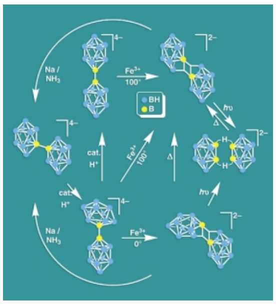
ISSN 1359-7345 • CHCOFS (6)547-665 (2002)

ChemComm

CHEMICAL COMMUNICATIONS • www.rsc.org/chemcomm



Cover
The redox and associated stereochemical processes which govern the interconversions of $[B_{20}H_{18}]^{2-}$ and $[B_{20}H_{18}]^{4-}$ ions (three isomers each). These structures manifest the various ways that two *closo*-decaborate cages may be linked together.

Free site-wide access to Advance Articles and the electronic form of this journal is provided with a full-rate institutional subscription.
See **www.rsc.org/ejs** for more information

contents

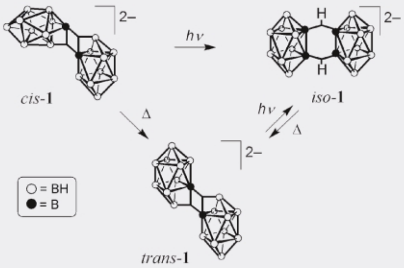
FEATURE ARTICLE

547

The versatile chemistry of the $[B_{20}H_{18}]^{2-}$ ions: novel reactions and structural motifs

M. Frederick Hawthorne, Kenneth Shelly and Fangbiao Li

A variety of reactions of the $[B_{20}H_{18}]^{2-}$ ions and related species are descrited, providing mechanistic insights into B_{20} chemistry.



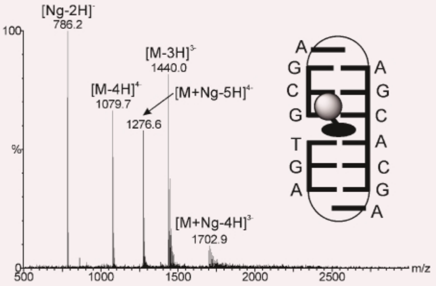
COMMUNICATIONS

556

Electrospray ionisation mass spectrometric detection of weak non-covalent interactions in nogalamycin–DNA complexes

Michelle L. Colgrave, Jennifer L. Beck, Margaret M. Sheil and Mark S. Searle

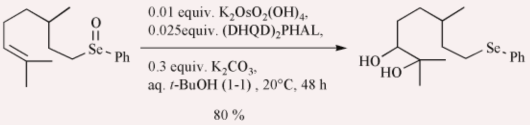
The use of electrospray ionisation mass spectrometry (ESI-MS) in high salt solutions for the analysis of weak non-covalent complexes of the anthracycline antibiotic nogalamycin with novel DNA hairpin structures.



558

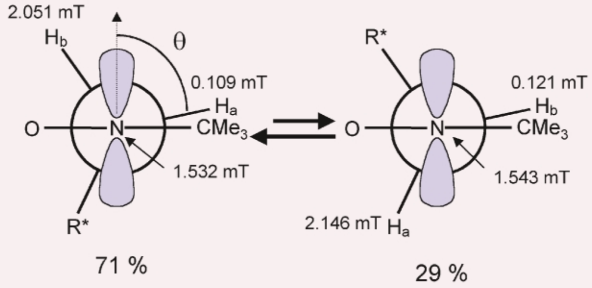
Evidence of an equilibrium between selenides and osmium(VIII) reagents and selenoxides and osmium(VI) reagents

Alain Krief, Alexandra Destree, Virginie Durisotti, Nicolas Moreau, Caroline Smal and Catherine Colaux-Castillo



Driving the equilibrium between selenides and osmium(VIII) reagents with selenoxides and osmium(VI) by a subsequent reaction allows the transformation of allylselenoxides to allylalcohols or the dihydroxylation of C=C double bonds.

560

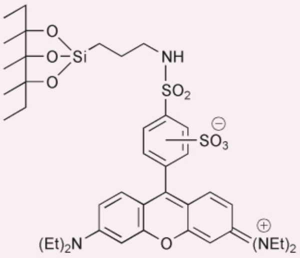


First characterisation of rotational conformers in a chiral nitroxide by EPR spectroscopy

Paola Franchi, Marco Lucarini, Gian Franco Pedulli and Elisa Bandini

The detection and characterisation in liquid solution by EPR spectroscopy of the rotational conformers of a nitroxide radical containing a chiral centre is reported for the first time.

562

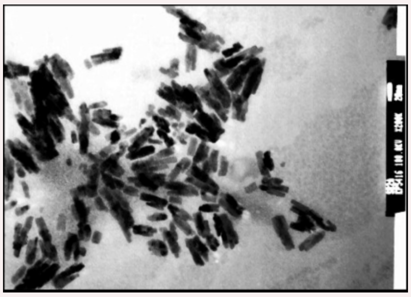


A new method for fluoride determination by using fluorophores and dyes anchored onto MCM-41

Ana B. Descalzo, Diego Jiménez, Jamal El Haskouri, Daniel Beltrán, Pedro Amorós, M. Dolores Marcos, Ramón Martínez-Máñez and Juan Soto

The dissolution of siliceous materials produced by fluoride attack at acid pH has been used for determining this anion in aqueous solutions by means of the liberation of fluorescent or coloured dyes supported onto MCM-41.

564

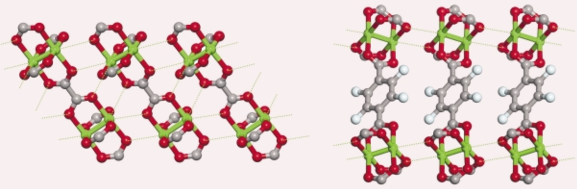


A single-source route to CdS nanorods

P. Sreekumari Nair, Thottackad Radhakrishnan, Neerish Revaprasadu, Gabriel A. Kolawole and Paul O'Brien

We report for the first time the use of a single molecule precursor for the preparation of CdS nanorods. It is proposed that the elongated 'rod-like' morphology of the CdS particles is due primarily to the nature of the precursor.

566

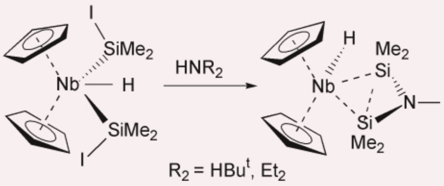


Intermolecular recognition and crystal packing in molybdenum and tungsten coordination polymers as deduced from powder X-ray diffraction data

Malcolm H. Chisholm, Paul J. Wilson and Patrick M. Woodward

In the absence of single crystals the solid-state molecular conformations and packing of coordination polymers of the type $[(^t\text{BuCO}_2)_3\text{M}_2(\mu\text{-X})\text{M}_2(\text{O}_2\text{C}^t\text{Bu})_3]_n$ have been determined from analysis of X-ray powder diffraction data (XRPD).

568



Serendipitous syntheses and structures of $[\text{Cp}_2\text{Nb(H)}\{(\text{SiMe}_2)_2(\mu\text{-NR})\}]$

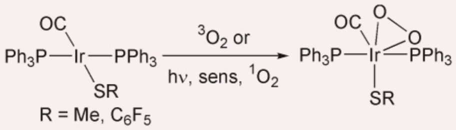
Georgii I. Nikonov, Sergei F. Vyboishchikov, Lyudmila G. Kuzmina and Judith A. K. Howard

The unprecedented coupling of primary and secondary amines with two silyl ligands of the niobocene bis(silyl)hydride complex $[\text{Cp}_2\text{Nb(H)(SiR}_2\text{Cl)}_2]$ affords the nitrogen-bridged 1,3-disilaniobocyclobutanes $[\text{Cp}_2\text{Nb(H)}\{(\mu\text{-SiR}_2)_2\text{NR}\}]$ (R = Bu^t (**4**), Et (**5**)), having unusual structural and NMR features.

570

Reaction of singlet oxygen with Ir(I) and Rh(I) thiolato complexes: oxidative addition *vs.* S-oxidation

David G. Ho, Rehana Ismail, Nestor Franco, Ruomei Gao, Edward P. Leverich, Irina Tsyba, Nam Nhat Ho, Robert Bau and Matthias Selke

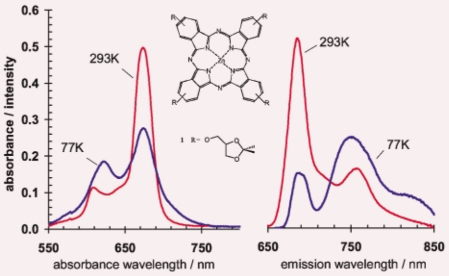


Singlet oxygen reacts with Ir(I) and Rh(I) thiolato complexes to form the corresponding Ir(III) and Rh(III) peroxo thiolato complexes which do not undergo intramolecular oxidation of the thiolate moiety.

572

The first genuine observation of fluorescent mononuclear phthalocyanine aggregates

Christopher Farren, Simon FitzGerald, Andrew Beeby and Martin R. Bryce

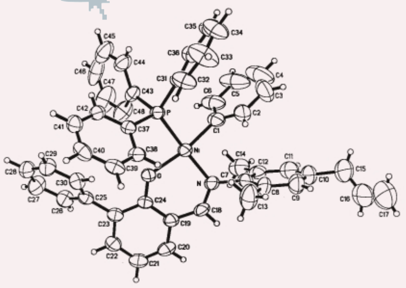


An initial photophysical study of a tetra-solketal-substituted zinc phthalocyanine is reported; at low temperature this compound exhibits very strong aggregation, and a new red shifted emission peak is observed, $\lambda_{max} \approx 750$ nm, attributed to a fluorescent phthalocyanine dimer.

574

Self-immobilized catalysts for ethylene polymerization: neutral, single-component salicylaldiminato phenyl nickel(II) complexes bearing allyl substituents

Dao Zhang, Guo-Xin Jin and Ninghai Hu

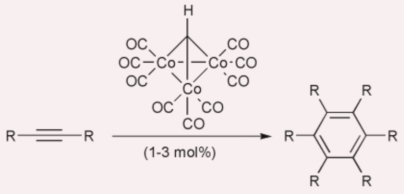


Neutral salicylaldiminato phenyl nickel complexes with allyl substituents can be used as single-component catalysts for ethylene polymerization. The allyl substituent induces self-immobilization of the originally homogeneous catalysis.

576

Methylidynetricobalt nonacarbonyl catalyzed cyclotrimerization of alkynes

Takumichi Sugihara, Akihito Wakabayashi, Yasuko Nagai, Hiroko Takao, Hiroshi Imagawa and Mugio Nishizawa

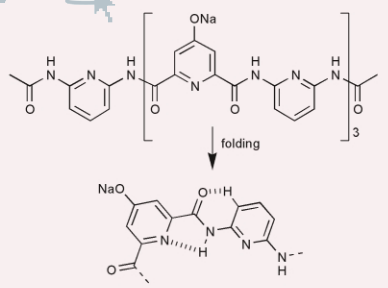


A cobalt carbonyl cluster, methylidynetricobalt nonacarbonyl, catalyzed inter- and intramolecular cyclotrimerization of alkynes producing substituted benzene derivatives in good to excellent yields.

578

Hydroxy-substituted oligopyridine dicarboxamide helical foldamers

Ivan Huc, Victor Maurizot, Heinz Gornitzka and Jean-Michel Léger

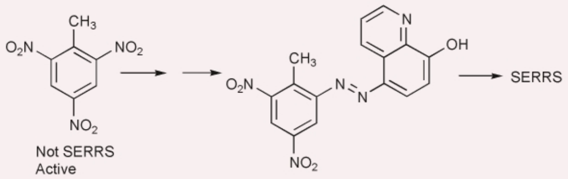


Short oligopyridine dicarboxamides bearing benzyloxy, hydroxy and hydroxylate moieties adopt very robust single helical conformations, even in water.

580

Selective functionalisation of TNT for sensitive detection by SERRS

Callum J. McHugh, Ruth Keir, Duncan Graham and W. Ewen Smith

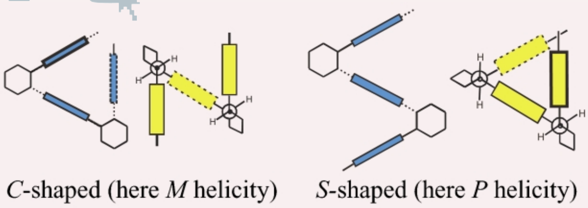


Selective chemical functionalisation of 2,4,6-trinitrotoluene to a surface enhanced resonance Raman active species for sensitive detection.

582

Folding of aromatic oligoimides of *trans*-1,2-diaminocyclohexane

Jacek Gawronski, Krystyna Gawronska, Jakub Grajewski, Karol Kacprzak and Urszula Rychlewska



C-shaped (here *M* helicity) *S*-shaped (here *P* helicity)

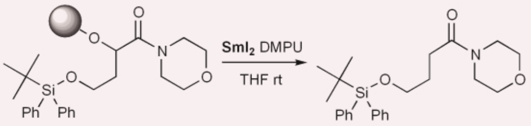
These oligomers have fixed (*R*,*R*) chirality but fold to either *M* or *P* helical conformers

Chiral oligomeric diimides prepared from pyromellitic dianhydride, (*R*,*R*)-1,2-diaminocyclohexane and phthalic anhydride fold into *M* or *P* helical conformers.

584

Reduction of α-aryloxy carbonyl compounds with samarium(II) iodide. A new traceless linker for the solid phase synthesis of carbonyl compounds

Fiona McKerlie, David J. Procter and Graham Wynne

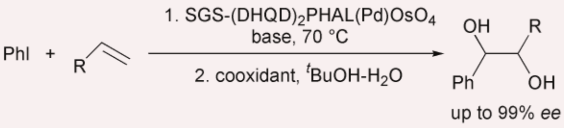


A new linker for the solid phase synthesis of functionalised carbonyl compounds has been developed. The linker is cleaved under mild, neutral conditions using SmI_2.

586

A new bifunctional catalyst for tandem Heck–asymmetric dihydroxylation of olefins

Boyapati M. Choudary, Naidu S. Chowdari, Karangula Jyothi, Nadakuditi S. Kumar and Mannepalli L. Kantam

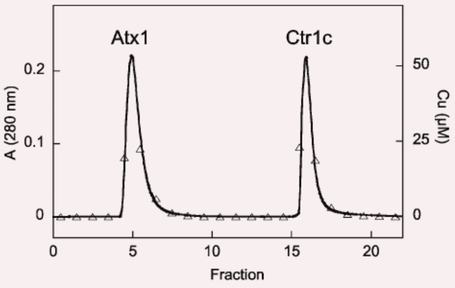


A heterogeneous bifunctional catalyst consisting of active palladium and osmium species anchored on silica gel through mercaptopropyl spacer has been developed for tandem Heck–asymmetric dihydroxylation of olefins to unfold a low cost process.

588

A C-terminal domain of the membrane copper pump Ctr1 exchanges copper(I) with the copper chaperone Atx1

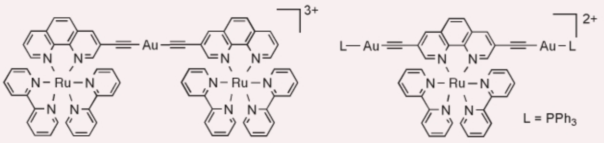
Zhiguang Xiao and Anthony G. Wedd



A cloned C-terminal domain of the yeast high-affinity copper uptake pump Ctr1 exchanges Cu(I) rapidly with the yeast copper chaperone Atx1: $10^{-2} < K_{ex} < 10^{+2}$.

590

Construction of molecular wires based on a gold(I) bis-σ-acetylide building block incorporated into ruthenium(II) polypyridyl complexes

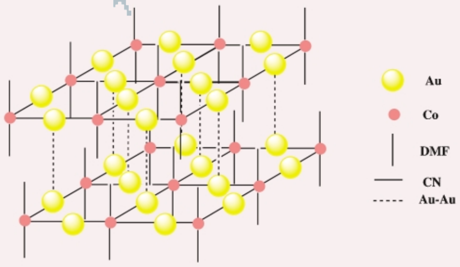


Michito Shiotsuka, Youhei Yamamoto, Shigeru Okuno, Masayuki Kitou, Koichi Nozaki and Satoru Onaka

A novel Ru(II)–Au(I)–Ru(II) triad shows an intense emission at 620 nm upon excitation at 360 nm, which suggests an efficient energy transfer from the Au site to the Ru sites *via* extended π-conjugation through the ethynyl units.

592

Aurophilicity as a cofactor in crystal engineering. Dicyanoaurate(I) anion as a building block in a novel Co(II)–Au(I) bimetallic assembly

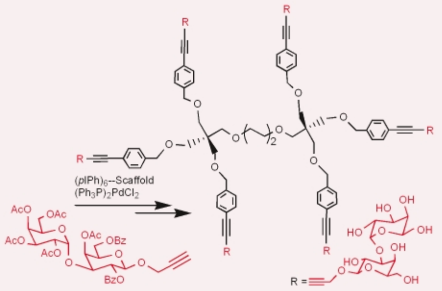


Enrique Colacio, Francesc Lloret, Raikko Kivekäs, José Ruiz, José Suárez-Varela and Markku R. Sundberg

A 2D grid-shaped cyanide-bridged Co(II)–Au(I) bimetallic coordination polymer, $[Co(DMF)_2\{Au(CN)_2\}_2]$, has been prepared from the $[Au(Cu)_2]^-$ building block; sheets associate pair-wise by aurophilic interactions and the compound exhibits zeolite-like properties.

594

Olefin self-metathesis as a new entry into xenotransplantation antagonists bearing the Galili antigen

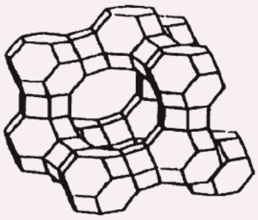


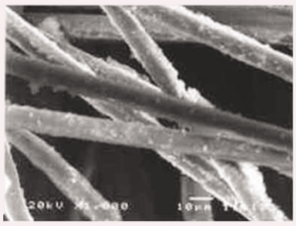
Bingcan Liu and René Roy

An αGal-related xenotransplantation cluster (**8**) bearing six residues was constructed using ruthenium catalyzed olefin metathesis and a single step Sonogashira cross-coupling of **6** onto a hexameric aryl iodide scaffold.

596

Zeolite-coated quartz fibers as media for photochemical and photophysical studies



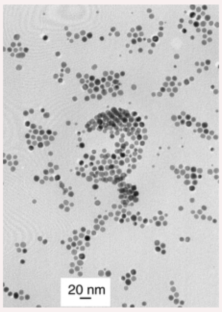


Ajit R. Pradhan, Sundararajan Uppili, J. Shailaja, J. Sivaguru and V. Ramamurthy

Use of zeolite-coated optical fibers for asymmetric photochemical reactions and for sensing polyaromatic compounds.

598

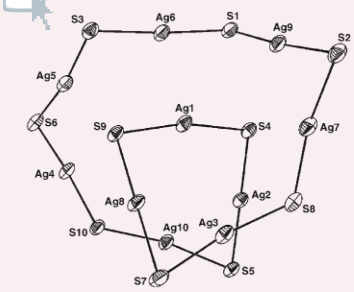
Aurophilic complexes as gold atom sources in organic media



Manuel Bardají, Pawel Uznanski, Catherine Amiens, Bruno Chaudret and Antonio Laguna

Gold oxonium complexes $[O(Au^{I}PR_3)_3](CF_3SO_3)$ (R = Ph, Me): a new class of gold atom precursors in organic media.

600

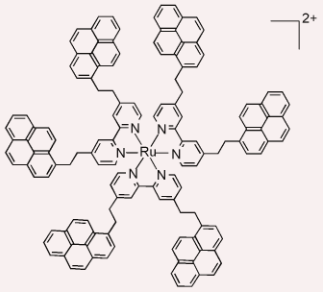


Synthesis and crystal structure of a novel decanuclear silver cluster complex $[Ag(SC_6H_2Pr^i_3\text{-}2,4,6)]_{10}\cdot 2CHCl_3\cdot C_2H_5OH$

Xianglin Jin, Xiangjin Xie, Hua Qian, Kaluo Tang, Chunling Liu, Xin Wang and Qihuang Gong

The novel decanuclear silver cluster complex $[Ag(SC_6H_2Pr^i_3\text{-}2,4,6)]_{10}$ (**1**), which is the first example of a silver thiolate complex of cyclo-$(\mu\text{-SR})_{10}M_{10}$ type, consists of ten silver atoms linked through ten aryl thiolate ligands. The $Ag_{10}S_{10}$ core is a 20-membered ring of alternating silver and sulfur atoms, which is compactly folded.

602



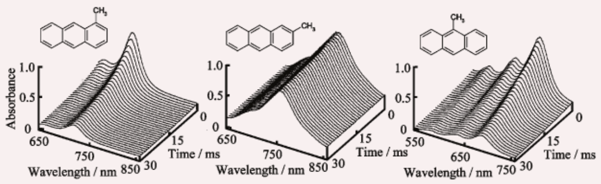
Towards ruthenium(II) polypyridine complexes with prolonged and predetermined excited state lifetimes

Nathan D. McClenaghan, Francesco Barigelletti, Béatrice Maubert and Sebastiano Campagna

Trends for luminescence lifetime and equilibration between excited states ae shown definitively for a series of complexes comprising the $[Ru(bpy)_3]^{2+}$ chromophore and differing number of pyrenyl groups.

604

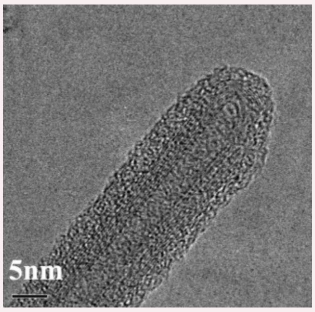
Spectroscopic detection of short-lived anthracene derivative cation radicals using an electron transfer stopped-flow method with the tris(2,4-dibromophenyl)amine cation radical



Munetaka Oyama, Jun Matsui and Hyun Park

Dynamic transformation profiles of short-lived anthracene derivative cation radicals could be observed using an electron transfer stopped-flow method by adopting the tris(2,4-dibromophenyl)amine cation radical as a reaction initiator.

606

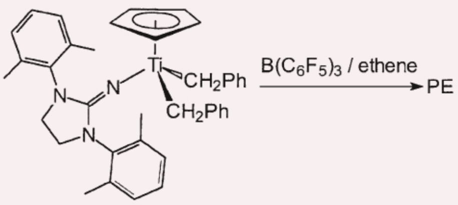


Nanotubes in Si-doped titanium dioxide

Yuhong Zhang and Armin Reller

Nanotubes are observed in Si-doped titanium dioxide prepared by a sol–gel technique. The formation and composition of the nanotubes are sensitively related to the silicon content. Although the mechanism is not clear, this discovery presents a novel route for fabrication of metal oxide nanotubes by the sol–gel technique, which is simple and easy.

608



A highly efficient titanium-based olefin polymerisation catalyst with a monoanionic iminoimidazolidide π-donor ancillary ligand

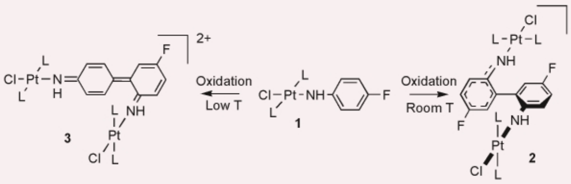
Winfried P. Kretschmer, Chris Dijkhuis, Auke Meetsma, Bart Hessen and Jan H. Teuben

A new cyclopentadienyl titanium comples with a 1,3-diaryl-iminoimidazolidide ancillary ligand is shown to be a robust olefin polymerisation catalyst system with high activity and good co-monomer incorporation characteristics.

610

Oxidative coupling of platinum arylamides: temperature dependent C–H or C–F cleavage

Ana C. Albéniz, Virginia Calle, Pablo Espinet and Sandra Gómez

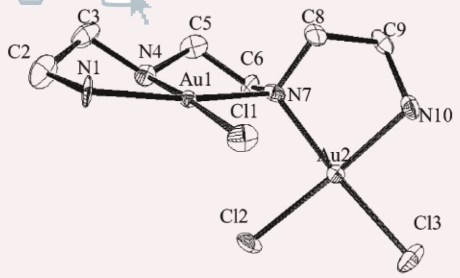


Oxidation of an arylamido platinum complex leads to C–C coupling with selective temperature dependent C–H *vs*. C–F bond cleavage. A very stable radical cation, **2**, is prepared and characterized.

612

Au_2trien: a dinuclear gold(III) complex with unprecedented structural features

Luigi Messori, Francesco Abbate, Pierluigi Orioli, Caterina Tempi and Giordana Marcon

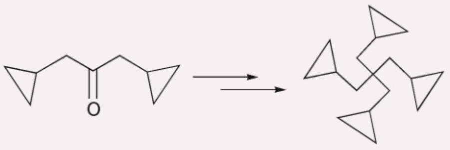


The X-ray structure of an unusual dinuclear gold(III) complex, Au_2(trien), with two square planar gold(III) centers bridged by a nitrogen donor is reported.

614

An expedient synthesis of tetrakis(cyclopropylmethyl)methane

C. V. Ramana, Syed M. Baquer, Rajesh G. Gonnade and Mukund K. Gurjar



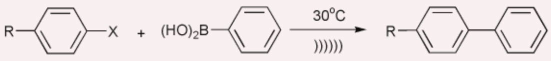
3

First synthesis of an elegant and symmetrical molecule **3** has been described and its C_2-symmetry has been established by single crystal X-ray analysis.

616

Ultrasound promoted Suzuki cross-coupling reactions in ionic liquid at ambient conditions

R. Rajagopal, Dilip V. Jarikote and K. V. Srinivasan



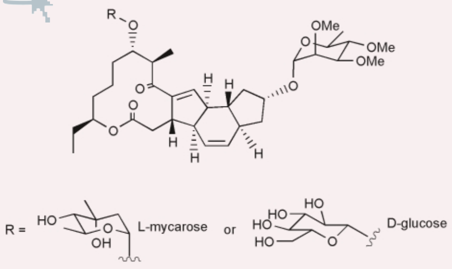
X = I, Br, Cl
R = H, OCH_3, CH_3, Cl, NO_2

Ultrasound has promoted Suzuki cross-coupling reactions of halobenzenes with phenyl boronic acid at ambient conditions using the ionic liquid [bbim][BF_4] with methanol as co-solvent without a phosphine ligand.

618

Engineered biosynthesis of novel spinosyns bearing altered deoxyhexose substituents

Sabine Gaisser, Christine J. Martin, Barrie Wilkinson, Rose M. Sheridan, Rachel E. Lill, Alison J. Weston, Sarah J. Ready, Clive Waldron, Gary D. Crouse, Peter F. Leadlay and James Staunton

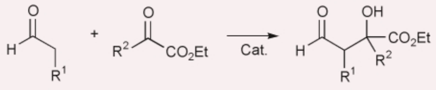


Novel spinosyns have been prepared using a genetically engineered strain of *Saccharopolyspora erythraea*, in which the β-D-formosamine moiety in glycosidic linkage to the hydroxy group at C17 is replaced with α-L-mycarose or β-D-glucose.

620

Direct catalytic asymmetric aldol reactions of aldehydes

Anders Bøgevig, Nagaswamy Kumaragurubaran and Karl Anker Jørgensen

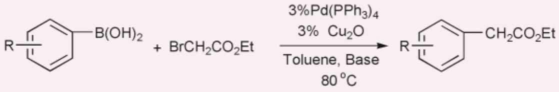


A direct catalytic asymmetric aldol reaction of aldehydes with activated carbonyl compounds is presented; the reaction proceeds with a high yield and enantioselectivity, and the potential of the reaction is shown by the synthesis of optically active β-hydroxycarboxylic acid derivatives.

622

Remarkable co-catalysis by copper(I) oxide in the palladium catalyzed cross-coupling of arylboronic acids with ethyl bromoacetate

Xing-xin Liu and Min-zhi Deng

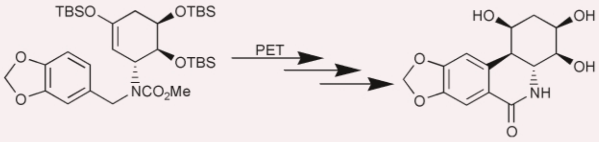


Copper(I) oxide can effectively co-catalyze the Suzuki type cross-coupling reactions of arylboronic acids with ethyl bromoacetate in the absence of highly toxic thallium compounds or special ligands.

624

A new strategy towards the total synthesis of phenanthridone alkaloids: synthesis of (+)-2,7-dideoxypancratistatin as a model study

Ganesh Pandey, Andiappan Murugan and Madhesan Balakrishnan

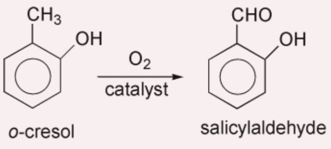


A new strategy towards the synthesis of phenanthridone alkaloids has been reported through the synthesis of (+)-2,7-dideoxypancratistatin from D-(−)-quinic acid employing PET initiated carbocyclization of an electron rich aromatic by silylenol ether as a key step.

626

One-step heterogeneously catalytic oxidation of *o*-cresol by oxygen to salicylaldehyde

Feng Wang, Jie Xu and Shi-jian Liao

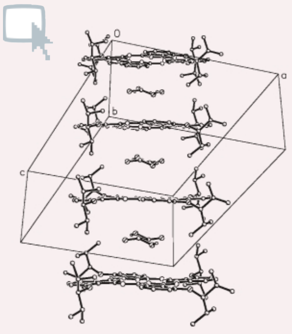


Salicylaldehyde (selectivity = 57.3% at a conversion = 73.8%) was prepared for the first time by the oxidation of *o*-cresol in a single step using impregnated CuCo/C catalysts.

628

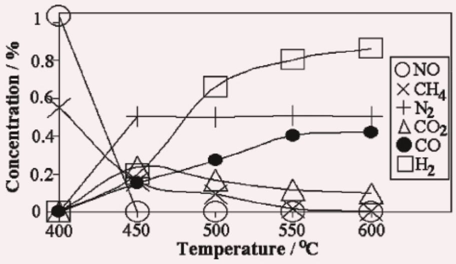
Formation and crystal structure of an unexpected inclusion complex of a metal-free phthalocyanine and oxalic acid

Wei Liu, Chi-Hang Lee, Hung-Wing Li, Chi-Keung Lam, Jinzhi Wang, Thomas C. W. Mak and Dennis K. P. Ng



This communication reports the crystal structure of a novel 1 : 1 inclusion complex of phthalocyanine with oxalic acid, which is generated serendipitously in a cerium-promoted cyclisation reaction.

630

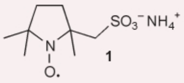


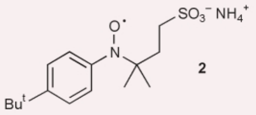
The catalytic activity of alumina supported Ru nanoparticles for NO/CH_4 reaction

Ioan Balint, Akane Miyazaki and Ken-ichi Aika

The reaction of NO with CH_4 over alumina supported Ru nanoparticles is examined. The originality of this work lies in the use of NO as an oxidant and the associated high selectivity (≈80%) to CO/H_2 at low reaction temperatures ($T > 500$ °C).

632


1

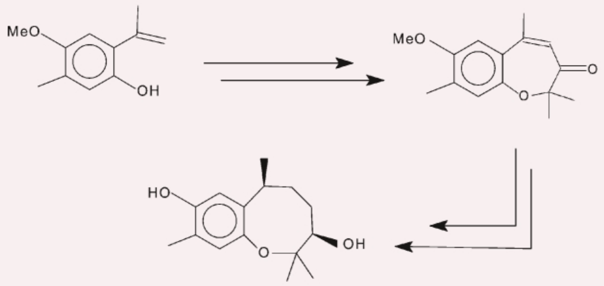

2

Water-soluble aminoxyls (nitroxides): 2-methyl-2-[(*N*-(4-*tert*-butylphenyl)oxyl]propanesulfonate and (1-oxyl-2,5,5-trimethylpyrrolidin-2-yl)methanesulfonate

Lucien Marx and André Rassat

Two sulfonate-aminoxyls, **1** and **2**, obtained by methods easily adaptable to the preparation of various other aminoxyls are totally soluble in water but are partially associated in other solvents.

634

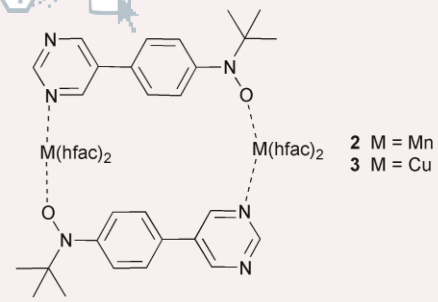


Formal syntheses of heliannuols A and D, allelochemicals from *Helianthus annus*

Kazi Tuhina, Dipal R. Bhowmik and Ramanathapuram V. Venkateswaran

PCC induced carbonyl ene cyclisation to form a seven-membered ring and the generation of the benzoxocane ring system through selective bond cleavage of a cyclopropane fused benzoxepanone.

636

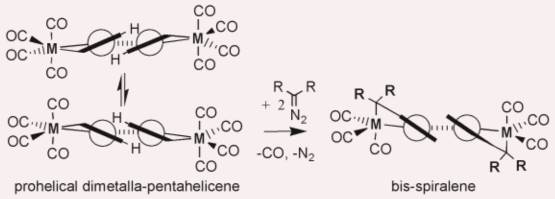


1 : 1 Complexes of 5-(4-[*N*-*tert*-butyl-*N*-aminoxyl]phenyl)pyrimidine with manganese(II) and copper(II) hexafluoroacetonylacetonate

Lora M. Field, Paul M. Lahti and Fernando Palacio

Mn(hfac)$_2$ and Cu(hfac)$_2$ form 1 : 1 complexes with 5-(4-[*N*-*tert*-butyl-*N*-aminoxyl]phenyl)pyrimidine that exhibit strong metal–nitroxide exchange. Spin polarization models do not explain the antiferromagnetic exchange behavior between spin sites in these complexes.

638

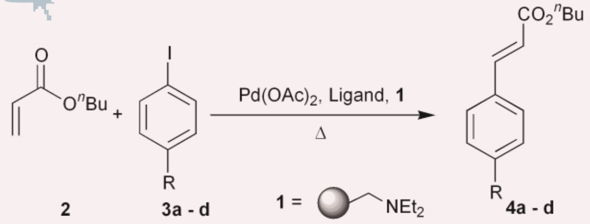


Expression of the prohelicity of bis-cyclomanganated 2,3-diphenylquinoxaline through reactions with diaryldiazomethanes

André de Cian, Jean-Pierre Djukic, Jean Fischer, Michel Pfeffer and Karl Heinz Dötz

Bis-metallation of 2,3-diphenylquinoxaline generates metalla-analogues of pentahelicenes whose prohelicity in the case of manganese(I) complexes can be enhanced by reaction with diazoalkanes to yield new organometallic helices.

640

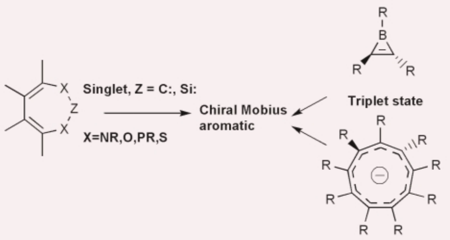


Palladium-mediated cross-coupling reactions with supported reagents in supercritical carbon dioxide

Richard S. Gordon and Andrew B. Holmes

Commercially available polystyrene supported amine and phosphine resins facilitate palladium-mediated Heck and Suzuki reactions in supercritical carbon dioxide (scCO$_2$).

642



The aromaticity and Möbius characteristics of carbeno[8]heteroannulenes and triplet state annulenes

Christian J. Kastrup, Steven P. Oldfield and Henry S. Rzepa

Two types of annulene which may show significant Möbius aromatic character and bond and twist delocalisation are proposed.

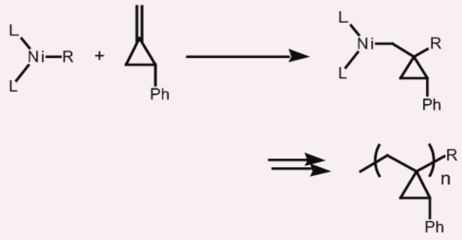
644

Transmetallation of β-allenyl silanes: efficient synthesis of dienyl chlorostannanes and chlorostibines

Mokhtar Lahrech, Jérôme Thibonnet, Salih Hacini, Maurice Santelli and Jean-Luc Parrain

The reaction of 1-trimethylsilylbuta-2,3-diene with tin tetrachloride, antimony trichloride or antimony pentachloride gave the corresponding buta-1,3-dien-2-yl halostannane or stibine derivatives; this ligand exchange was extended to other β-allenylsilanes.

646

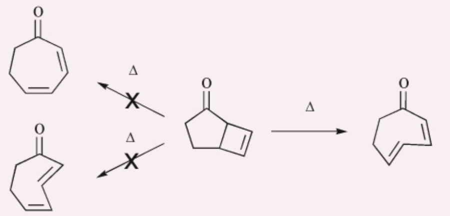


Ni-complex-catalysed addition polymerisation of 2-phenyl-1-methylenecyclopropane to afford a polymer with cyclopropylidene groups

Daisuke Takeuchi and Kohtaro Osakada

π-Allyl-nickel complexes initiated addition polymerisation of 2-phenyl-1-methylenecyclopropane to give a polymer with three-membered rings; the formed polymer showed a high T_g and negligible thermal decomposition up to 300 °C.

648

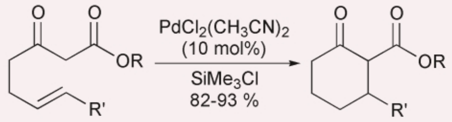


Pyrolysis and UV photoelectron spectroscopy of bicyclo[3.2.0]hept-6-en-2-one; preparation and detection of cyclohepta-2(*Z*),4(*E*)-dien-1-one

Tom Bajorek and Nick H. Werstiuk

In the gas phase, bicyclo[3.2.0]hept-6-en-2-one (**1**) undergoes thermal conrotatory ring opening to give **2** in accord with the Woodward–Hoffmann rules; this contrasts previous reports on the thermolysis of bicyclo[3.2.0]hept-6-ene which yielded the all *cis* isomer.

650

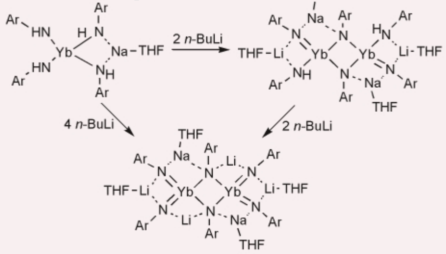


Palladium-catalyzed cyclization of alkenyl β-keto esters in the presence of chlorotrimethylsilane

Tao Pei and Ross A. Widenhoefer

The Pd(II) complex $PdCl_2(CH_3CN)_2$ catalyzed the cyclization of alkenyl β-keto esters in the presence of a stoichiometric amount of $SiMe_3Cl$ to form 2-carboalkoxycyclohexanones in good yield with excellent regioselectivity.

652

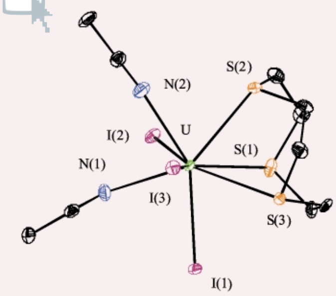


Synthesis and structural characterization of imido–lanthanide complexes with a metal–nitrogen multiple bond

Hoi-Shan Chan, Hung-Wing Li and Zuowei Xie

Novel imido–ytterbium complexes with a linear Yb–N–C angle and a formal Yb=N bond stabilized by sterically demanding 2,6-diisopropylphenyl groups are prepared and structurally characterized.

654

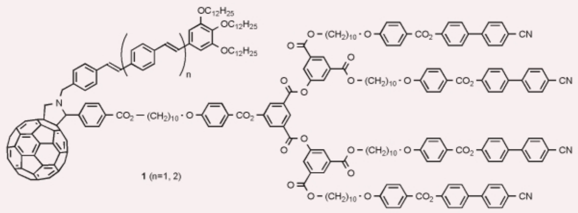


Unique crown thioether complexes of f elements: the crystal structure of U(III) and La(III) complexes of 1,4,7-trithiacyclononane

Lydia Karmazin, Marinella Mazzanti and Jacques Pécaut

The crystal structure of the first U(III) complex anchored by a neutral polydentate sulfur donor ligand has been determined and a stronger M–S interaction has been observed in the U(III) complex of 1,4,7-trithiacyclononane compared to the La(III) and Ce(III) complexes.

656

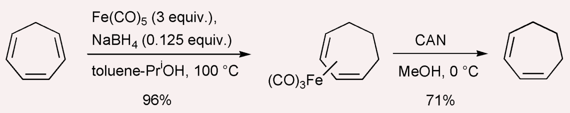


Liquid-crystalline fullerene–oligophenylenevinylene conjugates

Stéphane Campidelli, Robert Deschenaux, Jean-François Eckert, Daniel Guillon and Jean-François Nierengarten

Functionalization of C_{60}-OPV conjugates with a dendritic mesogenic group allows the liquid-crystalline ordering of such donor-acceptor systems which presents all the characteristic features required for photovoltaic applications.

658



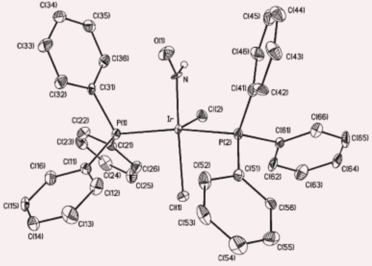
Reductive complexation of cycloheptatrienes by iron pentacarbonyl and catalytic sodium borohydride

Yoann Coquerel and Jean-Pierre Deprés

$Fe(CO)_5$ and a catalytic amount of sodium borohydride react with cycloheptatrienes in protic solvents to yield the corresponding tricarbonyl(η^4-1,3-diene)iron complexes; this is particularly efficient for the synthesis of the useful tricarbonyl(cycloheptadiene)iron complex.

COMMUNICATIONS

660



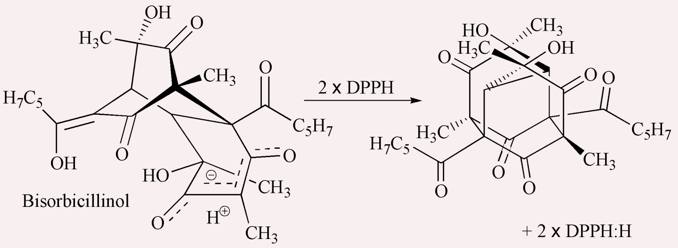
Synthesis, structure, and reactions of a nitroxyl complex of iridium(III), *cis,trans*-$IrHCl_2(NH=O)(PPh_3)_2$

Rory Melenkivitz and Gregory L. Hillhouse

Reaction of $Ir(NO)(PPh_3)_3$ with anhydrous HCl results in addition of 2 equivalents of HCl with formal protonation of the nitrosyl ligand, affording the unusual six-co-ordinate nitroxyl complex *cis,trans*-$IrHCl_2(NH=O)(PPh_3)_2$.

662

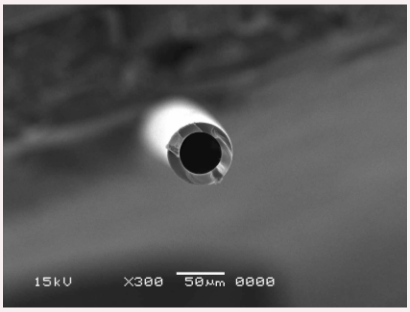
Chemical studies of the radical scavenging mechanism of bisorbicillinol using the 1,1-diphenyl-2-picrylhydrazyl radical



Naoki Abe and Akira Hirota

A potent antioxidant, bisorbicillinol, produces a stable radical-terminated symmetric dimer by donating two hydrogen atoms to the 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical.

664



High-selectivity, high-flexibility glass hollow-fiber membrane for gas separation

Koji Kuraoka, Takashi Hirano and Tetsuo Yazawa

A high gas selectivity, high flexibility glass hollow-fiber membrane based on spinodal phase separation has been prepared by direct winding from glass melt, followed by an acid leaching processing.

CONFERENCE DIARY

xviii

COPIES OF CITED ARTICLES

The Library and Information Centre (LIC) of the RSC offers a first class Document Delivery Service for items in Chemistry and related subjects. Contact the LIC, The Royal Society of Chemistry, Burlington House, Piccadilly, London W1V 0BN, UK.

This service is only available from the LIC in London and not the RSC in Cambridge.

Contents lists in advance of publication are available on the web via www.rsc.org/chemcomm – or take advantage of our free e-mail alerting service (www.rsc.org/ej_alert) to receive notification each time a new list becomes available.

Supplementary crystallographic data are available: see article for further information.

Electronic supplementary information is available on http://www.rsc.org/esi: see article for further information.

AUTHOR INDEX