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Cover

See Nathalie Solladié, Anne-Marie Albrecht-Gary, Jean-François Nierengarten et al., page 5736. The image shows how a fullerene ligand can be clicked on a bis-Zn(II)porphyrin receptor to form a macrocyclic supramolecular complex. Image reproduced by permission of Ali Trabolsi, Mourad Elhabiri, Maxence Urbani, Juan Luis Delgado de la Cruz, Fettah Ajamaa, Nathalie Solladié, Anne-Marie Albrecht-Gary and Jean-François Nierengarten from Chem. Commun., 2005, 5736-5738.



Inside cover See Stanislaus S. Wong et al., page 5721. We review recent developments in the synthesis and characterization of ternary transition metal oxide nanostructures, including work on alkaline earth metal titanates, alkali metal titanates, bismuth ferrites, and ABO₄-type oxides. Image reproduced by permission of Yuanbing Mao, Tae-Jin Park and Stanislaus S. Wong from Chem. Commun., 2005, 5721-5735.

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FEATURE ARTICLE

5721

Synthesis of classes of ternary metal oxide nanostructures

Yuanbing Mao, Tae-Jin Park and Stanislaus S. Wong*

Advances in the synthesis of alkaline earth metal titanates, alkali metal titanates, bismuth ferrites, ABO₄-type oxides, and other classes of ternary oxide nanomaterials are reported.



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Ali Trabolsi, Mourad Elhabiri, Maxence Urbani, Juan Luis Delgado de la Cruz, Fettah Ajamaa, Nathalie Solladié,* Anne-Marie Albrecht-Gary* and Jean-François Nierengarten*

Owing to the complementarity between a bis-Zn(II)–porphyrin receptor (in grey) and a fullerene ligand bearing two pyridine substituents (in green), the C_{60} substrate can be *clicked* onto the ditopic porphyrinic receptor, thus leading to a stable non-covalent macrocyclic 1 : 1 complex.

5739

Tumor angiogenic vasculature targeting with PAMAM dendrimer–RGD conjugates

Rameshwer Shukla, Thommey P. Thomas, Jennifer Peters, Alina Kotlyar, Andrzej Myc and James R. Baker, Jr.*

RGD-4C peptide was conjugated to surface modified G5 PAMAM dendrimer and was shown to target $\alpha_V \beta_3$ integrin receptor expressing HUVEC cells. This conjugate provides a foundation that could be used for targeted delivery of radionuclides and drugs to solid tumors.

Click





Allosteric function facilitates template assisted olefin metathesis

Rie Wakabayashi, Yohei Kubo, Osamu Hirata, Masayuki Takeuchi* and Seiji Shinkai*

Template assisted olefin metathesis of an allosteric host **1b** to give the corresponding bicyclic compound **1c** was achieved and **1c** can allosterically bind template guest diamines with different affinity and cooperativity.

5745

The effect of selenium incorporation on the bandwidth and conductivity of neutral radical conductors

Leanne Beer, Jaclyn L. Brusso, Robert C. Haddon, Mikhail E. Itkis, Richard T. Oakley,* Robert W. Reed, John F. Richardson, Richard A. Secco and Xueyang Yu

The first example of an undimerized π -stacked *bis*-1,2,3-thiaselenazolyl radical displays improved bandwidth and conductivity relative to an isostructural *bis*-1,2,3-dithiazolyl.





Reversing the code of a template-directed solid-state synthesis: a bipyridine template that directs a single-crystal-to-single-crystal [2 + 2] photodimerisation of a dicarboxylic acid

Tomislav Friščić and Leonard R. MacGillivray*

The code of a template-directed solid-state synthesis based on hydrogen bond donors has been reversed to hydrogen bond acceptors.

Hydrogen bond directed synthesis of pyridazine and naphthyridine containing macrocycles

Liyan Xing, Ulrich Ziener, Todd C. Sutherland and Louis A. Cuccia*

Self-templated heterocyclic macrocycles with urea or formamidine linkages were prepared in high-yielding one-step reactions (Origami design by Tomoko Fuse).

Temperature-induced abrupt volume inflation in the mixed-valence ternary Zintl phase Yb₈Ge₃Sb₅

Serena Margadonna,* Kosmas Prassides,* Maria Chondroudi, James R. Salvador and Mercouri G. Kanatzidis*

The ternary Zintl phase $Yb_8Ge_3Sb_5$ exhibits an unusually complex structural and electronic response to changes in temperature and an abrupt negative thermal expansion below 15 K.

Measuring rate constants for active species in the polymerization of ethylene by MAO-activated metallocene catalysts by electrospray ionization mass spectrometry

Fabio di Lena, Esther Quintanilla and Peter Chen*

Electrospray ionization mass spectrometry (ESI-MS) of MAOactivated metallocene-catalyzed polymerizations quenched with carbodiimides provides a method for the determination of rate constants in Ziegler–Natta polymerizations.





5751



5760

Chelated heteroatoms in polyoxometalates and the topological equivalence of $\{Co^{III}(en)\}$ to type II *cis*-dioxometal centers. Synthesis and structure of $[\{Co(en)(\mu-OH)_2Co(en)\}\{PW_{10}O_{37}Co(en)\}_2]^{8-}$ and $[K \subset \{Co(en)WO_4\}\{WO(H_2O)\}(PW_9O_{34})_2]^{12-}$

Nebebech Belai and Michael T. Pope*

Insertion of $\{Co(en)\}^{3+}$ into polyoxometalates yields the first examples of polyanions with embedded chelated heteroatoms. This new class of complexes offers possibilities for stereochemical control of applications in catalysis and imaging.

5763

Dynamic sol-gel interconversion by reversible cation binding and release in G-quartet-based supramolecular polymers

Assaad Ghoussoub and Jean-Marie Lehn*

The bis-guanine monomer **G-G** forms highly cross-linked, K^+ stabilized, polymeric hydrogels that can be reversibly interconverted between gel and sol state *via* sequential binding and release of K^+ by a cryptand undergoing protonation/ deprotonation.

5766

Poly(9,9-dialkyl-3,6-dibenzosilole)—a high energy gap host for phosphorescent light emitting devices

Khai Leok Chan, Scott E. Watkins, Chris S. K. Mak, Mary J. McKiernan, Carl R. Towns, Sofia I. Pascu and Andrew B. Holmes*

Poly(3,6-dibenzosilole) has been prepared and used as a high triplet energy host for the electrophosphorescence of the guest iridium complex.

5769

High-yield one-step synthesis in water of $[Pt_{3n}(CO)_{6n}]^{2-}$ (n > 6) and $[Pt_{38}(CO)_{44}]^{2-}$

Cristina Femoni, Francesco Kaswalder, Maria Carmela Iapalucci, Giuliano Longoni,* Marita Mehlstäubl and Stefano Zacchini

Carbonylation in water of commercial platinum salts at atmospheric or slightly superatmospheric CO pressure affords in one step either the $[Pt_{38}(CO)_{44}]^2$ or the $[Pt_{3n}(CO)_{6n}]^2$ (n > 6) nanosized molecular platinum carbonyl clusters.









5775



Never before used in the MBH reaction, sp³ hybridized electrophiles now react efficiently to give enone cycloalkylation products.

Multivalent, bifunctional dendrimers prepared by click chemistry

Peng Wu, Michael Malkoch, Jasmine N. Hunt, Robert Vestberg, Eiton Kaltgrad, M. G. Finn,* Valery V. Fokin,* K. Barry Sharpless* and Craig J. Hawker*

Unsymmetrical dendrimers, containing both mannose binding units and coumarin fluorescent units, have been prepared using click chemistry and shown to be highly efficient, dual-purpose recognition/detection agents for the inhibition of hemagglutination.

Expanding functionality of RNA: synthesis and properties of RNA containing imidazole modified tandem G–U wobble base pairs

Eriks Rozners,* Romualdas Smicius and Chika Uchiyama

Imidazole modification at C-5 of uridine that is part of tandem G–U wobble base pairs is synthesized and found to be well tolerated in short RNA helices.

Prodigiosin is a chloride carrier that can function as an anion exchanger

Jennifer L. Seganish and Jeffery T. Davis*

Prodigiosin 1, previously described as an H^+/Cl^- co-transporter also demonstrates anion exchange in nitrate solution. The carrier mechanism is supported.





5784



Kevin P. Cole and Richard P. Hsung*

Stereoselective and transannular reactivities are described here for the ABD tricyclic manifold of phomactin A that possesses a unique structural topology.



5787

A novel sheet 4f-3d mixed-metal pyridine dicarboxylate: synthesis, structure, photophysical properties and its transformation to a perovskite oxide

Partha Mahata, Gopinathan Sankar, Giridhar Madras* and Srinivasan Natarajan*

A 4f–3d pyridine dicarboxylate possessing large apertures within the layers, active for the photo-decomposition of RBBR, transforms to a perovskite at 600 °C. The large aperture (*ca.* 7Å) within the sheet is shown.

5790

$Transformation \ of \ nanoporous \ ox oseleno antimonates \ into \\ Sb_2O_3 \\ -nanoribbons \ and \ nanorods$

Dorota Sendor,* Thomas Weirich and Ulrich Simon

We have isolated flexible Sb_2O_3 nanoribbons and nanorods as the main product from the disintegration of nanoporous oxoselenoantimonates of the cetineite type. The size of the obtained one-dimensional nanomaterials ranges up to 15 µm in length with diameters between 8 and 50 nm.

5793

Cyclic sulfamidates as lactam precursors. An efficient asymmetric synthesis of (-)-aphanorphine

John F. Bower, Peter Szeto and Timothy Gallagher*

A highly efficient synthesis of (-)-aphanorphine **3** has been achieved using an enantiomerically pure cyclic sulfamidate **1** to mediate the construction of the key lactam precursor **2**.





K₆[Sb₁₂O₁₈][SbSe₃]₂[(H₂O)₆]

Sb₂O₃ nanoribbons





Pyridine-functionalised ambidextrous gelators: towards catalytic gels

Juan F. Miravet* and Beatriu Escuder*

New pyridine containing gelators have been used to prepare Pd-functionalised materials with catalytic activity.

5799

Tropos Ligand



Dual Chirality Control

Dual chirality control of palladium(II) complexes bearing *tropos* biphenyl diamine ligands

Kohsuke Aikawa and Koichi Mikami*

Axial and center chirality of Pd complexes with *tropos* biphenyl secondary diamine ligands is shown to be controlled by chiral amide (*R*)-DABNTf, which can efficiently discriminate between two enantiomeric Pd complexes.

5802

9



Complex PbTe hopper (skeletal) crystals with high hierarchy

Ji-Ping Zhu, Shu-Hong Yu,* Zhu-Bing He, Jun Jiang, Ke Chen and Xiao-Yuan Zhou

A facile and mild solution method has been discovered for the synthesis of complex PbTe hopper crystals in large quantities, which are highly similar to the cubic halite skeletal crystals formed from extreme supersaturation in salt lakes existing in nature. This route may provide a new approach to growing other complex semiconductor structures of high hierarchy.

5805



Direct visualisation, by aberration-corrected electron microscopy, of the crystallisation of bimetallic nanoparticle catalysts

Edmund P. W. Ward,* Ilke Arslan, Paul A. Midgley,* Andrew Bleloch and John Meurig Thomas*

The number of atoms present in coalesced clusters of $Ru_{10}Pt_2$ was determined by aberration-corrected electron microscopy. The crystallisation of molecular structures into regular, facetted crystals was only observed for species containing greater than *ca.* 200 atoms.

5808

Selective oxidative *para* C–C dimerization of 2,6-dimethylphenol

Christophe Boldron, Guillem Aromí, Ger Challa, Patrick Gamez and Jan Reedijk*

The selective oxidative *para* C–C dimerization of 2,6-dimethylphenol, mediated by a hypervalent form of iodine, *i.e.* (diacetoxyiodo)benzene, has been investigated and a mechanism is proposed.



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