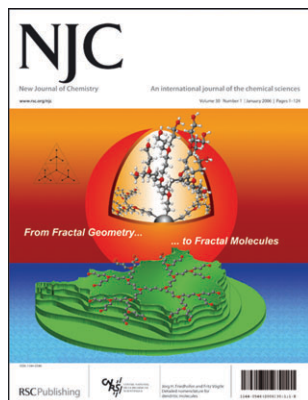


IN THIS ISSUE

ISSN 1144-0546 CODEN NJCHES 30(1) 1-124 (2006)



Cover

See Jörg H. Friedhofen and Fritz Vögtle, page 32. The picture shows different fractal figures. Historically, the Sierpinski-triangle was the first published fractal figure. Later, Mandelbrot constructed more complicated self similar geometrical forms. The cascane-nomenclature which is presented in this issue highlights the fractal geometry of dendrimers to derive the rules for naming molecules consisting of dendritic fragments. Image reproduced by permission of Jörg H. Friedhofen and Fritz Vögtle, *New J. Chem.*, 2006, **30**, 32.

CHEMICAL SCIENCE

C1

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

Chemical Science

January 2006/Volume 3/Issue 1

www.rsc.org/chemicalscience

EDITORIAL

11

Editorial

Denise Parent and Sarah Ruthven, *NJC* Editors, welcome Jerry Atwood as Co-Editor-in-Chief of *NJC* and reflect on a year of success and new developments for the journal.



EDITORIAL STAFF**Editor (RSC)**

Sarah Ruthven

Editor (CNRS)

Denise Parent

Assistant editor

G rard Calleja (CNRS)

Publishing assistant

Jackie Cockrill (RSC)

Team leader, serials production

Helen Saxton (RSC)

Technical editorsCaroline Moore (RSC), Celia Clarke (RSC),
Ken Wilkinson (RSC)**Administration coordinator**

Sonya Spring (RSC)

Editorial secretariesLynne Braybrook (RSC), Florence Lepage (CNRS),
Jill Segev (RSC), Julie Thompson (RSC)**Publisher**

Adrian Kybett (RSC)

New Journal of Chemistry (Print: ISSN 1144-0546; electronic: ISSN 1369-9261) is published 12 times a year by the Centre National de la Recherche Scientifique (CNRS), 3 rue Michel-Ange, 75794 Paris cedex 16, France, and the Royal Society of Chemistry (RSC), 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

2006 Annual (print + electronic) subscription price:  711; US\$1301. 2006 Annual (electronic) subscription price:  640; US\$1171. 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 New Journal of Chemistry, 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

NJC

New Journal of Chemistry

An international journal for the chemical sciences

www.rsc.org/njc

The New Journal of Chemistry is a broad-based primary journal encompassing all branches of the chemical sciences. Published monthly, it contains full research articles, letters, opinions and perspectives.

EDITORIAL BOARD**Editor-in-chief**Jean-Pierre Majoral, Toulouse,
France**Co-editor-in-chief**Jerry Atwood,
Columbia, MO, USA**Consulting editor**Odile Eisenstein,
Montpellier, France**Associate editors**

Manuscripts should be directed to the appropriate Editor detailed below.

Supramolecular chemistry and crystal engineering

Dr Jonathan W Steed
Department of Chemistry
University Science Laboratories
University of Durham
South Road
Durham
UK DH1 3LE
Fax (+44) (0) 191 384 4737
Tel (+44) (0) 191 384 2085
E-mail jon.steed@dur.ac.uk

Board members

Laurent Bonneviot, Lyon, France
Matthias Bremer, Darmstadt,
Germany
John A Gladysz, Erlangen, Germany
George Gokel, St Louis, MO, USA
Luca Prodi, Bologna, Italy
Paul Raithby, Bath, UK
David Reinhoudt, Enschede,
The Netherlands

Alan Rowan, Nijmegen,
The Netherlands
Michael Scott, Gainesville, FL, USA
Jonathan W Steed, Durham, UK
Michael Veith, Saarbr cken,
Germany
Vivian Yam, Hong Kong, PR China

Organic & bioorganic

Professor George Gokel
Departments of Chemistry and
Molecular Biology & Pharmacology
Washington University Medical
School
Campus Box 8103
660 S. Euclid Ave.
St Louis, MO 63110, USA
Fax (+1) 314 362 9298
Tel (+1) 314 362 9297
E-mail ggokel@molecool.wustl.edu

Alternatively, any author may
submit direct to the
Montpellier Editorial Office
Dr Denise Parent
New Journal of Chemistry
Universit  Montpellier II
Place Eug ne Bataillon
C.C. 014
34095 Montpellier cedex 5
France
Fax (+33) (0) 4 67 14 48 79
Tel (+33) (0) 4 67 14 48 78
E-mail njc@univ-montp2.fr

INTERNATIONAL ADVISORY EDITORIAL BOARD

Markus Antonietti, MPI,
Potsdam, Germany
Didier Astruc, Talence, France
Pierre Braunstein, Strasbourg,
France
Kenneth Caulton, Bloomington,
IN, USA
Robert Crabtree, New Haven,
CT, USA
Pierre Dixneuf, Rennes, France
Fran ois Fajula, Montpellier,
France

Andrew B Holmes, Melbourne,
Australia
Reinhard W Hoffmann,
Marburg, Germany
Miguel Julve, Valencia, Spain
Peter Junk, Monash, Australia
Henryk Koslowski, Wroclaw,
Poland
Bernard Meunier, Toulouse,
France
Jan Reedijk, Leiden,
The Netherlands

Kari Rissanen, Jyv skyl ,
Finland
Cl ment Sanchez, Paris, France
Jeremy K M Sanders,
Cambridge, UK
Philippe Sautet, Lyon, France
Jean-Pierre Sauvage,
Strasbourg, France
Ulrich Schubert, Vienna, Austria

INFORMATION FOR AUTHORS

Full details of how to submit material for publication in the New Journal of Chemistry are given in the Instructions for Authors (available from <http://www.rsc.org/authors>). Submissions should be sent via ReSource: <http://www.rsc.org/resource>. Authors may reproduce/republish portions of their published contribution without seeking permission from the CNRS and the RSC, provided that any such republication is accompanied by an acknowledgement in the form: (Original Citation) – Reproduced by permission of the CNRS and the RSC.

 The Royal Society of Chemistry and the Centre National de la Recherche Scientifique 2005. 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 Royal Society of Chemistry 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.

 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

LETTERS

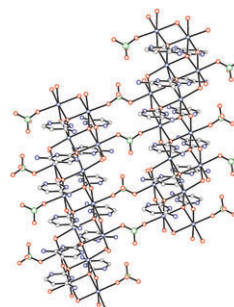


13

The counterion as a useful tool to obtain complexes of cytosine with alkali metal ions

Donatella Armentano, Giovanni De Munno* and Rachele Rossi

Two new sodium cytosine compounds have been synthesized from aqueous solutions containing perchlorate ions. Both compounds show an unprecedented coordination of the nucleobase.

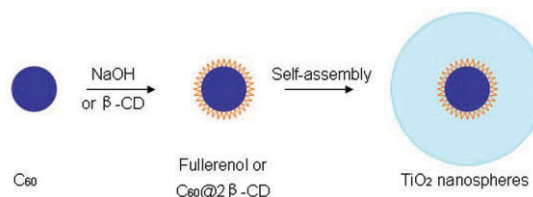


18

Size controllable self-assembly of titania nanospheres cored with fullerene/fullerene

Ying Yu, Jun-sen Wu, Yong-shan Ma, Chen-hui Wang and Zhi-qiang Shi*

The core-shell nanospheres fullereneol-TiO₂ and C₆₀@2β-CD-TiO₂ were fabricated by a layer-by-layer self-assembly procedure seeding with fullerenols and C₆₀@2β-CD, respectively.

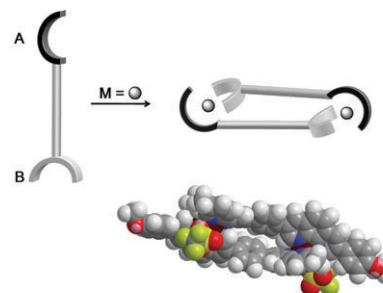


22

A phen-terpy conjugate whose chelate coordination axes are orthogonal to one another and its zinc complex

Benoît Champin, Valérie Sartor and Jean-Pierre Sauvage*

A new highly rigid ditopic ligand has been prepared, and its reaction with Zn²⁺ yields a dimeric structure as shown by ES-MS, ¹H and DOSY spectroscopies.

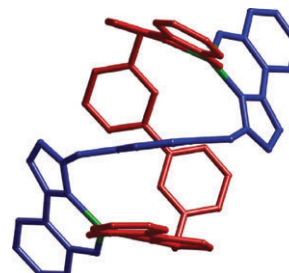


26

Mixed ligand helicates and mesocates

Tanya K. Ronson, Harry Adams, T. Riis-Johannessen, John C. Jeffery and Michael D. Ward*

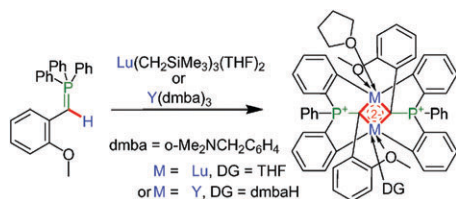
A 1 : 1 mixture of the homoleptic double helicates [M^{II}(L¹)₂] and [M^{II}(L²)₂] [M = Cu, Zn; (L¹)²⁻ and (L²)²⁻ are bis-bidentate ligands] affords the mixed ligand complexes [M(L¹)(L²)] in good yield; whereas [Cu(L¹)(L²)] is a double helicate, [Zn(L¹)(L²)] is a mesocate with a 'face to face' arrangement of the two ligands.



LETTERS



29



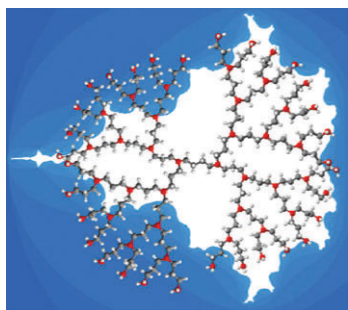
Synthesis and molecular structures of the first phosphoranylidene complexes of rare earth metals

Konstantin A. Rufanov,* Bernd H. Müller, Anke Spannenberg* and Uwe Rosenthal

A new class of organometallic complexes of the rare-earth metals has been achieved and structurally characterized.

PAPERS

32

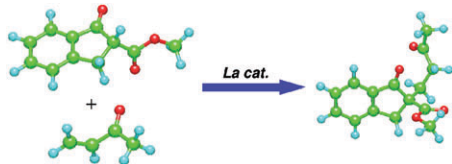


Detailed nomenclature for dendritic molecules

Jörg H. Friedhofen and Fritz Vögtle*

Cascadane-nomenclature, a systematic and detailed set of nomenclature rules for dendritic species, is proposed.

44

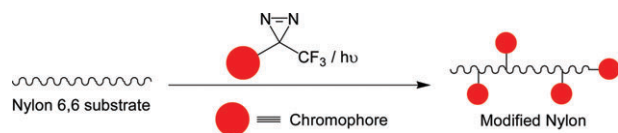


Creation of monomeric La complexes on apatite surfaces and their application as heterogeneous catalysts for Michael reactions

Kohsuke Mori, Michitaka Oshiba, Takayoshi Hara, Tomoo Mizugaki, Kohki Ebitani and Kiyotomi Kaneda*

A monomeric La species on an apatite surface, which functioned as an efficient heterogeneous catalyst for the Michael reaction of 1,3-dicarbonyls with enones, was prepared using a cation-exchange method.

53



Surface modification of nylon 6,6 using a carbene insertion approach

Anton Blencowe, Kevin Cosstick and Wayne Hayes*

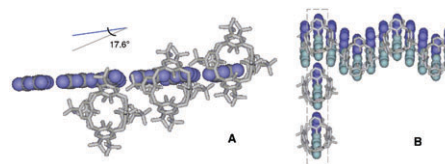
Functionalisation of nylon 6,6 with a fluorenone chromophore was achieved in an efficient manner using a carbene insertion approach from diazirine precursors.

59

Assembly modes in the solid state structure of the complexes of melamine mono-cations with *para*-calix[4]arene sulfonic acid and calix[4]arene dihydroxyphosphonic acid

Adina N. Lazar, Oksana Danylyuk, Kinga Suwinska and Anthony W. Coleman*

The crystal structures between melamine mono-cations and two anionic calix[4]arene derivatives are based on bilayer arrangements of the calix[4]arene with intercalating sheets of melamine cations.

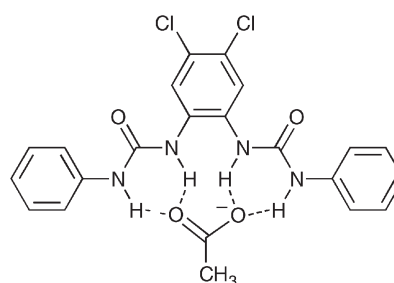


65

Carboxylate complexation by a family of easy-to-make *ortho*-phenylenediamine based bis-ureas: studies in solution and the solid state

Simon J. Brooks, Peter R. Edwards, Philip A. Gale* and Mark E. Light

Bis-urea compounds based on *ortho*-phenylenediamine function as excellent receptors for carboxylate anions in DMSO-*d*₆-0.5% water solution.

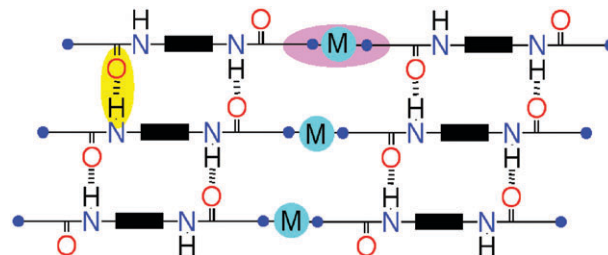


71

Molecular tectonics: generation of 2-D molecular networks by combination of coordination and hydrogen bonds

Jérôme Pansanel, Abdelaziz Jouaiti, Sylvie Ferlay, Mir Wais Hosseini,* Jean-Marc Planeix and Nathalie Kyritsakas

Isomeric tectons bearing both hydrogen- and coordination-bond generators leads to the formation of either a purely coordination or combined H- and coordination type 2-D networks.

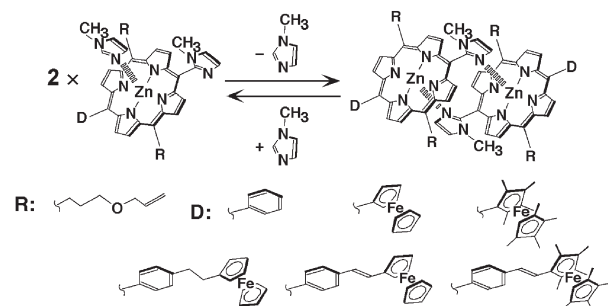


77

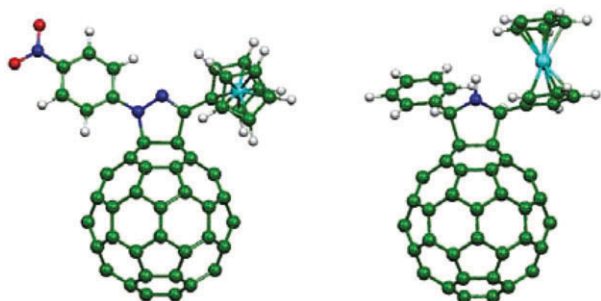
Synthesis and electrochemical properties of slipped-cofacial porphyrin dimers of ferrocene-functionalized Zn-imidazolyl-porphyrins as potential terminal electron donors in photosynthetic models

Dipak Kalita, Mitsuhiko Morisue and Yoshiaki Kobuke*

A systematic series of ferrocene-functionalized Zn-imidazolyl-porphyrins and their supramolecular dimers were identified by spectroscopic and electrochemical methods.



93

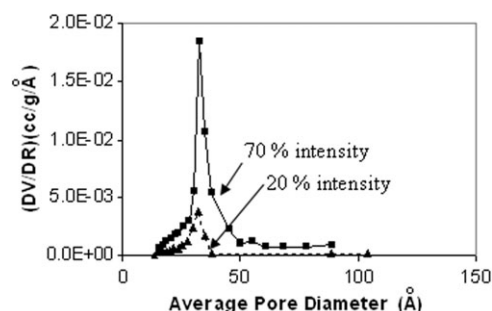


Synthesis and photophysical properties of ruthenocene-[60]fullerene dyads

Juan José Oviedo, Mohamed E. El-Khouly, Pilar de la Cruz, Laura Pérez, Javier Garín, Jesús Orduna, Yasuyuki Araki, Fernando Langa* and Osamu Ito*

Two novel synthesized ruthenocene- C_{60} dyads, with 2-pyrazoline ring and pyrrolidine ring as linker have been prepared. It was found that the ruthenocene-[60]fullerenes have an ability to prolong the charge-separated states compared with those for ferrocene-[60]fullerenes.

102

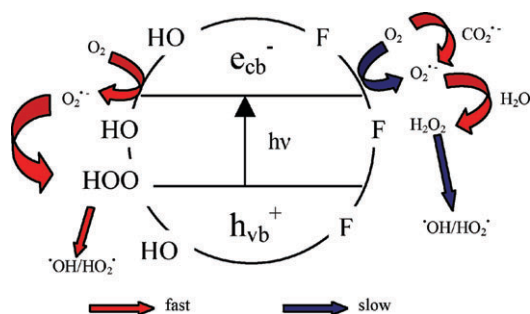


Acoustic cavitation—an efficient energetic tool to synthesize nanosized CuO-ZrO₂ catalysts with a mesoporous distribution

Manickam Sivakumar, Aharon Gedanken,* Ziyi Zhong and Luwei Chen

Acoustic cavitation induces the formation of nanosized CuO-ZrO₂ catalysts with a mesoporous distribution.

108

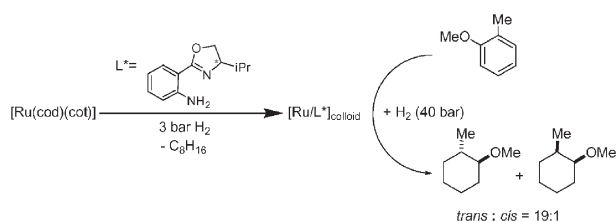


H₂O₂ evolution during the photocatalytic degradation of organic molecules on fluorinated TiO₂

Marta Mrowetz and Elena Selli*

Surface TiO₂ fluorination has a shielding effect on the photocatalytic decomposition of H₂O₂ and favours the desorption of photocatalytically produced active species, e.g. the CO₂^{•-} radical anion produced from formic acid photocatalytic oxidation, thus favouring its reaction with O₂ to yield H₂O₂.

115



Synthesis, characterization and catalytic reactivity of ruthenium nanoparticles stabilized by chiral N-donor ligands

Susanna Jansat, David Picurelli, Katrin Pelzer, Karine Philippot,* Montserrat Gómez,* Guillermo Muller, Pierre Lecante and Bruno Chaudret*

New ruthenium nanoparticles stabilized by chiral N-donor ligands have been prepared and characterized, and their applications in asymmetric hydrogenation processes studied.

AUTHOR INDEX

- | | | | |
|---------------------------|--------------------------|--------------------------|----------------------------|
| Adams, Harry, 26 | Gale, Philip A., 65 | Light, Mark E., 65 | Ronson, Tanya K., 26 |
| Araki, Yasuyuki, 93 | Garin, Javier, 93 | Ma, Yong-shan, 18 | Rosenthal, Uwe, 29 |
| Armentano, Donatella, 13 | Gedanken, Aharon, 102 | Mizugaki, Tomoo, 44 | Rossi, Rachele, 13 |
| Blencowe, Anton, 53 | Gómez, Montserrat, 115 | Mori, Kohsuke, 44 | Rufanov, Konstantin A., 29 |
| Brooks, Simon J., 65 | Hara, Takayoshi, 44 | Morisue, Mitsuhiko, 77 | Sartor, Valérie, 22 |
| Champin, Benoît, 22 | Hayes, Wayne, 53 | Mrowetz, Marta, 108 | Sauvage, Jean-Pierre, 22 |
| Chaudret, Bruno, 115 | Hosseini, Mir Wais, 71 | Müller, Bernd H., 29 | Selli, Elena, 108 |
| Chen, Luwei, 102 | Ito, Osamu, 93 | Muller, Guillermo, 115 | Shi, Zhi-qiang, 18 |
| Coleman, Anthony W., 59 | Jansat, Susanna, 115 | Orduna, Jesús, 93 | Sivakumar, Manickam, 102 |
| Cosstick, Kevin, 53 | Jeffery, John C., 26 | Oshiba, Michitaka, 44 | Spannenberg, Anke, 29 |
| Danylyuk, Oksana, 59 | Jouaiti, Abdelaziz, 71 | Oviedo, Juan José, 93 | Suwinska, Kinga, 59 |
| de la Cruz, Pilar, 93 | Kalita, Dipak, 77 | Pansanel, Jérôme, 71 | Vögtle, Fritz, 32 |
| De Munno, Giovanni, 13 | Kaneda, Kiyotomi, 44 | Pelzer, Katrin, 115 | Wang, Chen-hui, 18 |
| Ebitani, Kohki, 44 | Kobuke, Yoshiaki, 77 | Pérez, Laura, 93 | Ward, Michael D., 26 |
| Edwards, Peter R., 65 | Kyritsakas, Nathalie, 71 | Philippot, Karine, 115 | Wu, Jun-sen, 18 |
| El-Khouly, Mohamed E., 93 | Langa, Fernando, 93 | Picurelli, David, 115 | Yu, Ying, 18 |
| Ferlay, Sylvie, 71 | Lazar, Adina N., 59 | Planeix, Jean-Marc, 71 | Zhong, Ziyi, 102 |
| Friedhofen, Jörg H., 32 | Lecante, Pierre, 115 | Riis-Johannessen, T., 26 | |

FREE E-MAIL ALERTS AND RSS FEEDS


Contents lists in advance of publication are available on the web via www.rsc.org/njc – 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.

RSS Try our RSS feeds for up-to-the-minute news of the latest research. By setting up RSS feeds, preferably using feed reader software, you can be alerted to the latest Advance Articles published on the RSC web site. Visit www.rsc.org/publishing/technology/rss.asp for details.

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 for more information.

* 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).

For
physical chemistry
research ...



Choose PCCP

- with "frequency doubling" to weekly issues, you are certain to see the latest research even faster! With the fastest publication times in the field and the very best science, you are guaranteed a winning formula with PCCP.

Apply this PCCP Certainty Principle today!