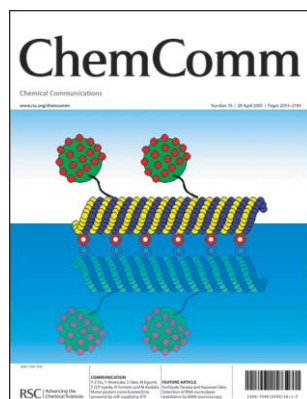


IN THIS ISSUE

ISSN 1359-7345 CODEN CHCOFS (16) 2053–2184 (2005)

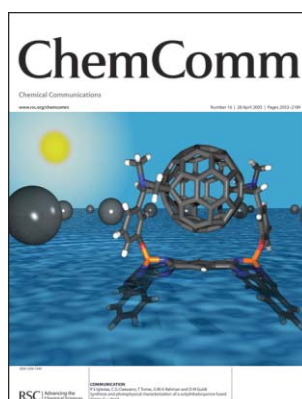


Cover

See Masato Kodaka *et al.* page 2080.

A new nano-biomachine has been created from microtubules (MTs) and hetero-bifunctional polymer particles bearing pyruvate kinase, which is propelled on glass surfaces coated with kinesin by use of self-supplying ATP.

Image reproduced by permission of Yong-Zhong Du, Yuichi Hiratsuka, Shu Taira, Masaru Eguchi, Taro Q. P. Uyeda, Noboru Yumoto and Masato Kodaka, *Chem. Commun.*, 2005, 2080.



Inside cover

See Tomas Torres, Dirk M. Guldi *et al.* page 2113.

Bringing together non-planar π -extended surfaces: Singular subphthalocyanine-based “wavy” aromatic surfaces, matching the visible region of the solar spectrum, transfer energy to other electroactive moieties like fullerene.

Image reproduced by permission of Rodrigo S. Iglesias, Christian G. Claessens, Tomas Torres, G.M. Aminur Rahman and Dirk M. Guldi, *Chem. Commun.*, 2005, 2113.

EDITORIAL

2067

Forthcoming launch of new journal *Molecular BioSystems*

We are delighted to announce that next month sees the publication of the first issue of the RSC’s exciting **new interdisciplinary journal** *Molecular BioSystems*.



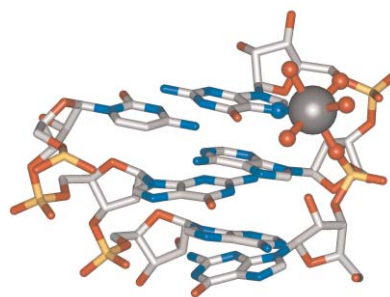
FEATURE ARTICLE

2069

Detection of RNA nucleobase metalation by NMR spectroscopy

Yoshiyuki Tanaka* and Kazunari Taira*

In this feature article, the NMR spectroscopic behavior of the metal ion-binding motif of hammerhead ribozymes upon the metalation and the roles of the metal ion at the motif are described.



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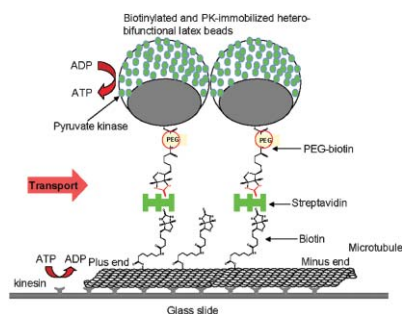
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2080

Motor protein nano-biomachine powered by self-supplying ATP

Yong-Zhong Du, Yuichi Hiratsuka, Shu Taira, Masaru Eguchi, Taro Q. P. Uyeda, Noboru Yumoto and Masato Kodaka*

A new nano-biomachine has been created from microtubules (MTs) and hetero-bifunctional polymer particles bearing pyruvate kinase, which is propelled on glass surfaces coated with kinesin by use of self-supplying ATP.

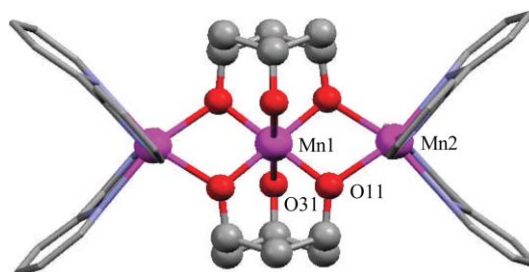


2083

Synthesis, structure and magnetic properties of a trinuclear $[\text{Mn}^{\text{III}}\text{Mn}^{\text{II}}_2]$ single-molecule magnet

Richard T. W. Scott, Simon Parsons, Muralee Murugesu, Wolfgang Wernsdorfer, George Christou and Euan K. Brechin*

Ferromagnetic exchange between the three Mn ions in the complex $[\text{Mn}_3(\text{Hcht})_2(\text{bpy})_4](\text{ClO}_4)_3$ leads to a spin ground state of $S = 7$. Single crystal studies reveal the temperature and sweep rate dependent hysteresis loops expected for a single-molecule magnet.

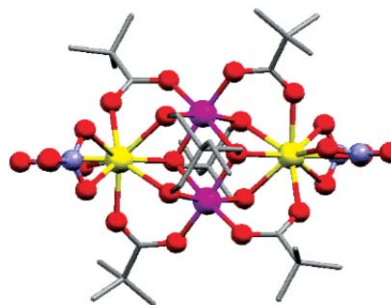


2086

The search for 3d–4f single-molecule magnets: synthesis, structure and magnetic properties of a $[\text{Mn}^{\text{III}}_2\text{Dy}^{\text{III}}_2]$ cluster

Abhudaya Mishra, Wolfgang Wernsdorfer, Simon Parsons, George Christou and Euan K. Brechin*

Tetranuclear $[\text{Mn}^{\text{III}}_2\text{Ln}^{\text{III}}_2]$ complexes formed using tripodal ligands display frequency dependent out-of-phase ac susceptibility signals and temperature and sweep rate dependent hysteresis loops.

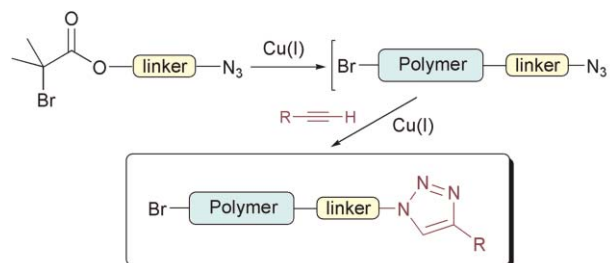


2089

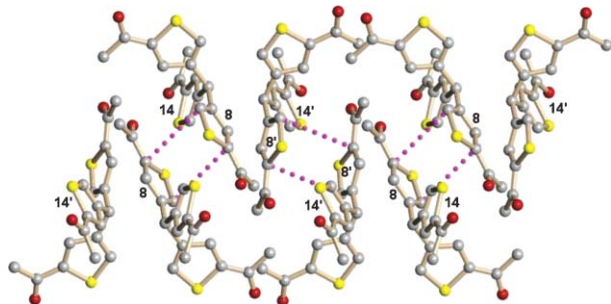
One-pot tandem living radical polymerisation–Huisgens cycloaddition process (“click”) catalysed by *N*-alkyl-2-pyridylmethanimine/Cu(I)Br complexes

Giuseppe Mantovani, Vincent Ladmiral, Lei Tao and David M. Haddleton*

Azide terminally functional poly(methyl methacrylate) ($M_n = 4000$ – 6000 , PDI = 1.21–1.28) have been prepared and reacted with alkynes in a Huisgen cycloaddition (click) reaction using the same catalyst for both processes.



2092

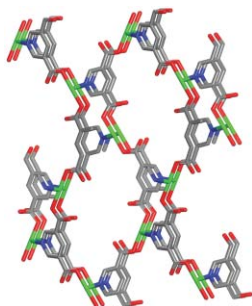


The first example of a crystalline guest-free form of the tris(5-acetyl-3-thienyl)methane (TATM) host material

Paul S. Sidhu, Gary D. Enright, Konstantin A. Udachin and John A. Ripmeester*

The product can be obtained by leaching guests out of inclusion compounds, which is apparently accompanied by a single-crystal-to-single-crystal transition.

2095

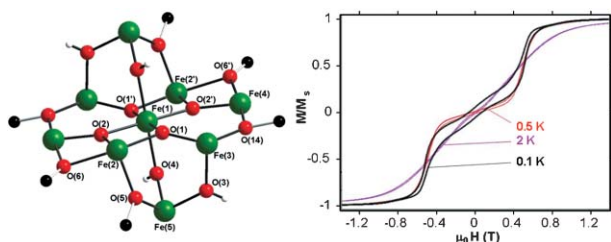


Terminal co-ligand directed synthesis of a neutral, non-interpenetrated (10,3)-a metal-organic framework

Jarrold F. Eubank, Rosa D. Walsh and Mohamed Eddaoudi*

A neutral, non-interpenetrated porous metal-organic framework (MOF) having (10,3)-a topology, Cu(3,5-PDC)(DMF)(pyr), has been constructed *via* the assembly of the achiral tri-connected building blocks 3,5-pyridinedicarboxylate (3,5-PDC) and CuN(CO₂)₂, synthesized *in situ*. Similarly, a 2D structure having (6,3) topology has been generated, each by means of terminal co-ligand directed synthesis.

2098

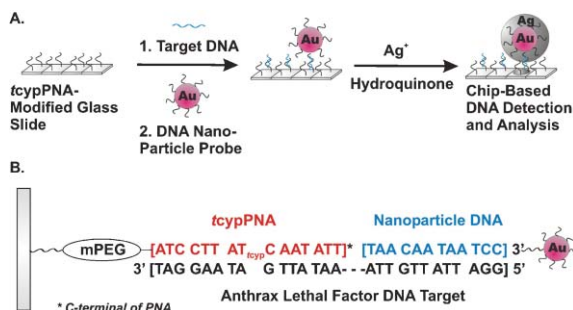


Formal encapsulation of [Fe(H₂O)₆]³⁺ by {Fe₂(hpdta)} units gives a system of S = 13/2 Fe^{III}, oxo clusters showing magnetic hysteresis

Wolfgang Schmitt, Christopher E. Anson, Wolfgang Wernsdorfer and Annie K. Powell*

Solvothermal synthesis leads to a system containing nonanuclear Fe(III) aggregates with spin ground states of 13/2 displaying hysteresis below 1.8 K.

2101



Cyclopentane-modified PNA improves the sensitivity of nanoparticle-based scanometric DNA detection

Jonathan K. Pokorski, Jwa-Min Nam, Rafael A. Vega, Chad A. Mirkin and Daniel H. Appella*

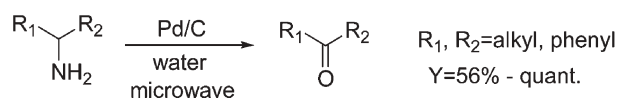
Lowering the limit of DNA detection is important for the development of new diagnostics. We show that using *trans*-cyclopentane-modified PNA as a target capture strand improves the detection limit of a known DNA detection assay. The success of this work depended highly on the improved properties of cyclopentane-modified PNA compared to regular PNA.

2104

Microwave-assisted direct transformation of amines to ketones using water as an oxygen source

Akira Miyazawa,* Kan Tanaka, Toshiyasu Sakakura, Masashi Tashiro, Hideki Tashiro, G. K. Surya Prakash and George. A. Olah

A novel Pd/C catalyzed direct transformation of amines to ketones, *retro*-reductive amination, was achieved in water as an oxygen source under microwave irradiation in fair to good yield.

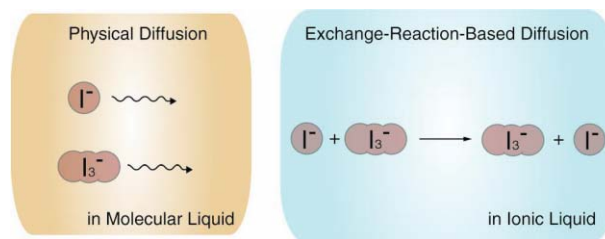


2107

Anomaly of charge transport of an iodide/tri-iodide redox couple in an ionic liquid and its importance in dye-sensitized solar cells

Ryuji Kawano and Masayoshi Watanabe*

Fast charge transport based on the exchange reaction of an I⁻/I₃⁻ redox couple, which has been observed in ionic liquids due to their high ionic strength but not in molecular liquids, contributes to the high performance of dye-sensitized solar cells using the ionic liquids in spite of their high viscosity.

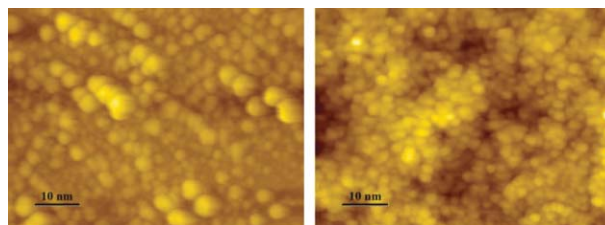


2110

Synthesis of single-phase anatase nanocrystallites at near room temperatures

Walid A. Daoud* and John H. Xin

This article describes the formation of single-phase nanocrystalline anatase titanium dioxide under ambient pressure and at near room temperatures. Large quantities of single-phase anatase solids can be produced by this method.

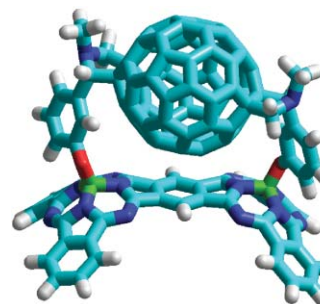


2113

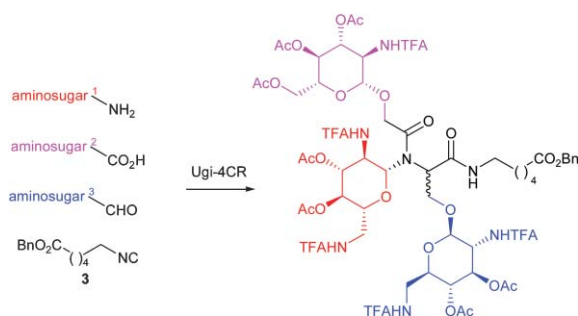
Synthesis and photophysical characterization of a subphthalocyanine fused dimer-C₆₀ dyad

Rodrigo S. Iglesias, Christian G. Claessens, Tomas Torres,* G. M. Aminur Rahman and Dirk M. Guldi*

A C₆₀-SubPc dimer bisadduct was synthesized and characterized. Its photophysical behaviour shows a cascade of back and forth energy transfer events from the SubPc dimer to the C₆₀ moiety.



2116

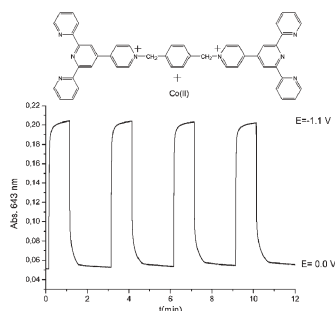


Synthesis of multivalent aminoglycoside mimics *via* the Ugi multicomponent reaction

Bernhard Westermann* and Simon Dörner

Multivalent neoglycoconjugates with 2,6-diamino-2,6-dideoxyglucose moieties can be obtained by an Ugi multicomponent approach leading to mono-, di- and tri-valent carbohydrate clusters.

2119

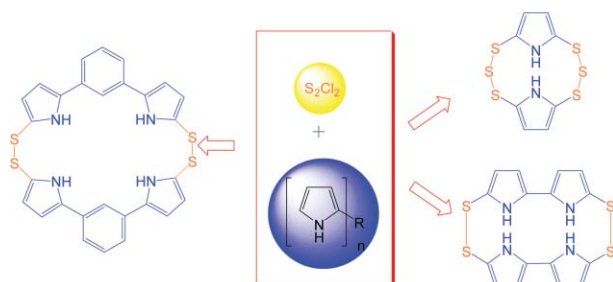


A new Co(II)-metalloviologen-based electrochromic material integrated in thin multilayer films

Dirk G. Kurth,* Jesús Pitarch López and Wen-Fei Dong

A metallosupramolecular coordination polyelectrolyte prepared by the reaction of cobalt(II) with a novel bisterpyridine ligand has been assembled as the active component in electrochromic films by sequential deposition using electrostatic layer-by-layer self-assembly.

2122

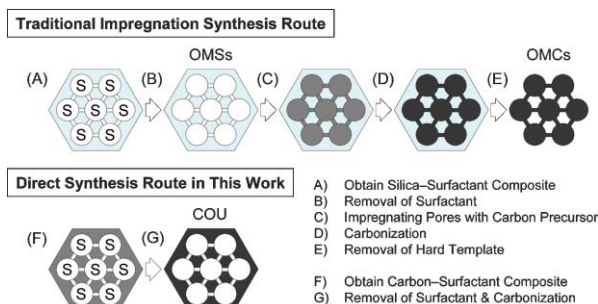


Straightforward synthesis of sulfur bridged oligopyrrolic macrocycles

David Sanchez-Garcia, Thomas Köhler, Daniel Seidel, Vincent Lynch and Jonathan L. Sessler*

Treatment of appropriate α,α' -free pyrrolic precursors with sulfur dichloride allows for the facile, one-step production of di- and trisulfide linked oligopyrrolic macrocycles.

2125



Synthesis of ordered mesoporous carbons with channel structure from an organic-organic nanocomposite

Shunsuke Tanaka, Norikazu Nishiyama,* Yasuyuki Egashira and Korekazu Ueyama

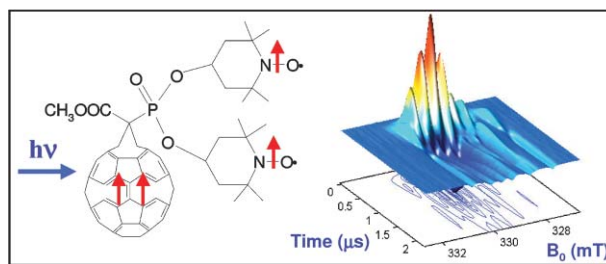
Mesoporous carbons with ordered channel structure (COU-1) have been successfully fabricated *via* a direct carbonization of an organic-organic nanocomposite using a thermally-decomposable triblock copolymer and a thermosetting polymer.

2128

First observation of the hyperfine structure of an excited quintet state in liquid solution

Lorenzo Franco, Martina Mazzoni, Carlo Corvaja,*
Valentina P. Gubskaya, Lucia Sh. Berezhnaya and
Ildus A. Nuretdinov

Photoexcitation of a fullerene-linked bisnitroxide gives a hyperfine resolved transient EPR spectrum, assigned to a quintet state generated by spin coupling of the nitroxides and the fullerene excited triplet.

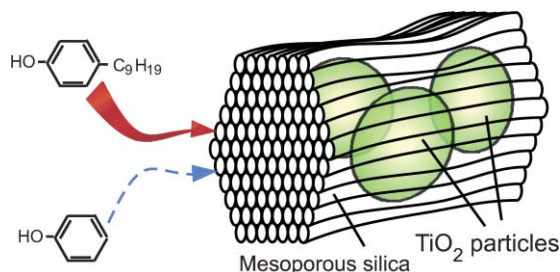


2131

Direct nanocomposite of crystalline TiO₂ particles and mesoporous silica as a molecular selective and highly active photocatalyst

Kei Inumaru,* Takashi Kasahara, Masataka Yasui and
Shoji Yamanaka

Well-crystallised TiO₂ particles (P-25) were directly incorporated into surfactant-templated mesoporous silica particles (pore diameter: 2.7 nm), and the composite material showed molecular selective and enhanced photocatalysis for decomposition of 4-nonylphenol.

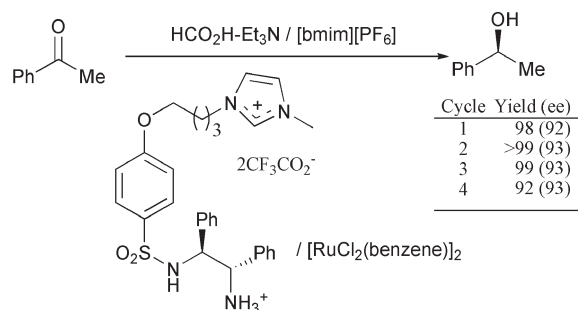


2134

A recyclable catalyst for asymmetric transfer hydrogenation with a formic acid–triethylamine mixture in ionic liquid

Ikuo Kawasaki, Kazuya Tsunoda, Tomoko Tsuji,
Tomoko Yamaguchi, Hiroki Shibuta, Nozomi Uchida,
Masayuki Yamashita and Shunsaku Ohta*

A novel task-specific ionic ligand with an imidazolium salt moiety was synthesized, and its catalytic ability and recyclability for asymmetric transfer hydrogenation with a formic acid–triethylamine mixture in ionic liquid [bmim][PF₆] was examined.

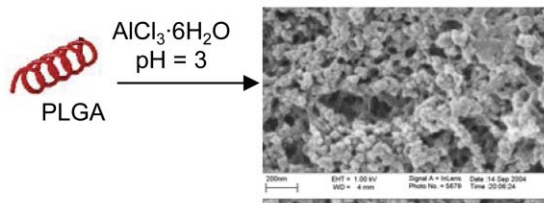


2137

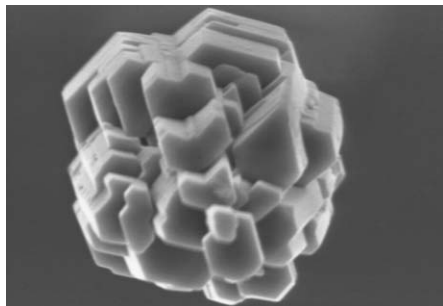
Helical poly-L-glutamic acid templated nanoporous aluminium oxides

Jeng-Shiung Jan and Daniel F. Shantz*

The synthesis of porous aluminium oxide made in the presence of helical poly-L-glutamic acid is reported.



2140

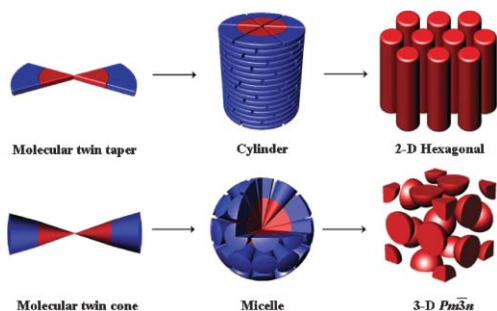


Aragonite growth on single-crystal substrates displaying a threefold axis

Boaz Pokroy* and Emil Zolotoyabko

Pseudo-hexagonal tablets of aragonite (a metastable polymorph of CaCO_3) were grown epitaxially under calcite-stable conditions by using carbonate free single-crystal substrates with a threefold axis oriented normal to the substrate surface.

2143

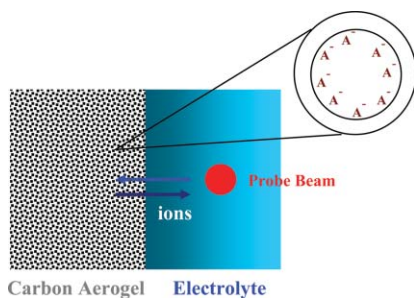


Generation dependent mesophase behavior in extended amphiphilic dendrons in the shape of macromolecular dumbbells

Byoung-Ki Cho, Anurag Jain, Sol M. Gruner and Ulrich Wiesner*

X-Ray scattering studies on 2nd and 3rd generation extended amphiphilic dendrons with identical hydrophilic volume fractions suggest 2-D hexagonal columnar and $Pm\bar{3}n$ micellar cubic mesophases, respectively, elucidating the role of shape induced interface curvature in mesophase formation.

2146

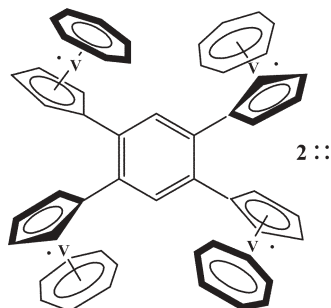


Double layer properties of carbon aerogel electrodes measured by probe beam deflection and AC impedance techniques

Gabriel A. Planes, María C. Miras and César A. Barbero*

The first use of probe beam deflection techniques to measure double layer properties, especially the potential of minimum charge (pmc), of highly porous materials is described.

2149



1,2,4,5-Tetra([5]trovacenyl)benzene: an organometallic tetradical displaying pronounced electro- and magnetocommunication

Christoph Elschenbroich,* Olav Schiemann, Olaf Burghaus and Klaus Harms

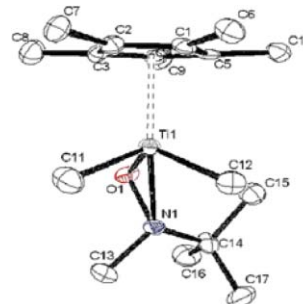
Considerable twist angles between the central benzene spacer and peripheral [5]trovacenyl-probe axes do not prevent the title molecule from exhibiting spin-spin exchange coupling J and redox splitting $\delta E_{1/4}$ for the reductions $2^{\cdot\cdot}$ ($0 \rightarrow -\dot{y} \dot{U} \rightarrow 2-\dot{y} \dot{U} \rightarrow 3-\dot{y} \dot{U} \rightarrow 4-\dot{y} \dot{U}$); $\delta E_{1/2}$ values for the oxidations $2^{\cdot\cdot}$ ($0 \rightarrow +\dot{y} \dot{U} \rightarrow 2+\dot{y} \dot{U} \rightarrow 3+\dot{y} \dot{U} \rightarrow 4+$) are unresolved, however.

2152

Cyclopentadienyl titanium hydroxylaminate complexes as highly active catalysts for the polymerization of propylene

Andrew P. Dove, Xiangjin Xie and Robert M. Waymouth*

Pentamethylcyclopentadienyltitanium(IV) dimethyl complexes bearing η^2 -bound hydroxylamine ligands are highly active catalysts for the polymerization of propylene.

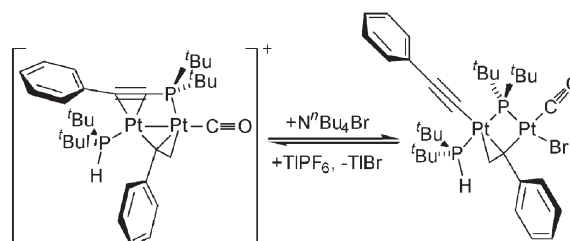


2155

Unprecedented reversible coupling of alkynyl and phosphide ligands on a dinuclear platinum framework

Alberto Albinati, Valeria Filippi, Piero Leoni,*
 Lorella Marchetti, Marco Pasquali and Vincenzo Passarelli

The reductive coupling of the bridging phosphide and the adjacent σ -alkynyl moieties in $[\text{Pt}_2(\mu\text{-P}^t\text{Bu}_2)_2\{\mu, \eta^1: \eta^2\text{-C(Ph)CH}_2\}(C\equiv C\text{-Ph})(CO)(P^t\text{Bu}_2\text{H})(Br)]$ is promoted by bromide abstraction and is reversed by adding $\text{N}^t\text{Bu}_4\text{Br}$.

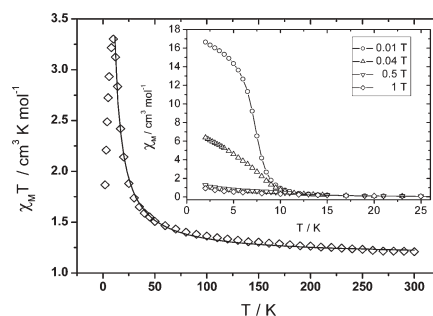


2158

Isolation of a new two-dimensional honeycomb carbonato-bridged copper(II) complex exhibiting long-range ferromagnetic ordering

Arpi Majumder, Chirantan Roy Choudhury,
 Samiran Mitra,* Georgina M. Rosair, M. Salah El Fallah*
 and Joan Ribas

The basic solution of $\text{Cu}(\text{ClO}_4)_2 \cdot 6\text{H}_2\text{O}$ and 4-aminopyridine readily traps atmospheric CO_2 to form a novel $\mu_3\text{-CO}_3$ bridged 2D honeycomb-like network which exhibits long range ferromagnetic ordering.

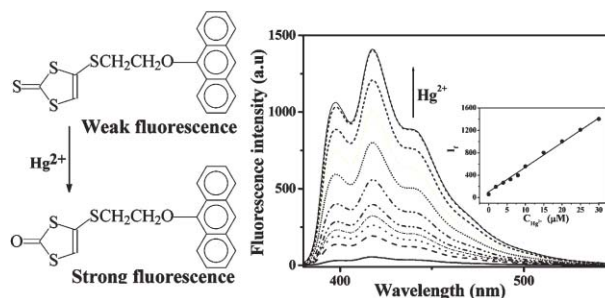


2161

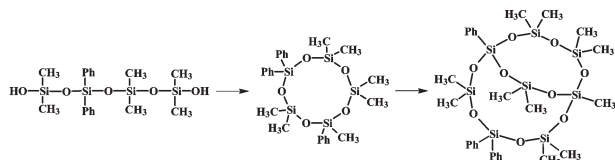
1,3-Dithiole-2-thione derivatives featuring an anthracene unit: new selective chemodosimeters for $\text{Hg}(\text{II})$ ion

Guanxin Zhang, Deqing Zhang,* Shiwei Yin,
 Xiaodi Yang, Zhigang Shuai and Daoben Zhu*

New selective chemodosimeters for $\text{Hg}(\text{II})$ ion based on 1,3-dithiole-2-thione derivatives featuring an anthracene unit are described.



2164

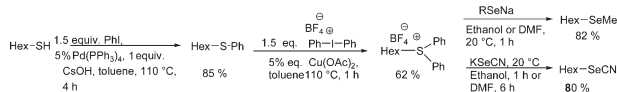


Rational synthesis of asymmetric bicyclic siloxane

Wenmei Xue, Mayfair C. Kung and Harold H. Kung*

A rational and versatile method to synthesize bicyclic siloxane of design structures is presented. The method is used to synthesize a new, asymmetric bicyclo[7.5.3]octasiloxane and other bicyclic siloxanes.

2167

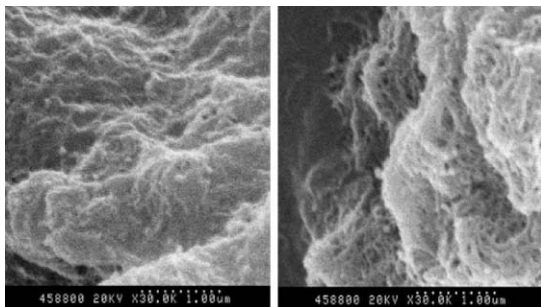


Synthesis of primary-alkyl selenols and selenides from primary-alkyl thiols involving diphenyl sulfonium salts

Alain Krief,* Willy Dumont and Michael Robert

Hexyl thiol has been transformed to hexyl selenol and related selenides and selenocyanate by substitution of the corresponding hexyldiphenylsulfonium tetrafluoroborate with selenium nucleophiles.

2169

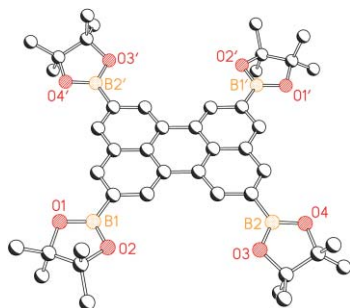


Electrochemically deposited nanocomposite of chitosan and carbon nanotubes for biosensor application

Xi-Liang Luo, Jing-Juan Xu, Jin-Li Wang and Hong-Yuan Chen*

A simple and controllable electrodeposition method for the formation of a chitosan-carbon nanotube nanocomposite film on an electrode surface was proposed and further used for the construction of an enzyme-chitosan-carbon nanotube composite based biosensor.

2172



Selective Ir-catalysed borylation of polycyclic aromatic hydrocarbons: structures of naphthalene-2,6-bis(boronate), pyrene-2,7-bis(boronate) and perylene-2,5,8,11-tetra(boronate) esters

David N. Coventry, Andrei S. Batsanov, Andrés E. Goeta, Judith A. K. Howard, Todd B. Marder* and Robin N. Perutz

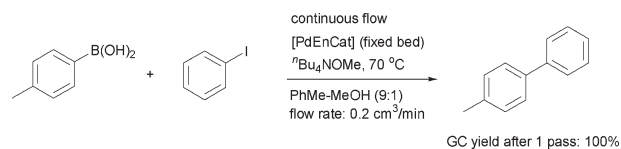
The selectivity of the Ir-catalysed reaction of pyrene and perylene with $B_2(\text{pin})_2$ provided pyrene-2,7-(Bpin) $_2$ and perylene-2,5,8,11-(Bpin) $_4$ via direct borylation at positions which are otherwise difficult to functionalise.

2175

Efficient batch and continuous flow Suzuki cross-coupling reactions under mild conditions, catalysed by polyurea-encapsulated palladium (II) acetate and tetra-*n*-butylammonium salts

Connie K. Y. Lee, Andrew B. Holmes,* Steven V. Ley,* Ian F. McConvey, Bushra Al-Duri, Gary A. Leeke, Regina C. D. Santos and Jonathan P. K. Seville

[PdEnCat]TM40 promotes Suzuki reactions in scCO₂ at 40 °C and in continuous flow mode in conventional organic solvents at 70 °C.

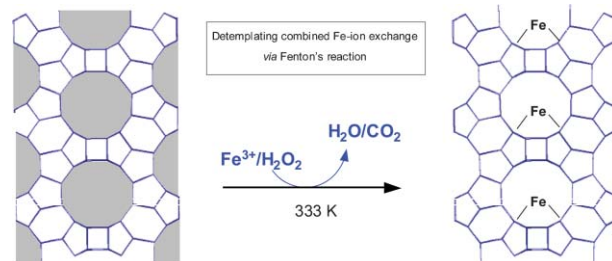


2178

One-pot catalyst preparation: combined detemplating and Fe ion-exchange of BEA through Fenton's chemistry

I. Melián-Cabrera, F. Kapteijn* and J. A. Moulijn

BEA zeolite has been simultaneously detemplated and Fe-exchanged by treating the parent zeolite with a Fenton's-type reagent (Fe³⁺-H₂O₂) at low temperature. This *one-pot* process simplifies and speeds up considerably the preparation route.



ADDITIONS AND CORRECTIONS

2181

Reversible Michael addition of thiols as a new tool for dynamic combinatorial chemistry

Baolu Shi and Michael F. Greaney


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