IN THIS ISSUE

ISSN 1359-7345 CODEN CHCOFS (32) 4013–4128 (2005)

In this issue...

A novel, simple procedure towards two new classes of core-extended perylene chromophores. See Sibylle Müller and Klaus Müllen, page 4045.

Cover

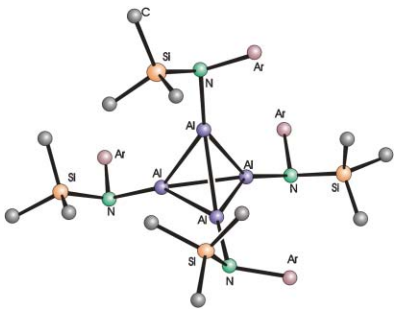
See Isamu Kinoshita *et al.*, page 4047. The 2-D clathrate hydrate of toluene is formed by the aggregation of a trace amount of water in toluene by strong hydrogen bonds with [CuF(tptm)]. Image reproduced by permission of Riichi Miyamoto, Rika Tanaka Hamazawa, Masakazu Hirotsu, Takanori Nishioka, Isamu Kinoshita and L. James Wright, from *Chem. Commun.*, 2005, 4047–4049.

FEATURE ARTICLE

Chemistry of aluminium(I)

Herbert W. Roesky* and S. Shravan Kumar

The presence of a lone pair of electrons plays an important role in the preparation of aluminium-containing heterocyclic compounds, main group–main group and transition metal–main group compounds having donor–acceptor bonds by carrying out reactions with unsaturated compounds and Lewis acids.

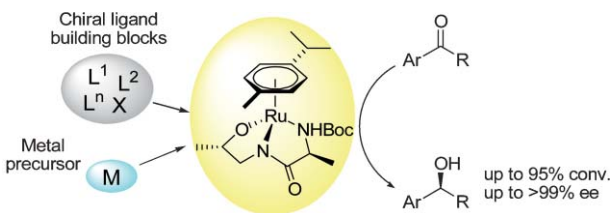


COMMUNICATIONS

In situ formation of ligand *and* catalyst—application in ruthenium-catalyzed enantioselective reduction of ketones

Patrik Västilä, Jenny Wettergren and Hans Adolfsson*

The direct *in situ* formation of highly efficient ruthenium-catalysts for the asymmetric reduction of ketones was obtained by combining chiral ligand building blocks with a ruthenium precursor. Aryl alkyl ketones were reduced under hydrogen transfer conditions in high conversions with excellent enantiomeric excess (up to > 99% ee).



Chemical Communications (print: ISSN 1359-7345; electronic: ISSN 1364-548X) is published 48 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF. All orders, with cheques made payable to the Royal Society of Chemistry, should be sent to RSC Distribution Services, c/o Portland Customer Services, Commerce Way, Colchester, Essex, UK CO2 8HP. Tel +44 (0)1206 226050; E-mail sales@rscdistribution.org

2005 Annual (print + electronic) subscription price: £1595; US$2635. 2005 Annual (electronic) subscription price: £1435; US$2370. 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

ChemComm

Chemical Communications

www.rsc.org/chemcomm

EDITORIAL BOARD

ASSOCIATE EDITORS

Submissions should be sent *via* ReSourCe: http://www.rsc.org/resource
Manuscripts from North America should be submitted to the appropriate Associate Editor.

Supramolecular
Jerry L. Atwood

Organic
P. Andrew Evans

Chemical biology
Barbara Imperiali

Inorganic, Organometallic and Materials
T. Don Tilley

Submissions from other regions should be submitted to the Editor ***via*** ReSourCe at http://www.rsc.org/resource. For information on how to submit your manuscript see http://www.rsc.org/authors

SCIENTIFIC EDITORS

The Scientific Editors welcome enquiries from potential authors regarding the submission and scientific content of papers. For more information please see http://www.rsc.org/authors

Dermot O'Hare
Donald Hilvert
Mir Wais Hosseini
Alois Fürstner

EDITORIAL ADVISORY BOARD

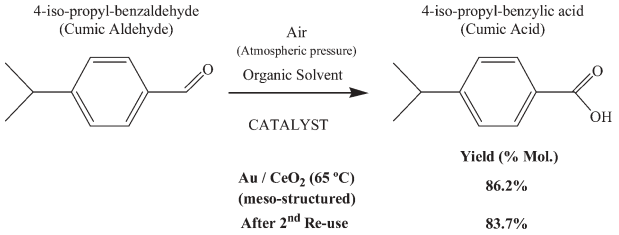
The paper used in this publication meets the requirements of ANSI/NISO Z39.48–1992 (Permanence of Paper).

4042

Gold supported on a mesoporous CeO_2 matrix as an efficient catalyst in the selective aerobic oxidation of aldehydes in the liquid phase

Avelino Corma* and Marcelo E. Domine

Gold supported on CeO_2 catalyses the selective aerobic oxidation of aliphatic and aromatic aldehydes better than other reported catalysts such as Pt/C/Bi materials. The activity is due to the nanometric particle size of Au and CeO_2.

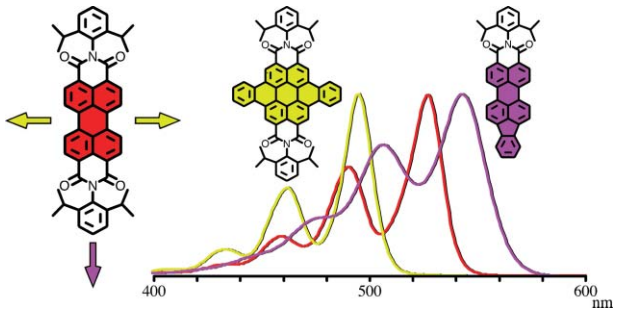


4045

Facile synthetic approach to novel core-extended perylene carboximide dyes

Sibylle Müller and Klaus Müllen*

The straightforward synthesis of two new classes of core-extended perylene chromophores, dibenzocoronene tetracarboxdiimide and indenoperylene dicarboxmonoimide, proves that directional enlargement of the aromatic π-system leads to tailored bathochromic and hypsochromic shifts.

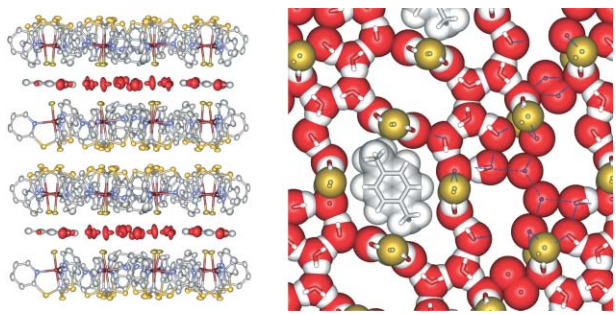


4047

A two-dimensional clathrate hydrate sandwiched by planar arrays of a copper complex

Riichi Miyamoto, Rika Tanaka Hamazawa, Masakazu Hirotsu, Takanori Nishioka, Isamu Kinoshita* and L. James Wright*

A 2-D clathrate hydrate of toluene spontaneously assembles between planar arrays of [CuF(tptm)] (tptm = tris(2-pyridylthio)methyl) when this amphiphilic complex crystallises from toluene–water mixtures.

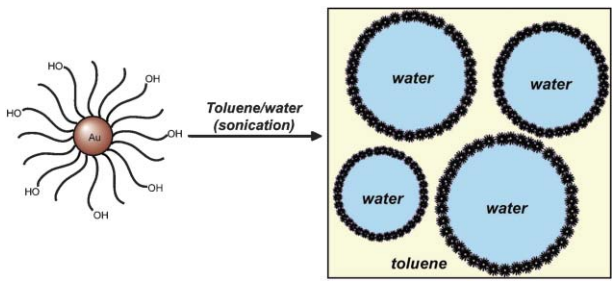


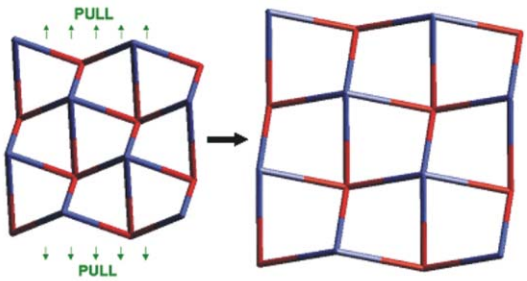
4050

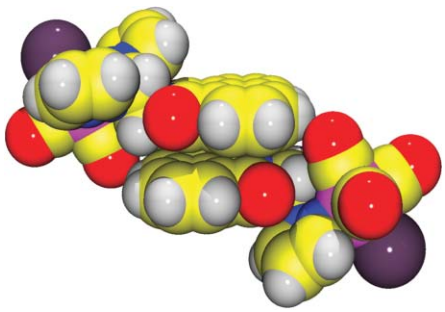
Mixed monolayer coverage on gold nanoparticles for interfacial stabilization of immiscible fluids

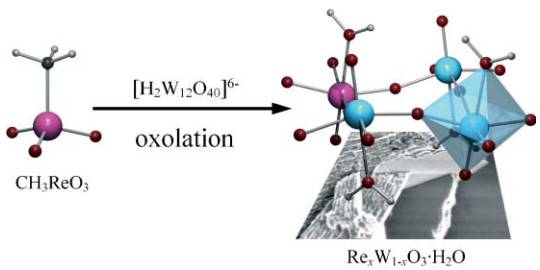
Elizabeth Glogowski, Jinbo He, Thomas P. Russell* and Todd Emrick*

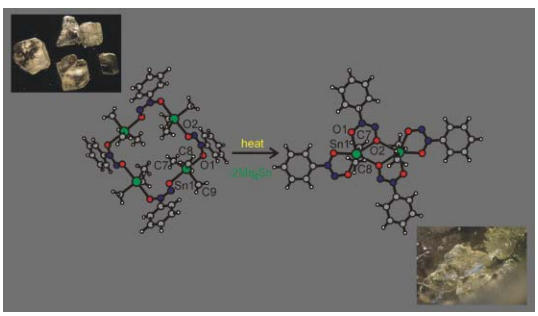
Gold nanoparticles covered with a mixed monolayer of *n*-dodecanethiol and 11-mercapto-1-undecanol were prepared and found to mediate the oil–water interface, providing access to stable water droplets in oil.

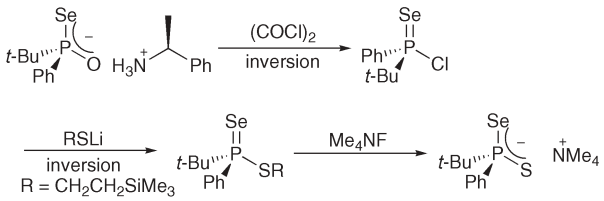








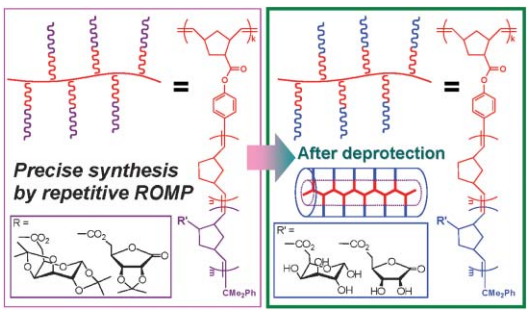




Enantiomerically pure P-chiral phosphinoselenoic chlorides: inversion of configuration at the P-chirogenic center in the synthesis and reaction of these substances

Tsutomu Kimura and Toshiaki Murai*

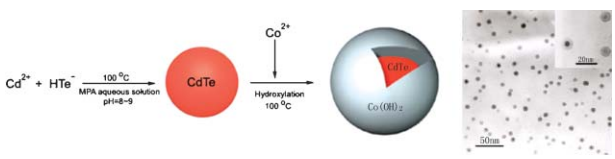
Optically active P-chiral phosphinoselenoic chlorides were successfully synthesized by reacting optically active phosphinoselenoic acid salts with oxalyl chloride. The chloride was converted to a phosphinoselenothioic acid salt with high ee.



Precise synthesis of poly(macromonomer)s containing sugars by repetitive ring-opening metathesis polymerisation

James J. Murphy and Kotohiro Nomura*

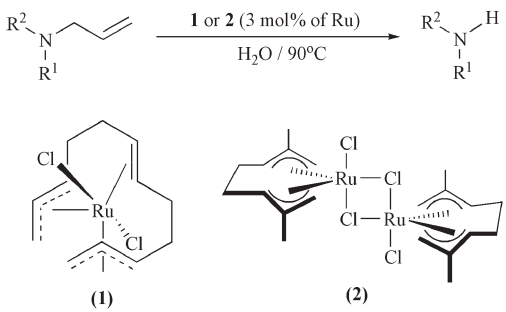
The precise synthesis of poly(macromonomer)s containing sugars has been demonstrated using a repetitive ROMP technique, which upon removal of the sugar protecting groups affords a novel amphiphilic architecture.



$CdTe@Co(OH)_2$ (core–shell) nanoparticles: aqueous synthesis and characterization

Liang Li, Huifeng Qian and Jicun Ren*

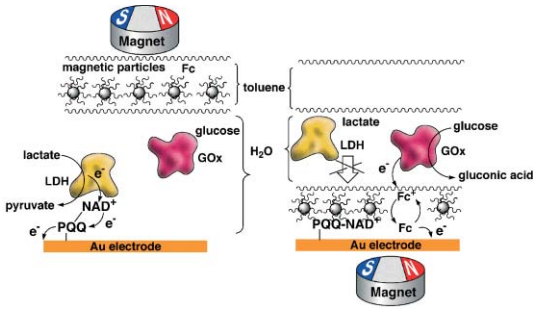
A seed-mediated growth approach for preparation of $CdTe@Co(OH)_2$ (core–shell) nanoparticles in the aqueous phase is reported.

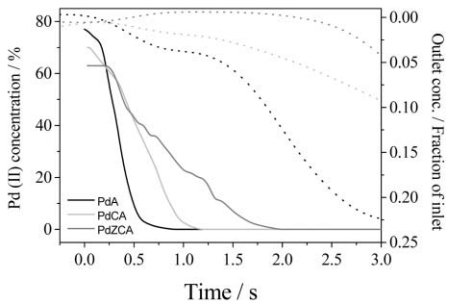


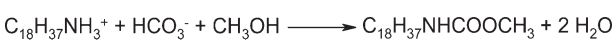
Ru(IV)-catalyzed isomerization of allylamines in water: A highly efficient procedure for the deprotection of *N*-allylic amines

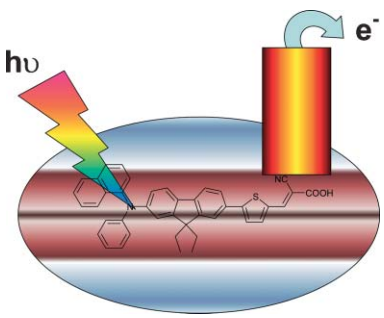
Victorio Cadierno,* Sergio E. García-Garrido, José Gimeno* and Noel Nebra

A general and efficient procedure for the deprotection of *N*-allylic substrates in aqueous media, using catalytic amounts of the bis(allyl)-ruthenium(IV) complexes $[Ru(\eta^3:\eta^2:\eta^3\text{-}C_{12}H_{18})Cl_2]$ (**1**) and $[\{Ru(\eta^3:\eta^3\text{-}C_{10}H_{16})(\mu\text{-}Cl)Cl\}_2]$ (**2**), has been developed.

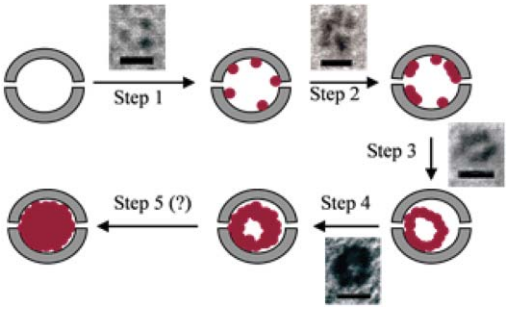








4101

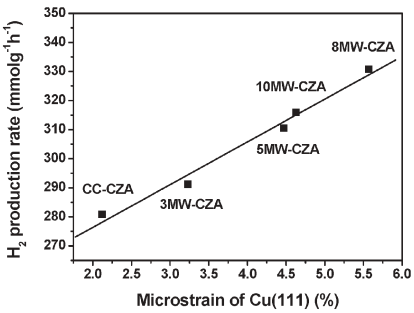


Cobalt oxide hollow nanoparticles derived by bio-templating

Jae-Woo Kim,* Sang H. Choi,* Peter T. Lillehei, Sang-Hyon Chu, Glen C. King and Gerald D. Watt

We present here the hollow cobalt oxide nanoparticles by controlling the number of metal atoms inserted in ferritin and describe the metal growth mechanism in the ferritin interior.

4104

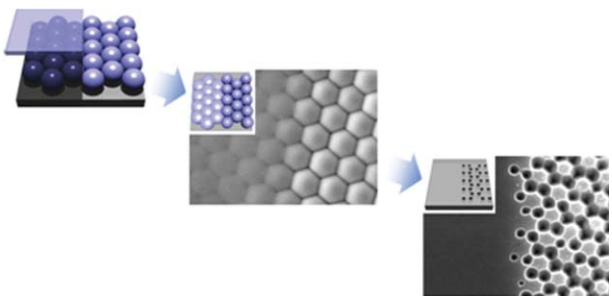


A unique microwave effect on the microstructural modification of $Cu/ZnO/Al_2O_3$ catalysts for steam reforming of methanol

Xin-Rong Zhang, Lu-Cun Wang, Yong Cao,* Wei-Lin Dai, He-Yong He and Kang-Nian Fan*

A short time (3–10 min) of microwave irradiation on the $CuO/ZnO/Al_2O_3$ oxide precursor can result in a unique tailored microstructural modification on the catalyst, leading to a significantly enhanced performance for H_2 production from steam reforming of methanol.

4107

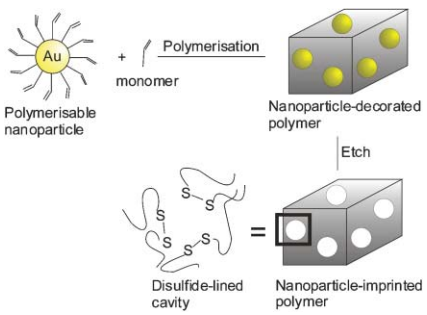


Colloidal lithography with crosslinkable particles: fabrication of hierarchical nanopore arrays

Jun Hyuk Moon, Won Sun Kim, Jong-Wook Ha, Se Gyu Jang, Seung-Man Yang* and Jung-Ki Park

Colloidal lithography with self-assembled monolayers of crosslinkable polymeric particles has been developed to create hierarchical arrays of nanopores on substrates.

4110



Au nanoparticle-imprinted polymers

Stéphanie Koenig and Victor Chechik*

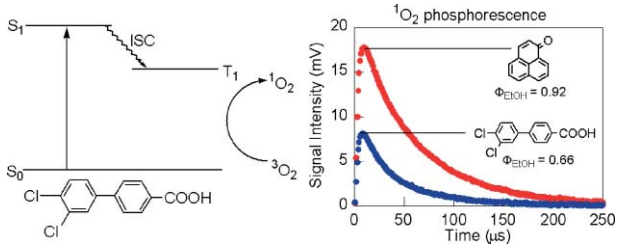
Au nanoparticles protected with a polymerisable ligand were incorporated into bulk macroporous polymers; etching the metal core resulted in disulfide-lined, nanometre-scale cavities capable of recognising similarly-sized Au particles.

4113

Photosensitizing properties of 2,4-dichlorobenzoic acid and chlorinated biphenyl carboxylic acids, potentially key components of chromophoric dissolved organic matter

Anne L. Boreen and Kristopher McNeill*

2,4-Dichlorobenzoic acid and a suite of chlorinated biphenyl carboxylic acids were found to be efficient sensitizers of the reactive oxygen species singlet oxygen ($^1O_2$).

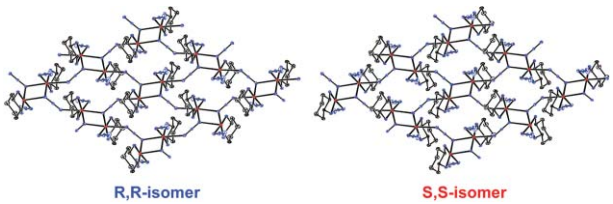


4116

Chiral azide-bridged two-dimensional Cu(II) compounds showing a field-induced spin–flop transition

Young Sin You, Jung Hee Yoon, Hyoung Chan Kim and Chang Seop Hong*

Two azide-bridged chiral Cu(II) compounds, $[Cu(R,R\text{-dacy})(N_3)_2]_n$ (**1**) (*R*,*R*-dacy = *trans*-(1*R*,2*R*)-diaminocyclohexane) and $[Cu(S,S\text{-dacy})(N_3)_2]_n$ (**2**) (*S*,*S*-dacy = *trans*-(1*S*,2*S*)-diaminocyclohexane), with two-dimensional layer structures exhibiting end-to-end and end-on azide bridging patterns, were prepared and **1** undergoes a field-induced spin–flop transition.

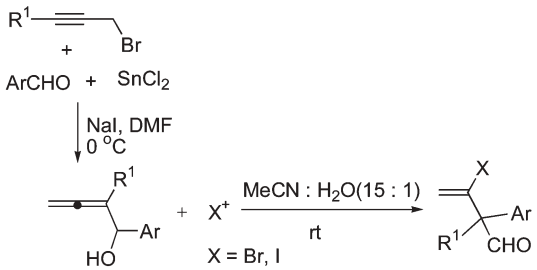


4119

Efficient two-step synthesis of 3-halo-3-enals or 2-halo-2-alkenyl ketones from propargylic bromides *via* a unique cationic 1,2-aryl or proton shift in electrophilic addition reaction of 2,3-allenols with X^+

Chunling Fu, Jing Li and Shengming Ma*

The reaction of readily available 1-substituted 2,3-allenols with Br_2, NBS, or I_2 afforded the not-easily-available but synthetically useful 3-halo-3-alkenals or 2-halo-2-alkenyl ketones in good yields *via* a sequential electrophilic interaction of X^+ with the allene moiety, a 1,2-aryl or proton shift, and a H^+-elimination process.

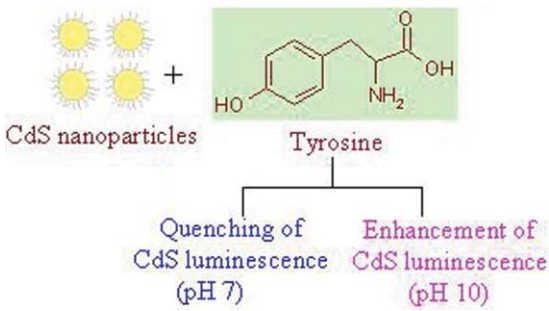


4122

Size dependent interaction of biofunctionalized CdS nanoparticles with tyrosine at different pH

Amiya Priyam, Anindita Chatterjee, Satyen K. Das and Abhijit Saha*

Enhancement of fluorescence of CdS nanoparticles by tyrosine at pH 10 in contrast to Stern–Volmer quenching at pH 7 was observed and both the effects were found to depend on the size of the nanoparticles.



AUTHOR INDEX

FREE E-MAIL ALERTS

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.

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

Electronic supplementary information (ESI) is available *via* the online article (see http://www.rsc.org/esi for general information about ESI).

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.

Professor Don Tilley

US Associate Editor for inorganic, organometallic and materials chemistry, *ChemComm*

ChemComm is the leading international journal for the publication of communications on important new developments in the chemical sciences.

Each one of ChemComm's US Associate Editors is happy to receive submissions from the Americas in their subject area.

T. Don Tilley is Professor of Chemistry at the University of California, Berkeley. His research involves synthetic, structural, and reactivity studies in organometallic systems. Metal-mediated routes to new polymers, and molecular approaches to the designed construction of advanced solid state materials and heterogeneous catalysts are also being developed.

Call for papers!

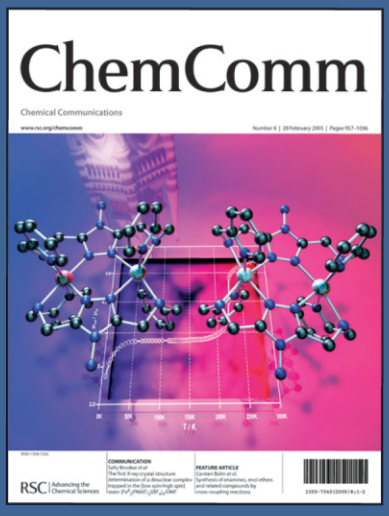
Professor Tilley is pleased to receive papers on important developments in inorganic, organometallic and materials chemistry. Submit today at **www.rsc.org/resource**

For enquiries, please contact:
Professor Tilley at chemcomm@berkeley.edu

17050525

Why publish in ChemComm:

- Impact factor: 4.031
- Rapid publication – typically 60 days (from receipt to publication)
- Now: weekly publication
- 3 page communications – providing authors with the flexibility to develop their results and discussion
- 40 years publishing excellent research
- High visibility – indexed in MEDLINE
- 'Hot papers' are highlighted – helping authors to promote their work
- FREE colour where scientifically necessary
- FREE inclusion in Chemical Biology Virtual Journal



Submit today!

RSC | Advancing the Chemical Sciences

www.rsc.org/chemcomm

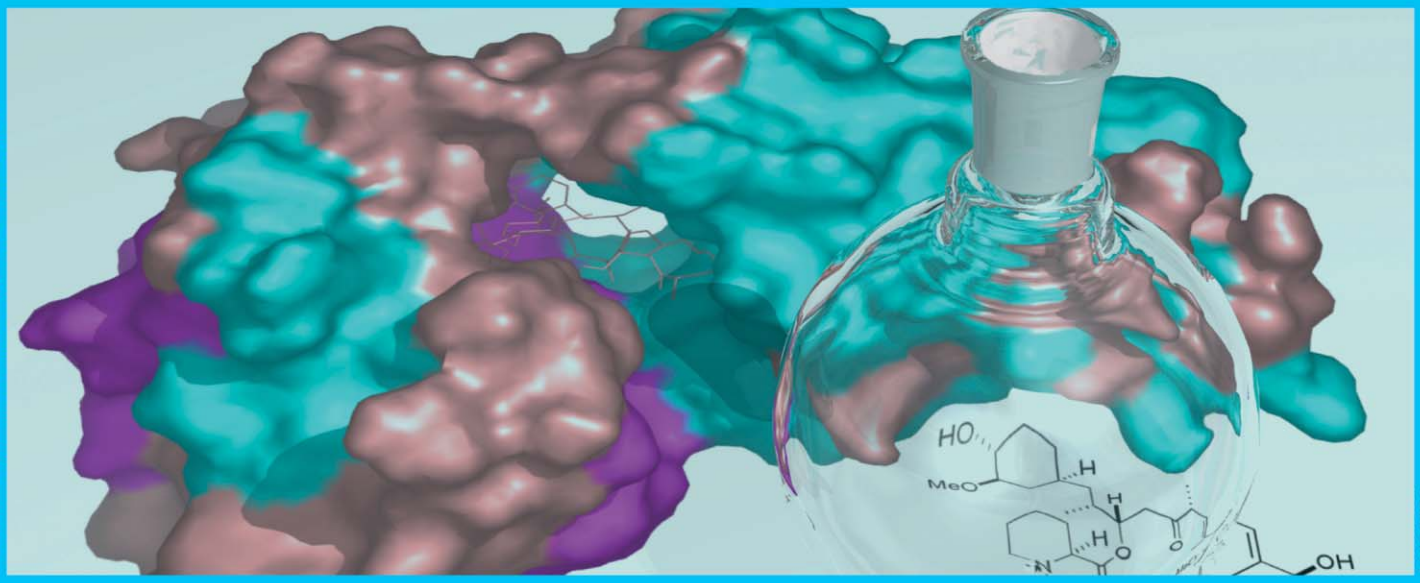


Image reproduced by permission of David R. Spring, *Chem. Soc. Rev.*, 2005, **34**(6), 472

21030554

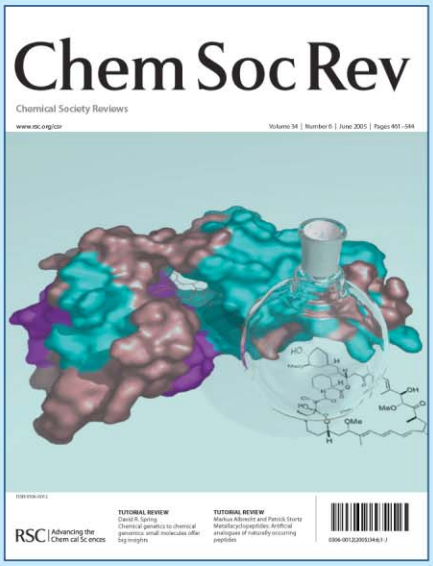
Chem Soc Rev

Chemical Society Reviews

An international, multidisciplinary journal publishing accessible, succinct and reader-friendly articles on topics of current interest in the chemical sciences.

Keeping you at the forefront of chemical science

- Impact factor: 10.836
- Now 12 issues a year
- High visibility - cited in MEDLINE



RSC Publishing

www.rsc.org/chemsocrev