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ISSN 1359-7345 CODEN CHCOFS (5) 425-532 (2007)



See Leroy Cronin et al., pages 468 and 471. A hybrid image showing that self assembly has been used to construct new polyoxometalate (POM)-based clusters and chiral POM-based materials demonstrating that POMs have great potential as scalable building blocks. Image reproduced by permission of Chris Ritchie, Eric M. Burkholder, De-Liang Long, David Adam, Paul Kögerler, Carsten Streb and Leroy Cronin, from Chem. Commun., 2007, 468 and 471.



Inside cover

See Tsukasa Torimoto et al., page 483. The selectivity of products formed by the photocatalytic reduction of nitrobenzene can be tuned by changing the nanostructure of jingle-bell-shaped semiconductor nanocomposite particles. Image reproduced by permission of Bonamali Pal, Tsukasa Torimoto, Ken-ichi Okazaki and Bunsho Ohtani. from Chem. Commun., 2007,

CHEMICAL BIOLOGY

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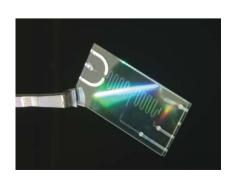
FEATURE ARTICLE

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Recent advances in synthetic micro reaction technology

Paul Watts* and Charlotte Wiles

Through the comparison of reactions performed in micro reactors with those conducted in traditional batch reaction vessels, this Feature Article aims to illustrate the advantages associated with the emerging field of micro reaction technology.



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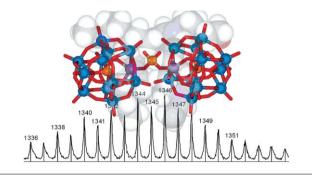
COMMUNICATIONS

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Exploiting the multifunctionality of organocations in the assembly of hybrid polyoxometalate clusters and networks

Chris Ritchie, Eric M. Burkholder, De-Liang Long, David Adam, Paul Kögerler and Leroy Cronin*

N,N'-Bis(2-hydroxyethyl)piperazine (BHEP) acts as a multifunctional cation allowing the isolation of an unprecedented phosphate bridged complex connecting two mono-vacant lacunary clusters substituted with Mn(II), $[\{PMnW_{11}O_{39}\}_2(PO_4)]^{13}$ and $[P_2Mn_4W_{18}O_{68}]^{10}$.

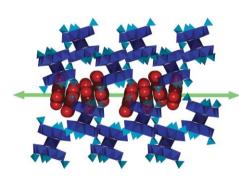


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Engineering porosity in a chiral heteropolyoxometalatebased framework: the supramolecular effect of benzenetricarboxylic acid

Carsten Streb, De-Liang Long and Leroy Cronin*

A chiral heteropolyoxometalate-based framework, synthesised using a planar aromatic tri-acid included as a guest, contains partially filled 1D channels and exhibits reversible water sorption capabilities.

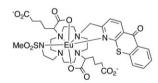


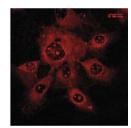
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A single component ratiometric pH probe with long wavelength excitation of europium emission

Robert Pal and David Parker*

A cell permeable macrocyclic Eu(III) complex incorporating an N-methylsulfonamide moiety changes form with pH, allowing ratiometric pH measurements in the range 6 to 8, following excitation at 384 nm.



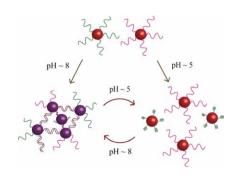


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pH-driven conformational switch of "i-motif" DNA for the reversible assembly of gold nanoparticles

Jaswinder Sharma, Rahul Chhabra, Hao Yan and Yan Liu*

We report a pH-driven conformational switch, which responds to a change in pH of the solution reversibly. This offers an easy to use pH sensor that can be visualized by the naked eye.



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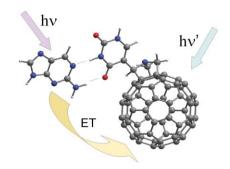
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Photoinduced electron transfer in a Watson-Crick base-paired, 2-aminopurine:uracil-C₆₀ hydrogen bonding conjugate

Francis D'Souza,* Suresh Gadde, D.-M. Shafiqul Islam, Siew-Cheng Pang, Amy Lea Schumacher, Melvin E. Zandler, Rumiko Horie, Yasuyaki Araki and Osamu Ito*

Efficient photoinduced electron transfer in a newly assembled via Watson-Crick type base-pairing conjugate involving 2-aminopurine and a uracil appended C_{60} is reported.

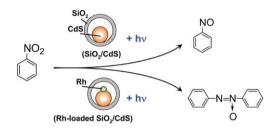


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Photocatalytic syntheses of azoxybenzene by visible light irradiation of silica-coated cadmium sulfide nanocomposites

Bonamali Pal, Tsukasa Torimoto,* Ken-ichi Okazaki and Bunsho Ohtani

Photoirradiation of a 2-PrOH aqueous solution containing nitrobenzene and rhodium-loaded silica-coated CdS nanoparticles produced azoxybenzene with good selectivity (68%); the photocatalytic activity is enhanced by decreasing the semiconductor particle core size.

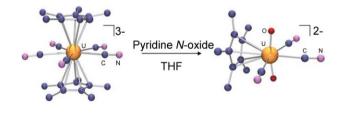


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The first cyclopentadienyl complex of uranyl

Jérôme Maynadié, Jean-Claude Berthet,* Pierre Thuéry and Michel Ephritikhine

The U(IV) linear pentacyano metallocene $[U(C_5Me_5)_2(CN)_5][NEt_4]_3$ reacted with pyridine N-oxide in anhydrous organic solvents to give $[UO_2(C_5Me_5)(CN)_3][NEt_4]_2$, the first uranyl(VI) species containing a cyclopentadienyl ligand. As observed in the crystal structure, the (C_5Me_5) ligand forces the $\{UO_2\}^{2+}$ ion to deviate from linearity.



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Catalytic asymmetric synthesis of mycocerosic acid

Bjorn ter Horst, Ben L. Feringa* and Adriaan J. Minnaard*

Mycocerosic acid, a lipid cell wall component of Mycobacterium tuberculosis, is prepared via an iterative catalytic enantioselective 1,4-addition protocol.

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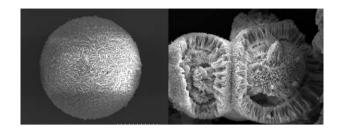
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First direct-formation and properties of microspherical superstructure. Morphology of diamineplatinum(II) complexes with isonicotinate

Hye Ji Yoon, In Sung Chun, Young Mee Na, Young-A Lee and Ok-Sang Jung*

Uniform microspheres (30 µm) of [Pt(en)(iso)(iso·HPF₆)] (iso = isonicotinate) have been formed without intentional addition of any template via a genuine self-assembly; the structure, morphology, and hydrogenation-catalytic activity of [Pt(en)(iso)(iso·HPF₆)] have been discussed.

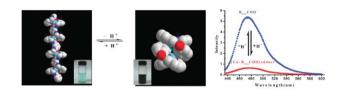


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Proton-controllable fluorescent switch based on interconversion of polynuclear and dinuclear copper(II) complexes

Hsueh-Ju Liu, Yu-Hsin Hung, Chang-Chuan Chou* and Chan-Cheng Su*

The first reversible interconversion process between a one-strand polymeric copper(II) complex $\{[Cu_2(L1)_2(ClO_4)_2](ClO_4)_2\}_n$ (1) and a dicopper(II) helicate [Cu₂(L1-2H)₂] (2), proceeding via a deprotonationprotonation process, can transduce fluorescence and function as a fluorescent switch.



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Exploring a new, connective Pummerer reaction: formation of oxindoles by the reaction of thiols with glyoxamides

Marc Miller, William Tsang, Andrew Merritt and David J. Procter*

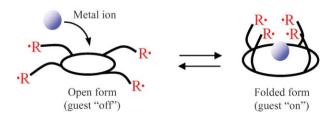
The reaction of a range of thiols with mono- and bis-glyoxamides derived from secondary anilines, triggers a new, connective Pummerer cyclisation process and leads to the formation of oxindoles.

501

Magnetic exchange coupling tunable by means of selective cation binding into poly(radical-armed) azacrowns

Kazuki Igarashi, Takashi Nogami and Takayuki Ishida*

Host-guest complexes of tris(radical)-substituted 1,4,7-triazacyclononane and tetrakis(radical)-substituted 1,4,7,10-tetraazacyclododecane afforded the folded structures of the hosts where the radical oxygen atoms were coordinated to the guest metal ion.





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Asymmetric total synthesis of martinelline and martinellic

Shuhei Ikeda, Masatoshi Shibuya and Yoshiharu Iwabuchi*

The first asymmetric total synthesis of (-)-martinelline ((-)-2)and the second total synthesis of (-)-martinellic acid ((-)-1)were achieved by employing a tandem Mukaiyama-Mannich reaction/aminal cyclization as the key step.

507

One-pot approach to chiral chromenes *via* enantioselective organocatalytic domino oxa-Michael-aldol reaction

Hao Li, Jian Wang, Timiyin E-Nunu, Liansuo Zu, Wei Jiang, Shaohua Wei* and Wei Wang*

A tandem oxa-Michael-aldol reaction of α,β-unsaturated aldehydes with salicylaldehydes, promoted by (S)-diphenylpyrrolinol triethylsilyl ether, has been developed. The process affords synthetically useful chromenes in high vields and high enantioselectivities.

510

Novel route to carbodiphosphoranes producing a new P,C,P pincer carbene ligand

Silvia Stallinger, Christian Reitsamer, Walter Schuh, Holger Kopacka, Klaus Wurst and Paul Peringer*

Formation of a carbodiphosphorane from dppm and CS₂ in the coordination sphere of palladium.

$$PdCl_2 + dppm + CS_2 \longrightarrow P \longrightarrow Pd \longrightarrow Pd$$

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Removal of oxidation debris from multi-walled carbon nanotubes

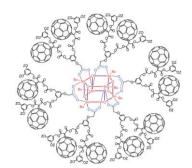
Raquel Verdejo, Steven Lamoriniere, Ben Cottam, Alexander Bismarck and Milo Shaffer*

Conventional liquid phase oxidation of multiwall carbon nanotubes (MWCNTs) using concentrated acids generates contaminating debris that should be removed using aqueous base before further reaction.



COMMUNICATIONS

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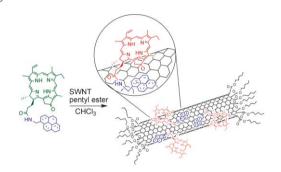


Self-assembly of fullerene-rich nanostructures with a stannoxane core

Uwe Hahn, Aline Gégout, Carine Duhayon, Yannick Coppel, Alix Saquet and Jean-François Nierengarten*

Fullerene derivatives bearing a carboxylic acid function undergo self-assembly with *n*-butylstannonic acid (*n*BuSn(O)OH) to produce fullerene-rich nanostructures with a stannoxane core in almost quantitative yields.

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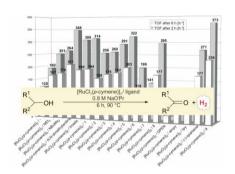


Noncovalent attachment of *pyro*-pheophorbide *a* to a carbon nanotube

Jari S. Kavakka, Sami Heikkinen, Ilkka Kilpeläinen, Marco Mattila, Harri Lipsanen and Juho Helaja*

Pyrene guided van der Waals driven attachment of tethered chlorin (a chlorophyll derivative) to soluble SWNT walls was performed with a self-assembling approach and demonstrated by ¹H NMR and optical spectroscopy.

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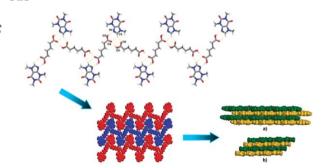


Novel improved ruthenium catalysts for the generation of hydrogen from alcohols

Henrik Junge, Björn Loges and Matthias Beller*

The dehydrogenation reaction of alcohols to generate hydrogen at ambient conditions has been studied.

525



A "hidden" co-crystal of caffeine and adipic acid

Dejan-Krešimir Bučar, Rodger F. Henry, Xiaochun Lou, Thomas B. Borchardt and Geoff G. Z. Zhang*

Co-crystal formation between caffeine and adipic acid has been explored over the years without success. Utilizing the newly developed co-crystal screening method, we have finally discovered this "hidden" caffeine and adipic acid co-crystal.

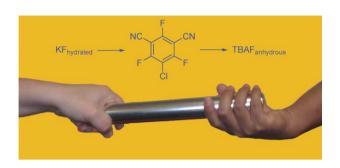
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Fluoride relay: a new concept for the rapid preparation of anhydrous nucleophilic fluoride salts from KF

Haoran Sun and Stephen G. DiMagno*

Fluoride relay is used to generate exceptionally nucleophilic fluoride reagents from KF on a time scale commensurate with radiotracer synthesis.

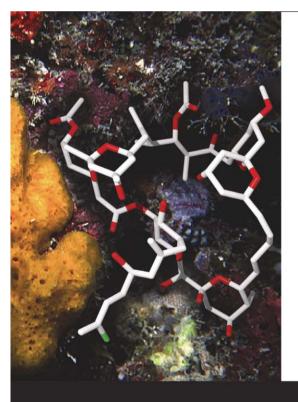


ADDITION AND CORRECTION

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Novel improved ruthenium catalysts for the generation of hydrogen from alcohols

Henrik Junge, Björn Loges and Matthias Beller



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