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ChemComm

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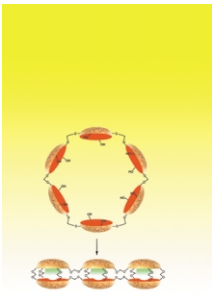
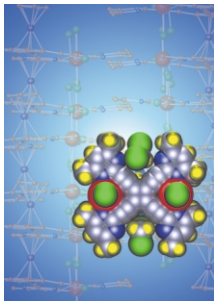




Cover (far left)
Formation of a trimer of carceplexes from a hexamer of cavitands.

Inside cover (left)
The supramolecular square structure of the mercury (II) chloride complex of [tetrakis(2-pyrimidinylethynyl) cyclobutadiene][(cyclopentadienyl)cobalt].

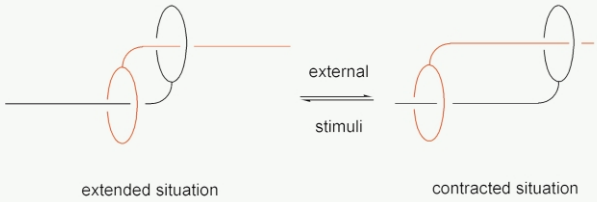
contents

FOCUS ARTICLE

1613

Towards artificial muscles at the nanometric level

Maria Consuelo Jimenez-Molero, Christiane Dietrich-Buchecker and Jean-Pierre Sauvage



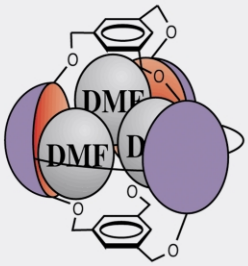
Molecular systems suited to the fabrication of machines and (rotary or linear) motors at the molecular level are outlined, and their possible applications discussed.

FEATURE ARTICLE

1617

Molecules that can't resist templation

John Sherman



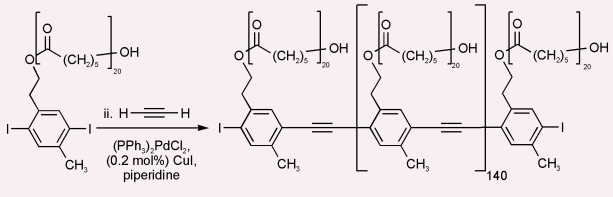
The encapsulation of molecules or ions has captured the interest of a variety of researches, including those using zeolites, fullerenes, micelles, clathrates, and metal coordination complexes. Multiple hemispherical units have been used to create organic cages that can bind guests reversibly or irreversibly. Often such cages will only form in the presence of a guest, which acts as a template. This article summarizes some of the work in this field.

COMMUNICATIONS

1624

Grafted conjugated polymers: synthesis and characterization of a polyester side chain substituted poly(*para*phenyleneethynylene)

Yqing Wang, Belma Erdogan, James N. Wilson and Uwe H. F. Bunz*



Reported in the synthesis of a poly(*para*phenyleneethynylene) with macromolecular side chains and its irreversible thermochromic behaviour.

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http://www.rsc.org/chemcomm

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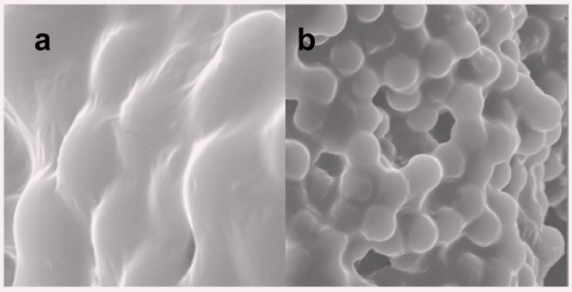
1626

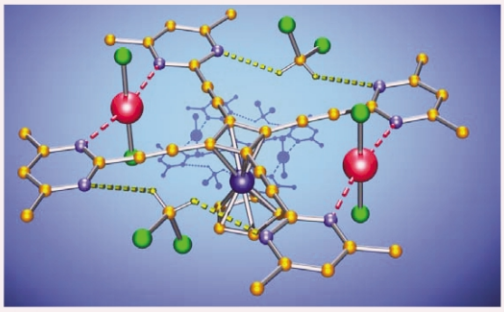


A biosensing model system: selective interaction of biotinylated PPEs with streptavidin-coated polystyrene microspheres

James N. Wilson, Yiqing Wang, John J. Lavigne and Uwe H. F. Bunz*

Formation of a highly fluorescent composite formed from the biotinylated PPE 3 and streptavidin covered polystyrene microspheres is reported.

1628

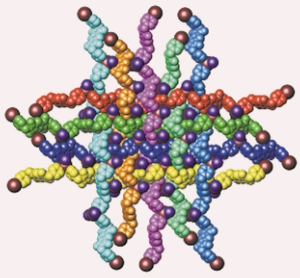


A supramolecular organometallic–metalorganic square

Matthew Laskoski, Jason G. M. Morton, Mark D. Smith and Uwe H. F. Bunz*

The crystal structure of this highly functionalized cyclobutadiene complex shows the incorporation of mercury chloride in a *trans*-spanning fashion. The mercury chloride shows an unusual square planar coordination geometry.

1630

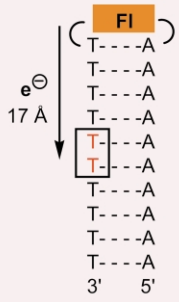


The first 'two-over/two-under' (2O/2U) 2D weave structure assembled from Hg-containing 1D coordination polymer chains

Yun-Hui Li, Cheng-Yong Su, Andrea M. Goforth, Ken D. Shimizu, Kenneth D. Gray, Mark D. Smith and Hans-Conrad zur Loye*

1D coordination polymers interweave in a 'two-over-two-under' fashion resulting in a 2D cloth-like network. Its formation is made possible by the distorted tetrahedral coordination geometry of the Hg(II) ion and the 'Z' type conformation of the ligand.

1632

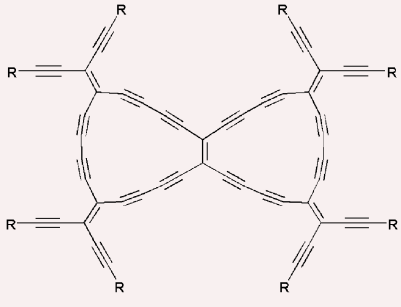


Excess electron transfer in flavin-capped, thymine dimer-containing DNA hairpins

Christoph Behrens and Thomas Carell*

Excess electrons hop through DNA using A–T base pairs as temporary charge carriers. This was investigated with flavin-capped and thymine dimer containing DNA hairpins.

1634

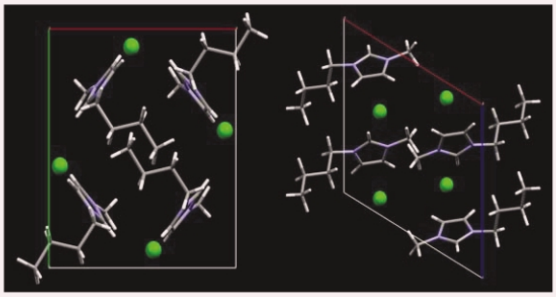


Donor-substituted peralkynylated "radiaannulenes": novel all-carbon macrocycles with an intense intramolecular charge-transfer

Frieder Mitzel, Corinne Boudon, Jean-Paul Gisselbrecht, Paul Seiler, Maurice Gross and François Diederich*

Acetylenic scaffolding based on tetraethynylethene (TEE) has been advanced to a novel unusual series of cyclic TEE-oligomers and to unprecedented bicyclic all-carbon sheets. These highly conjugated systems are good electron acceptors and display intense intramolecular charge-transfer when equipped with peripheral electron-donors.

1636

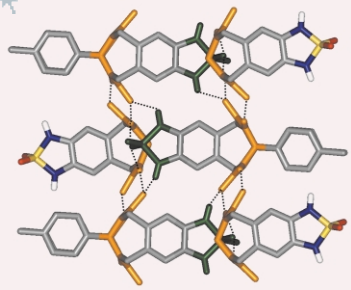


Crystal polymorphism in 1-butyl-3-methylimidazolium halides: supporting ionic liquid formation by inhibition of crystallization

John D. Holbrey, W. Matthew Reichert, Mark Nieuwenhuyzen, Suzanne Johnston, Kenneth R. Seddon and Robin D. Rogers

Crystallization of 1-butyl-3-methylimidazolium chloride from mixed ionic liquid or ionic liquid–aromatic solution, and from the melt yields different crystalline polymorphs, the first direct evidence for inhibition of crystallization in ionic liquids by polymorphism.

1638

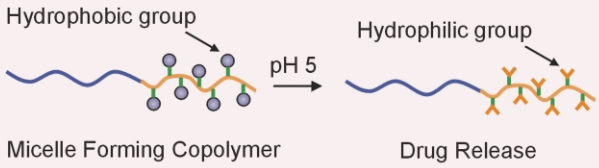


Glycoluril ribbons tethered by complementary hydrogen bonds

Darren W. Johnson, Fraser Hof, Liam C. Palmer, Tomás Martín, Ulrike Obst and Julius Rebek, Jr.*

Four complementary hydrogen bonds between sulfamides and ureas link adjacent hydrogen-bonded ribbons to form sheets in the solid-state; this interaction is investigated in solution using model urea and sulfamide compounds.

1640

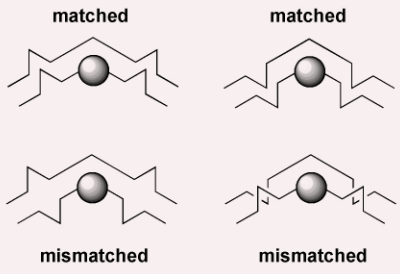


A new approach towards acid sensitive copolymer micelles for drug delivery

Elizabeth R. Gillies and Jean M. J. Fréchet*

A new strategy for the development of acid-sensitive micelles is introduced. This approach involves conjugation of hydrophobic groups to a block copolymer by an acid degradable linkage such that upon hydrolysis the copolymer becomes much more hydrophilic, triggering release of the micellar contents.

1642

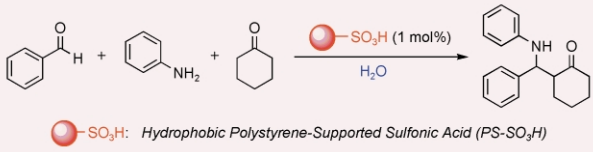


New building blocks for the assembly of sequence selective molecular zippers

Christopher A. Hunter,* Philip S. Jones, Pascale M. N. Tiger and Salvador Tomas

We report a promising candidate for the construction of mutually complementary oligomers that carry sequence specific binding information. These compounds will open the door to the development of new synthetic molecular information systems.

1644



Mannich-type reactions in water using a hydrophobic polymer-supported sulfonic acid catalyst

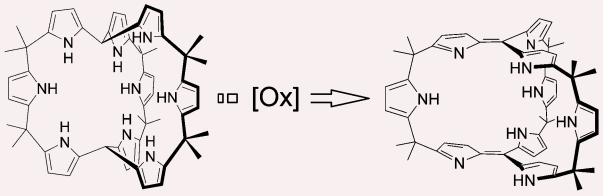
Shinya Iimura, Daisuke Nobutou, Kei Manabe and Shū Kobayashi*

Three-component Mannich-type reactions were efficiently catalyzed by hydrophobic polystyrene-supported sulfonic acid (PS–SO_3H) in water as the sole solvent under mild conditions.

1646

Synthesis and X-ray structure of a three dimensional calixphyrin

Christophe Bucher, Rebecca S. Zimmerman, Vincent Lynch and Jonathan L. Sessler*

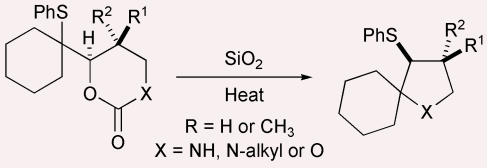


DDQ-mediated oxidation of a bicyclic nonapyrrole linked through sp^3 hybridized bridgehead carbon atoms produces the corresponding calixphyrin-like species characterized by sp^2 hybridized apices.

1648

Stereoselective substituted pyrrolidine and cyclic ether synthesis by PhS migration

Lorenzo Caggiano, John Davies, David J. Fox, David C. Moody and Stuart Warren*

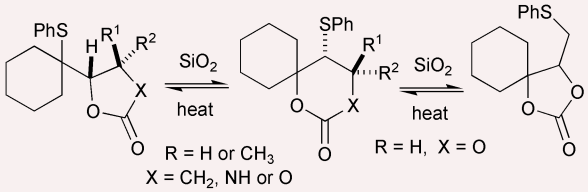


The effect of substitution on heterocycle synthesis by a novel silica gel catalysed decarboxylative ring-closing reaction is shown to be stereospecific and dependent on the nature of the nitrogen substituent.

1650

A novel silica catalysed stereoselective cyclic carbamate and carbonate rearrangement

Lorenzo Caggiano, John Davies, David J. Fox, David C. Moody and Stuart Warren*

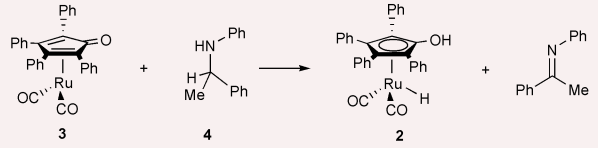


Phenylsulfanyl-containing five- and six-membered lactones, cyclic carbamates and carbonates stereospecifically interconvert in the presence of silica gel *via* thiiranium ions.

1652

Mechanism of ruthenium-catalyzed hydrogen transfer reactions. Evidence for a stepwise transfer of CH and NH hydrogens from an amine to a (cyclopentadienone)ruthenium complex

Alida H. Éll, Jeffrey B. Johnson and Jan-E. Bäckvall*

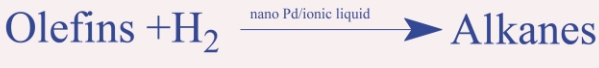


The kinetic deuterium isotope effect of the transfer of the two hydrogens from amine **4** to ruthenium intermediate **3** (k_{CHNH}/k_{CDNH} = 3.24 ± 0.16; k_{CHNH}/k_{CDND} = 3.26 ± 0.25) shows that the two hydrogens are transferred in two discrete steps with C–H transfer to ruthenium being the slow step.

1654

Hydrogenation of olefins using ligand-stabilized palladium nanoparticles in an ionic liquid

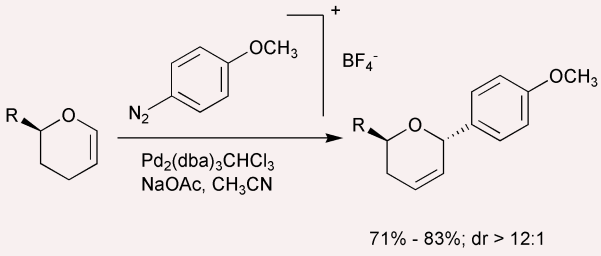
Jun Huang, Tao Jiang, Buxing Han,* Haixiang Gao, Yanhong Chang, Guoying Zhao and Weize Wu



Phenanthroline-stablized Pd nanoparticles in ionic liquid 1-n-butyl-3-methylimidazolium hexafluorophosphate are very active and selective for the hydrogenation of olefins, and the catalytic system can be reused many times without reducing the activity.

1656

Heck arylation of cyclic enol ethers with aryldiazonium salts: regio- and stereoselective synthesis of arylated oxacycles

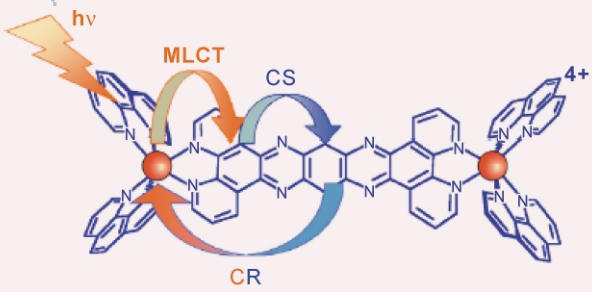


Bernd Schmidt

The first examples of the arylation of cyclic enol ethers with aryldiazonium tetrafluoroborates are reported. The reaction is highly *trans*-diastereoselective and undesired double bond isomerization reactions are not observed.

1658

Primary charge separation in photoinduced multielectron storage systems. A dinuclear ruthenium(II) species featuring a charge-separated state with a lifetime of 1.3 μs

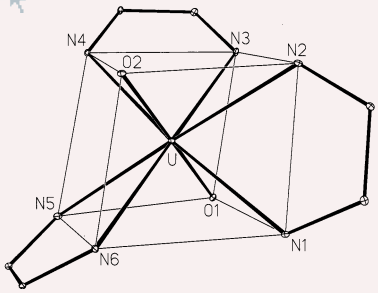


Claudio Chiorboli, Sandro Fracasso, Franco Scandola, Sebastiano Campagna, Scolastica Serroni, Rama Konduri and Frederick M. MacDonnell

In the Ru(II) species shown, the initially formed MLCT state is deactivated in 35 ps by electron transfer (cs) to a charge-separated state whose lifetime is extremely solvent dependent, reaching 1.3 μs in dichloromethane at room temperature.

1660

A novel coordination geometry for the uranyl ion. Rhombohedral uranium environment in $[UO_2(OTf)_2(bpy)_2]$ and $[UO_2(phen)_3][OTf]_2$

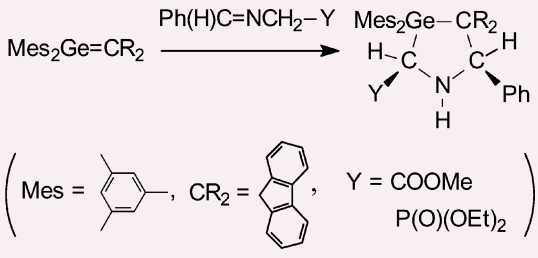


Jean-Claude Berthet,* Martine Nierlich and Michel Ephritikhine

In contrast to what has been invariably observed and is considered as a general rule, the UO_2^{2+} ion can adopt a coordination geometry other than the ubiquitous polygonal bipyramid.

1662

The use of a germene for the synthesis of esters of α-germyl-substituted α-amino acid and α-aminophosphonic acid

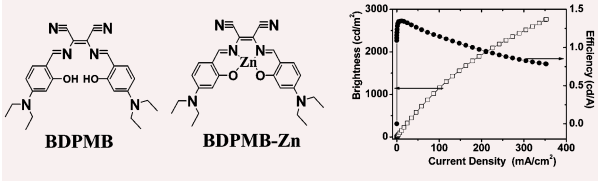


S. Ech-Cherif El Kettani, J. Escudié, C. Couret, H. Ranaivonjatovo, M. Lazraq, M. Soufiaoui, H. Gornitzka and G. Cretiu Nemes

The first α-germyl-substituted α-amino (or α-aminophosphonic) esters have been synthesized by a one-pot reaction between the germene $Mes_2Ge{=}CR_2$ (CR_2 = fluorenylidene) and the iminoester or iminophosphonate $Ph(H)C{=}NCH_2{-}Y$.

1664

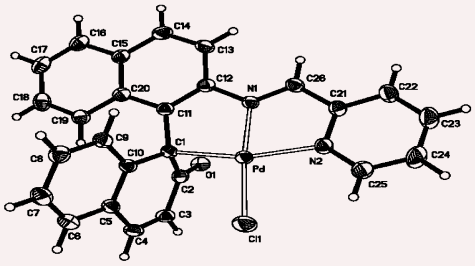
A bis-salicylaldiminato Schiff base and its zinc complex as new highly fluorescent red dopants for high performance organic electroluminescence devices



Pengfei Wang, Ziruo Hong, Zhiyuan Xie, Shiwen Tong, Oiyan Wong, Chun-Sing Lee, Ningbew Wong, Liangsun Hung and Shuittong Lee*

Bright saturated red-emitting EL devices with excellent colour chromaticity coordinates (x, y = 0.670, 0.325 for **BDPMB**; x, y = 0.655, 0.325 for **BDPMB-Zn**) and good efficiency (1.35 cd A^{-1} for **BDPMB**; 0.50 cd A^{-1} for **BDPMB-Zn**) were obtained by using **BDPMB** and **BDPMB-Zn** as the novel red-emitting dopants.

1666



Formation of a palladium(II) complex of 2-(2-pyridinylmethyleneamino)-2′-hydroxy-1,1′-binaphthyl with novel C_σ-coordination and its theoretical investigation

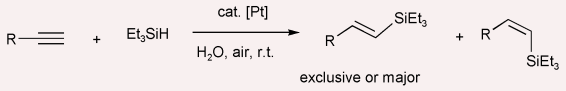
Lijin Xu, Qian Shi, Xingshu Li,* Xian Jia, Xin Huang, Ruihu Wang, Zhongyuan Zhou, Zhenyang Lin* and Albert S. C. Chan*

Complexation of the NOBIN-derived Schiff ligand **1** with $Pd(CH_3CN)_2Cl_2$ has been observed to result in a novel Pd–C bonding mode and theoretical calculations have been carried out to clarify the reaction mechanism.

1668

A highly regio- and stereoselective transition metal-catalyzed hydrosilylation of terminal alkynes under ambient conditions of air, water, and room temperature

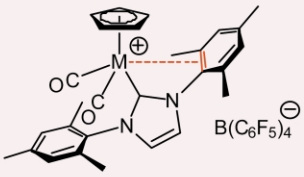
Wei Wu and Chao-Jun Li*

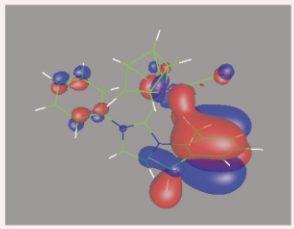


Hydrosilylation of terminal alkynes catalyzed by Pt(DVDS)–P proceeded with high efficiency and stereoselectivity at room temperature in air and water.

1670

An *N*-heterocyclic carbene as a bidentate hemilabile ligand: a synchrotron X-ray diffraction and density functional theory study



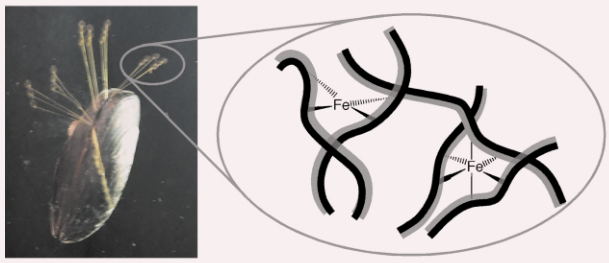


Vladimir K. Dioumaev, David J. Szalda, Jonathan Hanson, James A. Franz and R. Morris Bullock*

In $CpM(CO)_2(IMes)^+B(C_6F_5)_4^-$ (M = Mo, W; IMes = 1,3-bis(2,4,6-trimethylphenyl)imidazol-2-ylidene) the *N*-heterocyclic carbene ligand IMes adopts a bidentate hemilabile coordination mode, with a C=C bond of one of the mesityl rings of IMes weakly coordinated to the formally $16e^-$ metal center.

1672

Specificity of metal ion cross-linking in marine mussel adhesives

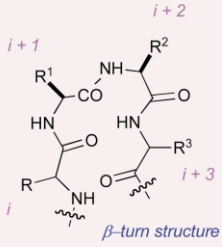


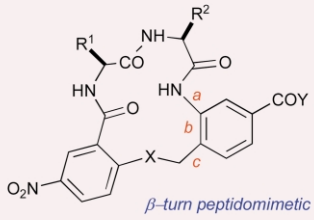
Jennifer Monahan and Jonathan J. Wilker*

In an effort to understand the formation of marine bioadhesives, mussel protein extracts were cured with various reagents and the enhanced cross-linking ability of Fe^{3+} was found.

1674

Syntheses of second generation, 14-membered ring β-turn mimics

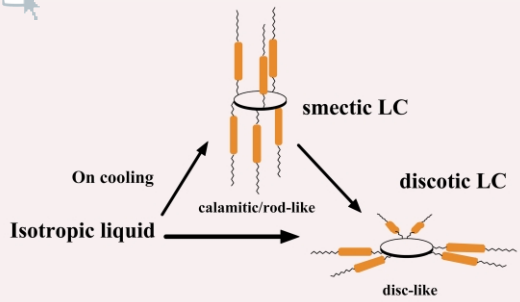




Hong Boon Lee, Mookda Pattarawarapan, Sudipta Roy and Kevin Burgess*

Practical solid phase syntheses of the peptidomimetics shown have been developed; conformational analyses show their structures present dipeptide fragments in β-turn conformations.

1676

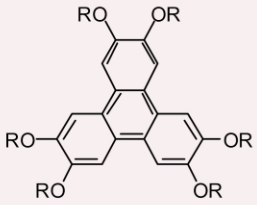


Calamitic and discotic mesophases formed by kinetically controlled rod–disc alternation of molecular shape in a triphenylene–azobenzene mesogenic system

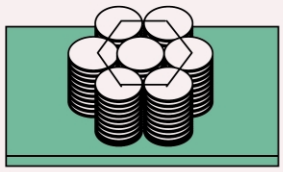
Yo Shimizu,* Atsuhiko Kurobe, Hirosato Monobe, Naohiro Terasawa, Kenji Kiyohara and Kingo Uchida*

A triphenylene mesogen with the peripheral azobenzene units was found to show kinetically controlled bimesomorphism, with a metastable smectic and a stable hexagonal columnar (Col_h) phases on cooling, which is caused by the rod–disc alternation of the molecular shape.

1678



R = $(CH_2)_3C_4F_9$



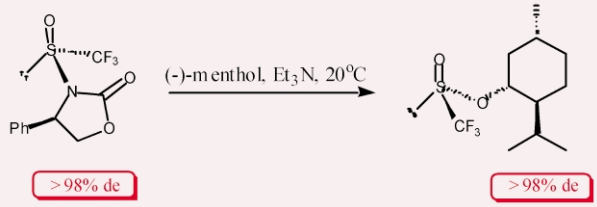
homeotropic alignment
columnar axis perpendicular to the substrate plane

Strong tendency towards homeotropic alignment in a hexagonal columnar mesophase of fluoroalkylated triphenylenes

Naohiro Terasawa, Hirosato Monobe, Kenji Kiyohara and Yo Shimizu*

Spontaneous homeotropic alignment in a Col_h mesophase was attained by the introduction of a certain length of perfluoromethylene chain into the peripheral tails of triphenylene mesogens.

1680

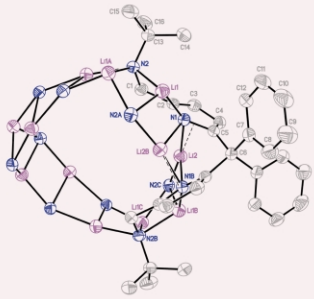


Synthesis and reactivity of a stable crystalline diastereomerically pure trifluoromethanesulfinic acid derivative: (*S*)-(−)-1-trifluoromethylsulfinyl-(*R*)-4-phenyloxazolidin-2-one

Vadim D. Romanenko, Claire Thoumazet, Vincent Lavallo, Fook S. Tham and Guy Bertrand*

The first diastereomerically pure trifluoromethanesulfinic acid derivative reacts with (−)-menthol affording the O-menthyl trifluoromethanesulfinate derivative in >98% de.

1682

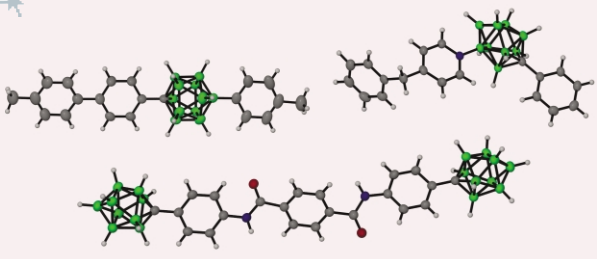


The syntheses and structures of Group 1 expanded dipyrrolides: the formation of a 12-rung amidolithium circular ladder

Jason B. Love,* Alexander J. Blake, Claire Wilson, Stuart D. Reid, Andrew Novak and Peter B. Hitchcock

Elaboration of *meso*-disubstituted dipyrromethanes to incorporate imino or amino donors results in ligands that adopt unique, aggregated structures with Group 1 metals.

1684

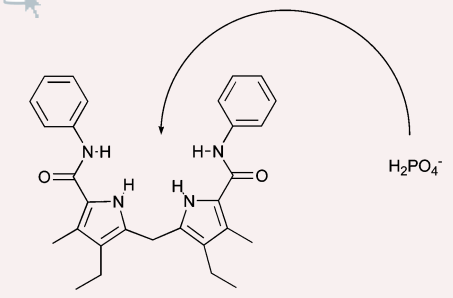


Polyhedral monocarbaborane chemistry. Routes to neutral, monoanionic and dianionic carbo-carbaborane rods

Neil J. Bullen, Andreas Franken, Colin A. Kilner and John D. Kennedy*

Routes are described to the 23 Å $[MeC_6H_4C_6H_4CB_{11}H_{10}C_6H_4Me]^-$ monoanion, the 21.5 Å neutral $[PhCB_9H_8NC_5H_4CH_2C_6H_5]$, and the 30 Å $[(B_9H_9C)C_6H_4NHCOC_6H_4CONHC_6H_4(CB_9H_9)]^{2-}$ dianion with a Kevlar-like central unit.

1686



Anion complexation properties of 2,2′-bisamidodipyrrolylmethanes

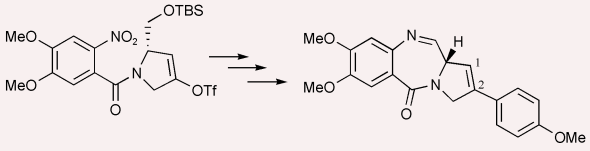
Ismael El Drubi Vega, Salvatore Camiolo, Philip A. Gale,* Michael B. Hursthouse and Mark E. Light

New bis-amido dipyrrolylmethanes have been synthesised and shown to complex anions in DMSO/5% solution. The compound shown binds $H_2PO_4^-$ in DMSO-d_6/25% water with an association constant of 234 M^{-1}.

1688

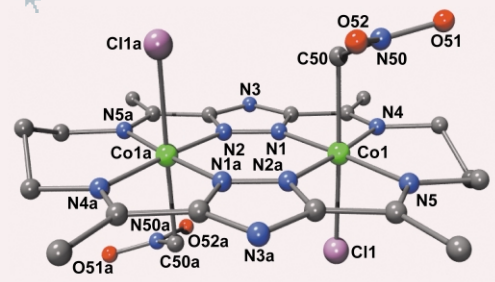
Synthesis of a novel C2-aryl substituted 1,2-unsaturated pyrrolobenzodiazepine

Gyoung-Dong Kang, Philip W. Howard* and David E. Thurston*



A novel C2-aryl 1,2-unsaturated PBD has been prepared *via* an enol triflate intermediate. The regiochemistry of triflation is dependent upon the point at which the reaction is performed during the synthetic route.

1690

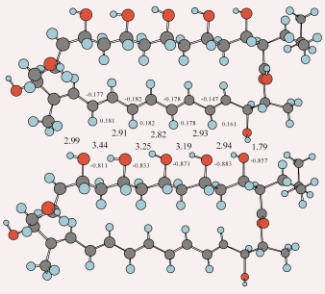


A dicobalt(II) complex of a triazolate-containing macrocycle reacts with nitromethane to yield an organometallic dicobalt(III) complex

Udo Beckmann, Janna D. Ewing and Sally Brooker*

Two different dinuclear cobalt complexes of a triazolate-containing Schiff-base macrocycle have been prepared. The dinuclear cobalt(II) complex readily reacts with nitromethane in air to form a dinuclear cobalt(III) complex with two Co–C nitromethyl bonds.

1692



Concerted interaction between conjugated double bond CHs and multiple OHs in polyene macrolide antibiotic chainin: weak =C–H···O interactions responsible for intrinsic molecular assembly

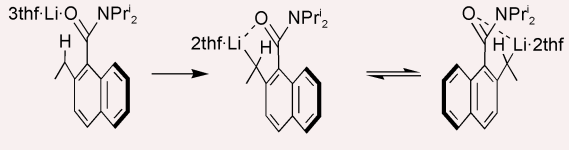
Yasuko In, Hirofumi Ohishi, Toshimasa Ishida* and Yasuhiro Igarashi*

The concerted interactions observed between five conjugated double bond CHs and four hydroxy Os in the crystal of chainin, a polyene macrolide antibiotic, clarified the existence of unprecedented, weak =C–H···O interactions, which is important for forming its intrinsic molecular assembly.

1694

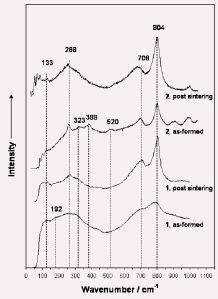
Variations in the solid-state, solution and theoretical structures of a laterally deprotonated aromatic tertiary amide

David R. Armstrong, Jonathan Clayden,* Robert Haigh, David J. Linton, Paul Schooler and Andrew E. H. Wheatley*



The structural chemistry of a laterally deprotonated 2-alkyl-1-naphthamide is investigated in the solid state, in solution and by DFT calculations.

1696

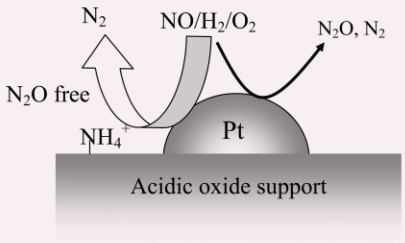


Aerosol assisted chemical vapour deposition of tungsten oxide films from polyoxotungstate precursors: active photocatalysts

Warren B Cross and Ivan P Parkin*

Aerosol assisted CVD has been used to coat yellow tungsten oxide films on glass from ionic polyoxometallate precursors. These films show photoinduced superhydrophilicity and marked photocatalytic activity.

1698

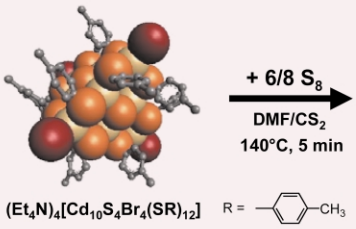


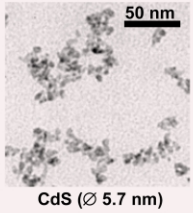
Nitrous oxide free pathway for selective reduction of NO by hydrogen over supported Pt catalysts

Atsushi Satsuma,* Masanori Hashimoto, Junji Shibata, Hisao Yoshida and Tadashi Hattori

The presence of strong acid sites on a metal oxide support results in a reaction of adsorbed NH_4^+ species in a flow of NO + O_2, which is a N_2O free pathway in selective catalytic reduction of NO by H_2 over supported Pt catalysts.

1700



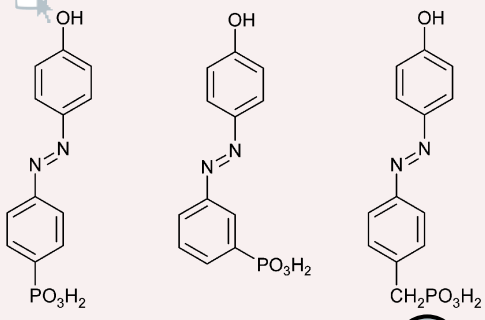


A low temperature cluster condensation approach to CdS nanocrystals: oxidative aggregation of $[Cd_{10}S_4Br_4(SR)_{12}]^{4-}$ with sulfur

Frank E. Osterloh* and Daniel P. Hewitt

As pre-assembled building blocks, transition metal clusters can be valuable synthetic precursors to crystalline inorganic solids. This is demonstrated here for the synthesis of CdS nanocrystals from the title compound.

1702

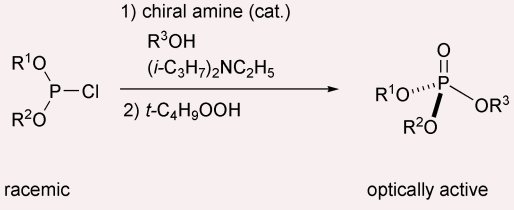


Attachment of phosphonate-functionalised azo-dyes to oxide surfaces to give enhanced light and wet fastness

Sonali S. De Silva, Philip J. Camp, David K. Henderson, Dorothy C. R. Henry, Hamish McNab, Peter A. Tasker* and Paul Wight

Using a surface ligating dye in an ink containing organic host molecules provides a useful approach to improving both the wet and light fastness after printing on oxide-treated papers.

1704

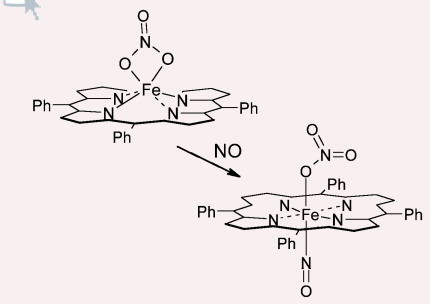


The first asymmetric synthesis of trialkyl phosphates on the basis of dynamic kinetic resolution in the phosphite method using a chiral source in a catalytic manner

Yoshihiro Hayakawa,* Mamoru Hyodo, Kazutaka Kimura and Masanori Kataoka

The first asymmetric synthesis of trialkyl phosphates having stereogenic phosphorus atoms on the basis of dynamic kinetic resolution using a chiral source in a catalytic manner.

1706

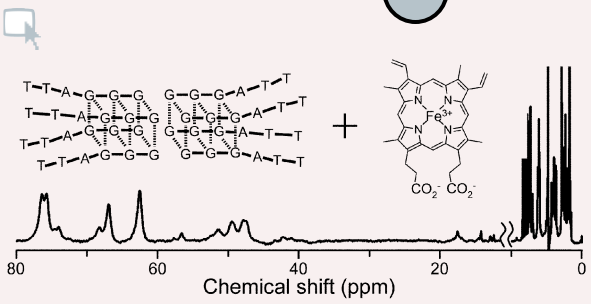


Reactions of nitrogen oxides with heme models. Low temperature spectral characterization of the unstable nitrato-nitrosyl complex $Fe^{III}(TPP)(ONO_2)(NO)$

Tigran S. Kurtikyan,* Garik G. Martirosyan, Manya E. Hakobyan and Peter C. Ford*

Low temperature interaction of NO gas with Fe(TPP)(O_2NO) thin films leads to formation of a new 6-coordinate complex, Fe(TPP)(ONO_2)(NO). The reaction is accompanied by bidentate–monodentate isomerization of coordinated nitrate and transition of Fe(III) from high-spin to low-spin.

1708



Coordination complex between haemin and parallel-quadruplexed d(TTAGGG)

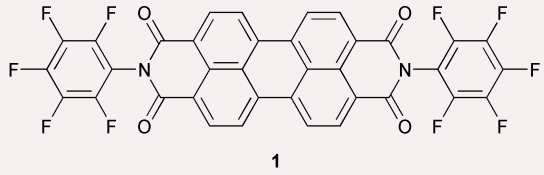
Toshiyasu Mikuma, Takako Ohyama, Norifumi Terui, Yasuhiko Yamamoto* and Hiroshi Hori

Haemin, iron(III)–protoporphyrin IX complex, and parallel-quadruplexed d(TTAGGG) have been shown to form a stable coordination complex which exhibits spectroscopic properties remarkably similar to those of haemoproteins.

1710

Fluoroperylene diimide: a soluble and air-stable electron acceptor

Min-Min Shi, Hong-Zheng Chen,* Jing-Zhi Sun, Jian Ye and Mang Wang*



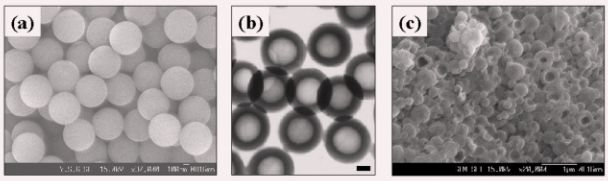
1

Fluorinated perylene diimide (**1**) possessed particular advantages: good solubility and lower LUMO while compared to its non-fluorinated analog. Thus, **1** exhibited much better photoconductivity whether charged negatively or positively.

1712

Simple preparation of monodisperse hollow silica particles without using templates

Hoe Jin Hah, Jung Soo Kim, Byung Jun Jeon, Sang Man Koo* and Yong Eun Lee

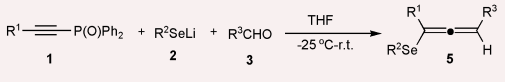


Monodisperse hollow silica particles were prepared *via* a simple two-step method without using templates. The particle size and hollow diameter of the resultant particles can be controlled by changing the experimental conditions.

1714

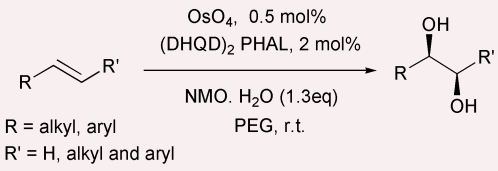
A novel one-pot three-component tandem Michael/aldol/Horner–Wadsworth–Emmons (HWE) reaction of lithium alkylselenolates with 1-alkynylphosphine oxides and aldehydes: facile synthesis of selenium-substituted allenes

Xian Huang* and Zheng-Chang Xiong



The one-pot tandem Michael/aldol/Horner–Wadsworth–Emmons (HWE) reaction of lithium alkylselenolates, 1-alkynylphosphine oxides and aldehydes in THF provides a new general access to selenium-substituted allenes with good to excellent yields.

1716

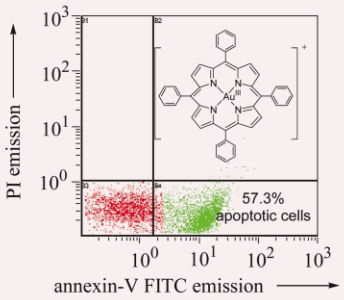


Osmium tetroxide in poly(ethylene glycol) (PEG): a recyclable reaction medium for rapid asymmetric dihydroxylation under Sharpless conditions

S. Chandrasekhar,* Ch. Narsihmulu, S. Shameem Sultana and N. Ramakrishna Reddy

We describe for the first time OsO_4 in PEG not only as a recoverable and reusable system for dihydroxylation but also as a medium where reaction is rapid (2 h) and high yielding at very low concentrations of osmium tetroxide, 0.5 mol%.

1718

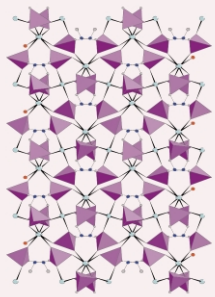


Gold(III) porphyrins as a new class of anticancer drugs: cytotoxicity, DNA binding and induction of apoptosis in human cervix epitheloid cancer cells

Chi-Ming Che,* Raymond Wai-Yin Sun, Wing-Yiu Yu, Chi-Bun Ko, Nianyong Zhu and Hongzhe Sun*

A series of gold(III) tetraarylporphyrins are stable in the presence of glutathione and exert much higher potency than cisplatin in killing human cancer cells, including drug-resistant variants; the gold-induced cytotoxicity occurs through apoptotic pathway according to laser confocal microscopy and flow cytometric studies.

1720

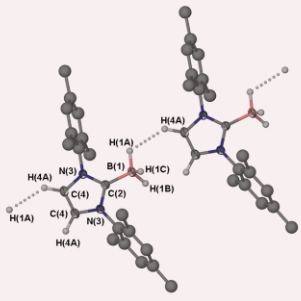


A novel copper organophosphonate with a pore-like 3D framework and Cu–Cu magnetic ordering

Deyuan Kong, Yang Li, Joseph H. Ross Jr. and Abraham Clearfield*

$H_2O_3PCH_2NH_2^+CH_2PO_3H^-$ was hydrothermally reacted at 150 °C with Cu(II) in aqueous solution, leading to the formation of a 3D-coordination network compound, $Cu_3[NH_2(CH_2PO_3)_2]_2$ (**1**). X-Ray crystallography reveals that a distorted square planar Cu(1) ion and an octahedral Cu(2) ion bridged with single terminal oxygen atoms form a 3D-coordination framework. Novel antiferromagnetic coupling between the two kinds of Cu units was observed at 15 K, followed by ferromagnetic ordering at 9 K.

1722

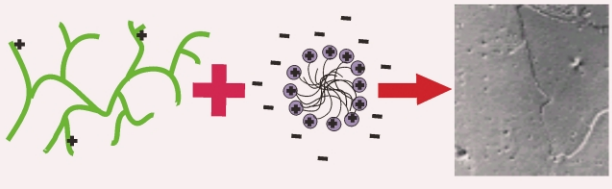


An imidazol-2-ylidene borane complex exhibiting *inter*-molecular [C–H$^{\delta+}$···H$^{\delta-}$–B] dihydrogen bonds

Taramatee Ramnial, Howard Jong, Iain D. McKenzie, Michael Jennings* and Jason A. C. Clyburne*

1,3-Bis(2,4,6-trimethylphenyl)imidazol-2-ylidene is a high melting solid that exhibits head-to-tail alignment of the molecular dipoles in the solid state. The closest intermolecular contact is a simple well-defined example of a [C–H$^{\delta+}$···H$^{\delta-}$–B] hydrogen bond.

1724

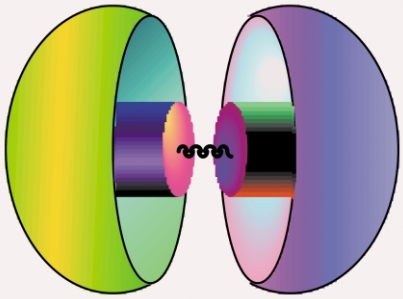


Spontaneous free-standing nanostructured film growth in polyelectrolyte-surfactant systems

Karen J. Edler,* Arach Goldar, Tessa Brennan and Stephen J. Roser

Substitution of a polyelectrolyte for silica during formation of surfactant-templated films produces similar nano- and macroscale structures confirming that silica acts as a polyelectrolyte during self-assembly of nanostructured thin films.

1726

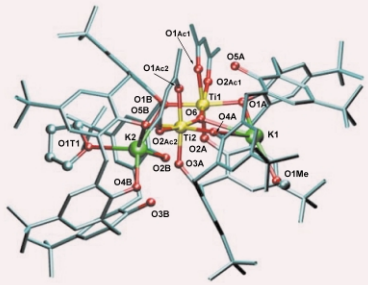


Design and properties of "Janus-like" supermolecular liquid crystals

Isabel M. Saez and John W. Goodby

Giant "Janus" liquid crystals, which structurally have two different faces – one chiral and one polar, self-organise to give condensed chiral liquid crystal phases at room temperature.

1728

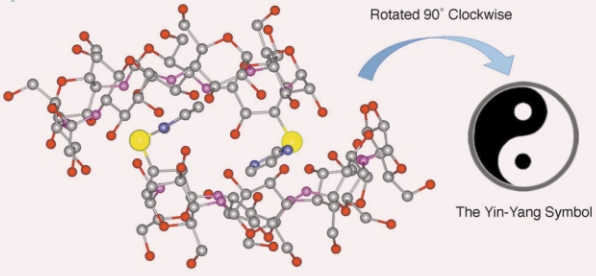


A heterobimetallic K_2Ti_2 complex incorporating two calix[5]arenes: A diverse array of metal–ligand interplay

Antonella J. Petrella, Nicholas K. Roberts, Donald C. Craig, Colin L. Raston and Robert N. Lamb

Reaction of *p*-^{t}Bu-calix[5]arene with potassium metal in a mixture of methanol and THF followed by $[Ti(acac)_2(OPr^i)_2]$ affords an unsymmetrical dimeric 1:1 K/Ti complex built up from a central Ti–O–Ti core with each titanium(IV) centre octahedrally coordinated, bearing an acac and a calix[5]arene encapsulating a potassium ion.

1730

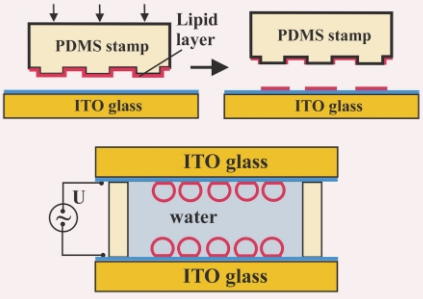


Crystal structure of mono[3-(2-imidazolylthio)]-*altro*-β-cyclodextrin: elliptical distortion of the cavity and unique 'Yin–Yang' stacking

Hans J. Lindner, De-Qi Yuan,* Kahee Fujita, Koushi Kubo and Frieder W. Lichtenthaler*

The title compound is elliptically distorted due to the unusual $^1C_4$ geometry of the altrose portion. In packing, imidazolyl moieties mutually reside on each other's cavities thereby resembling the Yin–Yang type balancing of antagonisms.

1732

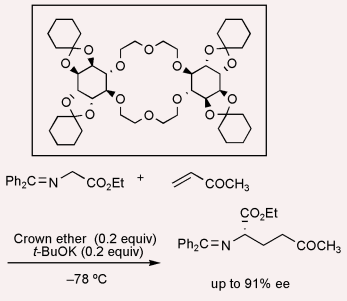


A novel technique for preparation of monodisperse giant liposomes

Pietro Taylor, Chun Xu, Paul D. I. Fletcher and Vesselin N. Paunov*

A novel technique for the preparation of monodisperse giant liposomes has been developed based on a combination of micro-patterning of ITO glass slides with lipid solution and electroformation. The average diameter of the produced liposomes is determined by size of the micro-pattern features.

1734



Synthesis of a novel crown ether derived from *chiro*-inositol and its catalytic activity on the asymmetric Michael addition

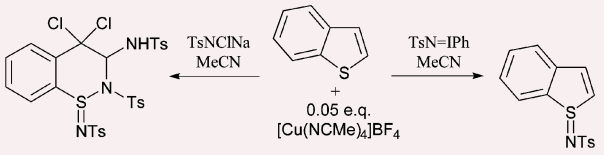
Takahiko Akiyama,* Mikiko Hara, Kohei Fuchibe, Shigeru Sakamoto and Kentaro Yamaguchi

The enantioselective Michael reaction of glycine imine is mediated by base in the presence of a novel crown ether prepared from L-quebrachitol.

1736

On the sulfimidation of benzo[*b*]thiophene

Stephen J. Archibald, Andrew N. Boa* and Nela Peša

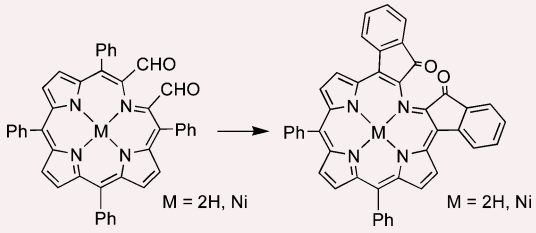


Benzo[*b*]thiophene and chloramine-T react in the presence of $[Cu(NCMe)_4]BF_4$ to yield a ring-expanded dihydrobenzothiazine. No reaction takes place in the absence of the copper(I) catalyst, but the expected sulfimide can be made using [(*N*-tosylimino)iodo]benzene, PhI=NTs.

1738

Indaphyrin, a *meso*-tetraphenylsecochlorin-derived chromophore incorporating *o*-phenyl-to-β-linkages

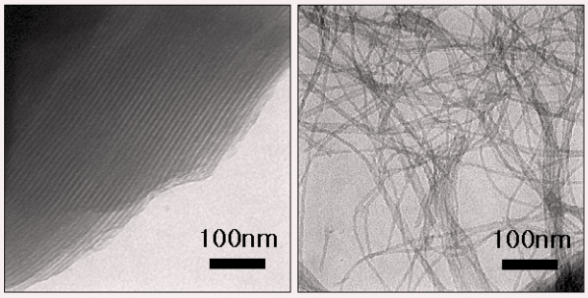
Jason R. McCarthy, Michael A. Hyland and Christian Brückner*



Acid-induced cyclization of *meso*-tetraphenyl-2,3-secochlorin-2,3-dialdehyde produced *meso*-diphenylindaphyrin, a novel secochlorin-based chromophore in which linkages between the *o*-phenyl and the β-position force the *meso*-phenyl groups into co-planarity with the porphyrinic π-system.

1740

Synthetic control of ordered and disordered arrays of carbon nanofibers from SBA-15 silica templates

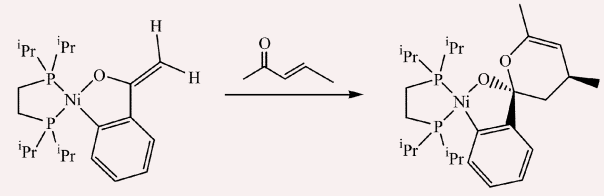


Suk Bon Yoon, Jeong Yeon Kim, Fathi Kooli, Chul Wee Lee and Jong-Sung Yu*

A novel synthetic control method for the generation of carbon replicas produces either highly ordered networks of carbon nanofibers with uniform mesopores or disordered carbon nanofibers. Both of these materials were templated from SBA-15 silica modified under different conditions.

1742

Addition reactions of *O*-bound cyclic nickel enolates to α,β-unsaturated ketones

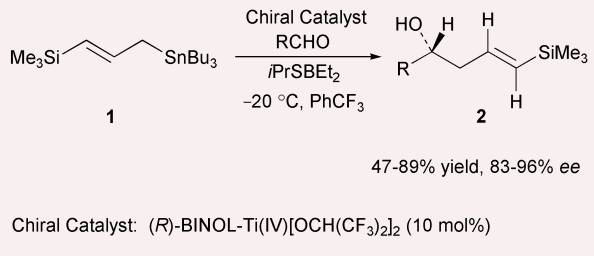


Juan Cámpora,* Celia M. Maya, Pilar Palma, Ernesto Carmona, Claudia Graiff and Antonio Tiripicchio

The stereoselectivity of these reactions suggests a concerted mechanism, through an *exo* transition state.

1744

Regulation of equilibria in the catalytic asymmetric allylic transfer reaction: unusual 1,2-carbonyl addition of 3-trimethylsilyl-2-propenylstannane



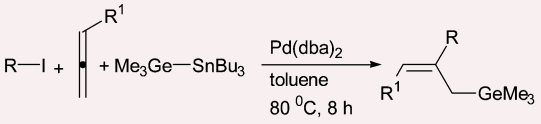
Chan-Mo Yu,* Ji-Min Kim, Mi-Sook Shin and Mee-Ok Yoon

Catalytic asymmetric allylic transfer reaction of **1** with achiral aldehydes catalyzed by BINOL–$Ti^{IV}[OCH(CF_3)_2]_2$ along with Et_2BSPr^i in the production of unusual 1,2-carbonyl adduct **2** is achieved with high levels of enantioselectivity.

1746

Palladium-catalyzed highly regio-, stereo- and chemoselective carbogermanylation of allenes: a novel method for the synthesis of 2-arylallylgermane derivatives

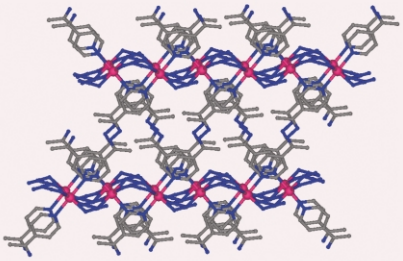
Masilamani Jeganmohan, Muthian Shanmugasundaram and Chien-Hong Cheng*



The three-component assembling reaction of allenes, aryl iodides and stannylgermane catalyzed by the $Pd(dba)_2$–toluene system affords 2-arylallylgermanes in good to excellent yields.

1748

From manganese(II)-azido layers to a novel three-dimensional molecular magnet: spin canting and metamagnetism

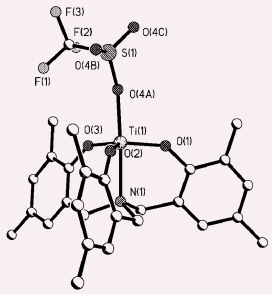


En-Qing Gao, Zhe-Ming Wang and Chun-Hua Yan*

Two-dimensional magnetically active Mn^{II}-azido layers are interlinked by an organic spacer to generate a 3D pillared structure. The compound exhibits metamagnetic behavior due to spin canting within the antiferromagnetic layers and interlayer antiferromagnetic interactions.

1750

Synthesis, structure and catalytic activity of an air-stable titanium triflate, supported by an amine tris(phenolate) ligand

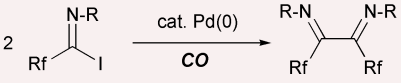


Steven D. Bull, Matthew G. Davidson, Andrew L. Johnson, Diane E. J. E. Robinson and Mary F. Mahon

An air- and moisture-stable titanium(IV) triflate (**3**) supported by a C_3-symmetric amine tris(phenolate) ligand (**1a**) has been synthesised, characterised by X-ray crystallography and demonstrated to be an excellent catalyst for formal aza-Diels–Alder reactions.

1752

A novel route to the fluorinated diimines: carbon monoxide-promoted reductive homocoupling of fluorinated imidoyl iodides in the presence of a palladium catalyst

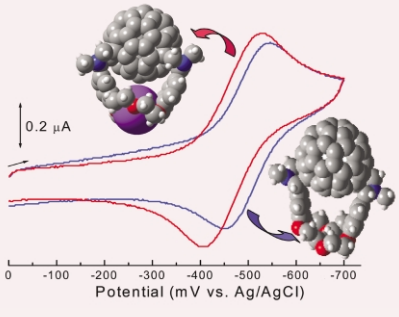


Hideki Amii, Mitsuhiro Kohda, Motoharu Seo and Kenji Uneyama*

A new catalytic access to the fluorinated α-diimines which involves palladium(0)-catalyzed reductive dimerization of the imidoyl iodides is described.

1754

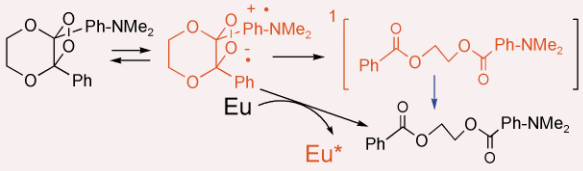
Bis-functionalized fullerene-dibenzo[18]crown-6 conjugate: synthesis and cation-complexation dependent redox behavior



Phillip M. Smith, Amy Lea McCarty, Nhu Yen Nguyen, Melvin E. Zandler and Francis D'Souza*

A one-step procedure to synthesize a bis-functionalized fullerene–crown ether conjugate by 1,3-dipolar cycloaddition of azomethine ylides to C_{60} and metal ion induced potential changes of the C_{60} redox processes as electrochemical evidence for cation recognition is reported.

1756

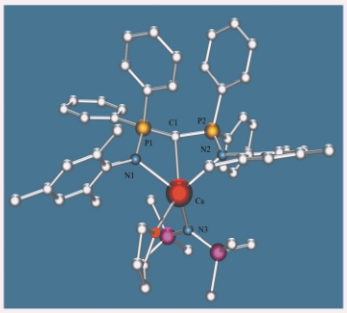


Reversible formation of excited states in intramolecular donor assisted chemiluminescence reactions of dioxetanes

Sharat Singh and Edwin F. Ullman*

Equilibrium donor substituted dioxetanes are in thermal equilibrium with excited charge transfer states that undergo concomitant ring scission and energy transfer to energy acceptors to yield excited state products.

1758

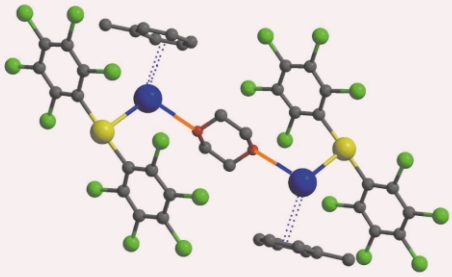


Bis(phosphinimino)methyl derivatives of Ca, Sr and Ba: facile access to heavier alkaline earth organometallic chemistry

Michael S. Hill* and Peter B. Hitchcock

A series of mononuclear and arene-soluble bis(phosphinimino)methyl derivatives of the heavier alkaline earth metals, calcium, strontium and barium, have been obtained by straightforward addition of two molar equivalents of $[KN(SiMe_3)_2]$ to a mixture of $[CH_2(Ph_2P{=}NC_6H_2\text{-}Me_3\text{-}2,4,6)_2]$ and MI_2 (M = Ca, Sr, Ba) in THF.

1760

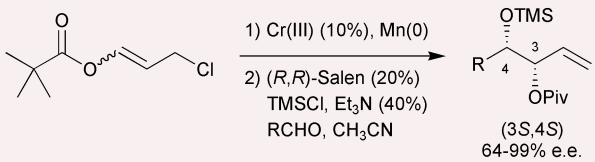


$[\{AuTl(C_6Cl_5)_2(toluene)\}_2(dioxane)]$: A striking structure that leads to a blue luminescence

Eduardo J. Fernández, Antonio Laguna,* José María López-de-Luzuriaga, M. Elena Olmos and Javier Pérez

The blue luminescent complex $[\{AuTl(C_6Cl_5)_2(toluene)\}_2(dioxane)]$ displays the shortest Au–Tl interaction, a toluene molecule in a η^6-mode and the "disappearance" of the Tl(I) inert pair.

1762

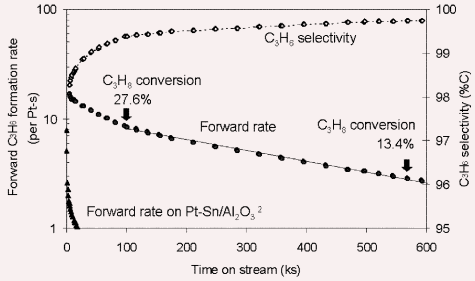


3-Chloropropenyl pivaloate in organic synthesis: the first asymmetric catalytic entry to *syn*-alk-1-ene-3,4-diols

Marco Lombardo,* Sebastiano Licciulli, Stefano Morganti and Claudio Trombini*

A new route to enantiomerically enriched *syn*-alk-1-ene-3,4-diols was developed by applying the Salen-based asymmetric version of the chromium-catalysed Nozaki–Hiyama–Kishi protocol to the reaction of 3-chloropropenyl pivaloate with aldehydes.

1764

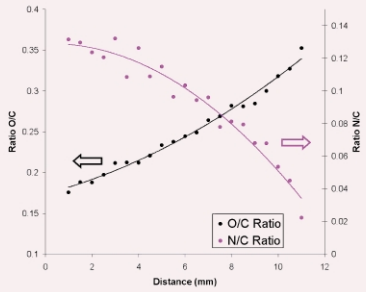


Active, selective, and stable Pt/Na-[Fe]ZSM5 catalyst for the dehydrogenation of light alkanes

Toshio Waku, Joseph A. Biscardi and Enrique Iglesia*

Small Pt clusters in Na-[Fe]ZSM5 give high alkene selectivities, near-equilibrium alkene yields, and unprecedented stability in the catalytic dehydrogenation of light alkanes.

1766

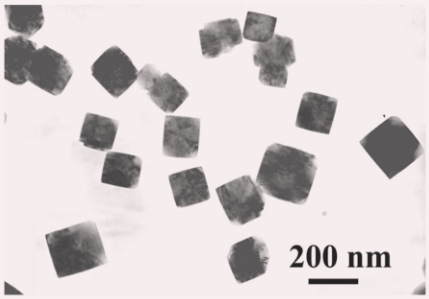


A method for the deposition of controllable chemical gradients

Jason D. Whittle, David Barton, Morgan R. Alexander and Robert D. Short*

This report describes a method for producing gradients of controllable functional groups on surfaces by plasma polymerisation. The chemistry of the gradient surfaces is analysed by X-ray photoelectron spectroscopy (XPS)

1768

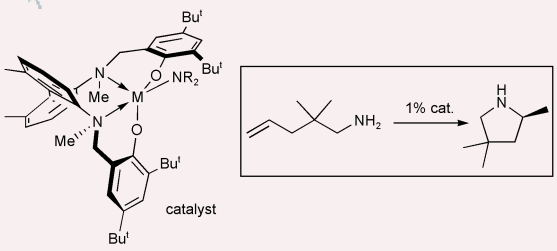


Size-controllable luminescent single crystal CaF_2 nanocubes

Xiaoming Sun and Yadong Li*

Single crystal CaF_2 nanocubes were synthesized by a simple hydrothermal method with the absence of surfactants. Rare earth ions were introduced into the fluorite lattice by a chemical modified process.

1770

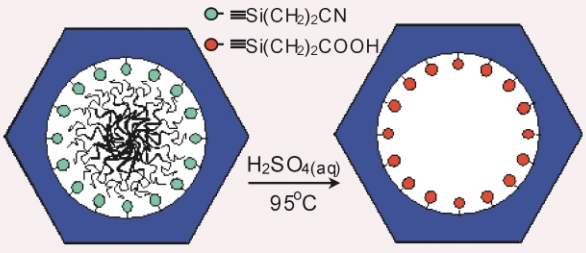


Chiral-at-metal organolanthanides: enantioselective aminoalkene hydroamination/cyclisation with non-cyclopentadienyls

Paul N. O'Shaughnessy, Paul D. Knight, Colin Morton, Kevin M. Gillespie and Peter Scott*

Chiral non-racemic complexes incorporating chemically robust amino/phenoxide ligands are found to be enantioselective catalysts for the intramolecular hydroamination of aminoalkenes. It is also shown that structurally related Schiff base complexes fail to mediate the reaction effectively.

1772

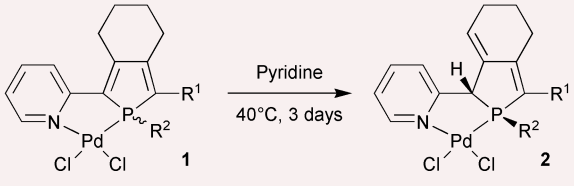


A novel synthetic route for negatively charged ordered mesoporous silica SBA-15

Chia-min Yang, Bodo Zibrowius and Ferdi Schüth*

Carboxylate-functionalized SBA-15 has been prepared by a one-pot synthesis of cyano-functionalized SBA-15 followed by treatment with sulfuric acid that removes the template and hydrolyses the cyanide group in one step.

1774



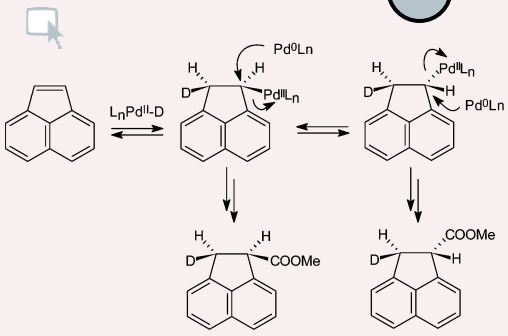
Stereospecific isomerisation of P-heterocycles triggered by coordination: synthesis of the first P,N-chelates featuring a 2-phospholene moiety

François Leca, Mathieu Sauthier, Boris le Guennic, Christophe Lescop, Loic Toupet, Jean-François Halet and Régis Réau*

Complexes **1** isomerise into their thermodynamically more stable isomers **2** providing a straightforward and stereospecific route to the first P,N-ligands featuring a phospholene unit.

COMMUNICATIONS

1776



Enantioselectivity in the catalytic hydroesterification of acenaphthylene: direct evidence of the racemization of Pd^{II}-alkyl species by a degenerate substitution equilibrium with $Pd^{0}L_n$

Jordi Gironès, Josep Duran, Alfonso Polo* and Julio Real

A degenerate substitution equilibrium between $Pd^{0}L_n$ and the Pd^{II}-alkyl species was observed in the palladium catalyzed hydroesterification of acenaphthylene. This process involves the inversion of the alkyl carbon, producing a detrimental effect in the enantioselectivity of the reaction.

ADDITIONS AND CORRECTIONS

1779

Carolyn G. Leong, Okwado M. Akotsi, Michael J. Ferguson and Steven H. Bergens

A ruthenium catalyst that does not require an N–H ligand to achieve high enantioselectivity for hydrogenation of an alkyl-aryl ketone

1779

Hongchao Li, Jan O. Jeppesen, Eric Levillain and Jan Becher

A mono-TTF-annulated porphyrin as a fluorescence switch

1779

David O'Donoghue and Edmond Magner

The redox thermodynamics of microperoxidase are dependent on the solvent medium

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Akiyama, Takahiko, 1734
Akotsi, Okwado M., 1779
Alexander, Morgan R., 1766
Amii, Hideki, 1752
Archibald, Stephen J., 1736
Armstrong, David R., 1694
Bäckvall, Jan-E., 1652
Barton, David, 1766
Becher, Jan, 1779
Beckmann, Udo, 1690
Behrens, Christoph, 1632
Bergens, Steven H., 1779
Berthet, Jean-Claude, 1660
Bertrand, Guy, 1680
Biscardi, Joseph A., 1764
Blake, Alexander J., 1682
Boa, Andrew N., 1736
Boudon, Corinne, 1634
Brennan, Tessa, 1724
Brooker, Sally, 1690
Brückner, Christian, 1738
Bucher, Christophe, 1646
Bull, Steven D., 1750
Bullen, Neil J., 1684
Bullock, R. Morris, 1670
Bunz, Uwe H. F., 1624, 1626, 1628
Burgess, Kevin, 1674
Caggiano, Lorenzo, 1648, 1650
Camiolo, Salvatore, 1686
Camp, Philip J., 1702
Campagna, Sebastiano, 1658
Cámpora, Juan, 1742
Carell, Thomas, 1632
Carmona, Ernesto, 1742
Chan, Albert S. C., 1666
Chandrasekhar, S., 1716
Chang, Yanhong, 1654
Che, Chi-Ming, 1718
Chen, Hong-Zheng, 1710
Cheng, Chien-Hong, 1746
Chiorboli, Claudio, 1658
Clayden, Jonathan, 1694
Clearfield, Abraham, 1720
Clyburne, Jason A. C., 1722
Couret, C., 1662
Craig, Donald C., 1728
Cross, Warren B, 1696
Davidson, Matthew G., 1750
Davies, John, 1648, 1650
De Silva, Sonali S., 1702
Diederich, François, 1634
Dietrich-Buchecker, Christiane, 1613
Dioumaev, Vladimir K., 1670
D'Souza, Francis, 1754
Duran, Josep, 1776
Edler, Karen J., 1724
Éll, Alida H., 1652
Ephritikhine, Michel, 1660
Erdogan, Belma, 1624
Escudié, J., 1662
Ewing, Janna D., 1690
Ferguson, Michael J., 1779
Fernández, Eduardo J., 1760
Fletcher, Paul D. I., 1732
Ford, Peter C., 1706
Fox, David J., 1648, 1650
Fracasso, Sandro, 1658
Franken, Andreas, 1684
Franz, James A., 1670
Fréchet, Jean M. J., 1640
Fuchibe, Kohei, 1734
Fujita, Kahee, 1730
Gale, Philip A., 1686
Gao, En-Qing, 1748
Gao, Haixiang, 1654
Gillespie, Kevin M., 1770
Gillies, Elizabeth R., 1640
Gironès, Jordi, 1776
Gisselbrecht, Jean-Paul, 1634
Goforth, Andrea M., 1630
Goldar, Arach, 1724
Goodby, John W., 1726
Gornitzka, H., 1662
Graiff, Claudia, 1742
Gray, Kenneth D., 1630
Gross, Maurice, 1634
Hah, Hoe Jin, 1712
Haigh, Robert, 1694
Hakobyan, Manya E., 1706
Halet, Jean-François, 1774
Han, Buxing, 1654
Hanson, Jonathan, 1670
Hara, Mikiko, 1734
Hashimoto, Masanori, 1698
Hattori, Tadashi, 1698
Hayakawa, Yoshihiro, 1704
Henderson, David K., 1702
Henry, Dorothy C. R., 1702
Hewitt, Daniel P., 1700
Hill, Michael S., 1758
Hitchcock, Peter B., 1682, 1758
Hof, Fraser, 1638
Holbrey, John D., 1636
Hong, Ziruo, 1664
Hori, Hiroshi, 1708
Howard, Philip W., 1688
Huang, Jun, 1654
Huang, Xian, 1714
Huang, Xin, 1666
Hung, Liangsun, 1664
Hunter, Christopher A., 1642
Hursthouse, Michael B., 1686
Hyland, Michael A., 1738
Hyodo, Mamoru, 1704
Igarashi, Yasuhiro, 1692
Iglesia, Enrique, 1764
Iimura, Shinya, 1644
In, Yasuko, 1692
Ishida, Toshimasa, 1692
Jeganmohan, Masilamani, 1746
Jennings, Michael, 1722
Jeon, Byung Jun, 1712
Jeppesen, Jan O., 1779
Jia, Xian, 1666
Jiang, Tao, 1654
Jimenez-Molero, Maria Consuelo, 1613
Johnson, Andrew L., 1750
Johnson, Darren W., 1638
Johnson, Jeffrey B., 1652
Johnston, Suzanne, 1636
Jones, Philip S., 1642
Jong, Howard, 1722
Kang, Gyoung-Dong, 1688
Kataoka, Masanori, 1704
Kennedy, John D., 1684
Kettani, S. Ech-Cherif El, 1662
Kilner, Colin A., 1684
Kim, Jeong Yeon, 1740
Kim, Ji-Min, 1744
Kim, Jung Soo, 1712
Kimura, Kazutaka, 1704
Kiyohara, Kenji, 1676, 1678
Knight, Paul D., 1770
Ko, Chi-Bun, 1718
Kobayashi, Shū, 1644
Kohda, Mitsuhiro, 1752
Konduri, Rama, 1658
Kong, Deyuan, 1720
Koo, Sang Man, 1712
Kooli, Fathi, 1740
Kubo, Koushi, 1730
Kurobe, Atsuhiko, 1676
Kurtikyan, Tigran S., 1706
Laguna, Antonio, 1760
Lamb, Robert N., 1728
Laskoski, Matthew, 1628
Lavallo, Vincent, 1680
Lavigne, John J., 1626
Lazraq, M., 1662
le Guennic, Boris, 1774
Leca, François, 1774
Lee, Chul Wee, 1740
Lee, Chun-Sing, 1664
Lee, Hong Boon, 1674
Lee, Shuittong, 1664
Lee, Yong Eun, 1712
Leong, Carolyn G., 1779
Lescop, Christophe, 1774
Levillain, Eric, 1779
Li, Chao-Jun, 1668
Li, Hongchao, 1779
Li, Xingshu, 1666
Li, Yadong, 1768
Li, Yang, 1720
Li, Yun-Hui, 1630
Licciulli, Sebastiano, 1762
Lichtenthaler, Frieder W., 1730
Light, Mark E., 1686
Lin, Zhenyang, 1666
Lindner, Hans J., 1730
Linton, David J., 1694
Lombardo, Marco, 1762
López-de-Luzuriaga, José María, 1760
Love, Jason B., 1682
Lynch, Vincent, 1646
McCarthy, Jason R., 1738
McCarty, Amy Lea, 1754
MacDonnell, Frederick M., 1658
McKenzie, Iain D., 1722
McNab, Hamish, 1702
Magner, Edmond, 1779
Mahon, Mary F., 1750
Manabe, Kei, 1644
Martín, Tomás, 1638
Martirosyan, Garik G., 1706
Maya, Celia M., 1742
Mikuma, Toshiyasu, 1708
Mitzel, Frieder, 1634
Monahan, Jennifer, 1672
Monobe, Hirosato, 1676, 1678
Moody, David C., 1648, 1650
Morganti, Stefano, 1762
Morton, Colin, 1770
Morton, Jason G. M., 1628
Narsihmulu, Ch., 1716
Nemes, G. Cretiu, 1662
Nguyen, Nhu Yen, 1754
Nierlich, Martine, 1660
Nieuwenhuyzen, Mark, 1636
Nobutou, Daisuke, 1644
Novak, Andrew, 1682
Obst, Ulrike, 1638
O'Donoghue, David, 1779
Ohishi, Hirofumi, 1692
Ohyama, Takako, 1708
Olmos, Elena M., 1760
O'Shaughnessy, Paul N., 1770
Osterloh, Frank E., 1700
Palma, Pilar, 1742
Palmer, Liam C., 1638
Parkin, Ivan P, 1696
Pattarawarapan, Mookda, 1674
Paunov, Vesselin N., 1732
Pérez, Javier, 1760
Peša, Nela, 1736
Petrella, Antonella J., 1728
Polo, Alfonso, 1776
Ramnial, Taramatee, 1722
Ranaivonjatovo, H., 1662
Raston, Colin L., 1728
Real, Julio, 1776
Réau, Régis, 1774
Rebek, Jr., Julius, 1638
Reddy, N. Ramakrishna, 1716
Reichert, W. Matthew, 1636
Reid, Stuart D., 1682
Roberts, Nicholas K., 1728
Robinson, Diane E. J. E., 1750
Rogers, Robin D., 1636
Romanenko, Vadim D., 1680
Roser, Stephen J., 1724
Ross Jr., Joseph H., 1720
Roy, Sudipta, 1674
Saez, Isabel M., 1726
Sakamoto, Shigeru, 1734
Satsuma, Atsushi, 1698
Sauthier, Mathieu, 1774
Sauvage, Jean-Pierre, 1613
Scandola, Franco, 1658
Schmidt, Bernd, 1656
Schooler, Paul, 1694
Schüth, Ferdi, 1772
Scott, Peter, 1770
Seddon, Kenneth R., 1636
Seiler, Paul, 1634
Seo, Motoharu, 1752
Serroni, Scolastica, 1658
Sessler, Jonathan L., 1646
Shanmugasundaram, Muthian, 1746
Sherman, John, 1617
Shi, Min-Min, 1710
Shi, Qian, 1666
Shibata, Junji, 1698
Shimizu, Ken D., 1630
Shimizu, Yo, 1676, 1678
Shin, Mi-Sook, 1744
Short, Robert D., 1766
Singh, Sharat, 1756
Smith, Mark D., 1628, 1630
Smith, Phillip M., 1754

Soufiaoui, M., 1662
Su, Cheng-Yong, 1630
Sultana, S. Shameem, 1716
Sun, Hongzhe, 1718
Sun, Jing-Zhi, 1710
Sun, Raymond Wai-Yin, 1718
Sun, Xiaoming, 1768
Szalda, David J., 1670
Tasker, Peter A., 1702
Taylor, Pietro, 1732
Terasawa, Naohiro, 1676, 1678
Terui, Norifumi, 1708
Tham, Fook S., 1680
Thoumazet, Claire, 1680
Thurston, David E., 1688
Tiger, Pascale M. N., 1642
Tiripicchio, Antonio, 1742
Tomas, Salvador, 1642
Tong, Shiwen, 1664
Toupet, Loic, 1774
Trombini, Claudio, 1762
Uchida, Kingo, 1676
Ullman, Edwin F., 1756
Uneyama, Kenji, 1752
Vega, Ismael El Drubi, 1686
Waku, Toshio, 1764
Wang, Mang, 1710
Wang, Pengfei, 1664
Wang, Ruihu, 1666
Wang, Yiqing, 1626
Wang, Yqing, 1624
Wang, Zhe-Ming, 1748
Warren, Stuart, 1648, 1650
Wheatley, Andrew E. H., 1694
Whittle, Jason D., 1766
Wight, Paul, 1702
Wilker, Jonathan J., 1672
Wilson, Claire, 1682
Wilson, James N., 1624, 1626
Wong, Ningbew, 1664
Wong, Oiyan, 1664
Wu, Wei, 1668
Wu, Weize, 1654
Xie, Zhiyuan, 1664
Xiong, Zheng-Chang, 1714
Xu, Chun, 1732
Xu, Lijin, 1666
Yamaguchi, Kentaro, 1734
Yamamoto, Yasuhiko, 1708
Yan, Chun-Hua, 1748
Yang, Chia-min, 1772
Ye, Jian, 1710
Yoon, Mee-Ok, 1744
Yoon, Suk Bon, 1740
Yoshida, Hisao, 1698
Yu, Chan-Mo, 1744
Yu, Jong-Sung, 1740
Yu, Wing-Yiu, 1718
Yuan, De-Qi, 1730
Zandler, Melvin E., 1754
Zhao, Guoying, 1654
Zhou, Zhongyuan, 1666
Zhu, Nianyong, 1718
Zibrowius, Bodo, 1772
Zimmerman, Rebecca S., 1646
zur Loye, Hans-Conrad, 1630

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