulfide-linked porphyrin dimer, which encapsulates the templating DABCO.

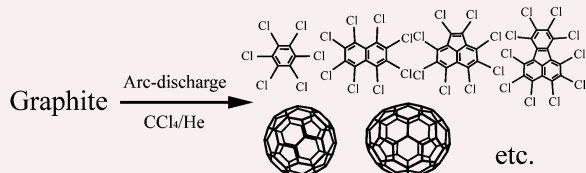
2676



### Significant promotional effect of CCl<sub>4</sub> on fullerene yield in the graphite arc-discharge reaction

Fei Gao, Su-Yuan Xie,\* Rong-Bin Huang and Lan-Sun Zheng

Fullerene yield was significantly increased when a small quantity of CCl<sub>4</sub> was added to the graphite arc-discharge reaction.



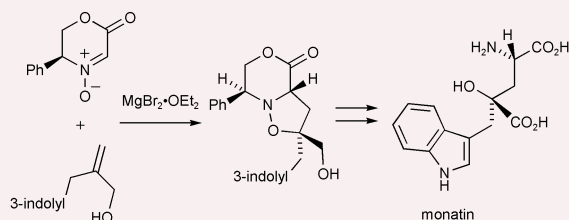
2678



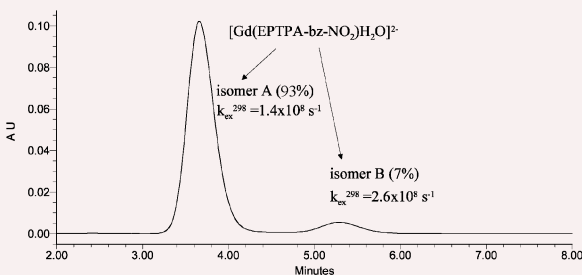
### Highly stereoselective synthesis of (–)-monatin, a high-intensity sweetener, using chelation-controlled nitron cycloaddition

Osamu Tamura,\* Tomoya Shiro, Atsushi Toyao and Hiroyuki Ishibashi\*

Synthesis of (–)-monatin was achieved by chelation-controlled cycloaddition of nitron with allyl alcohol in the presence of MgBr<sub>2</sub>·OEt<sub>2</sub>.



2680



### HPLC separation of diastereomers of Ln<sup>III</sup>-ethylenetriamine-pentaacetate complexes. Direct assessment of their water exchange rate

László Burai, Éva Tóth\* and André E. Merbach\*

The diastereomers of two Ln<sup>III</sup>-EPTPA derivatives have been separated by reversed-phase HPLC, and the water exchange rate on their Gd<sup>III</sup> complexes has been directly determined by <sup>17</sup>O NMR.

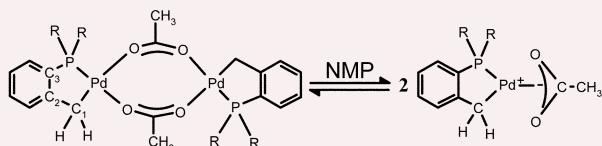
2682



### Extended X-ray absorption fine structure (EXAFS) characterisation of dilute palladium homogeneous catalysts

Steven G. Fiddy,\* John Evans,\* Mark A. Newton, Thomas Neisius, Robert P. Tooze and Richard Oldman

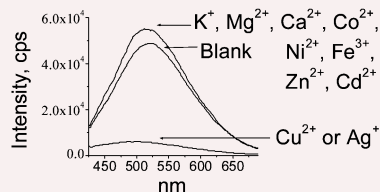
X-ray absorption spectroscopy (50 ppm Pd) shows that the Herrmann catalyst for the Heck reaction dissociates into a monomer; a Heck catalysis contains organometallic rather than colloidal Pd.



2684

**Peptide-coated CdS quantum dots for the optical detection of copper(II) and silver(I)**

Kerim M. Gattás-Asfura and Roger M. Leblanc\*

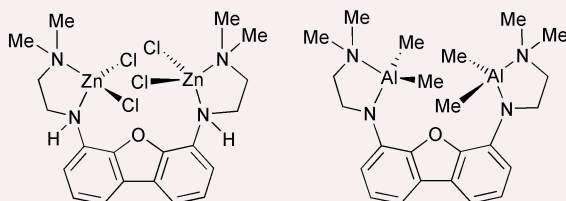


A pentapeptide with a designed amino acid sequence was utilized to fabricate a QD dot-based sensor. Similarly, new chemo- and biosensors may be developed by taking advantage of multi-functionality system design.

2686

**New dibenzofuran-bridged bis(amidoamine) and bis(ethylenediamine) ligands and their dinuclear zinc and aluminium complexes**

Mark L. Hlavinka and John R. Hagadorn\*



A new class of dibenzofuran-bridged bis(amidoamine) and bis(ethylenediamine) ligands are used to prepare structurally-characterized dinuclear zinc and aluminium complexes.

2688

**Synthesis of high quality inorganic fullerene-like BN hollow spheres via a simple chemical route**

Xinjun Wang, Yi Xie\* and Qixun Guo

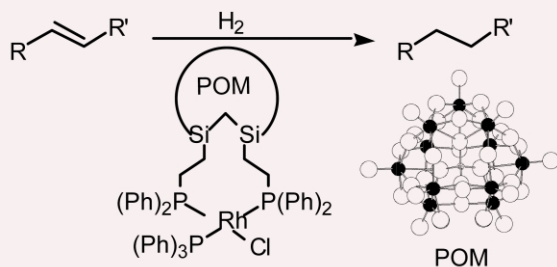


High quality inorganic fullerene-like boron nitride hollow spheres (100–200 nm) have been successfully synthesized *via* a simple chemical route with a 30–40% yield of BN hollow spheres.

2690

**Synthesis, characterization and catalytic activity of a Wilkinson's type metal-organic-polyoxometalate hybrid compound**

Itsik Bar-Nahum and Ronny Neumann\*

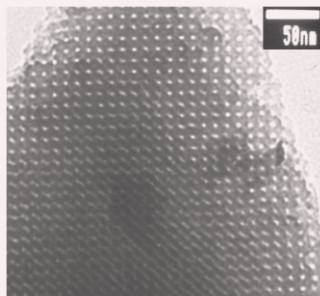


A Wilkinson's type catalyst was attached *via* an alkylene spacer to a polyoxometalate and used as an effective, recyclable hydrogenation catalyst in both organic monophasic and aqueous biphasic reaction media.

2692

**Highly ordered three-dimensional large-pore periodic mesoporous organosilica with *Im3m* symmetry**

Wanping Guo, Il Kim and Chang-Sik Ha\*

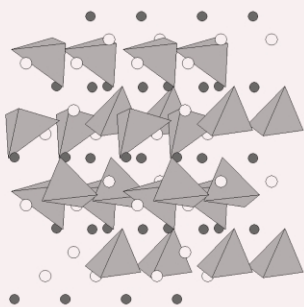


Highly ordered periodic mesoporous organosilica (PMO) having three-dimensional *Im3m* symmetry and a large cavity size of 9.8 nm was first synthesized in the presence of inorganic salts using triblock copolymer F127 as the template.

2694

**La<sub>1-x</sub>Ba<sub>1+x</sub>GaO<sub>4-x/2</sub>: a novel high temperature proton conductor**

Sara Li, Frank Schönberger and Peter Slater\*

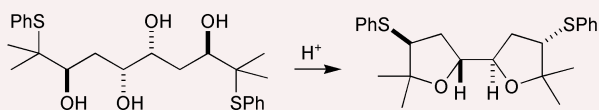


La<sub>1-x</sub>Ba<sub>1+x</sub>GaO<sub>4-x/2</sub> is a new high temperature proton conductor, with conductivities approaching those of the widely studied perovskite systems ( $\approx 1 \times 10^{-3}$  and  $1 \times 10^{-4}$  S cm<sup>-1</sup> at 800 and 500 °C respectively for  $x = 0.2$ ).

2696

**Thermodynamically controlled cyclisation reactions with double phenylsulfanyl migration**

Julie Carlisle, David J. Fox and Stuart Warren\*

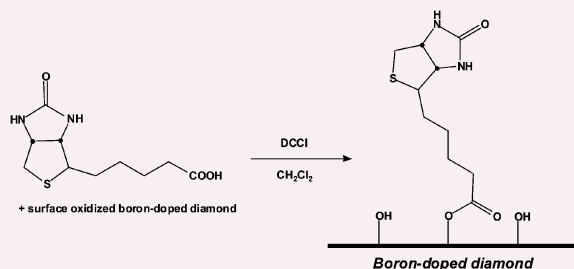


Enantiomerically enriched C<sub>2</sub>-symmetric tetrols were synthesised by a route involving a 'self-metathesis' reaction with Grubbs' second-generation ruthenium catalyst; these tetrols produced interesting bicyclic products when rearranged under acidic conditions.

2698

**Biotin grafting on boron-doped diamond**

Didier Delabouglise,\* Bernadette Marcus, Michel Mermoux, Pierre Bouvier, Jérôme Chane-Tune, Jean-Pierre Petit, Pascal Mailley and Thierry Livache

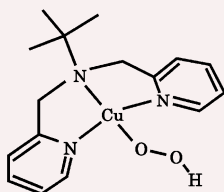


Grafting of biotin on top of a polycrystalline boron-doped diamond layer was achieved by surface oxidation followed by an esterification reaction and revealed by fluorescently labelled streptavidin.

2700

**Construction of a square-planar hydroperoxo-copper(II) complex inducing a higher catalytic reactivity**

Tatsuya Fujii, Asako Naito, Syuhei Yamaguchi, Akira Wada, Yasuhiro Funahashi, Koichiro Jitsukawa, Shigenori Nagatomo, Teizo Kitagawa and Hideki Masuda\*

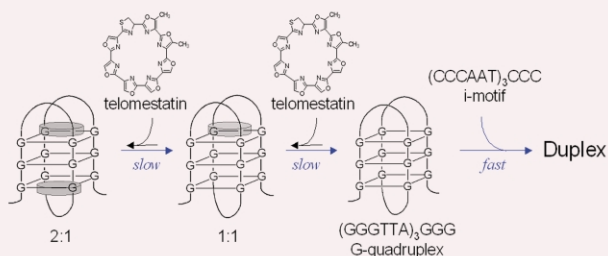


A hydroperoxo-copper(II) complex with a square-planar geometry has been prepared, whose reactions with some organic substrates have exhibited a higher selectivity and catalytic reactivity.

2702

**Telomestatin-induced stabilization of the human telomeric DNA quadruplex monitored by electrospray mass spectrometry**

Frédéric Rosu, Valérie Gabelica,\* Kazuo Shin-ya and Edwin De Pauw

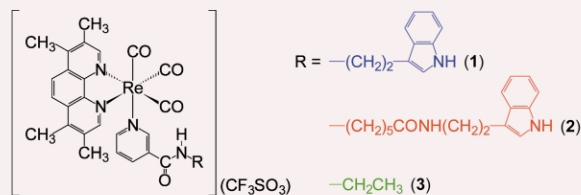


Electrospray mass spectrometry was used to monitor duplex formation between the human telomeric DNA quadruplex and its complementary strand, and the influence of complexation with telomestatin on the reaction kinetics.

2704

**Luminescent rhenium(I) diimine indole conjugates – photophysical, electrochemical and protein-binding properties**

Kenneth Kam-Wing Lo,\* Keith Hing-Kit Tsang, Wai-Ki Hui and Nianyong Zhu

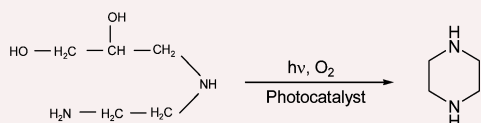


Two luminescent rhenium(I) diimine indole conjugates, **1** and **2**, have been synthesised, characterised and their properties studied. Unlike the control complex **3**, both **1** and **2** can be recognised by indole-binding proteins including bovine serum albumin, lysozyme and tryptophanase.

2706

**A novel route for the synthesis of piperazine from *N*-(2,3-dihydroxypropyl)ethylenediamine over composite photocatalysts**

K. V. Subba Rao,\* V. Kandavelu, B. Srinivas, M. Subrahmanyam and K. Ravindranathan Thampi\*

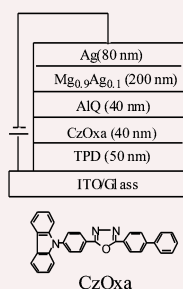


Semiconductor loaded zeolite composite catalysts (5 wt%  $\text{TiO}_2/\text{H}\beta$ ) have been used to photocatalytically synthesize piperazine from *N*-(2,3-dihydroxypropyl)ethylenediamine with yields up to 59.0 mol%.

2708

**High-performance blue electroluminescent devices based on 2-(4-biphenyl)-5-(4-carbazole-9-yl)phenyl-1,3,4-oxadiazole**

Min Guan, Zu Qiang Bian,\* Yi Feng Zhou, Fu You Li, Zhong Jun Li and Chun Hui Huang\*

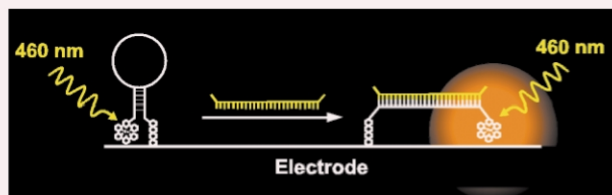


By using a functionalized compound CzOxa as emitter, blue light with a maximum luminance of  $26200 \text{ cd m}^{-2}$  at a drive voltage of 15 V and a maximum luminous efficiency of  $2.25 \text{ lm W}^{-1}$  were achieved.

2710

**Photoluminescence and electrochemiluminescence of a Ru(II)(bpy)<sub>3</sub>-quencher dual-labeled oligonucleotide probe**

Robert Wilson\* and Mary Katherine Johansson\*

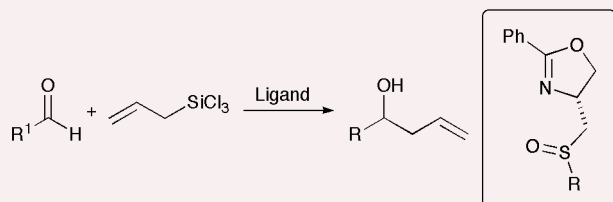


A molecular beacon oligonucleotide probe covalently labeled with  $\text{Ru}(\text{II})(\text{bpy})_3$  and Black Hole Quencher-2 is synthesized, and hybridization assays are performed using photoluminescence or electrochemiluminescence methods of excitation.

2712

**Chiral sulfoxides in the enantioselective allylation of aldehydes with allyltrichlorosilane**

Gareth J. Rowlands\* and William Kentish Barnes



The use of bidentate chiral sulfoxides for the Lewis base catalysed allylation of aldehydes is reported.

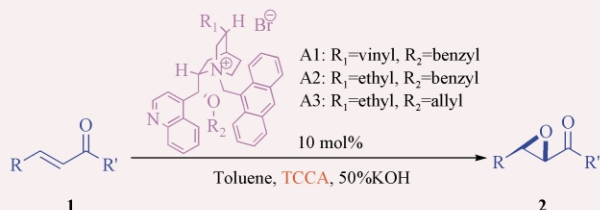


2714

### A highly enantioselective phase-transfer catalyzed epoxidation of enones with a mild oxidant, trichloroisocyanuric acid

Jinxing Ye, Yongcan Wang, Renhua Liu, Guofu Zhang, Qing Zhang, Jiping Chen and Xinmiao Liang\*

Treatment of chalcone derivatives with trichloroisocyanuric acid under mild conditions affords the corresponding epoxy ketones in good yields with moderate to excellent enantioselectivities of up to 96%.

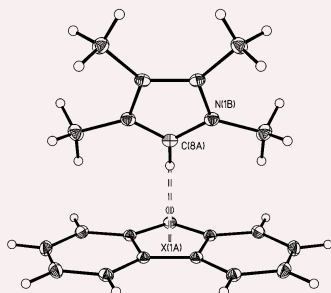


2716

### Isolation of C–H···C(π) complexes from the reaction of stable carbenes with hydrocarbons

Silvia Filipponi, Jamie N. Jones, Jennifer A. Johnson, Alan H. Cowley,\*  
Fabrizia Grepioni and Dario Braga

Crystalline salts that exhibit C–H···cyclopentadienide interactions have been prepared by deprotonation of fluorene, indene, or cyclopentadiene with nucleophilic carbenes.

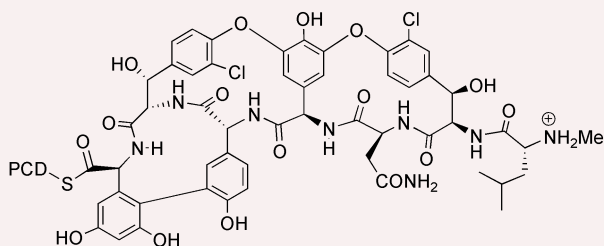


2718

### Production of vancomycin aglycone conjugated to a peptide carrier domain derived from a biosynthetic non-ribosomal peptide synthetase

Francesca Vitali, Katja Zerbe and John A. Robinson\*

Vancomycin aglycone has been transferred to a peptide carrier domain (derived from a non-ribosomal peptide synthetase) using the enzyme Sfp.

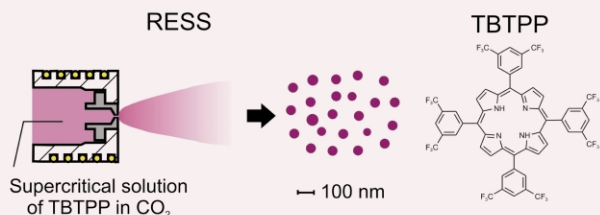


2720

### RESS for the preparation of fluorinated porphyrin nanoparticles

Amporn Sane, Shelby Taylor, Ya-Ping Sun and Mark C. Thies\*

Rapid expansion of supercritical solutions (RESS) was used to produce clean, surfactant-free nanoparticles (average size = 60 nm) of a fluorinated tetraphenylporphyrin from supercritical CO<sub>2</sub> solutions.



2722

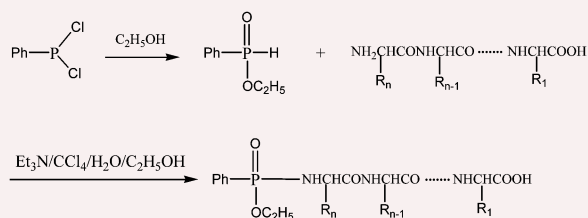
### A versatile synthesis of new pyrimidinyl nitronyl nitroxides

P. Brough, R. Chiarelli, J. Pécaut, A. Rassat\* and P. Rey\*

Pyrimidinyl nitronyl nitroxides, the six-membered analogs of the imidazolidinyl spin carriers, are prepared in four steps from diacetonamine. The stepwise synthesis has strong potentialities for versatile substitution.



2724

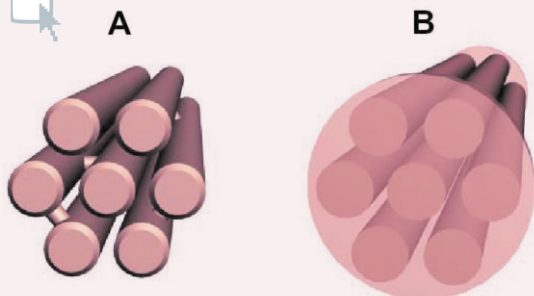


### Novel synthetic method of phosphoramidate peptides and its application in peptide sequencing *via* multistage mass spectrometry

Huiwang Ai, Hua Fu\* and Yufen Zhao

Phosphoramidate peptides were prepared by reaction of ethoxy(phenyl)phosphinate with free peptides in good yields under mild conditions. *N*-Phosphonyl derivatization of peptides combining with multi-stage ESI-MS is a powerful method for peptide sequencing.

2726

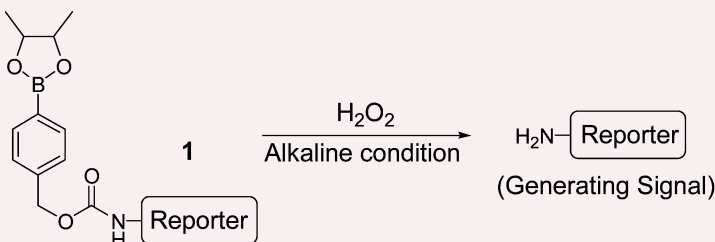


### Novel approaches to synthesize self-supported ultrathin carbon nanowire arrays templated by MCM-41

Bozhi Tian, Shunai Che, Zheng Liu, Xiaoying Liu, Weibin Fan, Takashi Tatsumi,\* Osamu Terasaki\* and Dongyuan Zhao\*

Two novel approaches have been proposed to fabricate ordered self-supported ultrathin carbon nanowire arrays employing mesoporous silica MCM-41 as the templates.

2728

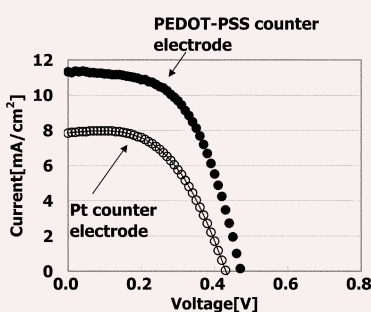


### Development of highly selective and sensitive probes for hydrogen peroxide

Lee-Chiang Lo\* and Chi-Yuan Chu

Probes that react specifically with hydrogen peroxide to release chromophoric or fluorescent reporter groups were designed and synthesized. The design offers great flexibility and expansibility for future applications.

2730

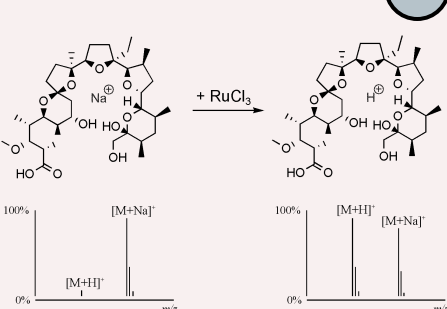


### Quasi-solid dye sensitised solar cells filled with ionic liquid—increase in efficiencies by specific interaction between conductive polymers and gelators

Y. Shibata, T. Kato, T. Kado, R. Shiratuchi, W. Takashima, K. Kaneto and S. Hayase\*

The photo-voltaic performance for DSSCs with PEDOT-PSS counter electrodes was better than that using Pt counter electrodes when gel electrolytes were injected into the cells; photocurrent  $J_{sc}$  increased with an increase in the thickness of the PEDOT-PSS.

2732

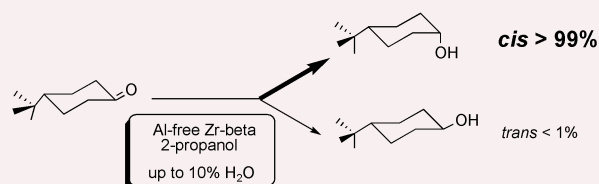


### The effect of ruthenium(III) chloride on the formation of protonated parent ions in electrospray mass spectrometry

Christian B. W. Stark, Norberto P. Lopes, Tatiana Fonseca and Paul J. Gates\*

We report here a general, simple and highly efficient method for the generation of protonated parent ions, in electrospray mass spectrometry, for compounds that do not normally exhibit such species.

2734

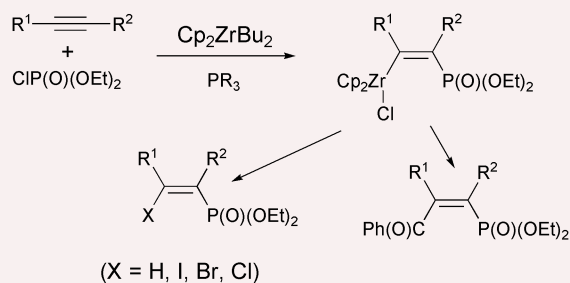


### Al-free Zr-zeolite beta as a regioselective catalyst in the Meerwein–Ponndorf–Verley reaction

Yongzhong Zhu, Gaikhuan Chuah and Stephan Jaenicke\*

A novel Al-free Zr zeolite beta catalyst is described which is highly active in the Meerwein–Ponndorf–Verley reduction of ketones to corresponding alcohols even in the presence of water.

2736

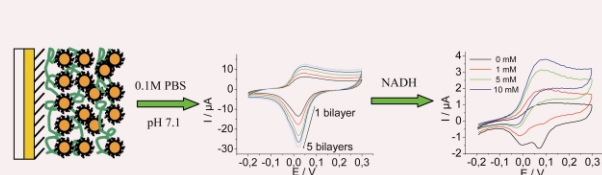


### Metallo-phosphorylation of alkynes: reaction of alkynes with Cp<sub>2</sub>Zr(1-butene)(PR<sub>3</sub>) and chlorophosphate

Chunbo Lai, Chanjuan Xi,\* Chao Chen, Mingming Ma and Xiaoyin Hong

Reaction of alkynes with Cp<sub>2</sub>ZrBu<sub>2</sub> and chlorophosphate in the presence of PR<sub>3</sub> form zircono-alkenylphosphonates, which can be transformed into various β-functionalized alkenylphosphonates.

2738

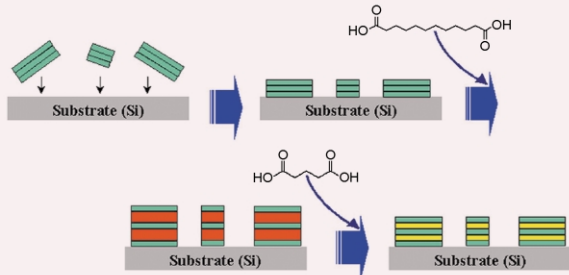


### Polyaniline doped with modified gold nanoparticles and its electrochemical properties in neutral aqueous solution

Shengjun Tian, Jianyun Liu, Tao Zhu and Wolfgang Knoll\*

Doping polyaniline with COO<sup>-</sup>-modified gold nanoparticles by forming stable layer-by-layer multilayer films can shift its electroactivity to neutral pH. The films can electrocatalyze the oxidation of NADH and offer potential applications in other fields, *e.g.*, optoelectronics or biosensing.

2740

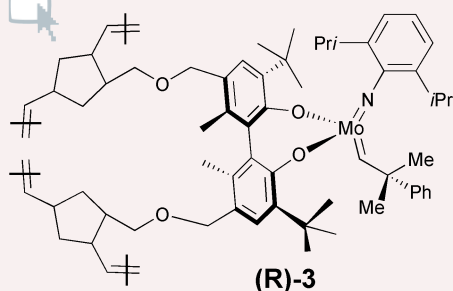


### Orientation-controlled assembly and solvothermal ion-exchange of layered double hydroxide nanocrystals

JongHyeon Lee, SeogWoo Rhee and Duk-Young Jung\*

The orientation-controlled LDH crystals on Si substrates were intercalated by dicarboxylate ions to give the anisotropic layer expansion.

2742



### A ROMP-derived, polymer-supported chiral Schrock catalyst for enantioselective ring-closing olefin metathesis

Roswitha M. Kröll, Norbert Schuler, Said Lubbad and Michael R. Buchmeiser\*

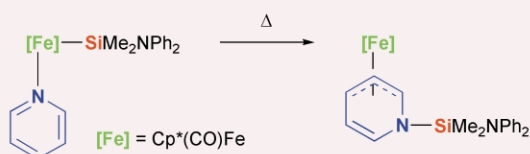
A ROMP-polymer supported chiral version of Schrock's catalyst allows to obtain high yields as well as good enantioselectivity in asymmetric RCM and desymmetrization reactions and accounts for low contamination of products with metal impurities.

2744



### Insertion of pyridine into an iron–silicon bond: structure of the product $\text{Cp}^*(\text{CO})\text{Fe}\{\eta^3(\text{C},\text{C},\text{C})\text{-C}_5\text{H}_5\text{NSiMe}_2\text{NPh}_2\}$

Masatoshi Iwata, Masaaki Okazaki\* and Hiromi Tobita\*

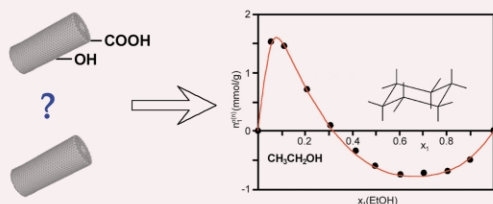


Thermolysis of  $\text{Cp}^*(\text{CO})(\text{C}_5\text{H}_5\text{N})\text{FeSiMe}_2\text{NPh}_2$  led to the insertion of pyridine into the iron–silicon bond to form  $\text{Cp}^*(\text{CO})\text{Fe}\{\eta^3(\text{C},\text{C},\text{C})\text{-C}_5\text{H}_5\text{NSiMe}_2\text{NPh}_2\}$ , which was structurally characterised by X-ray analysis.

2746

### Binary solvent mixture adsorption as a characterisation tool to determine the hydrophilic/hydrophobic properties of multiwall carbon nanotubes

Timea Kanyo, Zoltan Konya, Ferenc Berger, Imre Dekany and Imre Kiricsi\*



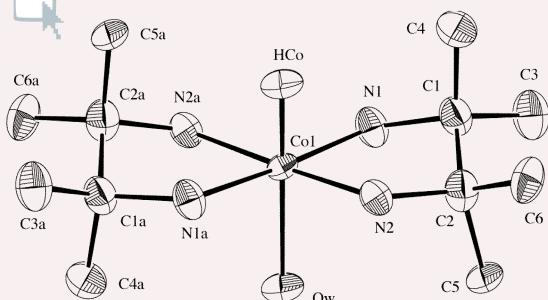
Binary solvent mixture adsorption measurements were used to quantitatively characterise the hydrophobic/hydrophilic properties of carbon nanotubes.

2748



### Synthesis and crystal and molecular structure of a hydrido tetraamine cobalt(III) complex

A. F. M. Mokhlesur Rahman, W. Gregory Jackson,\* Anthony C. Willis and A. David Rae



A moderately stable hydrido complex of a tetraaminecobalt(III) complex has been synthesised, a first, and the crystal structure and properties are reported.

## CONFERENCE DIARY

XX

Dates, venues and contact details of forthcoming events.

#### COPIES OF CITED ARTICLES

The Library and Information Centre (LIC) of the RSC offers a first class Document Delivery Service for items in Chemistry and related subjects. Contact the LIC, The Royal Society of Chemistry, Burlington House, Piccadilly, London W1V 0BN, UK.

This service is only available from the LIC in London and not the RSC in Cambridge.

#### ADVANCE CONTENTS LISTS

Contents lists in advance of publication are available on the web via [www.rsc.org/chemcomm](http://www.rsc.org/chemcomm) – or take advantage of our free e-mail alerting service ([www.rsc.org/ej\\_alert](http://www.rsc.org/ej_alert)) to receive notification each time a new list becomes available.

#### ADVANCE ARTICLES AND ELECTRONIC JOURNAL

Free site-wide access to Advance Articles and the electronic form of this journal is provided with a full-rate institutional subscription. See [www.rsc.org/ejs](http://www.rsc.org/ejs) for more information.

\* Indicates the author for correspondence: see article for contact details.



Electronic supplementary information is available on <http://www.rsc.org/esi>: see article for further information.

- Aggarwal, Varinder K., 2644  
 Ai, Huiwang, 2724  
 Alcock, Nathaniel W., 2666  
 Bar-Nahum, Itsik, 2690  
 Barnes, William Kentish, 2712  
 Bégis, Guillaume, 2656  
 Belenguer, Ana M., 2674  
 Berger, Ferenc, 2746  
 Bian, Zu Qiang, 2708  
 Blumire, Nigel J., 2658  
 Boitrel, Bernard, 2670  
 Bond, Andrew D., 2674  
 Bouvier, Pierre, 2698  
 Braga, Dario, 2716  
 Brennan, Paul E., 2652  
 Brough, P., 2722  
 Buchmeiser, Michael R., 2742  
 Burai, László, 2680  
 Carlisle, Julie, 2696  
 Chane-Tune, Jérôme, 2698  
 Che, Shunai, 2726  
 Chen, Chao, 2736  
 Chen, Jiping, 2714  
 Chiarelli, R., 2722  
 Christou, George, 2672  
 Chu, Chi-Yuan, 2728  
 Chuah, Gaikuan, 2734  
 Cladingboel, David, 2656  
 Clarkson, Guy, 2666  
 Cowley, Alan H., 2716  
 Dautel, Olivier J., 2662  
 De Pauw, Edwin, 2702  
 Dekany, Imre, 2746  
 Delabouglise, Didier, 2698  
 Dendrinou-Samara, Catherine, 2668  
 Evagorou, Andri, 2668  
 Evans, John, 2682  
 Fan, Weibin, 2726  
 Favette, Sophie, 2664  
 Fiddy, Steven G., 2682  
 Filipponi, Silvia, 2716  
 Flanagan, Stuart R., 2658  
 Fonseca, Tatiana, 2732  
 Fox, David J., 2696  
 Fu, Hua, 2724  
 Fujii, Tatsuya, 2700  
 Funahashi, Yasuhiro, 2700  
 Gabelica, Valérie, 2702  
 Gao, Fei, 2676  
 Gates, Paul J., 2732  
 Gattás-Asfura, Kerim M., 2684  
 Goodman, Jonathan M., 2654  
 Gouzerh, Pierre, 2664  
 Grepioni, Fabrizia, 2716  
 Guan, Min, 2708  
 Guo, Qixun, 2688  
 Guo, Wanping, 2692  
 Ha, Chang-Sik, 2692  
 Hagadorn, John R., 2686  
 Halime, Zakaria, 2670  
 Hannon, Michael J., 2666  
 Harrowven, David C., 2658  
 Hasenknopf, Bernold, 2664  
 Hayase, S., 2730  
 Hendrickson, David N., 2672  
 Hlavinka, Mark L., 2686  
 Hong, Xiaoyin, 2736  
 Huang, Chun Hui, 2708  
 Huang, Rong-Bin, 2676  
 Huffman, John C., 2672  
 Hui, Wai-Ki, 2704  
 Ishibashi, Hiroyuki, 2678  
 Iwata, Masatoshi, 2744  
 Jackson, W. Gregory, 2748  
 Jaenicke, Stephan, 2734  
 Jitsukawa, Koichiro, 2700  
 Johansson, Mary Katherine, 2710  
 Johnson, Jennifer A., 2716  
 Jones, Jamie N., 2716  
 Jung, Duk-Young, 2740  
 Kado, T., 2730  
 Kampf, Jeff W., 2668  
 Kandavelu, V., 2706  
 Kaneto, K., 2730  
 Kanyo, Timea, 2746  
 Kato, T., 2730  
 Kessissoglou, Dimitris P., 2668  
 Kieran, Amy L., 2674  
 Kim, Il, 2692  
 Kiricsi, Imre, 2746  
 Kitagawa, Teizo, 2700  
 Knoll, Wolfgang, 2738  
 Konya, Zoltan, 2746  
 Kröll, Roswitha M., 2742  
 Lachkar, Mohamed, 2670  
 Lai, Chunbo, 2736  
 Lam, Chi-Keung, 2660  
 Lavalette, Arnaud, 2666  
 Leblanc, Roger M., 2684  
 Lee, JongHyeon, 2740  
 Lère-Porte, Jean-Pierre, 2662  
 Ley, Steven V., 2652  
 L'Helias, Nathalie, 2658  
 Li, Fu You, 2708  
 Li, Sara, 2694  
 Li, Zhong Jun, 2708  
 Liang, Xinmiao, 2714  
 Liu, Jianyun, 2738  
 Liu, Renhua, 2714  
 Liu, Xiaoying, 2726  
 Liu, Zheng, 2726  
 Livache, Thierry, 2698  
 Lo, Kenneth Kam-Wing, 2704  
 Lo, Lee-Chiang, 2728  
 Lopes, Norberto P., 2732  
 Lubbad, Said, 2742  
 Ma, Mingming, 2736  
 Mailley, Pascal, 2698  
 Mak, Thomas C. W., 2660  
 Man, Michel Wong Chi, 2662  
 Marcus, Bernadette, 2698  
 Masuda, Hideki, 2700  
 Merbach, André E., 2680  
 Mermoux, Michel, 2698  
 Michaudet, Lydie, 2670  
 Moreau, Joël J. E., 2662  
 Moseley, Jonathan D., 2658  
 Motherwell, William B., 2656  
 Nagatomo, Shigenori, 2700  
 Naito, Asako, 2700  
 Neisius, Thomas, 2682  
 Neumann, Ronny, 2690  
 Newton, Mark A., 2682  
 Okazaki, Masaaki, 2744  
 Oldman, Richard, 2682  
 Ozin, Geoffrey, 2639  
 Pécaut, J., 2722  
 Pecoraro, Vincent L., 2668  
 Petit, Jean-Pierre, 2698  
 Rae, A. David, 2748  
 Rahman, A. F. M. Mokhlesur, 2748  
 Ramarao, Chandrashekar, 2652  
 Rao, K. V. Subba, 2706  
 Rassat, A., 2722  
 Rey, P., 2722  
 Rhee, SeogWoo, 2740  
 Richardson, Jeffery, 2644  
 Robinson, John A., 2718  
 Rosu, Frédéric, 2702  
 Roux, Cécile, 2664  
 Rowlands, Gareth J., 2712  
 Sanders, Jeremy K. M., 2674  
 Sane, Amporn, 2720  
 Schönberger, Frank, 2694  
 Schuler, Norbert, 2742  
 Shibata, Y., 2730  
 Shin-ya, Kazuo, 2702  
 Shiratuchi, R., 2730  
 Shiro, Tomoya, 2678  
 Slater, Peter, 2694  
 Smith, Martin D., 2652  
 Soler, Mònica, 2672  
 Srinivas, B., 2706  
 Stark, Christian B. W., 2732  
 Stepan, Antonia F., 2652  
 Stewart, Craig R., 2654  
 Subrahmanyam, M., 2706  
 Sun, Ya-Ping, 2720  
 Sun, Ziming, 2672  
 Takashima, W., 2730  
 Tamura, Osamu, 2678  
 Tatsumi, Takashi, 2726  
 Taylor, Shelby, 2720  
 Terasaki, Osamu, 2726  
 Thampi, K. Ravindranathan, 2706  
 Thies, Mark C., 2720  
 Tian, Bozhi, 2726  
 Tian, Shengjun, 2738  
 Tobita, Hiromi, 2744  
 Tooze, Robert P., 2682  
 Tóth, Éva, 2680  
 Toupet, Louis, 2670  
 Toyao, Atsushi, 2678  
 Tsang, Keith Hing-Kit, 2704  
 Tuna, Floriana, 2666  
 Vaissermann, Jacqueline, 2664  
 Vitali, Francesca, 2718  
 Wada, Akira, 2700  
 Wang, Xinjun, 2688  
 Wang, Yongcan, 2714  
 Warren, Stuart, 2696  
 Wernsdorfer, Wolfgang, 2672  
 Willis, Anthony C., 2748  
 Wilson, Robert, 2710  
 Xi, Chanjuan, 2736  
 Xie, Su-Yuan, 2676  
 Xie, Yi, 2688  
 Yamaguchi, Syuhei, 2700  
 Ye, Jinxing, 2714  
 Zaleski, Curtis M., 2668  
 Zerbe, Katja, 2718  
 Zhang, Guofu, 2714  
 Zhang, Qing, 2714  
 Zhao, Dongyuan, 2726  
 Zhao, Yufen, 2724  
 Zheng, Lan-Sun, 2676  
 Zhou, Yi Feng, 2708  
 Zhu, Nianying, 2704  
 Zhu, Tao, 2738  
 Zhu, Yongzhong, 2734

NOTE: An asterisk in the heading of each paper indicates the author who is to receive any correspondence.