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ChemComm

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Cover
Recent introduction of ionically cross-linked LB films provides new opportunities for an old technology (pp. 2787–2791).

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contents

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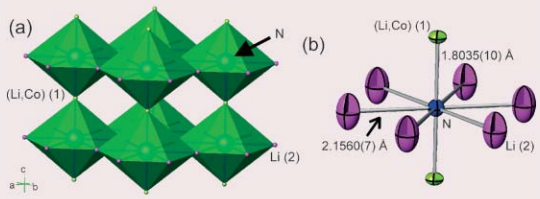
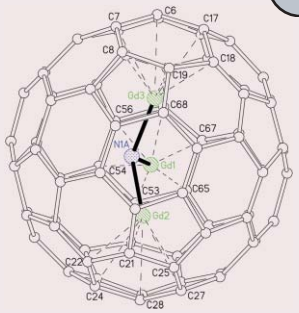


Crystal growth, defect structure and magnetism of new Li_3N-derived lithium nitridocobaltates

Alexandra G. Gordon, Ronald I. Smith, Claire Wilson, Zlatka Stoeva and Duncan H. Gregory*

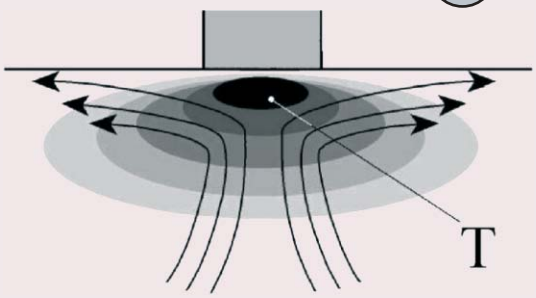
New nitridocobaltates $Li_{3-x-y}Co_xN$ contain significant Li^+ vacancies ($y \approx 0.45$) disordered within lithium–nitrogen planes and exhibit increased covalency through infinite –N–(Li,Co)–N– chains. These features could yield improved anodes for secondary lithium ion batteries.



Pyramidalization of Gd_3N inside a C_{80} cage. The synthesis and structure of $Gd_3N@C_{80}$

Steven Stevenson,* J. Paige Phillips, Jon E. Reid, Marilyn M. Olmstead, Sankar Prasad Rath and Alan L. Balch*

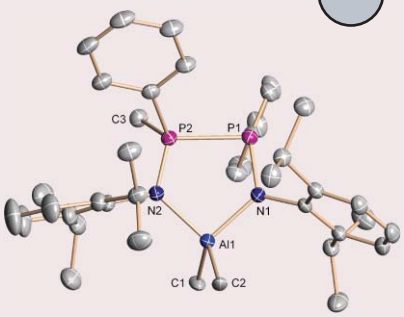
The synthesis and X-ray crystal structure of $Gd_3N@C_{80}$ are reported.



Microwave activation in ionic liquids induces high temperature–high speed electrochemical processes

Ujjal Kumar Sur, Frank Marken,* Barry A. Coles, Richard G. Compton and Jaïrton Dupont

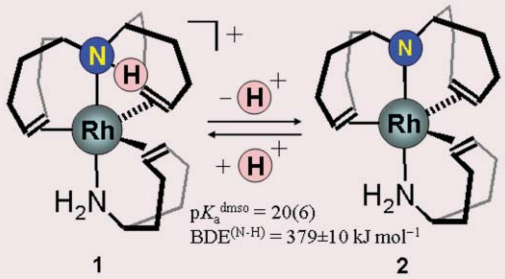
Self-focusing of intense microwave radiation at microelectrodes immersed in ionic liquids dramatically enhances voltammetric current signals and temperatures to give extreme conditions sufficient for condensed phase pyrolysis processes to occur.



Formation of a chiral NPPN ligand *via* metallation of acyclic NPNCN systems

Tristram Chivers,* May C. Copsey and Masood Parvez

A new type of bidentate *N*,*N*′-chelating ligand containing a chiral phosphorus centre has been synthesized *via* the metallation of an acyclic NPNCN species. The zwitterionic ligand backbone contains a phosphenium centre stabilised by an imido phosphine fragment.

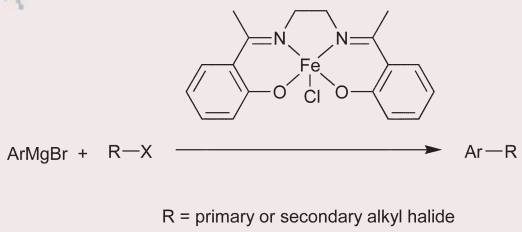


Amine olefin rhodium(I) complexes: pK_a and NH bond strength

Torsten Büttner, Frank Breher and Hansjörg Grützmacher*

The rhodium amine olefin complex **1** is deprotonated to give the remarkably stable corresponding rhodium(I) amide **2**. Reversible oxidation at E°(dmso) = −0.466 V (*vs.* Fc/Fc^+) allows the determination of the NH bond dissociation energy (BDE).

2822

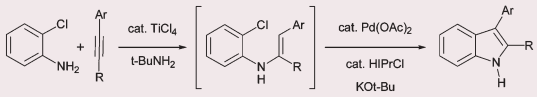


Iron(III) salen-type catalysts for the cross-coupling of aryl Grignards with alkyl halides bearing β-hydrogens

Robin B. Bedford,* Duncan W. Bruce, Robert M. Frost, John W. Goodby and Michael Hird

Salen-type complexes of iron(III) prove to be highly active catalysts in the coupling of aryl Grignard reagents with primary and secondary alkyl halides.

2824

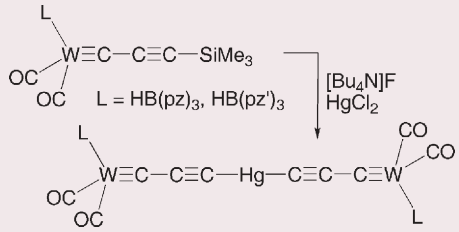


Hydroamination/Heck reaction sequence for a highly regioselective one-pot synthesis of indoles using 2-chloroaniline

Lutz Ackermann,* Ludwig T. Kaspar and Christian J. Gschrei

A one-pot protocol consisting of a highly regioselective $TiCl_4$-catalyzed hydroamination and a 5-*endo* Heck cyclization starting from 2-chloroaniline allows a concise and efficient indole synthesis.

2826

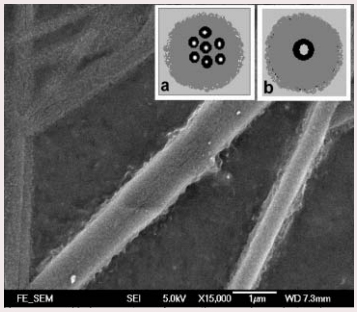


A mercury bis(tricarbido) complex: $[Hg\{C{\equiv}C–C{\equiv}W(CO)_2Tp\}_2(dmso)_4](dmso)_2$ (Tp = hydrotrispyrazolylborate)

Rian D. Dewhurst, Anthony F. Hill* and Anthony C. Willis

The first example of a structurally characterised octahedral diorganomercurial complex with unidentate ligands.

2828

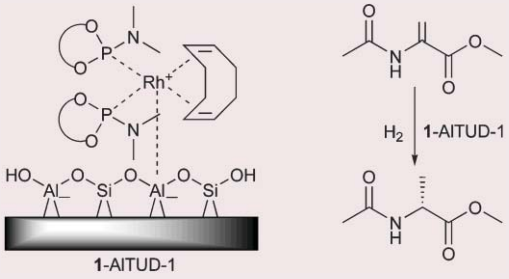


Fabrication of nanowires with polymer shells using treated carbon nanotube bundles as macro-initiators

Yuyang Liu,* Jing Tang and J. H. Xin

Nanowires with polymer shells were produced *via* radical grafting polymerization of methyl methacrylate using treated carbon nanotube bundles as macro-initiators, thereby providing an efficient way to produce high grafting ratio nanocomposites.

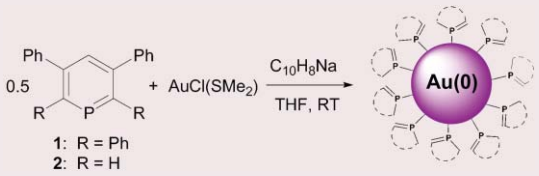
2830



Efficient immobilisation of Rh-MonoPhos on the aluminosilicate AlTUD-1

Chrétien Simons, Ulf Hanefeld, Isabel W. C. E. Arends, Adriaan J. Minnaard, Thomas Maschmeyer* and Roger A. Sheldon*

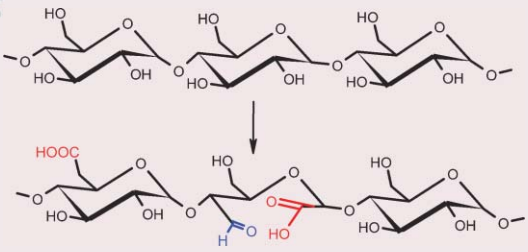
Rhodium-MonoPhos was successfully immobilised by ionic interactions on aluminosilicate AlTUD-1. The resulting new heterogeneous catalyst can be used in water and showed excellent enantioselectivity and activity in the asymmetric hydrogenation of methyl-2-acetamidoacrylate.



Phosphinine stabilised gold nanoparticles; synthesis and immobilisation on mesoporous materials

Audrey Moores, Frédéric Goettmann, Clément Sanchez* and Pascal Le Floch*

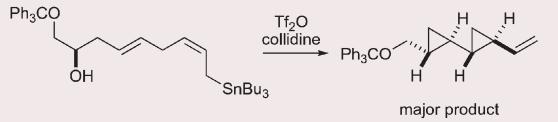
The first gold nanoparticles stabilised by sp^2-hybridised P ligands were synthesised. The strong affinity of sp^2-hybridised P atoms toward Au(0) centres allows sub-stoichiometric quantities of ligand to be used. These phosphinine-based nanoparticles were also immobilised on mesostructured materials.



A novel clean catalytic method for waste-free modification of polysaccharides by oxidation

Svetlana L. Kachkarova-Sorokina, Pierre Gallezot and Alexander B. Sorokin*

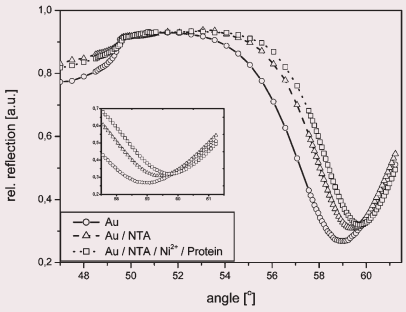
A single step, tailor made modification of polysaccharides by oxidation exemplified with starch has been achieved using only a small amount of iron phthalocyanine catalyst (0.0078 mol%), benign H_2O_2 oxidant and water.



Stereochemistry of contiguous cyclopropane formation from cascade cyclization of a skipped dienyl homoallyl triflate

Christopher M. Lincoln, James D. White* and Alexandre F. T. Yokochi

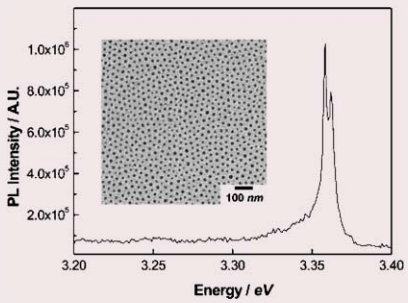
Solvolysis of asymmetric homoallylic triflates bearing a terminal stannyl substituent gives disubstituted cyclopropanes and bicyclopropanes bearing differentiated termini in high enantiomeric purity.



Monitoring the formation of biosilica catalysed by histidine-tagged silicatein

Muhammad Nawaz Tahir, Patrick Théato, Werner E. G. Müller, Heinz C. Schröder, Andreas Janshoff, Jian Zhang, Joachim Huth and Wolfgang Tremel*

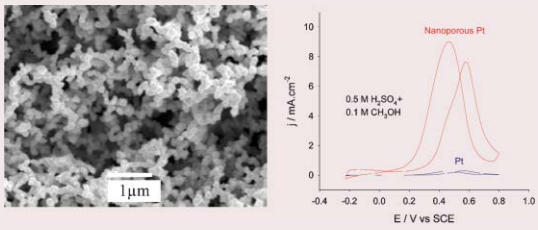
Surface bound silicatein retains its biocatalytic activity, which was demonstrated by monitoring the immobilisation of silicatein using a histidine-tag chelating anchor and the subsequent biosilicification of SiO_2 on surfaces.



Self-assembled arrays of zinc oxide nanoparticles from monolayer films of diblock copolymer micelles

Seong Il Yoo, Byeong-Hyeok Sohn,* Wang-Cheol Zin, Sung-Jin An and Gyu-Chul Yi

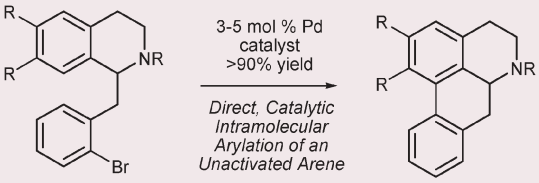
A hexagonal array of optically active ZnO nanoparticles was synthesized *in situ* on the solid substrate by utilizing a single-layered film of diblock copolymer micelles as a nanostructured template.



Fabrication and electrochemical properties of novel nanoporous platinum network electrodes

Xinsheng Peng, Kallum Koczkur, Stephanie Nigro and Aicheng Chen*

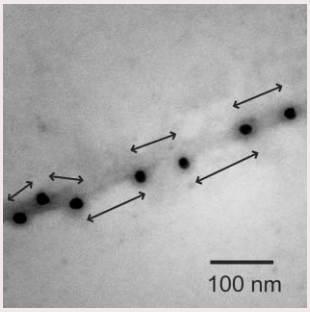
Three-dimensional nanoporous Pt networks were directly grown on a Ti substrate *via* a simple hydrothermal-assisted seed method. The formed nanoporous Pt network electrodes exhibit a large surface area and high activity, which supports the potential usefulness of these materials in novel electrochemical sensor design and catalyst development.



Direct intramolecular arylation of unactivated arenes: application to the synthesis of aporphine alkaloids

Marc Lafrance, Nicole Blaquière and Keith Fagnou*

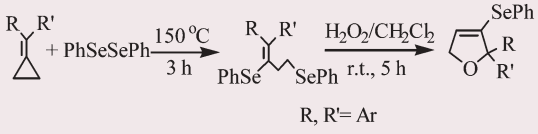
The direct intramolecular C–H arylation of unactivated arenes is a viable strategy for the synthesis of aporphine alkaloids. These reactions occur with 3 to 5 mol% catalyst and generate the aporphine skeleton in up to 99% yield.



Construction of a protein array on amyloid-like fibrils using co-assembly of designed peptides

Hiroyuki Kodama, Sachiko Matsumura, Taro Yamashita and Hisakazu Mihara*

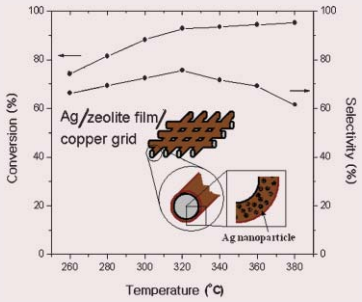
Streptavidin (labelled with colloidal gold) periodically bound onto cofibrils containing biotinylated peptides. The protein arrangement at every 50, 100, 150 nm intervals on the nanoscale construct was achieved.



Ring-opening reactions of methylenecyclopropanes with diphenyl diselenide upon heating; formation of 3-phenylselenyl-2,5-dihydrofuran derivatives

Le-Ping Liu and Min Shi*

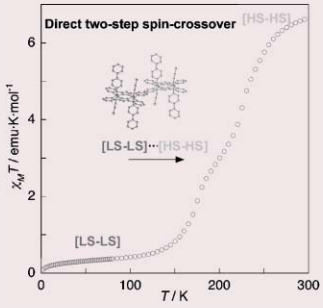
The reactions of methylenecyclopropanes **1** with diphenyl diselenide give ring-opened products **2** in good yields at 150 °C under nitrogen atmosphere for 3 h. The products **2** can further undergo oxidative cyclization with hydrogen peroxide to furnish 3-phenylselenyl-2,5-dihydrofurans **3** in moderate yields (three steps) at room temperature in CH_2Cl_2 for 5 h. A plausible reaction mechanism has been proposed.



A novel catalyst with high activity for polyhydric alcohol oxidation: nanosilver/zeolite film

Jiang Shen, Wei Shan, Yahong Zhang, Junming Du, Hualong Xu, Kangnian Fan, Wei Shen* and Yi Tang*

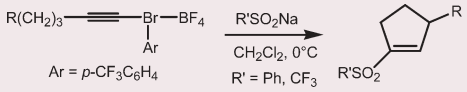
A novel nanosilver/zeolite film catalyst was fabricated and it showed high activity and selectivity for the partial oxidation of polyhydric alcohols at a relatively low temperature.



Direct two-step spin-crossover through [HS–HS][LS–LS] at the plateau in dinuclear diiron(II) complex [{Fe(NCBH$_3$)(4phpy)}$_2$(μ-bpypz)$_2$]

Keisaku Nakano, Satoshi Kawata, Ko Yoneda, Akira Fuyuhiro, Takashi Yagi, Saburo Nasu, Syotaro Morimoto and Sumio Kaizaki*

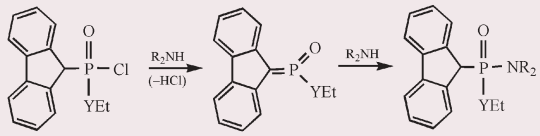
A new type of two-step spin-crossover through a like-spin pair state of [HS–HS] and [LS–LS] is demonstrated in contrast to the previously reported mixed spin state [HS–LS].



Tandem Michael addition–carbene insertion reaction of 1-alkynyl(aryl)(tetrafluoroborato)-λ^3-bromanes: 1-(phenylsulfonyl)- and 1-(trifluoromethylsulfonyl)cyclopentene annulation

Masahito Ochiai,* Norihiro Tada, Yoshio Nishi and Kentaro Murai

Exposure of 1-alkynyl [*p*-(trifluoromethyl)phenyl](tetrafluoroborato)-λ^3-bromanes to sodium benzenesulfinate or sodium trifluoromethanesulfinate in dichloromethane at 0 °C under argon resulted in tandem Michael–carbene insertion reactions to produce 1-sulfonylcyclopentenes selectively.



Phosphonyl transfer by the elimination-addition mechanism: accelerated formation of an alkylidineoxophosphorane (phosphene) intermediate when a P–O single bond is replaced by P–S

Martin J. P. Harger

Rate-limiting formation of the alkylidineoxophosphorane (phosphene) intermediate is *ca.* 10^3 times faster when Y = S than when Y = O, suggesting substantial stabilisation of a three-coordinate P^V centre by singly-bonded sulfur.

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