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ISSN 1359-7345 CODEN CHCOFS (17) 2185–2292 (2005)

Cover
See Toshifumi Dohi *et al.*, page 2205. A new recyclable hypervalent iodine(III) reagent has a beautiful, fine tetrahedral structure. Image reproduced by permission of Toshifumi Dohi, Akinobu Maruyama, Misaki Yoshimura, Koji Morimoto, Hirofumi Tohma, Motoo Shiro and Yasuyuki Kita from *Chem. Commun.*, 2005, 2205.

Inside cover
See Dinesh G. Patel *et al.*, page 2208. Single crystal photoisomerization of spirooxazine leads to thermally irreversible, photochemically reversible process for optical data storage in the solid state. Image reproduced by permission of Dinesh G. Patel, Jason B. Benedict, Roni A. Kopelman and Natia L. Frank from *Chem. Commun.*, 2005, 2208.

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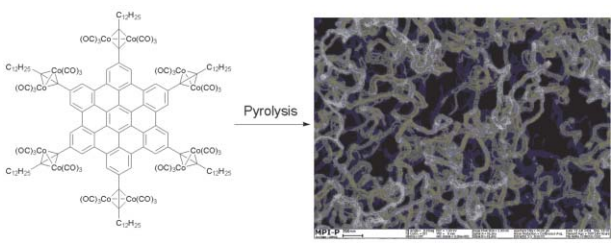
FEATURE ARTICLE

New carbon-rich materials for electronics, lithium battery, and hydrogen storage applications

Andrew C. Grimsdale, Jishan Wu and Klaus Müllen*

Methods for the preparation of novel carbon-rich materials for use in electronic devices, lithium batteries or possible hydrogen storage applications are presented.



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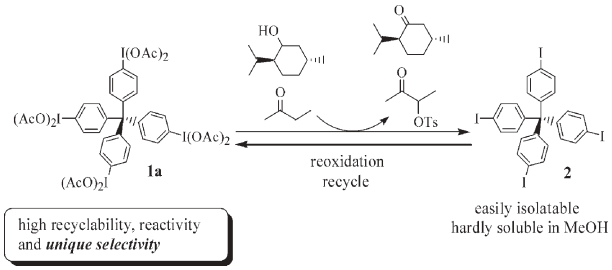
2205

A unique site-selective reaction of ketones with new recyclable hypervalent iodine(III) reagents based on a tetraphenylmethane structure

Toshifumi Dohi, Akinobu Maruyama, Misaki Yoshimura, Koji Morimoto, Hirofumi Tohma, Motoo Shiro and Yasuyuki Kita*

We have synthesized new recyclable reagents having a tetraphenylmethane backbone and used them in a unique site-selective α-tosyloxylation of ketones.

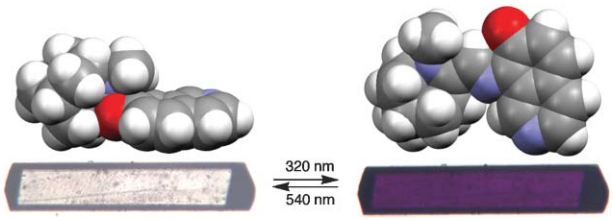


2208

Photochromism of a spirooxazine in the single crystalline phase

Dinesh G. Patel, Jason B. Benedict, Roni A. Kopelman and Natia L. Frank*

A new spirooxazine, spiro[azahomoadamantane-isoquinolinoxazine], was synthesized and crystallized in the colorless closed form. Single crystals were found to undergo photocoloration that is photochemically reversible and thermally irreversible; a first for this class of photochromes.

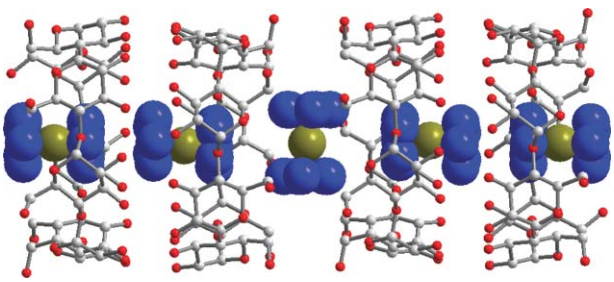


2211

A unique tetramer of 4 : 5 β-cyclodextrin–ferrocene in the solid state

Yu Liu,* Rui-Qin Zhong, Heng-Yi Zhang and Hai-Bin Song

Crystalline 4 : 5 β-cyclodextrin–ferrocene was prepared by hydrothermal treatment, showing a unique tetramer with two distinct packing modes.

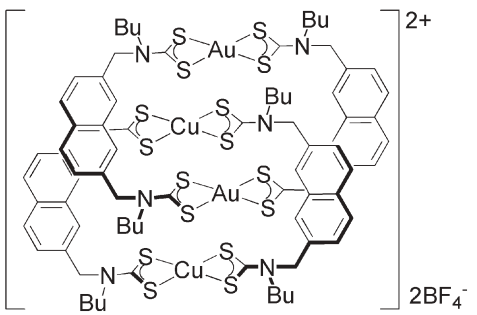


2214

Heteropolymetallic copper(II)–gold(III) dithiocarbamate [2]catenanes *via* magic ring synthesis

Wallace W. H. Wong, James Cookson, Emma A. L. Evans, Eric J. L. McInnes, Joanna Wolowska, John P. Maher, Peter Bishop and Paul D. Beer*

A rare class of mixed-metal [2]catenane has been assembled *via* magic ring synthesis of dinuclear copper(II) and gold(III) dithiocarbamate macrocycles.



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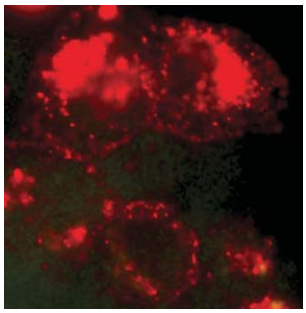
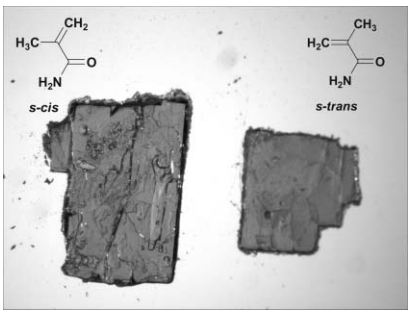


Cellular internalization and targeting of semiconductor quantum dots

Sophie M. Rozenzhak, Madhavi P. Kadakia, Tina M. Caserta, Tiffany R. Westbrook, Morley O. Stone and Rajesh R. Naik

Peptide-mediated uptake of quantum dots into mammalian cells.

2220

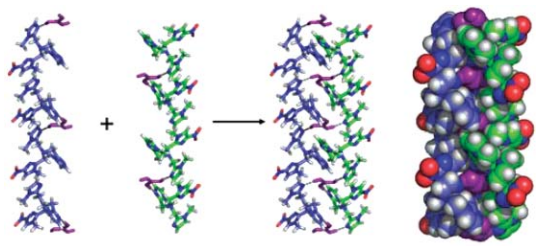


Conformational polymorphism of methacrylamide

Chengyun Guo, Magali B. Hickey, Evan R. Guggenheim, Volker Enkelmann and Bruce M. Foxman*

The industrially important compound methacrylamide crystallizes as concomitant conformational polymorphs; the monoclinic Form **I** contains only the *s-cis* conformer, while the orthorhombic Form **II** contains only the *s-trans* conformer.

2223

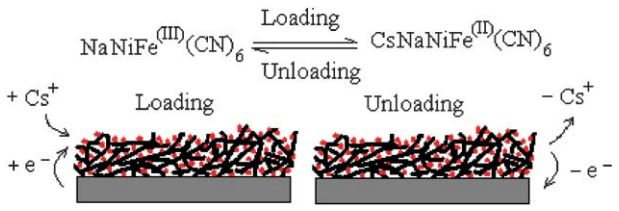


A supramolecular assembly of side-by-side polyimidazole tripod coils stabilized by π–π stacking and unique boric acid templated hydrogen bonding interactions

Lionel E. Cheruzel, Mark S. Mashuta and Robert M. Buchanan*

This study describes the crystal structure of a supramolecular assembly composed of side-by-side antiparallel polyimidazole coils and boric acid filled 1D channels that mimic membrane assemblies involved in the transport of ions, water and other small molecules.

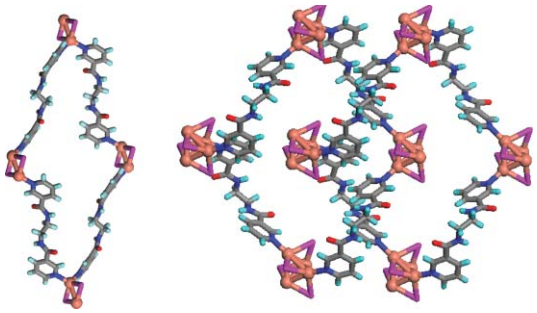
2226

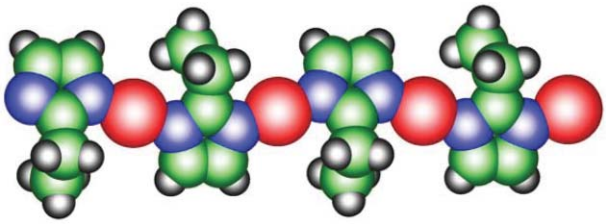


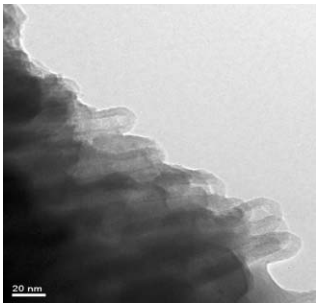
Novel hybrid materials with high stability for electrically switched ion exchange: carbon nanotube–polyaniline–nickel hexacyanoferrate nanocomposites

Yuehe Lin* and Xiaoli Cui

A novel and stable carbon nanotube–polyaniline–nickel hexacyanoferrate nanocomposite film has been synthesized by electrodeposition, and the feasibility for removing radioactive caesium through an electrically switched ion exchange process using the nanocomposite film has been evaluated in a mixture containing $NaNO_3$ and $CsNO_3$.







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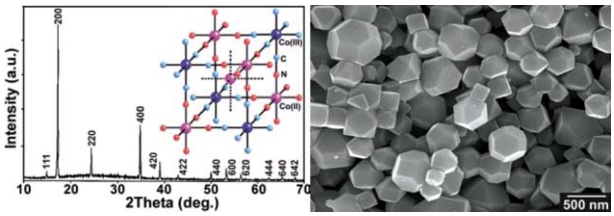
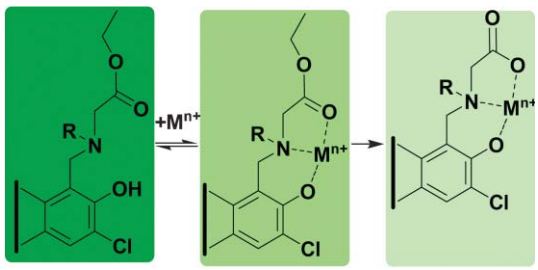


Shape-controlled synthesis of Prussian blue analogue $Co_3[Co(CN)_6]_2$ nanocrystals

Minhua Cao, Xinglong Wu, Xiaoyan He and Changwen Hu*

Prussian blue analogue $Co_3[Co(CN)_6]_2$ nanocrystals with morphologies of truncated nanocubes (polyhedra), cubes and rods, were synthesized in large quantities by a direct dissociation of the single-source precursor $K_3[Co(CN)_6]$ in a microemulsion system.

2244

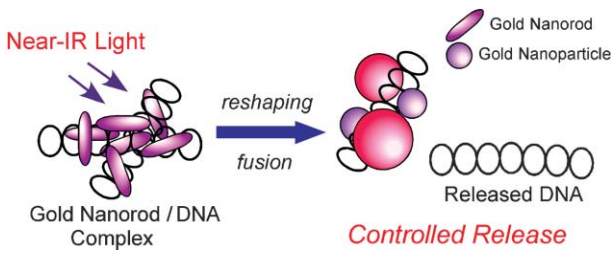


Double discrimination by binding and reactivity in fluorescent metal ion detection

Andriy Mokhir* and Roland Krämer

A fluorescent metal ion hybrid sensor containing reactive ester groups allows discrimination on the basis of the hydrolytic reactivities of metal ions, which display the same qualitative fluorescence response on binding only.

2247

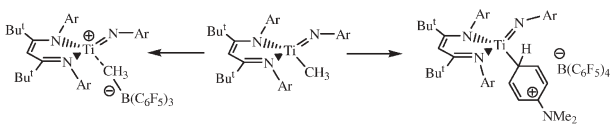


Controlled release of plasmid DNA from gold nanorods induced by pulsed near-infrared light

Hironobu Takahashi, Yasuro Niidome* and Sunao Yamada*

Pulsed near-infrared laser irradiation induced release of plasmid DNA immobilized on gold nanorods without structural degradation, by selective excitation of longitudinal plasmon oscillation.

2250



Latent low-coordinate titanium imides supported by a sterically encumbering β-diketiminate ligand

Falguni Basuli, Rodney L. Clark, Brad C. Bailey, Doug Brown, John C. Huffman and Daniel J. Mindiola*

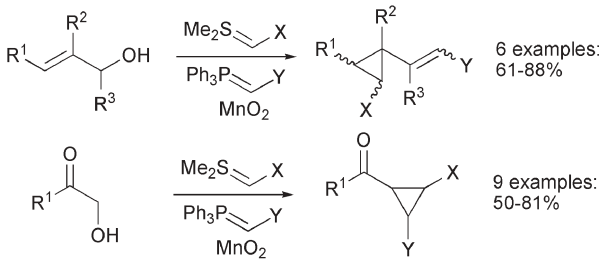
A family of cationic and low-coordinate titanium(IV) imide complexes supported by a sterically demanding β-diketiminate ligand Nacnac$^-$ (Nacnac$^-$ = $[ArNC(tBu)]_2CH$, Ar = 2,6-$iPr_2C_6H_3$) have been prepared, and shown to form discrete salts, zwitterions, or Meisenheimer-type products.

2253

Tandem oxidation processes: a combined phosphorus- and sulfur-ylide approach to polysubstituted cyclopropanes

Magalie F. Oswald, Steven A. Raw and Richard J. K. Taylor*

A new manganese dioxide-mediated tandem oxidation process (TOP) has been developed which, by suitable combination of stabilised phosphorus- and sulfur-ylides, allows the direct conversion of allylic alcohols or α-hydroxyketones into polysubstituted cyclopropanes.

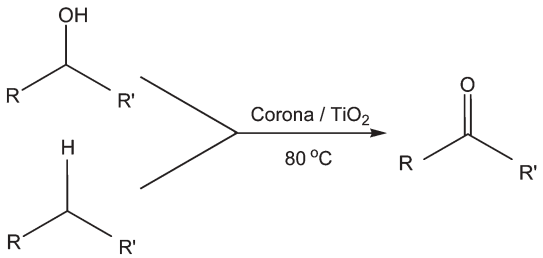


2256

Corona-induced photoxidation of alcohols and hydrocarbons over TiO_2 in the absence of a UV light source – A novel and environmentally friendly method for oxidation

Unnikrishnan R. Pillai and Endalkachew Sahle-Demessie*

Corona-induced photooxidation is a novel methodology for the oxidation of alcohols and hydrocarbons utilizing the advantage of the high oxidizing power of ozone formed in the reactor and the photooxidation capability of the UV light generated during the corona discharge.

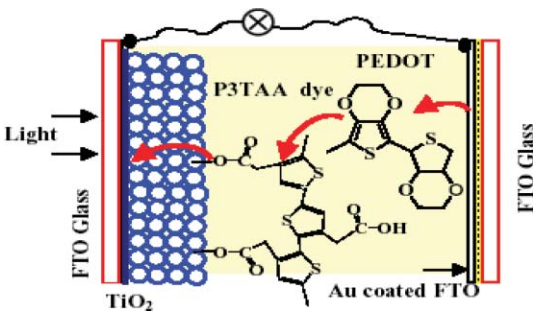


2259

Volatile solvent-free solid-state polymer-sensitized TiO_2 solar cells with poly(3,4-ethylenedioxythiophene) as a hole-transporting medium

Rohan Senadeera,* Norihiro Fukuri, Yasuteru Saito, Takayuki Kitamura, Yuji Wada and Shozo Yanagida*

Novel, volatile solvent free, solar cells were fabricated using thiophene derivative polymer sensitized TiO_2 electrodes together with an electrochemically polymerized hole-conductor, poly(3,4-ethylenedioxythiophene) (PEDOT) with promising photoresponses.

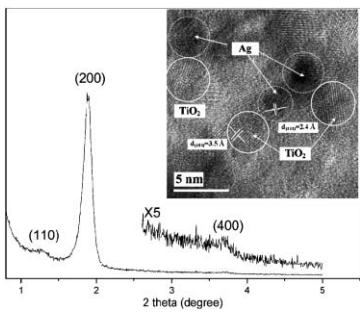


2262

A robust three-dimensional mesoporous Ag/TiO_2 nanohybrid film

Xinchen Wang, Jimmy C. Yu,* Chunman Ho and Angelo C. Mak

A highly ordered mesoporous Ag/TiO_2 nanohybrid film was successfully fabricated.



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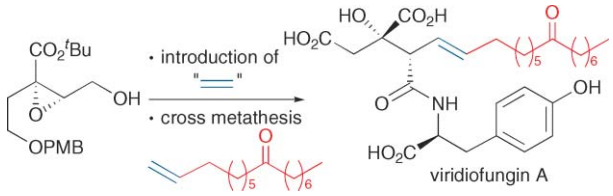
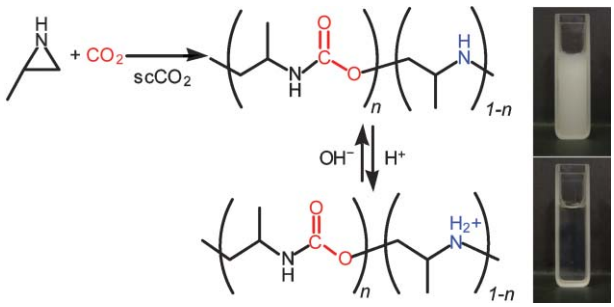


Total synthesis of viridiofungin A

Kenji Morokuma, Keisuke Takahashi, Jun Ishihara and Susumi Hatakeyama*

Viridiofungin A, an amino alkyl citrate antibiotic, was enantioselectively synthesized in naturally occurring form for the first time, employing regio- and stereoselective opening of the chiral glycidate with CH_2=CHMgBr/CuI and cross metathesis of the citric acid core and hexadec-15-en-8-one as key steps.

2268

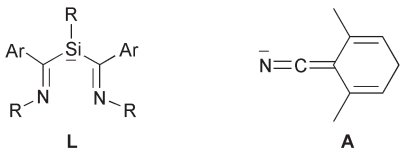


Double stimuli-responsive behavior of aliphatic poly(urethane-amine)s derived from supercritical carbon dioxide

Osamu Ihata, Yoshihito Kayaki* and Takao Ikariya*

Copolymeric products from 2-methylaziridine and carbon dioxide showed sharp and rapid phase transitions in response to both temperature and pH. Thanks to the pressure- and temperature-tunable physical properties of supercritical carbon dioxide, the stimuli-responsive property was controllable in a wide temperature or pH range.

2271



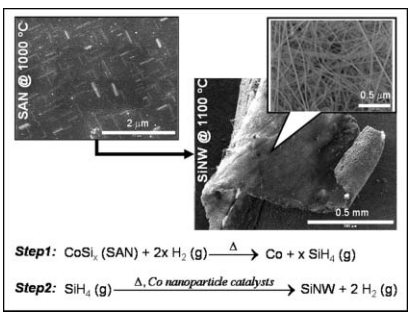
R = $SiMe_3$, Ar = 2,6-$Me_2C_6H_3$

Synthesis and structures of a 3-sila-β-diketiminatomagnesium bromide, ketenimide and triflate

James D. Farwell, Peter B. Hitchcock, Michael F. Lappert* and Andrey V. Protchenko

Four crystalline 3-sila-β-diketiminatomagnesium compounds Mg(**L**)X have been obtained: [Mg(Br)(**L**)(thf)]·0.5Et_2O **1** from the bis(imidoyl)bromosilane **L**–Br and Mg, [Mg(**L**)(**A**)$(D)_2$] **2** (D = NCAr) and **3** (D = thf) from [Mg$(SiR_3)_2(thf)_2$] and ArCN, and [{Mg(**L**)}$_2${μ-OSO(CF_3)O-μ}$_2$] **4** from **2** and ROTf with R–**A** (**5**) as coproduct; **2**, **3** and **5** contain the ketenimido ligand **A**.

2274



Silicon-based nanowires from silicon wafers catalyzed by cobalt nanoparticles in a hydrogen environment

Joshua D. Carter, Yongquan Qu, Rhiannon Porter, Luke Hoang, Daniel J. Masiel and Ting Guo*

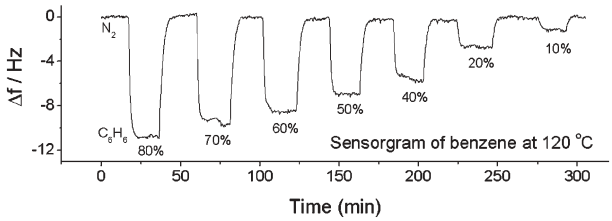
Bulk quantities of Si-based nanowires are produced from reactions between Co or Co silicide nanoparticle catalysts, Si wafers and hydrogen gas.

2277

Ionic liquid high temperature gas sensors

Lei Yu, Diego Garcia, Rex Ren and Xiangqun Zeng*

An ionic liquid piezoelectric gas sensor was demonstrated for detection of polar and nonpolar organic vapors at high temperature with fast, linear and reversible response.

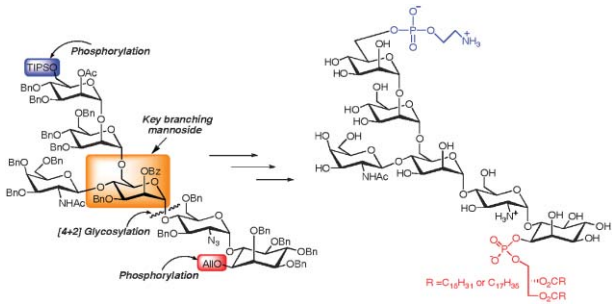


2280

Total syntheses of fully lipidated glycosylphosphatidylinositol anchors of *Toxoplasma gondii*

Yong-Uk Kwon, Xinyu Liu and Peter H. Seeberger*

Convergent syntheses of the glycosylphosphatidylinositol anchors of *T. gondii* were achieved. Such a modular approach can be also applied to the synthesis of various GPIs with branching carbohydrate moieties along the oligomannose chain.

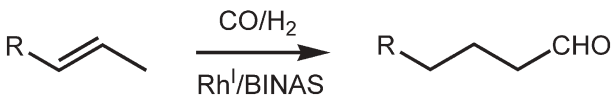


2283

Synthesis of linear aldehydes from internal olefins in water

Holger Klein, Ralf Jackstell and Matthias Beller*

The carbonylation of internal olefins to linear aldehydes in a biphasic water system is possible with unprecedented regioselectivity.

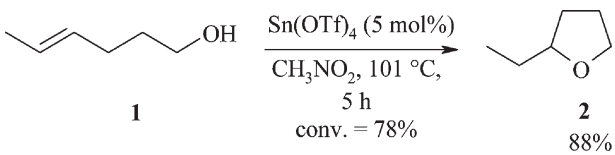


2286

Catalytic formation of C–O bonds by alkene activation: Lewis acid-cycloisomerisation of olefinic alcohols

Lydie Coulombel, Isabelle Favier and Elisabet Duñach*

Tin(IV) trifluoromethanesulfonate has been found to be an excellent catalyst for the cycloisomerisation of non-activated and differently substituted olefinic alcohols to cyclic ethers.



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