



Cover

A hydrogen powered Opel Zafira which took part in the Marathon drive from Norway to Portugal in May 2004 against a background of a transmission electron micrograph of dehydrogenated NaAlH_4 , containing aluminium, sodium hydride, and titanium catalyst (Courtesy: Opel/General Motors) (pp. 2249–2258).

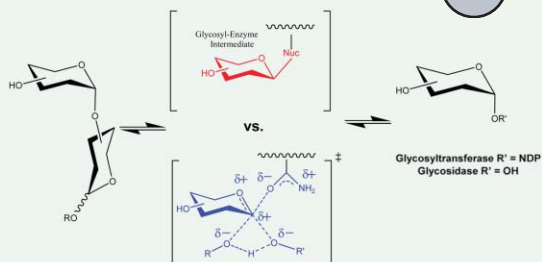


Chemical biology articles published in this journal also appear in the *Chemical Biology Virtual Journal*: www.rsc.org/chembiol

contents

FOCUS ARTICLE

2243



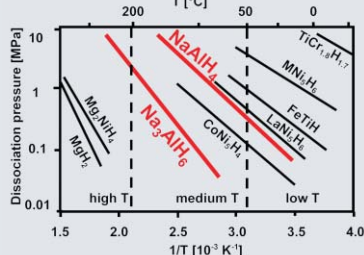
Mechanistic analogies amongst carbohydrate modifying enzymes

Luke L. Lairson and Stephen G. Withers*

An understanding of the catalytic mechanisms of carbohydrate modifying enzymes not only has applications in medicinal chemistry and biotechnology, but it also explores the nature of enzyme evolution. Does nature converge upon analogous strategies to catalyse a given class of reaction in opposite directions using *unrelated* enzymes or does a mechanistic continuum exist that directly parallels that of non-enzymatic nucleophilic substitution?

FEATURE ARTICLE

2249



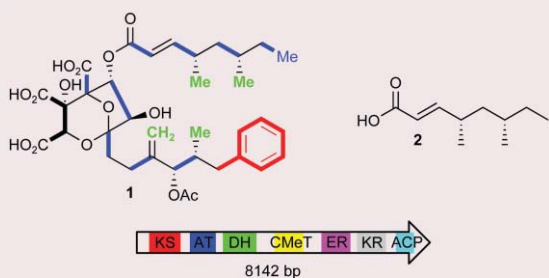
Light metal hydrides and complex hydrides for hydrogen storage

F. Schüth, B. Bogdanović and M. Felderhoff

Hydrogen storage is one of the most critical problems to be solved for the large scale introduction of hydrogen-powered cars. This article discusses the different approaches with a focus on storage in metal hydrides, the most promising today being NaAlH_4 .

COMMUNICATIONS

2260



Rapid cloning and expression of a fungal polyketide synthase gene involved in squalenone biosynthesis

Russell J. Cox*, Frank Glod, Deirdre Hurley, Colin M. Lazarus, Thomas P. Nicholson, Brian A. M. Rudd, Thomas J. Simpson, Barrie Wilkinson and Ying Zhang

A rapid cloning strategy is described for obtaining polyketide synthase genes from fungi. Application of this method led to the cloning of an iterative fungal PKS from *Phoma sp.* S2932 which was expressed in *Aspergillus terreus* and shown to produce the doubly methylated tetraketide **2**, the sidechain of the potent cholesterol biosynthesis inhibitor squalenone **1**.

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

EDITORIAL STAFF

Managing editor
Sarah Thomas

Deputy editor
Sula Armstrong

Assistant editors
Meriel Dyche Alison Stoddart
Lorna Jack Katherine Vickers

Publishing assistants
Jayne Drake Lois Kershaw
Jayne Gough

Crystallographic data editor
Kirsty Anderson

Team leader, serials production
Helen Saxton

Technical editors
Sandra Jones Elinor Richards
Kathryn Lees Michael Smith
Caroline Moore Ken Wilkinson

Production administration coordinator
Sonya Spring

Editorial secretaries (production)
Sarah James Julie Thompson

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 Extenza-Turpin Distribution Services Ltd, Pegasus Drive, Biggleswade, Beds, UK SG18 8QB. 2004 Annual (print + electronic) subscription price: £1045; US\$1725. 2004 Annual (electronic) subscription price: £940; US\$1552. 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. 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 432153;
Fax +44 (0)1223 426017; E-mail advertising@rsc.org

© The Royal Society of Chemistry, 2004. Apart from fair dealing for the purposes of research or private study for non-commercial purposes, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulations 2003, 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 is 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. Inclusion of an item in this publication does not imply endorsement by The Royal Society of Chemistry of the content of the original documents to which that item refers

© 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

Roeland J. M. Nolte, Nijmegen, The Netherlands
E-mail: nolte@sci.kun.nl

Jerry L. Atwood, Columbia, MO, USA
E-mail: rsc.chemcomm@missouri.edu

Shankar Balasubramanian, Cambridge, UK
E-mail: sb10031@cam.ac.uk

Hans-Ulrich Blaser, Solvias AG, Switzerland
E-mail: hans-ulrich.blaser@SOLVIAS.com

Makoto Fujita, Tokyo, Japan
E-mail: mfujita@appchem.t.u-tokyo.ac.jp

Alois Fürstner, Mülheim, Germany
E-mail: fuerstner@mpi-muelheim.mpg.de

David Haddleton, Warwick, UK
E-mail: D.M.Haddleton@warwick.ac.uk

Donald Hilvert, Zurich, Switzerland
E-mail: hilvert@org.chem.ethz.ch

Mir Wais Hosseini, Strasbourg, France
E-mail: hosseini@chimie.u-strasbg.fr

Barbara Imperiali, Cambridge, MA, USA
E-mail: chemcomm@mit.edu

Dermot O'Hare, Oxford, UK
E-mail: chemcomm@chem.ox.ac.uk

Colin Raston, Perth, Australia
E-mail: clraston@chem.uwa.edu.au

Clément Sanchez, Paris, France
E-mail: clemes@ccr.jussieu.fr

Ferdi Schüth, Mülheim, Germany
E-mail: schueth@mpi-muelheim.mpg.de

James D. White, Corvallis, OR, USA
E-mail: 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/authors>

Professor Dermot O'Hare

Inorganic Chemistry Laboratory
University of Oxford
Oxford, UK
E-mail: chemcomm@chem.ox.ac.uk

Professor Donald Hilvert

Laboratory of Organic Chemistry
ETH Zentrum, Zurich, Switzerland
E-mail: 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

Professor Alois Fürstner

Max-Planck-Institut für Kohlenforschung
Mülheim/Ruhr, Germany
E-mail: 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/authors>

Manuscripts from the Americas

SUPRAMOLECULAR
Professor Jerry L. Atwood
123 Chemistry Building
University of Missouri
Columbia, MO, USA
E-mail: rsc.chemcomm@missouri.edu

CHEMICAL BIOLOGY

Professor Barbara Imperiali
Department of Chemistry
Massachusetts Institute of Technology
Cambridge, MA, USA
E-mail: chemcomm@mit.edu

ORGANIC

Professor James D. White

Department of Chemistry
Oregon State University
Corvallis, OR, USA
E-mail: 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

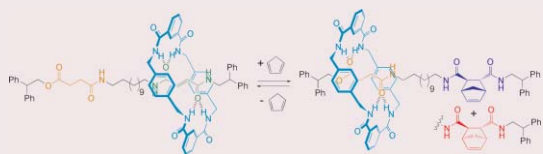
EDITORIAL ADVISORY BOARD

Takuzo Aida, Tokyo, Japan
Frank Allen, CCDC, Cambridge, UK
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, Heidelberg, Germany
George W. Gokel, St Louis, MO, USA
Karl J. Hale, London, UK
Andrew B. Holmes, Cambridge, 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, Durham, 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.

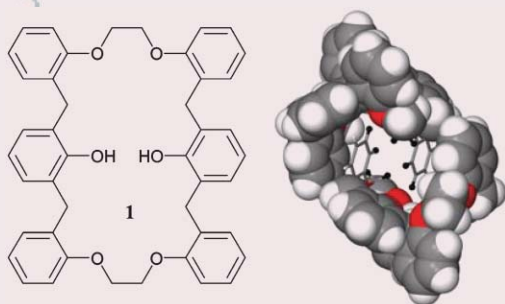
2262

**Shuttling through reversible covalent chemistry**

David A. Leigh* and Emilio M. Pérez

The first example of shuttling through reversible C–C bond formation is described.

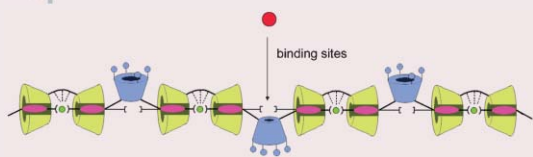
2264

**Solvent-mediated self-association of a Horning-crown macrocycle**

Luke T. Higham, Ulf P. Kreher, Roger J. Mulder, Christopher R. Strauss and Janet L. Scott*

A novel macrocycle **1** forms dimers in both the solid-state and in solution when exposed to chloroform, dichloromethane or toluene, but does not self-associate in the presence of dimethyl sulfoxide.

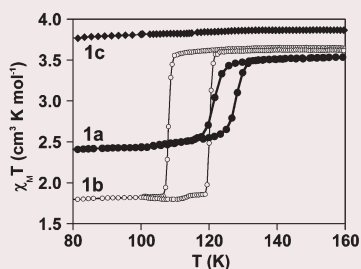
2266

**A metallo-capped polyrotaxane containing calix[4]arenes and cyclodextrins and its highly selective binding for Ca²⁺**

Yu Liu*, Hao Wang, Heng-Yi Zhang and Peng Liang

A nano-sized polyrotaxane based on azo-modified calixarenes and β -cyclodextrin dimers (bis-CDs) has been prepared by a molecular recognition strategy, displaying the highly selective binding for Ca²⁺.

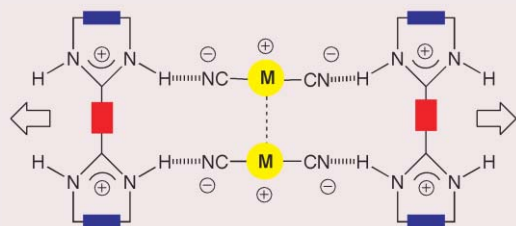
2268

**Supramolecular isomerism in spin crossover networks with aurophilic interactions**

Ana Galet, M. Carmen Muñoz, Víctor Martínez and José Antonio Real*

Self-assembly of iron(II), [Au(CN)₂][−] and 3-cyanopyridine affords three isomeric networks consisting of highly sensitive [FeN₆] knots. These supramolecular isomers differ in their spin crossover, and aurophilic properties.

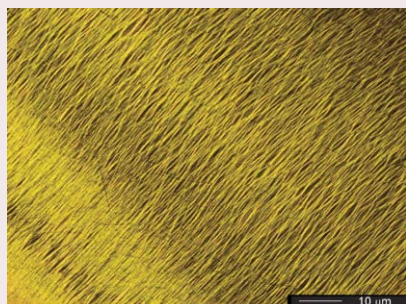
2270

**Molecular tectonics: design of luminescent H-bonded molecular networks**

Carmen Paraschiv, Sylvie Ferlay, Mir Wais Hosseini*, Véronique Bulach and Jean-Marc Planeix

A combination of dicationic tectons and M(CN)₂[−] anions (M = Ag, Au) leads to the formation of neutral 1-D H-bonded networks with controllable metal–metal distance exhibiting luminescence.

2272

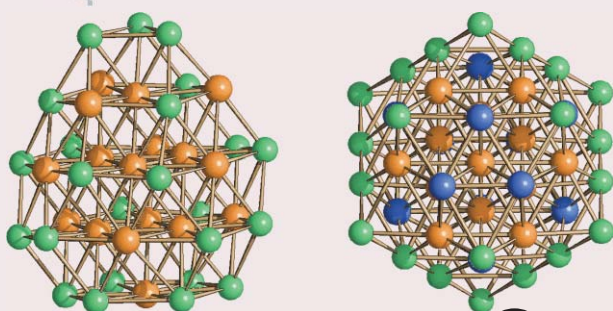


Self-oriented pseudoisocyanine J-aggregates in solution

Ken Takazawa*, Yasutaka Kitahama and Yasuyuki Kimura

Highly oriented fiber-shaped J-aggregates of pseudoisocyanine (PIC) molecules were obtained by simply growing the aggregates in a narrow glass cell, which allows evaporation of the solution in one direction.

2274

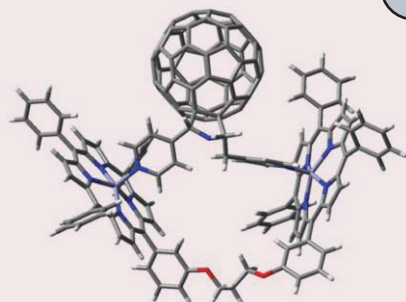


New high-nuclearity Ni–Pt carbonyl clusters: synthesis and X-ray structure of the ordered $[\text{H}_n\text{Ni}_{24}\text{Pt}_{17}(\text{CO})_{46}]^{5-}$ and the substitutionally Ni/Pt disordered $[\text{Ni}_{32}\text{Pt}_{24}(\text{CO})_{56}]^{6-}$ cluster anions

Cristina Femoni, M. Carmela Iapalucci, Giuliano Longoni* and Per H. Svensson

Condensation between preformed Ni–Pt and Pt carbonyl clusters leads to high-nuclearity $[\text{H}_{6-n}\text{Ni}_{24}\text{Pt}_{17}(\text{CO})_{46}]^{n-}$ ($n = 5, 6$) and $[\text{Ni}_{32}\text{Pt}_{24}(\text{CO})_{56}]^{6-}$ carbonyl clusters.

2276

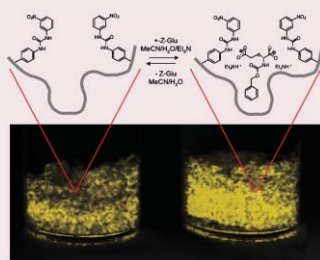


Supramolecular complex composed of a covalently linked zinc porphyrin dimer and fulleropyrrolidine bearing two axially coordinating pyridine entities

Francis D'Souza*, Suresh Gadde, Melvin E. Zandler, Mitsunari Itou, Yasuyuki Araki and Osamu Ito*

Efficient intramolecular photoinduced electron transfer from the singlet excited zinc porphyrin to the fullerene is observed in a newly assembled, highly stable, zinc porphyrin dimer–fullerene supramolecular complex.

2278

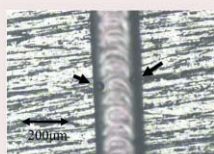
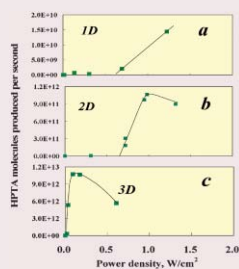


An enantioselective imprinted receptor for *Z*-glutamate exhibiting a binding induced color change

Panagiotis Manesiotis, Andrew J. Hall*, Marco Emgenbroich, Milena Quaglia, Ersilia De Lorenzi and Börje Sellergren*

Using 1-(4-styryl)-3-(3-nitrophenyl)urea as host monomer for the imprinting of *Z*-(D or L)-Glu, a polymeric receptor exhibiting strong enantioselectivity and a change in color intensity upon binding of the guest was obtained.

2280

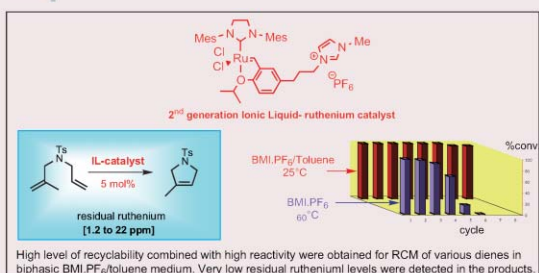


Ultrasonic cavitation in microspace

Yasuo Iida*, Kyuichi Yasui, Toru Tuziuti, Manickam Sivakumar and Yoshishige Endo

The presence of ultrasonic cavitation in microspaces was confirmed and the generation rates of OH radicals were evaluated with fluorometry.

2282

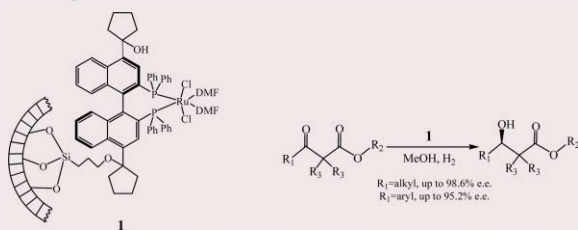


Ring-closing metathesis in biphasic BMI·PF₆ ionic liquid/toluene medium: a powerful recyclable and environmentally friendly process

Hervé Clavier, Nicolas Audic, Marc Mauduit* and Jean-Claude Guillemin*

High levels of recyclability combined with high reactivity were obtained for RCM of various dienes in biphasic BMI·PF₆/toluene medium. Very low residual ruthenium levels were detected in the products.

2284

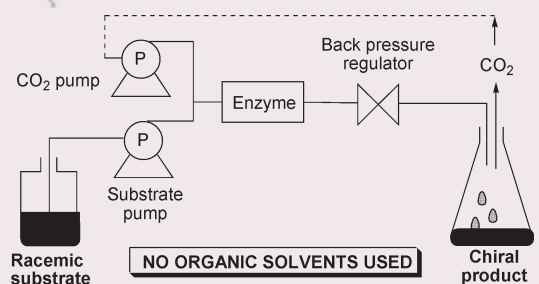


Mesoporous silica anchored Ru catalysts for highly enantioselective hydrogenation of β -ketoesters

Banu Kesanli and Wenbin Lin*

Recyclable and reusable mesoporous silica SBA-15 anchored Ru catalysts based on 4,4'-substituted BINAPs were synthesized and used for the hydrogenation of β -ketoesters with up to 98.6% e.e.

2286

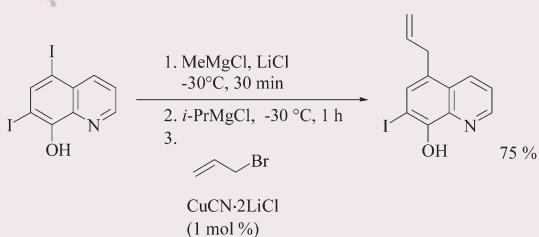


High-efficiency and minimum-waste continuous kinetic resolution of racemic alcohols by using lipase in supercritical carbon dioxide

Tomoko Matsuda*, Kazunori Watanabe, Tadao Harada, Kaoru Nakamura, Yoshitaka Arita, Yukihiko Misumi, Shinichiro Ichikawa and Takao Ikariya*

A novel continuous-flow scCO₂ process with improved productivity and minimized organic waste for kinetic resolution of racemic alcohols can be performed with an immobilized lipase leading to a quantitative mixture of the corresponding acetates with up to 99% ee and unreacted alcohols with up to 99% ee.

2288

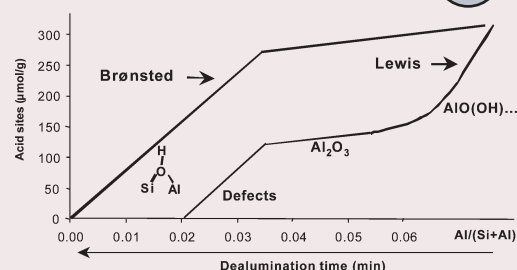


Convenient magnesiation of aromatic and heterocyclic rings bearing a hydroxy group in presence of LiCl

Felix Kopp, Arkady Krasovskiy and Paul Knochel*

The *in situ* protection of various functionalized hydroxy-substituted arenes and heteroarenes by MeMgCl in presence of LiCl followed by an I/Mg-exchange reaction provides the corresponding dimagnesiated species as THF soluble reagents, which react with various electrophiles in satisfactory to good yields.

2290

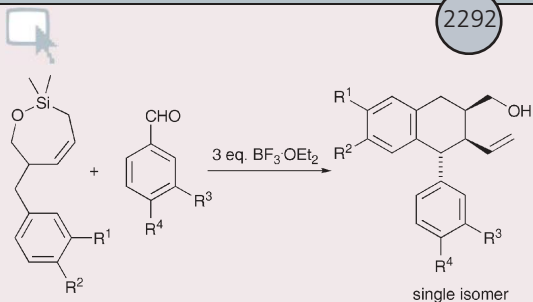


Semi-quantitative estimation by IR of framework, extraframework and defect Al species of HBEA zeolites

João P. Marques, Isabelle Gener, Philippe Ayrault, José M. Lopes, F. Ramôa Ribeiro and Michel Guisnet

A simple method based on the characterization (composition, Brønsted and Lewis acidities) of acid treated HBEA zeolites has been developed.

2292

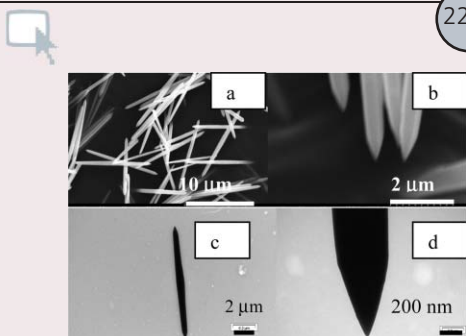


A novel, stereoselective and convergent synthesis of aryltetralins

Steven M. Miles, Stephen P. Marsden*, Robin J. Leatherbarrow and William J. Coates

A novel Lewis-acid mediated condensation of aldehydes and readily available allylsiloxanes leads to a one-pot stereoselective synthesis of functionalised aryltetralin skeleta of relevance to several bioactive natural products.

2294

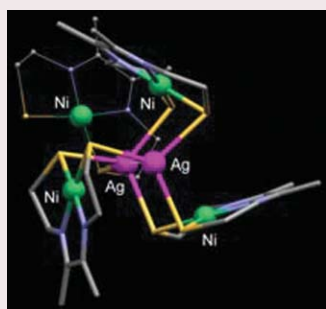


Microwave induced preparation of *a*-axis oriented double-ended needle-shaped ZnO microparticles

Deirdre Ledwith, Suresh C. Pillai, Graeme W. Watson and John M. Kelly*

Microwave irradiation of solutions of $\text{Zn}(\text{NO}_3)_2$ and urea provides a straightforward route to *a*-axis oriented crystals of needle-like morphology.

2296



Novel aggregation of $[\text{Ni}(\text{thiolato})_2(\text{amine})_2]$ -type square planes assisted by silver(I) ions

Takumi Konno*, Masafumi Usami, Masakazu Hirotsu, Takashi Yoshimura and Tatsuya Kawamoto

The pinwheel-like S-bridged $\text{Ni}^{\text{II}}_3\text{Ag}^{\text{I}}_2$ complex newly prepared from $[\text{Ni}(\text{L})]$ [$\text{L} = (\text{S}^-\text{CH}_2\text{CH}_2\text{NH}=\text{C}(\text{CH}_3)_2)_2$] and Ag^{I} showed reactivity toward additional $[\text{Ni}(\text{L})]$ to generate $\text{Ni}^{\text{II}}_4\text{Ag}^{\text{I}}_2$ and $\text{Ni}^{\text{II}}_7\text{Ag}^{\text{I}}_4$ metallo-aggregates, indicating their availability as a new class of heterometallic building block.

2298

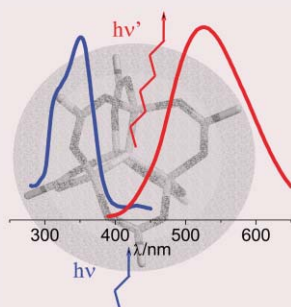


Low-temperature synthetic method for size-controlled CdSe nanocrystals: utilization of boron selenide

Nora Iancu, Renu Sharma and Dong-Kyun Seo*

By employing B_2Se_3 as a selenium source, relatively monodisperse, fluorescent CdSe nanocrystals can be conveniently prepared in various sizes selected from 2 to 13 nm, at reaction temperatures as low as 60°C .

2300

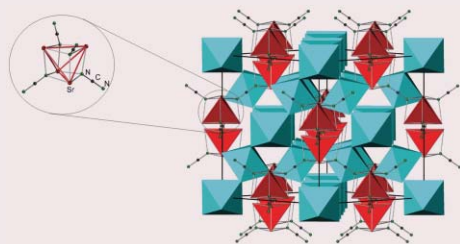


Electronic and vibrational properties of a MOF-5 metal-organic framework: ZnO quantum dot behaviour

S. Bordiga*, C. Lamberti, G. Ricchiardi, L. Regli, F. Bonino, A. Damin, K.-P. Lillerud, M. Bjorgen and A. Zecchina*

Photons at $h\nu = 28\,600\text{ cm}^{-1}$ are captured by the organic part of a MOF-5 metal-organic framework and efficiently transferred to the inorganic part, behaving as a ZnO quantum dot, emitting at $h\nu' = 19\,050\text{ cm}^{-1}$.

2302

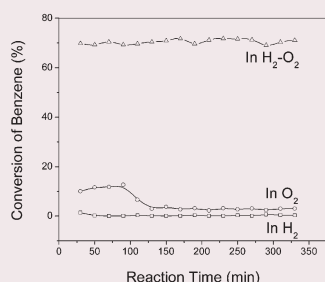


$\text{LiSr}_2(\text{NCN})\text{I}_3$: the first empty tetrahedral strontium(II) entity coordinated by carbodiimide units but without strontium–strontium bonding

Wuping Liao, Jörg von Appen and Richard Dronskowski*

$\text{LiSr}_2(\text{NCN})\text{I}_3$, the first extended compound containing empty tetrahedral Sr_4 entities, exhibits two interpenetrating three-dimensional networks made up from (a) Sr tetrahedra capped by NCN^{2-} anions on their triangular faces and (b) vertex-sharing LiI_6 octahedra.

2304

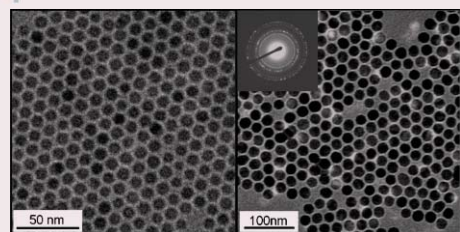


$\text{H}_2\text{-O}_2$ atmosphere increases the activity of Pt/TiO_2 for benzene photocatalytic oxidation by two orders of magnitude

Yilin Chen, Danzhen Li, Xinchun Wang, Xuxu Wang and Xianzhi Fu*

Unprecedented photocatalytic activity and durability of Pt/TiO_2 for decomposing benzene have been obtained by adding trace H_2 into an O_2 -rich photooxidation system.

2306

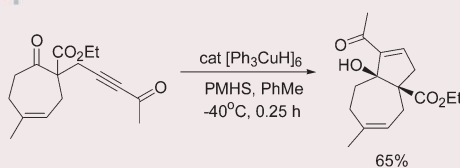


Synthesis of monodisperse iron oxide nanocrystals by thermal decomposition of iron carboxylate salts

William W. Yu, Joshua C. Falkner, Cafer T. Yavuz and Vicki L. Colvin*

Iron oxide (Fe_3O_4 , magnetite) nanocrystals of 6 to 30 nm with narrow size distributions ($\sigma = 5\text{--}10\%$) were prepared by the pyrolysis of iron carboxylate salts.

2308

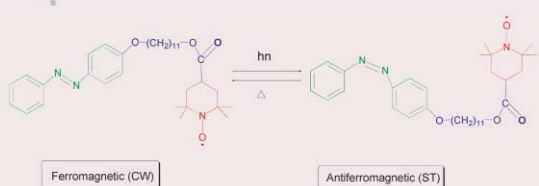


Stoichiometric and catalytic reductive aldol cyclizations of alkyne-diones induced by Stryker's reagent

Pauline Chiu* and Sze Kar Leung

Conjugate reductions of alkyne-diones by stoichiometric $[(\text{Ph}_3\text{P})\text{CuH}]_6$ or catalytic $[(\text{Ph}_3\text{P})\text{CuH}]_6$ and polymethylhydrosiloxane proceeds to tandem intramolecular aldol reactions to generate β -hydroxyenones with good diastereoselectivity.

2310

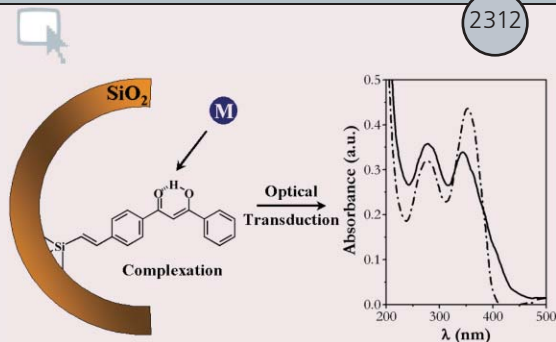


Azobenzene derivatives with a long alkyl chain and aminoxyls

Masahiro Fujino, Takamitsu Amano, Hiroki Akutsu, Jun-ichi Yamada and Shin'ichi Nakatsuji*

A *trans*-azobenzene derivative with a long alkyl chain and a TEMPO radical showed photo-induced isomerization to become the corresponding *cis*-isomer with a significant change of its intermolecular magnetic interaction.

2312

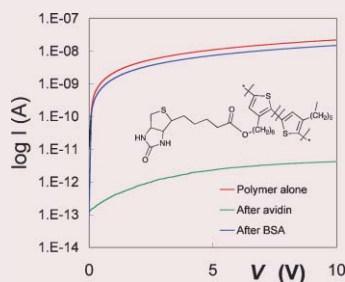


Advanced selective optical sensors based on periodically organized mesoporous hybrid silica thin films

Lionel Nicole, Cédric Boissière, David Grosso, Peter Hessemann, Joël Moreau and Clément Sanchez*

One pot synthesized mesoporous hybrid silica thin films functionalized with silylated aromatic β -diketones are used as fast, selective and sensitive optical sensors for uranyl species.

2314



A regioregular polyalkylthiophene bearing covalently-linked biotin, and its interaction with avidin in solution and in thin films

Fouzi Mouffouk, Simon J. Higgins*, Stewart J. Brown, Naser Sedghi, Bill Eccleston and Stuart Reeman

A regioregular polyalkylthiophene, as used in high-mobility TFT devices, has been functionalised with biotin groups and shown to respond selectively to avidin binding.

2316

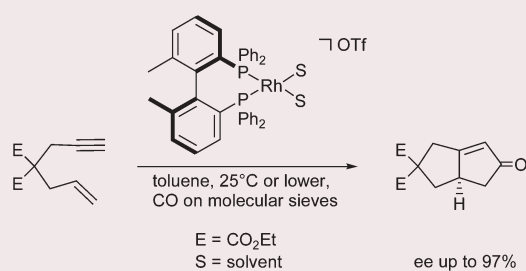


Superhydrophobic silica aerogels by fluorination at the gel stage

Anna Roig*, Elies Molins, Elisenda Rodríguez, Sandra Martínez, Marcial Moreno-Mañas and Adelina Vallribera*

Superhydrophobic silica aerogels are obtained by surface modification of standard silica gels prepared by a two-step process with a heavily fluorinated silyl chloride followed by supercritical evacuation of the solvent.

2318

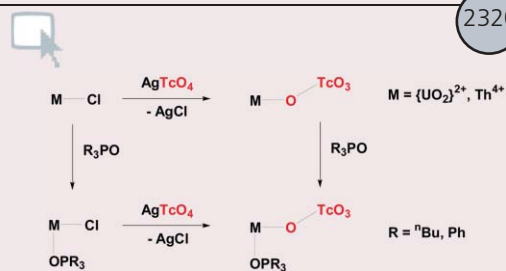


Mechanistic and stereochemical aspects of the asymmetric cyclocarbonylation of 1,6-enynes with rhodium catalysts

Thomas M. Schmid and Giambattista Consiglio*

NMR and kinetic investigations of the cyclocarbonylation of 1,6-enynes with cationic rhodium(I) catalysts, modified with atropisomeric diphosphines, disprove the involvement of carbonyl species for 1,6-enyne activation. Low-temperature catalysis, with molecular sieves as the carbon monoxide reservoir, is highly enantioselective (ee up to 97%).

2320

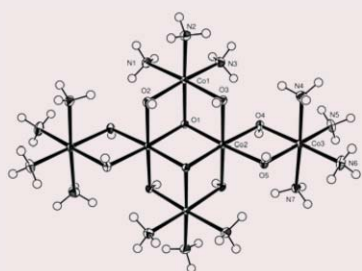


Coordination of pertechnetate $[\text{TcO}_4]^-$ to actinides

Mark J. Sarsfield*, Andrew D. Sutton, Iain May, Gordon H. John, Clint Sharrad and Madeleine Helliwell

AgTcO_4 is a very useful reagent for probing the coordination chemistry of pertechnetate in demonstrating that $[\text{TcO}_4]^-$ will readily coordinate to tetra- and hexa-valent actinide centres.

2322

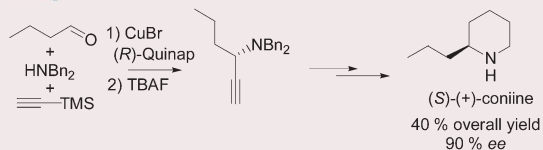


The rediscovery of Alfred Werner's second hexol

W. Gregory Jackson*, Josephine A. McKeon,
Margareta Zehnder*, Markus Neuberger* and Silvio Fallab

A compound originally prepared by Alfred Werner has been shown to be a hexanuclear species which can now be regarded as Werner's second hexol.

2324

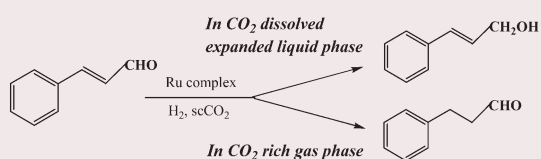


Practical highly enantioselective synthesis of terminal propargylamines. An expeditious synthesis of (*S*)-(+)-coniine

Nina Gommermann and Paul Knochel*

Enantiomerically enriched propargylamines can be prepared efficiently by reacting trimethylsilylacetylene, aldehydes and dibenzylamine in the presence of CuBr/Quinap as catalyst (up to 99%, 98% *ee*). This method is used for the synthesis of the alkaloid (*S*)-(+)-coniine.

2326

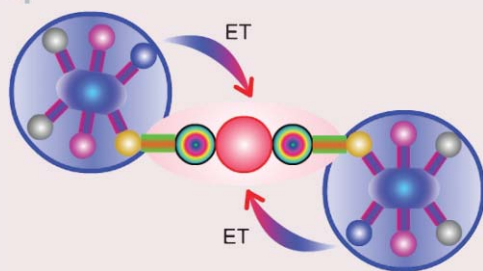


Carbon dioxide-expanded liquid substrate phase: an effective medium for selective hydrogenation of cinnamaldehyde to cinnamyl alcohol

Fengyu Zhao, Shin-ichio Fujita, Jianmin Sun, Yutaka Ikushima and Masahiko Arai*

The phase behaviour has significant effects on cinnamaldehyde (CAL) hydrogenation using a Ru complex catalyst in supercritical carbon dioxide (scCO₂). In a CO₂ dissolved expanded CAL liquid phase, the C=O bond can be selectively hydrogenated, while the C=C bond is hydrogenated in a CO₂-rich gas phase.

2328

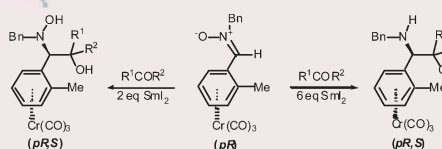


Energy harvesting star-shaped molecules for electroluminescence applications

K. R. Justin Thomas, Marappan Velusamy, Jiann T. Lin*,
Shih-Sheng Sun*, Yu-Tai Tao and Chang-Hao Chuen

Novel energy harvesting molecules featuring hexaarylbenzene based triarylamine donors and a dithienyl benzothiadiazole acceptor, and that emit red light in electroluminescent devices, have been prepared for the first time.

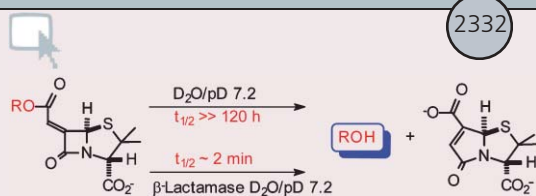
2330



First asymmetric SmI₂-induced cross-coupling of Cr(CO)₃ aromatic nitrone complexes with carbonyl compounds

Murielle Chavarot, Michaël Rivard, Françoise Rose-Munch*,
Eric Rose and Sandrine Py

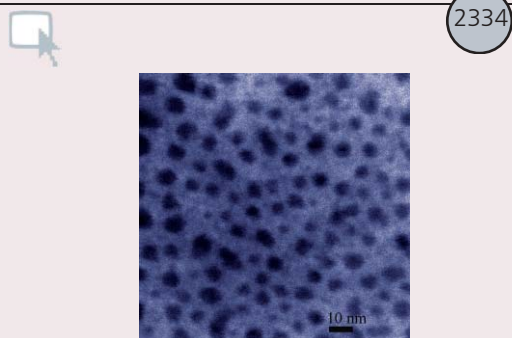
The highly chemo- and diastereoselective SmI₂-induced cross-coupling of Cr(CO)₃ nitrone complexes with carbonyl compounds affords enantiopure β-*N*-hydroxylamino or β-amino alcohol complexes in excellent yields.



Penicillins as β -lactamase-dependent prodrugs: enabling role of a vinyl ester exocyclic to the lactam ring

Carol C. Ruddle and Timothy P. Smyth*

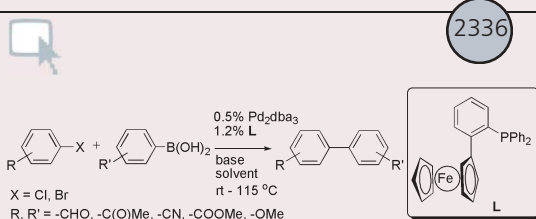
Incorporation of a vinyl ester exocyclic to the β -lactam ring of a penicillin nucleus enables this to act as a β -lactamase-dependent prodrug – rapid release of the (unactivated) alkoxy component of the vinyl ester is triggered by enzyme-catalysed hydrolysis of the β -lactam ring, whilst buffer-catalysed hydrolysis of the structure at neutral pH is particularly slow.



A new approach to the synthesis of conjugated polymer–nanocrystal composites for heterojunction optoelectronics

Andrew Watt*, Elizabeth Thomsen, Paul Meredith and Halina Rubinsztein-Dunlop

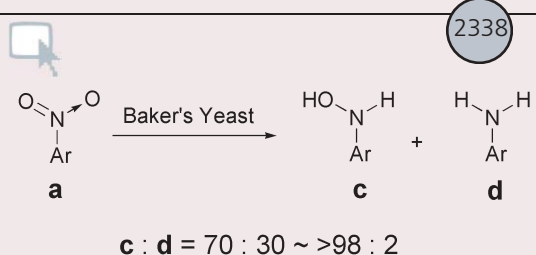
We report a simple one pot process for the preparation of lead sulfide nanocrystals in the conjugated polymer poly(2-methoxy-5-(2'-ethyl-hexyloxy)-*p*-phenylene vinylene) suitable for use in heterojunction optoelectronic devices.



An active ferrocenyl triarylphosphine for palladium-catalyzed Suzuki–Miyaura cross-coupling of aryl halides

Fuk Yee Kwong*, Kin Shing Chan, Chi Hung Yeung and Albert S. C. Chan*

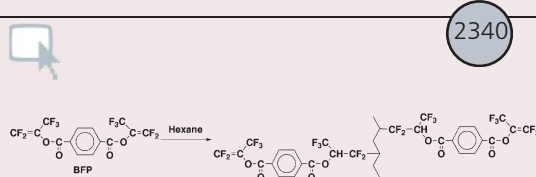
Pd-catalyzed Suzuki–Miyaura coupling of aryl halides was accomplished through the use of an active ferrocene-based triarylphosphine ligand. This air- and moisture-stable ligand was found to be active for cross-coupling at RT to 115 °C.



A novel strategy for the preparation of arylhydroxylamines: chemoselective reduction of aromatic nitro compounds using bakers' yeast

Feng Li, Jingnan Cui*, Xuhong Qian* and Rong Zhang

Using bakers' yeast as a biocatalyst, the chemoselective reduction of aromatic nitro compounds bearing electron-withdrawing groups gave the corresponding hydroxylamines with good to excellent conversion under mild conditions.

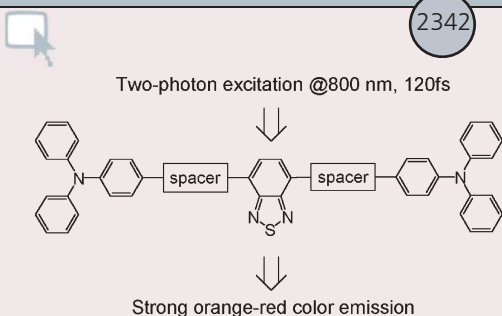


Oligomer preparation from hexane by radical polyaddition with bis(α -trifluoromethyl- β,β -difluorovinyl) terephthalate

Tadashi Narita*, Hiroshi Hamana and Satoshi Hattori

Polymer preparation from hexane as a starting material by radical polyaddition with bis(α -trifluoromethyl- β,β -difluorovinyl) terephthalate [CF₂=C(CF₃)OCOC₆H₄COOC(CF₃)=CF₂] was investigated to afford polymers bearing a molecular weight of as high as 5.5×10^3 .

2342

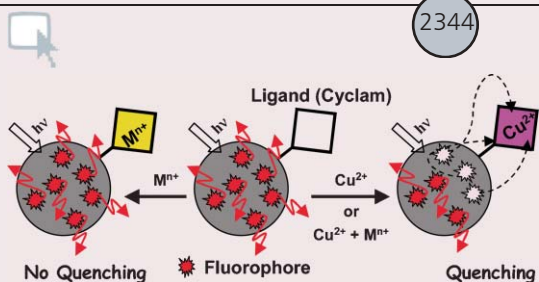


Strongly red-fluorescent novel donor- π -bridge-acceptor- π -bridge-donor (D- π -A- π -D) type 2,1,3-benzothiadiazoles with enhanced two-photon absorption cross-sections

Shin-ichiro Kato, Taisuke Matsumoto, Tsutomu Ishi-i, Thies Thiemann, Motoyuki Shigeiwa, Hideki Gorohmaru, Shuichi Maeda, Yoshiro Yamashita and Shuntaro Mataka*

Novel donor- π -bridge-acceptor- π -bridge-donor (D- π -A- π -D) type 2,1,3-benzothiadiazole fluorescent dyes connected to the *N,N*-diarylamino terminus *via* various type π -conjugate spacers exhibited large two-photon absorption cross-sections and high fluorescent quantum yields in orange-red color.

2344

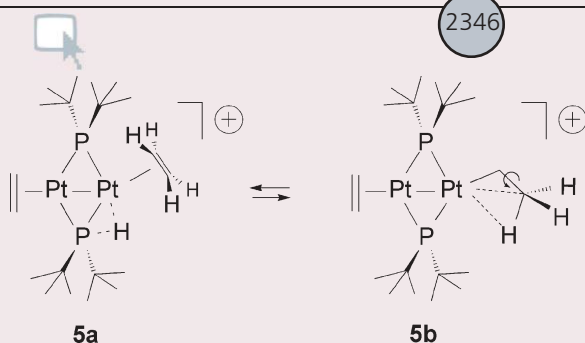


Metal-chelating nanoparticles as selective fluorescent sensor for Cu^{2+}

Rachel Méallet-Renault, Robert Pansu, Sonia Amigoni-Gerbier and Chantal Larpent*

A fluorescent sensor for Cu^{2+} at the nanomolar level in water has been designed by associating a BODIPY fluorophore and an efficient ligand in 16 nm polymer particles.

2346

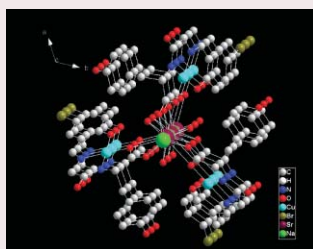


Structure and protonation of the bis-ethylene adduct $[\text{Pt}(\mu\text{-PBu}_2)(\eta^2\text{-CH}_2\text{=CH}_2)_2]$. Pt-H-P agostic interaction and proton scrambling

Piero Leoni*, Fabio Marchetti, Lorella Marchetti and Vincenzo Passarelli

The bis-ethylene derivative $[\text{Pt}(\mu\text{-PBu}_2)(\eta^2\text{-CH}_2\text{=CH}_2)_2]$ was prepared and characterized by X-ray diffraction. Its protonation affords $[\text{Pt}_2(\mu\text{-PBu}_2)(\mu\text{-PBu}_2\text{H})(\eta^2\text{-CH}_2\text{=CH}_2)_2](\text{CF}_3\text{SO}_3)$, exhibiting an exceedingly rare P-H-M (unprecedented for M = Pt) agostic interaction. The scrambling of the agostic proton with those of the adjacent ethylene molecule is also discussed.

2348

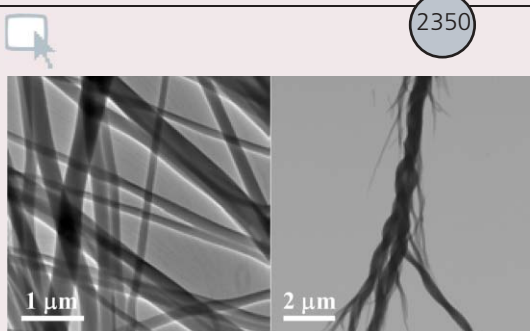


Self-assembly of a 1D heterotrimetallic Cu(II)-Sr(II)-Na(I) propeller-like chiral coordination polymer with ferromagnetic interactions

Wenlong Liu, You Song, Yizhi Li, Yang Zou, Dongbin Dang, Chunlin Ni and Qingjin Meng*

Metalloligand $[\text{CuL}]^-$ ($\text{H}_3\text{L} = N$ -5-bromosalicylaldehydeglycyl-L-tyrosine), Sr^{2+} and Na^+ are bridged through μ_2 -carboxylate oxygen atoms and μ_2 - H_2O , resulting in a 1D propeller-like chiral heterotrimetallic coordination polymer exhibiting weak ferromagnetic exchange interactions.

2350

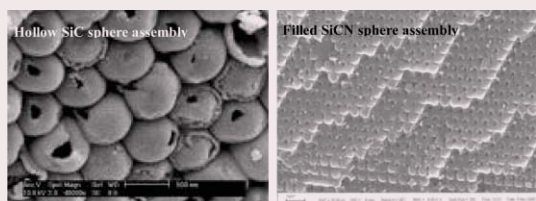


Polyaniline superstructures created by a templating effect of organogels

Chun Li, Tsukasa Hatano, Masayuki Takeuchi and Seiji Shinkai*

The organogelators are useful as a template to create chiral and achiral polyaniline superstructures *via* the electrostatic interaction between anionic polyaniline and a cationic gelator.

2352

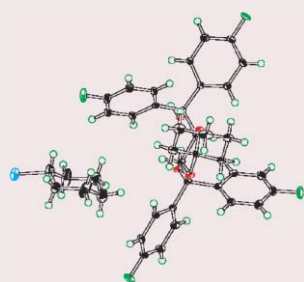


Inorganic polymer-derived hollow SiC and filled SiCN sphere assemblies from a 3DOM carbon template

Hao Wang, Jong-Sung Yu, Xiao-dong Li and Dong-pyo Kim*

Three-dimensional long range ordered hollow SiC and filled SiCN sphere assemblies were prepared from three-dimensional ordered macroporous carbon templates that were made from silica arrays.

2354

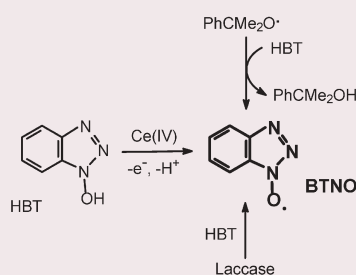


Isolation of equatorial conformers of chloro- and bromocyclohexane in a pure state as inclusion complexes with a host compound

Shinya Hirano, Shinji Toyota and Fumio Toda*

The equatorial conformers of chloro- and bromocyclohexane were isolated in a pure state as inclusion complexes with a host compound, and their structures were studied by IR spectra and X-ray analysis.

2356

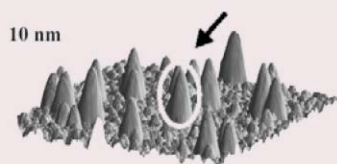


Spectrophotometric, EPR and kinetic characterisation of the $>N-O^{\bullet}$ radical from 1-hydroxybenzotriazole, a key reactive species in mediated enzymatic oxidations

Carlo Galli*, Patrizia Gentili, Osvaldo Lanzalunga, Marco Lucarini and Gian Franco Pedulli

Characterisation of the aminoxyl ($>N-O^{\bullet}$) radical BTNO, generated from 1-hydroxybenzotriazole (HBT) by the one-electron oxidant CAN, confirms BTNO as the reactive intermediate in oxidations by the laccase/HBT system.

2358

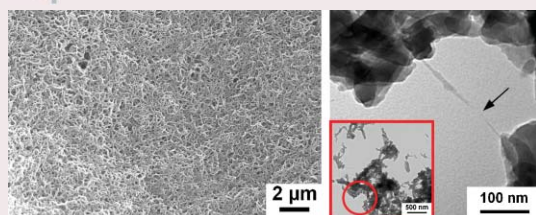


Irreversible or reversible self-assembly procedures yield robust zirconium (iv)-porphyrinphosphonate cones or μm -long fibers of monomolecular thickness

Andreas Klyszcz, Matthias Lauer, Marta Kopaczynska, Christoph Böttcher, Ferdinand Gonzaga and Jürgen-Hinrich Fuhrhop*

Porphyrinphosphonate assembly *via* zirconium(IV) favors irreversible side-on attachments. An exclusively linear tower growth was achieved by reversible face-to-face attachment at high pH without heavy metal ions.

2360



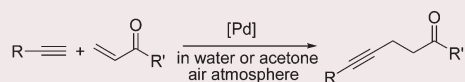
Polyaniline nanofibers: chemical synthesis using surfactants

Xinyu Zhang and Sanjeev K. Manohar*

Polyaniline.HCSA nanofibers (30–50 nm diameter) can be obtained by non-ionic surfactant-assisted polymerization of aniline. Subsequent bath sonication yields very small diameter fibers which from TEM images appear to be consistent with a quasi 1D single molecule polyaniline fiber.

COMMUNICATIONS

2362

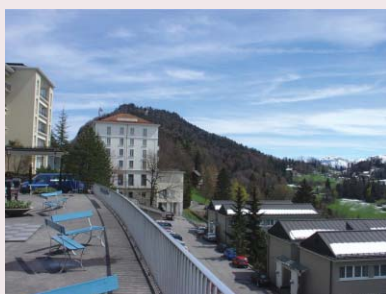
**The first palladium-catalyzed 1,4-addition of terminal alkynes to conjugated enones**

Liang Chen and Chao-Jun Li*

The first palladium-catalyzed 1,4-addition of terminal alkynes to conjugated enones has been developed in water and in acetone, producing the corresponding γ,δ -alkynyl ketones in high yields.

CONFERENCE REPORT

2365

**Highlights from the 39th ESF/EUCHEM Conference on Stereochemistry, Bürgenstock, Switzerland, April 2004**

Christopher J. Hayes and David R. Spring

ADDITIONS AND CORRECTIONS

2368

Alexei S. Karpov, Thomas Oeser
and Thomas J. J. Müller*

A novel one-pot four-component access to tetrahydro- β -carbolines by a coupling-amination-aza-annulation-pictet-spengler sequence (CAAPS)

Nandkumar M. Patil, Ashutosh A. Kelkar,
Zahid Nabi and Raghunath V. Chaudhari

Novel CuI/tributyl phosphine catalyst system for amination of aryl chlorides

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.

Tel: +44 (0) 20 7437 8656; Fax: +44 (0) 20 7287 9798; E-mail: library@rsc.org

FREE E-MAIL ALERTING SERVICE

Contents lists in advance of publication are available on the web via www.rsc.org/chemcomm — or take advantage of our free e-mail alerting service (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 electronic form of this journal is provided with a full-rate institutional subscription. See www.rsc.org/ejs for more information.

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



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