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IN THIS ISSUE

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Cover

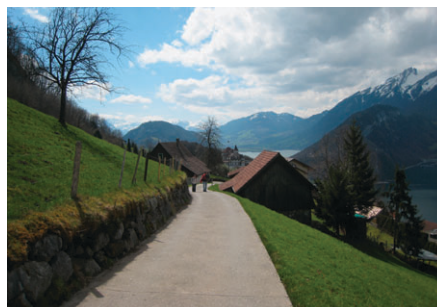
See Mirek Macka *et al.*, pp. 6504–6506.
Visible light induced polymerisation with red LEDs can be used to create chromatographic monoliths inside of a polyimide coated fused silica capillary. Image reproduced by permission of Zarah Walsh, Silvija Abele, Brian Lawless, Dominik Heger, Petr Klán, Michael C. Breadmore, Brett Paull and Mirek Macka from *Chem. Commun.*, 2008, 6504.

CONFERENCE REPORT

6441

Highlights from the 43rd EUCHEM Conference on Stereochemistry, Bürgenstock, Switzerland, April 2008

Scott L. Cockroft and David M. Lindsay



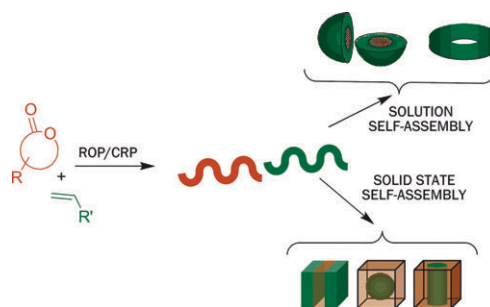
FEATURE ARTICLE

6446

Controlled ring-opening polymerisation of cyclic esters: polymer blocks in self-assembled nanostructures

Andrew P. Dove

The synthesis of poly(ester) containing block copolymers by the combination of ring-opening polymerisation (ROP) and controlled radical polymerisation (CRP) and their subsequent application in both solid state and solution self-assembly is reviewed.



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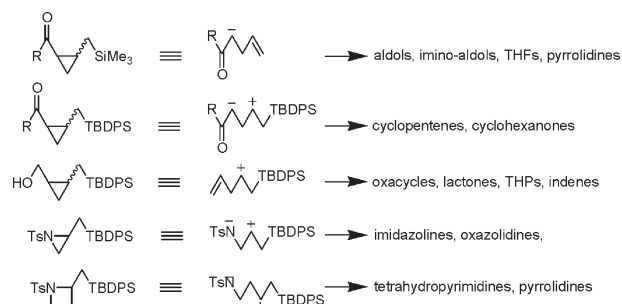
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6471

Silylmethyl-substituted cyclopropyl and other strained ring systems: cycloaddition with dipolarophiles

Divya Agrawal and Veejendra K. Yadav*

Lewis acid-assisted cycloadditions of dipolarophiles to silylmethyl-substituted three- and four-membered ring compounds and their possible synthetic usage are described. The retained silicon in the product can be transformed into alcohol, lending further synthetic applications.



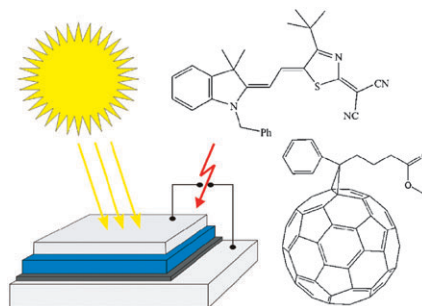
COMMUNICATIONS

6489

Bulk heterojunction organic solar cells based on merocyanine colorants

Nils M. Kronenberg, Manuela Deppisch, Frank Würthner,* Hans W. A. Lademann, Kaja Deing and Klaus Meerholz*

Traditional colorants that are widely applied in textile coloration, for printing purposes and nonlinear optics, now afford bulk heterojunction solar cells in combination with soluble C_{60} fullerene derivative PCBM with power conversion efficiencies up to 1.7% under standard solar radiation.

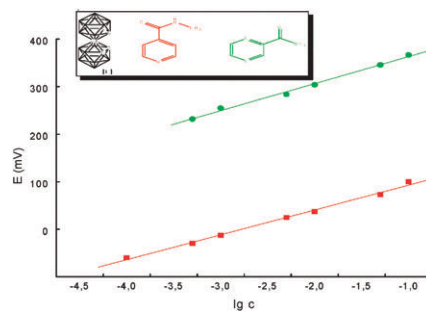


6492

Application of the cobaltabisdicarbollide anion to the development of ion selective PVC membrane electrodes for tuberculosis drug analysis

Anca-Iulia Stoica, Clara Viñas and Francesc Teixidor*

The cobaltabisdicarbollide anion is used as a new material able to generate an ion-pair complex used for PVC membrane ion selective electrodes.

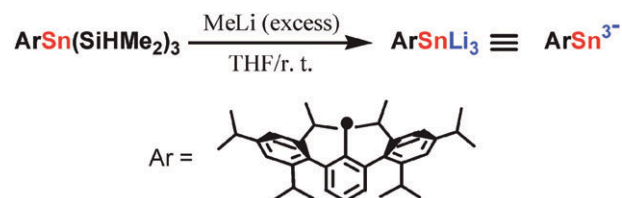


6495

Synthesis, structure and reactions of a trianion equivalent, trilithiostannane

Tomoyuki Tajima, Masatoshi Ikeda, Masaichi Saito,* Kazuya Ishimura and Shigeru Nagase

Transmetalation reaction of $\text{ArSn}(\text{SiHMe}_2)_3$ ($\text{Ar} = 2,6\text{-bis}(2,4,6\text{-triisopropylphenyl})\text{phenyl}$) with methyl lithium in THF at room temperature gave the first trianion equivalent, trilithiostannane ArSnLi_3 .





42nd IUPAC CONGRESS Chemistry Solutions

2–7 August 2009 | SECC | Glasgow | Scotland | UK

Theme: Chemistry for Health

Symposium: The Chemistry-Biology Interface: Drug Targets and Diagnostics

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Lab on a Chip
Niamh O'Connor
Analyst
Michael Smith
Molecular BioSystems

Keynote speakers:

Dana Spence
Michigan State University, USA
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Cornell University, USA
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University of Pennsylvania, USA
Thomas Kodadek
UT-Southwestern Medical Center, USA

Journal-sponsored speakers:

Paul Workman
The Institute of Cancer Research, UK (Molecular BioSystems)
Douglas Kell
University of Manchester, UK (Analyst)
Yoshinobu Baba
Nagoya University, Japan (Lab on a Chip)

The overlap between chemistry and biology is increasing as many scientists focus on this rapidly developing interface in order to achieve a better balance between research and real-world applications. One of the most exciting, promising and innovative areas at this chemistry-biology interface is the area of Drug Targets and Diagnostics, encompassing subjects such as cell signalling, proteomics/genomics, drug delivery, tissue engineering, biomarkers and diagnostics. The enhanced ability to view and study individual cells and biological molecules using new and miniaturised technologies is also contributing to rapid developments in our fundamental understanding of biological systems that in turn lead to an improved approach to identifying drug targets and disease.

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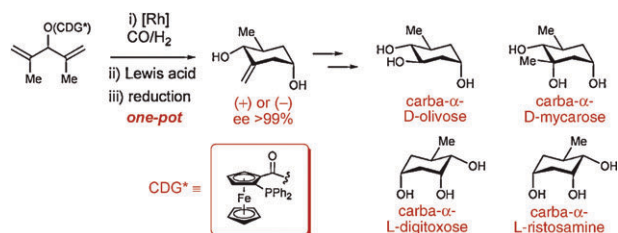
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6498

Enantioselective synthesis of 2,6-dideoxy carbasugars based on a desymmetrizing hydroformylation–carbonyl ene cyclization process

Bernhard Breit* and Aurélien Bigot

A practical one-pot process provides straightforward access to both enantiomers of a cyclohexanediol; further divergent, selective and protecting group-free transformations furnish four 2,6-dideoxy carbasugars.

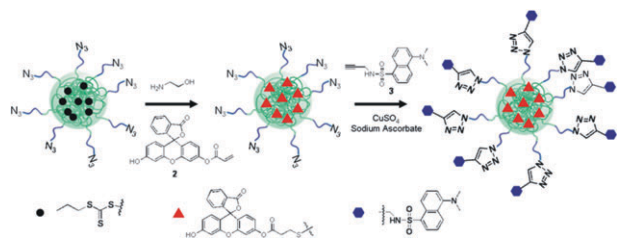


6501

Heterofunctional polymers and core–shell nanoparticles via cascade aminolysis/Michael addition and alkyne–azide click reaction of RAFT polymers

Zesheng An,* Wei Tang, Minghong Wu, Zheng Jiao and Galen D. Stucky*

A convenient methodology involving cascade aminolysis/Michael addition and alkyne–azide click reaction was developed for polymers and polymeric core–shell nanoparticles, synthesized *via* RAFT-mediated homogeneous and heterogeneous polymerisation processes, respectively, to provide well-defined heterofunctional polymeric materials.

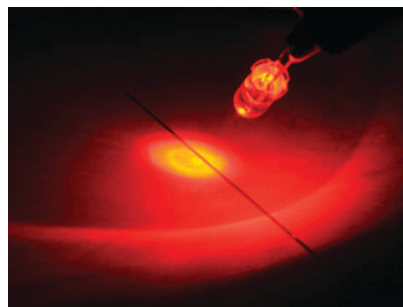


6504

Photoinitiated polymerisation of monolithic stationary phases in polyimide coated capillaries using visible region LEDs

Zarah Walsh, Silvoja Abele, Brian Lawless, Dominik Heger, Petr Klán, Michael C. Breadmore, Brett Paull and Mirek Macka*

Spatially controlled synthesis of methacrylate monoliths in polyimide coated capillaries is possible with polymerisation induced by red LEDs whose light can penetrate the coating.

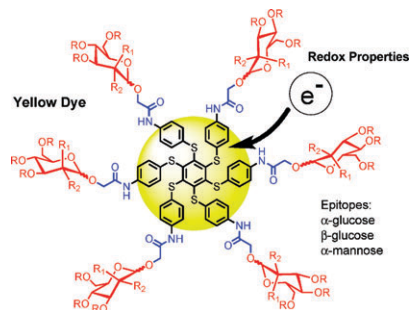


6507

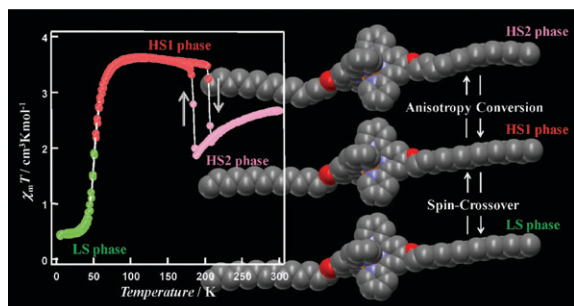
Glycosylated asterisks are among the most potent low valency inducers of Concanavalin A aggregation

Mazen Sleiman, Annabelle Varrot,* Jean-Manuel Raimundo, Marc Gingras* and Peter G. Goekjian*

A new class of sulfated and low-valent glycosylated asterisks with potential dual function as ligand and probe has some of the highest inhibition potencies of Con A-induced hemagglutination, by using a cross-linking mechanism. The enhancement is near the nanomolar concentrations with the α -D-mannose asterisk.



6510

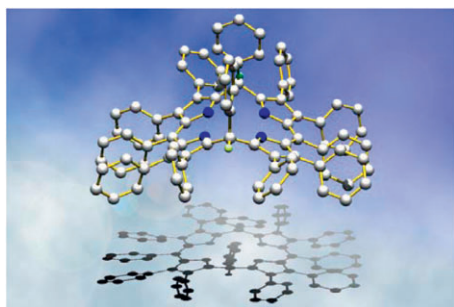


Dynamic structural conversion in a spin-crossover cobalt(II) compound with long alkyl chains

Shinya Hayami,* Kazuhisa Murata, Daisuke Urakami, Yoshihiro Kojima, Motoko Akita and Katsuya Inoue

A cobalt(II) compound $[\text{Co}(\text{C14-terpy})_2](\text{BF}_4)_2 \cdot \text{MeOH}$ (**1**) with long alkyl chains was prepared, and exhibited unique SCO at $T_1 = 50$ K and spin transition at $T_2 \uparrow = 206$ K and $T_2 \downarrow = 184$ K with hysteresis ($\Delta T = 22$ K) accompanying the motion of the long alkyl chains.

6513

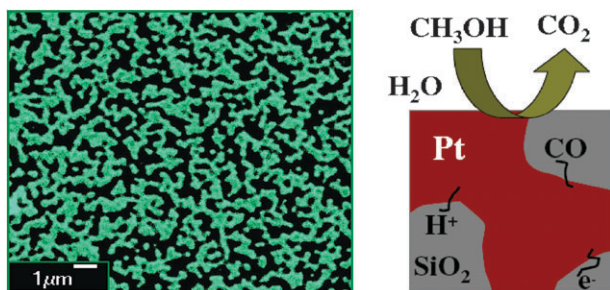


Formation of dodecaphenylporphodimethene via facile protonation of saddle-distorted dodecaphenylporphyrin

Takahiko Kojima*, Kakeru Hanabusa, Kei Ohkubo, Motoo Shiro and Shunichi Fukuzumi*

A saddle-distorted dodecaphenylporphyrin undergoes protonation followed by two-electron reduction by SnCl_2 to give a roof-shaped dodecaphenylporphodimethene which exhibits reversible one-electron reduction and oxidation behaviour in benzonitrile to allow us to observe an ESR spectrum of π -cation radical in the course of electrochemical oxidation.

6516

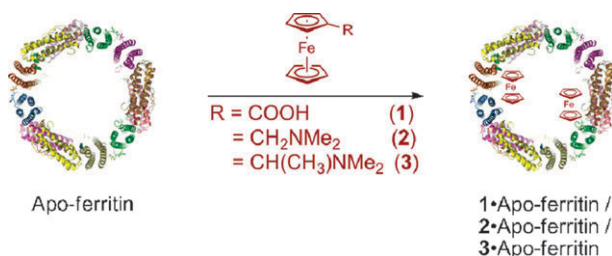


Facile synthesis of continuous Pt island networks and their electrochemical properties for methanol electrooxidation

Jitendra N. Tiwari,* Fu-Ming Pan,* Rajanish N. Tiwari and S. K. Nandi

2-D continuous Pt island networks were successfully synthesized by pulse-potentiostatic electrodeposition on the silicon substrate, which showed markedly enhanced catalytic activity toward methanol electrooxidation and high CO tolerance.

6519



Noncovalent insertion of ferrocenes into the protein shell of apo-ferritin

Jochen Niemeyer, Satoshi Abe, Tatsuo Hikage, Takafumi Ueno,* Gerhard Erker and Yoshihito Watanabe*

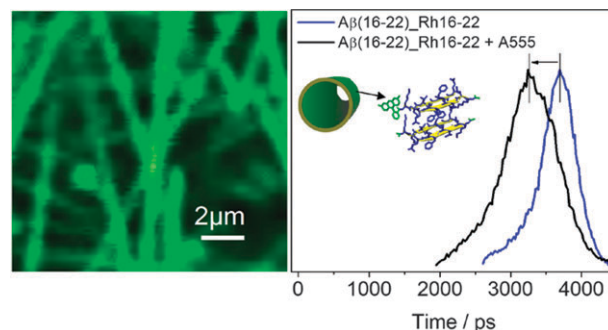
Apo-ferritin was used for the incorporation of functionalized ferrocene derivatives and the resulting composites were studied by means of single-crystal X-ray diffraction and electrochemical analysis, revealing a different incorporation behaviour of the ferrocenes governed by the functional group present.

6522

Light harvesting antenna on an amyloid scaffold

Yan Liang, Peng Guo, Sai Venkatesh Pingali, Suzette Pabit, Pappannan Thiyagarajan,* Keith M. Berland* and David G. Lynn

A robust 2D pigment array has been self-assembled using a paracrystalline amyloid nanotube as scaffold and Förster energy transfer to a separately bound pigment along the nanotube surface has been demonstrated.

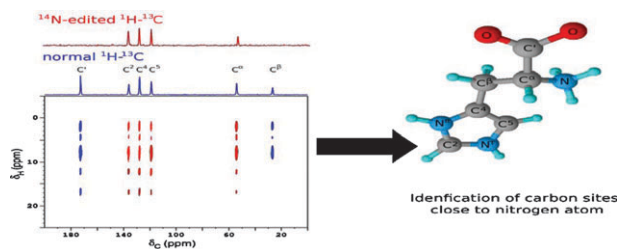


6525

Rapid analysis of isotopically unmodified amino acids by high-resolution ^{14}N -edited ^1H - ^{13}C correlation NMR spectroscopy

Jean-Paul Amoureux,* Qiang Wang, Bingwen Hu, Olivier Lafon, Julien Trébosc and Feng Deng

NMR analysis method of not-enriched bio-molecules with three 2D spectra: one ^1H - ^{14}N and two ^1H - ^{13}C with either all cross-peaks or only those of carbons close to a nitrogen atom.

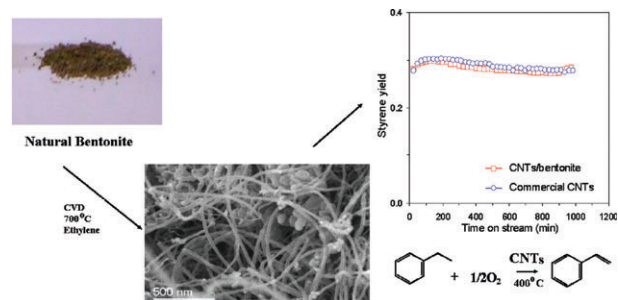


6528

Facile synthesis of carbon nanotube/natural bentonite composites as a stable catalyst for styrene synthesis

Ali Rinaldi, Jian Zhang, Jan Mizera, Frank Girgsdies, Ning Wang, Sharifah Bee Abd Hamid, Robert Schlögl and Dang Sheng Su*

Iron rich-natural bentonite was used as catalyst and support simultaneously to economically produce multiwall-carbon nanotubes. The compacted body composite is a stable catalyst in the oxidative dehydrogenation of ethyl benzene to styrene at 400 °C.

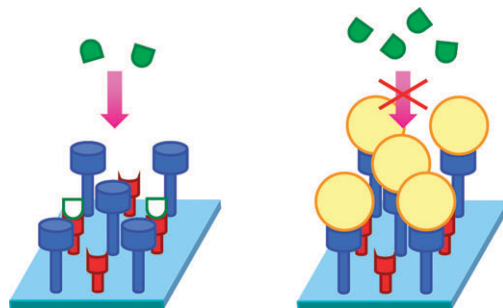


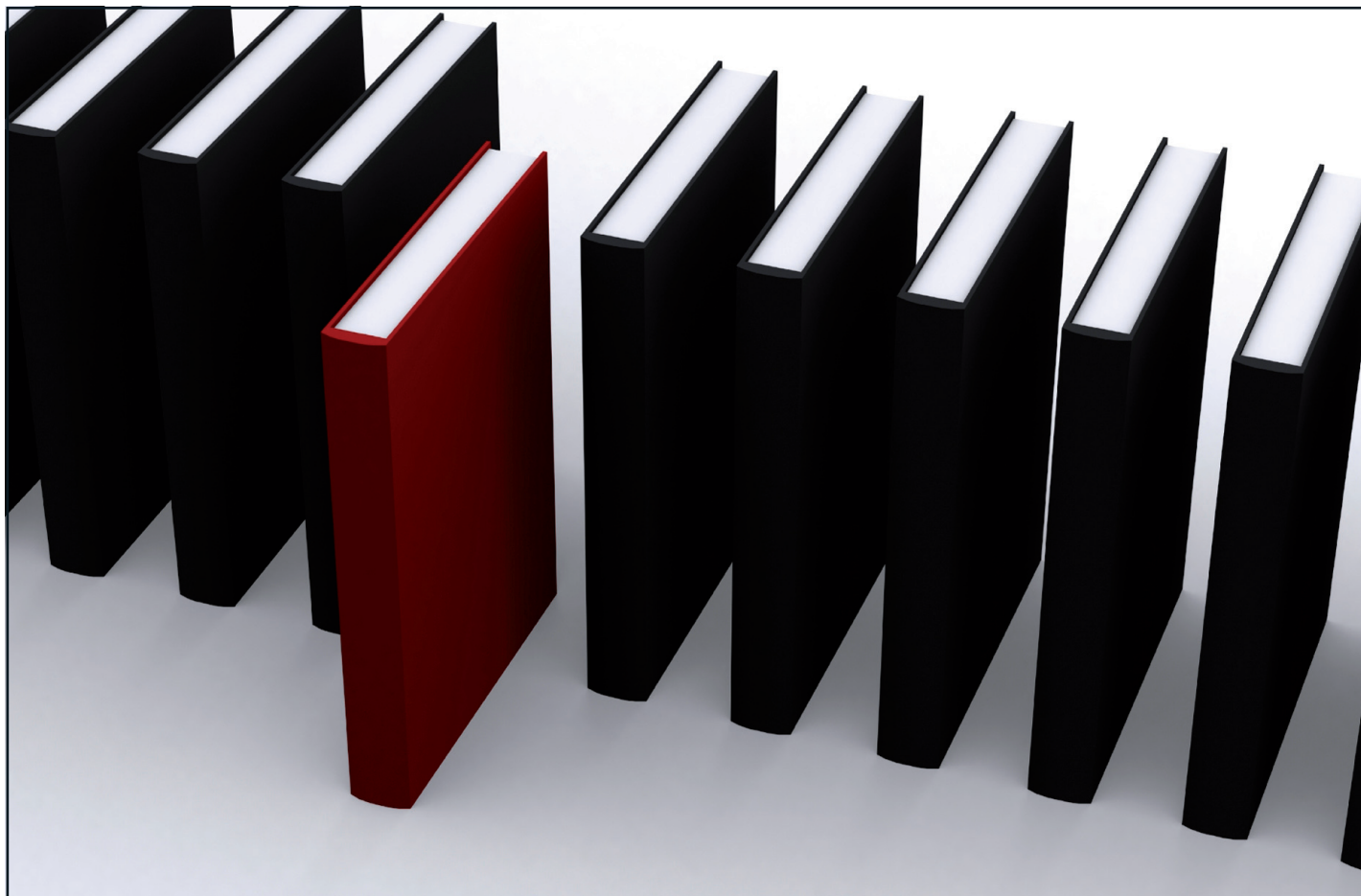
6531

Chromo-fluorogenic sensing of pyrophosphate in aqueous media using silica functionalised with binding and reactive units

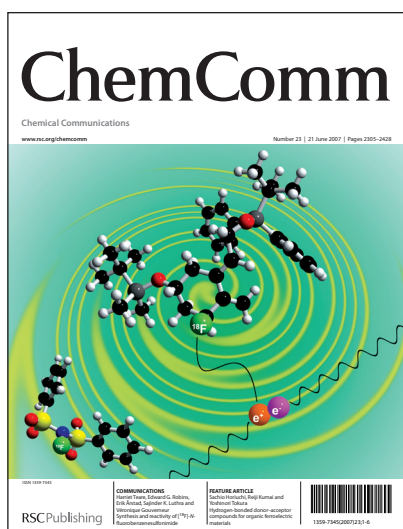
Estela Climent, Rosa Casasús, M^a. Dolores Marcos, Ramón Martínez-Mañez,* Félix Sancenón* and Juan Soto

A new protocol for the design of chromo-fluorogenic sensing materials using functionalised silica supports is reported.





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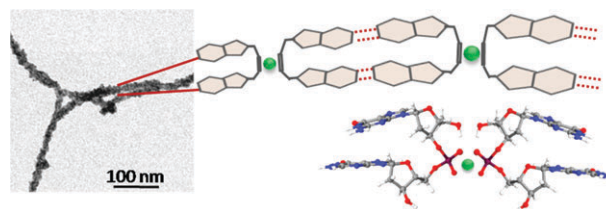
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6534

Controlled self-assembly of nucleotide–lanthanide complexes: specific formation of nanofibers from dimeric guanine nucleotides

Carole Aimé, Ryuhei Nishiyabu, Ryosuke Gondo, Kenji Kaneko and Nobuo Kimizuka*

Dimeric guanine nucleotides adopt a unique pincer-like structure in aqueous solution. In the presence of lanthanides, this conformation and guanine properties induce the formation of nanofibers exhibiting specific coordination environment, luminescence and morphology.

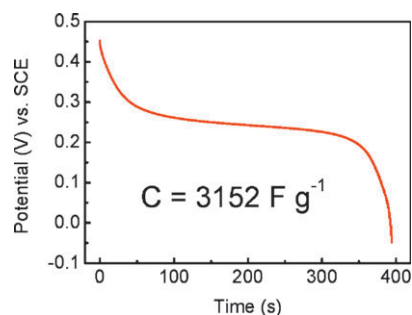


6537

Electrodeposited nickel hydroxide on nickel foam with ultrahigh capacitance

Guang-Wu Yang, Cai-Ling Xu* and Hu-Lin Li*

Electrodeposited $\text{Ni}(\text{OH})_2$ on nickel foam with porous and 3D nanostructures has ultrahigh capacitance in the potential range -0.05 – 0.45 V, and a maximum specific capacitance as high as 3152 F g^{-1} can be achieved in 3% KOH solution at a charge/discharge current density of 4 A g^{-1} .

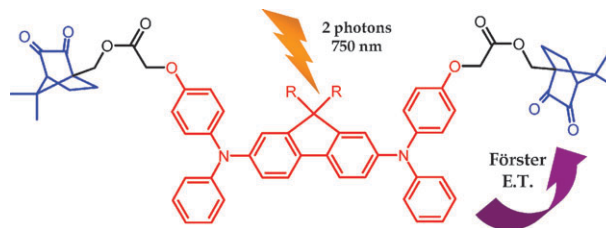


6540

Two-photon absorption and polymerization ability of intramolecular energy transfer based photoinitiating systems

M. Jin, J.-P. Malval,* D.-L. Versace, F. Morlet-Savary, H. Chaumeil, A. Defoin, X. Allonas and J.-P. Fouassier

A two-photon photoinitiator has been developed based on camphorquinone subunits associated with a 2,7-bisaminofluorene core. Through a Förster-type energy transfer, the two-photon excitation of the donor moiety leads to the activation of the camphorquinone groups with 95% efficiency.

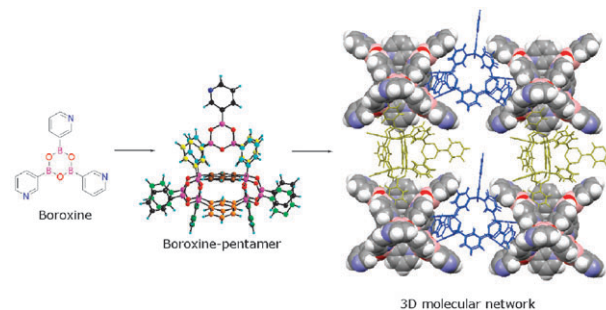


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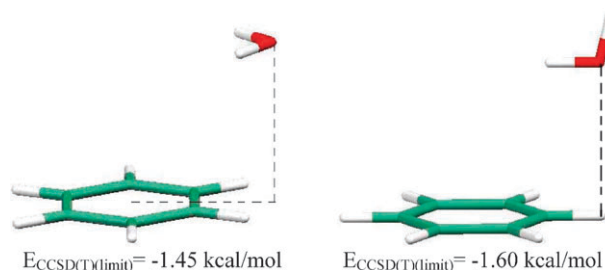
3-Pyridineboronic acid → boroxine → pentadecanuclear boron cage → 3D molecular network: a sequence based on two levels of self-complementary self-assembly

Domingo Salazar-Mendoza, Jorge Guerrero-Alvarez and Herbert Höpfl*

A pentadecanuclear boroxine-cage has been generated through a single-component self-assembly process, and serves as a twofold concave–convex self-complementary tecton for the assembly of a complex 3D molecular network.



6546

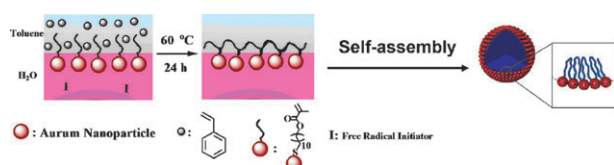


Parallel alignment of water and aryl rings—crystallographic and theoretical evidence for the interaction

Bojana D. Ostojić, Goran V. Janjić and Snežana D. Zarić*

An analysis of crystal structures from the Cambridge Structural Database (CSD) together with *ab initio* calculations revealed parallel alignments between water molecules and C₆-aryl rings.

6549

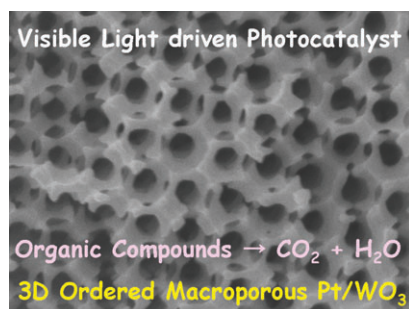


Copolymers of styrene and gold nanoparticles

Xiwen Zhang, Li Liu, Jia Tian, Jian Zhang and Hanying Zhao*

Stoichiometrically functionalized AuNPs as building units in polymerization reaction is described; the obtained copolymers, comprised of AuNPs and polystyrene, behave differently in various solvents, micellar structures with PS cores and AuNPs corona are obtained in water.

6552

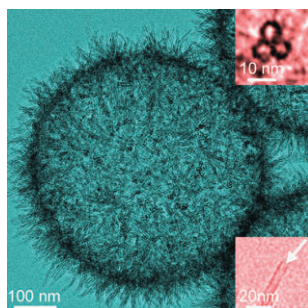


Preparation of nano-structured crystalline tungsten(vi) oxide and enhanced photocatalytic activity for decomposition of organic compounds under visible light irradiation

Masahiro Sadakane,* Keisuke Sasaki, Hironobu Kunioku, Bunsho Ohtani, Wataru Ueda and Ryu Abe*

3-D ordered macroporous WO₃ materials show outstanding photocatalytic activity for organic compound degradation under visible light after Pt loading.

6555



One-pot synthesis of nanotube-based hierarchical copper silicate hollow spheres

Yongqiang Wang, Guozhong Wang,* Hongqiang Wang, Weiping Cai and Lide Zhang

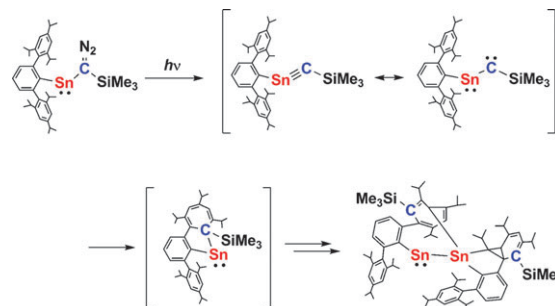
A new type of hierarchical structure, copper silicate hollow spheres assembled by nanotubes, was synthesized *via* a simple one-pot route by using silica colloidal spheres as chemical template.

6558

Formation of a stannylstannylene *via* intramolecular carbene addition of a transient stannaacetylene (R₃Sn≡CR')

Wataru Setaka,* Katsuyuki Hirai, Hideo Tomioka, Kenkichi Sakamoto and Mitsuo Kira*

A transient stannaacetylene generated photochemically afforded an unusual isolable stannylstannylene *via* the carbene addition to an intramolecular benzene ring as expected from the carbene-stannylene nature of the stannaacetylene.

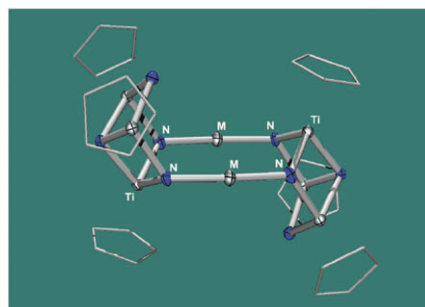


6561

Mercury or silver atoms bridging trinuclear titanium imido–nitrido systems

Avelino Martín, Noelia Martínez-Espada, Miguel Mena, Marta E. G. Mosquera, Adrián Pérez-Redondo and Carlos Yélamos*

Unprecedented polynuclear nitrido complexes containing [M₂Ti₂N₄] (M = Hg, Ag) eight-membered rings in a chair conformation have been prepared and structurally characterized.

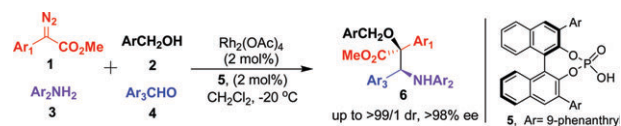


6564

Selectivity control in enantioselective four-component reactions of aryl diazoacetates with alcohols, aldehydes and amines: an efficient approach to synthesizing chiral β-amino-α-hydroxyesters

Xinfang Xu, Jing Zhou, Liping Yang and Wenhao Hu*

β-Amino-α-hydroxy acid derivatives are produced in a single step with excellent control of chemo-, diastereo- and enantioselectivity.

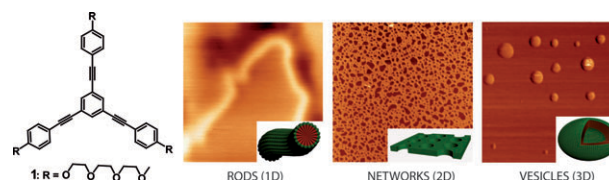


6567

Morphological changes in the self-assembly of a radial oligo-phenylene ethynylene amphiphilic system

Gustavo Fernández, Fátima García and Luis Sánchez*

Varying polarity of the solvent leads to the formation of vesicles, planar networks or rod-like objects by the spontaneous self-assembly of a simple C₃-radial oligo-phenylene ethynylene amphiphile.



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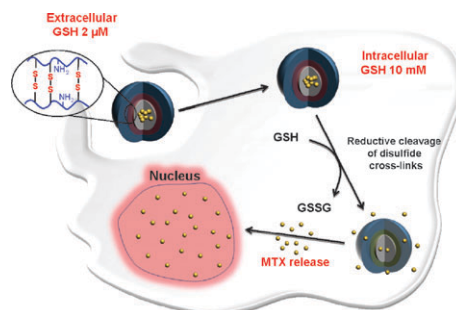
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6570

Disulfide-cross-linked PEG-poly(amino acid)s copolymer micelles for glutathione-mediated intracellular drug delivery

Ahn Na Koo, Hong Jae Lee, Sung Eun Kim, Jeong Ho Chang, Chiyoung Park, Chulhee Kim, Jae Hyung Park and Sang Cheon Lee*

Biocompatible, cell-permeable shell cross-linked polymer micelles bearing glutathione-cleavable shell cross-links have been developed for highly effective intracellular delivery of an anticancer drug.

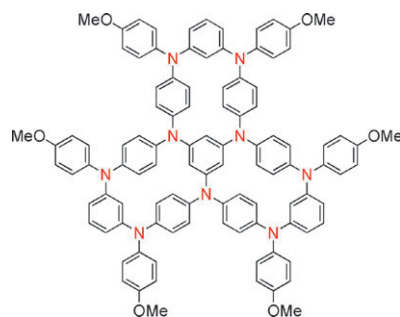


6573

Trimacrocylic arylamine and its polycationic states

Akihiro Ito,* Yuko Yamagishi, Koji Fukui, Syuuzi Inoue, Yasukazu Hirao, Ko Furukawa, Tatsuhisa Kato and Kazuyoshi Tanaka

A novel trimacrocylic arylamine was found to be accessible to the different spin-states by consecutive electrochemical or chemical oxidation.

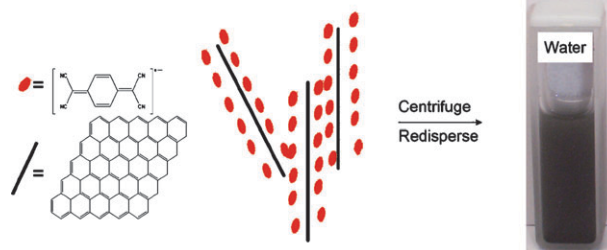


6576

Aqueous dispersions of TCNQ-anion-stabilized graphene sheets

Rui Hao, Wen Qian, Luhui Zhang and Yanglong Hou*

Aqueous dispersed graphene was successfully prepared *via* using 7,7,8,8-tetracyanoquinodimethane (TCNQ) anion as a stabilizer and expanded graphite as a starting material, which could provide a facile route to produce high quality water-soluble and organic solvent-soluble graphene sheets for various applications.

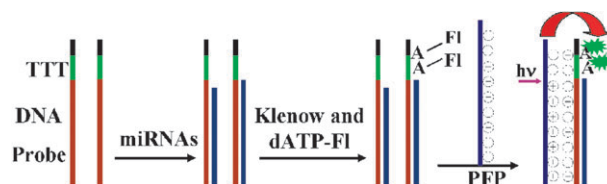


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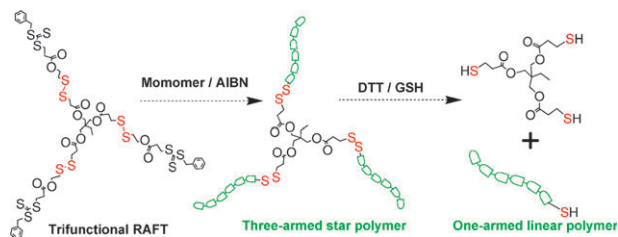
Amplified fluorescence determination of microRNAs in homogeneous solution with cationic conjugated polymers

Yali Zhang, Zhengping Li* and Yongqiang Cheng

FRET from a cationic conjugated polymer to the miRNA-primed extension products has been designed as a homogeneous and label-free platform for miRNA determination with high sensitivity and selectivity.



6582

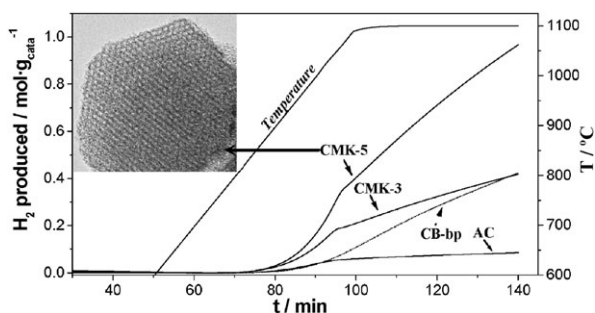


An approach to biodegradable star polymeric architectures using disulfide coupling

Jingquan Liu,* Huiyun Liu, Zhongfan Jia, Volga Bulmus and Thomas P. Davis*

The straightforward synthesis of biodegradable star polymers *via* both *in situ* polymerization from a trifunctional RAFT agent and post-polymerization conjugation of pyridyldisulfide-ended linear polymers to a trithiol precursor is described.

6585

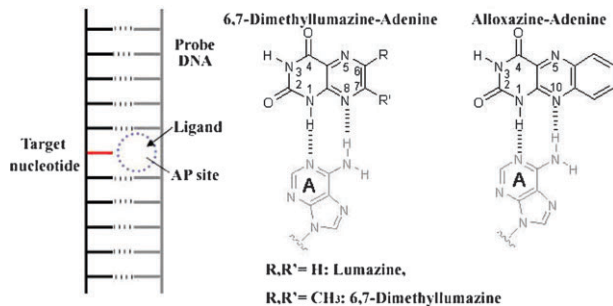


Ordered mesoporous carbons as highly active catalysts for hydrogen production by CH₄ decomposition

David P. Serrano,* Juan Ángel Botas, Patricia Pizarro, Rut Guil-López and Gema Gómez

Ordered mesoporous carbons have been applied, for the first time, as catalysts for hydrogen production *via* methane decomposition, exhibiting much higher and more stable activity than traditional carbonaceous catalysts.

6588

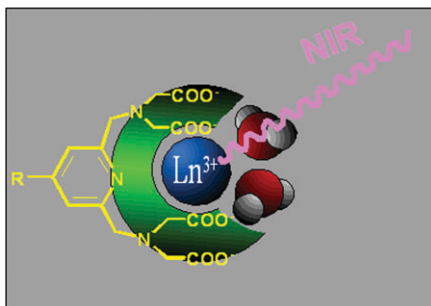


6,7-Dimethylumazine as a potential ligand for selective recognition of adenine opposite an abasic site in DNA duplexes

Zhiqiang Ye, Burki Rajendar, Dai Qing, Seichi Nishizawa and Norio Teramae*

6,7-Dimethylumazine more selectively binds to adenine opposite the abasic site in DNA duplexes than the other three nucleobases with a dissociation constant K_d of *ca.* 1.0 μM , compared to the parent molecule, lumazine.

6591



Pyridine-based lanthanide complexes: towards bimodal agents operating as near infrared luminescent and MRI reporters

Laurent Pellegatti, Jian Zhang, Bohuslav Drahos, Sandrine Villette, Franck Suzenet, Gérald Guillaumet, Stéphane Petoud* and Éva Tóth*

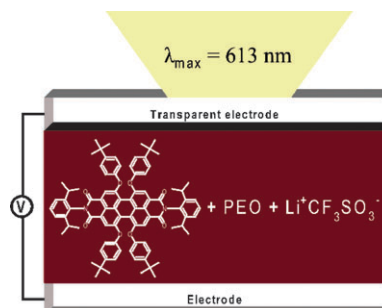
A versatile ligand scaffold is reported for Ln³⁺ complexation where MRI and luminescence requirements are simultaneously satisfied.

6594

Synthesis and utilization of perylene-based *n*-type small molecules in light-emitting electrochemical cells

Zachary B. Hill, Deanna B. Rodovsky, Janelle M. Leger and Glenn P. Bartholomew*

The utilization of a perylene derivative in an LEC device shows the ability of LECs to support *n*-type materials as the emissive component. This extends the use of organic emissive materials beyond the commonly used PPV derivatives.

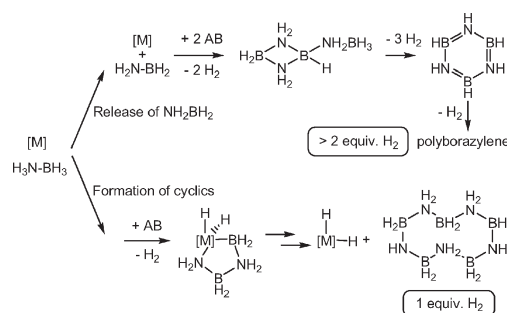


6597

Coordination of aminoborane, NH_2BH_2 , dictates selectivity and extent of H_2 release in metal-catalysed ammonia borane dehydrogenation

Vincent Pons, R. Tom Baker,* Nathaniel K. Szymczak, David J. Heldebrant, John C. Linehan, Myrna H. Matus, Daniel J. Grant and David A. Dixon*

In situ ^{11}B NMR monitoring, computational modeling, and external trapping studies show that ejection of reactive aminoborane, NH_2BH_2 , from the metal center is key to maximizing H_2 yield.

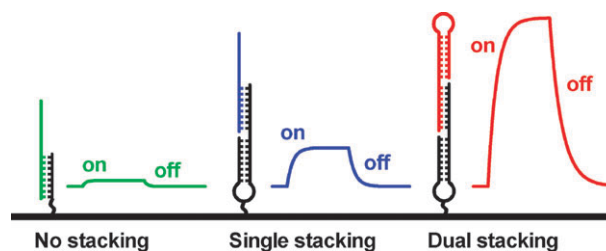


6600

Kinetics of base stacking-aided DNA hybridization

Bi-feng Yuan, Xing-ying Zhuang, Yu-hua Hao and Zheng Tan*

The association and dissociation rate constants (k_a and k_d) of DNA hybridizations involving dual, single or no stacking with different base-pairing sizes were measured, which reveals the advantage of stacking hybridization in both the kinetic and steady state.

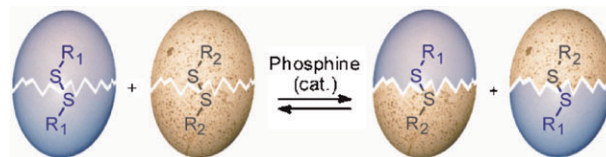


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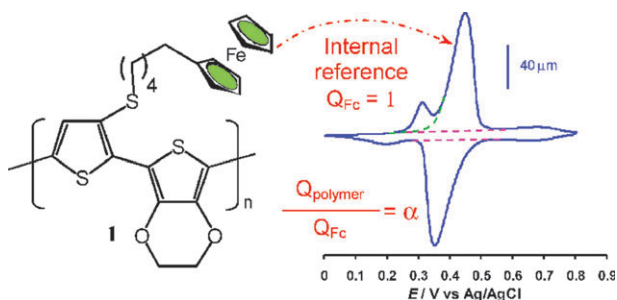
Phosphine-catalyzed disulfide metathesis

Rémi Caraballo, Martin Rahm, Pornrapee Vongvilai, Tore Brinck and Olof Ramström*

The reaction between disulfides and phosphines generates a reversible disulfide metathesis process in organic solvents at mild conditions. The catalytic process was used as a powerful tool for dynamic system generation.



6606



Internally referenced analysis of charge-transfer reactions in a new ferrocenyl bithiophenic conducting polymer through cyclic voltammetry

Chuang Peng, Xiaohang Zhou, George Z. Chen,*
Fabrice Moggia, Frédéric Fages, Hugues Brisset* and
Jean Roncali

Charge transfer to each monomer unit in conducting polymers can be reliably determined by incorporation of ferrocene as an internal reference.

ADDITIONS & CORRECTIONS

6609

Additions and corrections published in 2008



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