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Cover

See Steed et al., pp. 786-789. The cover image shows two viologen-based colourimetric anion sensors that respond to different amounts of anion depending on internal competition within the molecules. They are superimposed on an image of flowers taken in Tachikawa, Japan. The colours reflect the colour changes undergone by the anion sensors. Image reproduced with permission from Jonathan W. Steed et al. from New J. Chem., 2008, 32, 786.



Inside Cover

See Robinson et al., pp. 774-776. The cover displays the structure of a molecule containing the first unsupported group 13-hafnium bonds (pink orbs = group 13 elements; blue orb = hafnium). Two identical group 13 metals are bonded to the central hafnium atom resulting in a "V-shaped" core architecture. Image reproduced with permission from Gregory H. Robinson et al. from New J. Chem., 2008, 32, 774.

CHEMICAL SCIENCE

C33

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EDITORIAL

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Introduction to the special issue in honour of Jerry Atwood

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Dr Jonathan W. Steed
Department of Chemistry
University Science Laboratories
University of Durham
South Road
Durham
UK DH1 3LE
Fax (+44) (0) 191 384 4737
Tel (+44) (0) 191 384 2085
E-mail jon.steed@dur.ac.uk

Authors from the Americas

Professor Michael J. Scott Department of Chemistry University of Florida PO Box 117200 Gainesville FL 32611 USA Fax (+1) 352 392 3255 Tel (+1) 352 846 1165

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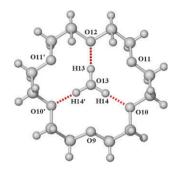
PERSPECTIVE

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Crown ethers as stabilising ligands for oxonium ions

Peter C. Junk

Crown ethers can be used to isolate oxonium ions $(H^+ \cdot (H_2O)_n)$ (n = 1, 2, 3, 4)). The structure and oligonuclearity of the oxonium ion depends on the hydrogen bonding acceptor properties of the immediate environment.

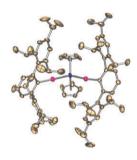


LETTERS

Organometallic compounds containing new Hf-Ga and Hf-In bonds: $Cp_2Hf(ER)_2$ ($Cp = C_5H_5$; E = Ga, In; $R = -C_6H_3-2,6-(2,4,6-i-Pr_3C_6H_2)_2$

Brandon Quillian, Yuzhong Wang, Pingrong Wei and Gregory H. Robinson*

Sodium metal reduction of RECl₂ (E = Ga, In; $R = -C_6H_3-2.6-(2.4.6-i-Pr_3C_6H_2)_2$) with Cp_2HfCl_2 gives Cp₂Hf(ER)₂ compounds, which represent the first Hf–E bonds.

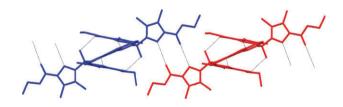


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Oxidation-induced control of self-assembly using a bisdipyrromethyl substituted phenanthroline building block

Patrick Plitt, Vincent M. Lynch and Jonathan L. Sessler*

Oxygenation of the *meso*-carbon atoms of the novel building block bis-dipyrromethyl substituted phenanthroline triggers a change in the hydrogen bond interactions from intramolecular to intermolecular.



780

Toxicity and biodistribution of para-sulfonatocalix[4]arene in mice

Anthony W. Coleman,* Said Jebors, Sebastien Cecillon, Pascale Perret, Dominique Garin, Danièle Marti-Battle and Marcelle Moulin

In vivo testing of para-sulfonato-calix[4]arene in mice shows that the molecule has an acute toxicity at doses of 400 mg kg⁻¹; the molecule is rapidly cleared from mice in urine and does not pass the blood-brain barrier.





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LETTERS

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Group 13 chelates in nerve gas agent and pesticide dealkylation

Amitabha Mitra, David A. Atwood,* Jeffrey Struss, Daniel J. Williams,* Bradley J. McKinney, William R. Creasy, David J. McGarvey, H. Dupont Durst and Roderick Fry

Schiff base boron and aluminium bromides have been used to cleave organophosphate nerve agents and pesticides and their simulants.

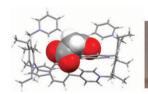


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Intramolecular binding site competition as a means of tuning the response of a colourimetric anion sensor

Sara Jane Dickson, Emma V. B. Wallace, Adam N. Swinburne, Martin J. Paterson, Gareth O. Lloyd, Andrew Beeby, Warwick J. Belcher and Jonathan W. Steed*

A viologen-derived double tripod receptor with pyridiniumbased binding groups colourimetrically senses carboxylate ions. The number of equivalents of anion required for the onset of the colour change depends on the peripheral functional groups.



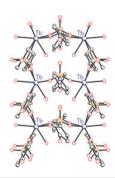


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Synthesis and structures of luminescent ladder-like lanthanide coordination polymers of 4-hydroxybenzenesulfonate

Xiaoping Yang, Joseph H. Rivers, W. Jeffrey McCarty, Michael Wiester and Richard A. Jones*

Reaction of sodium 4-hydroxybenzenesulfonate dihydrate (NaL · 2H₂O) with LnCl₃ · 6H₂O (3 : 1) in refluxing methanol gives the novel isomorphous 1-D framework compounds $\{[LnL_3(H_2O)_2] \cdot 2H_2O\}_{\infty}$ (Ln = Tb, Er and Yb) in 46–60% yields.

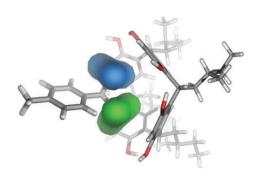


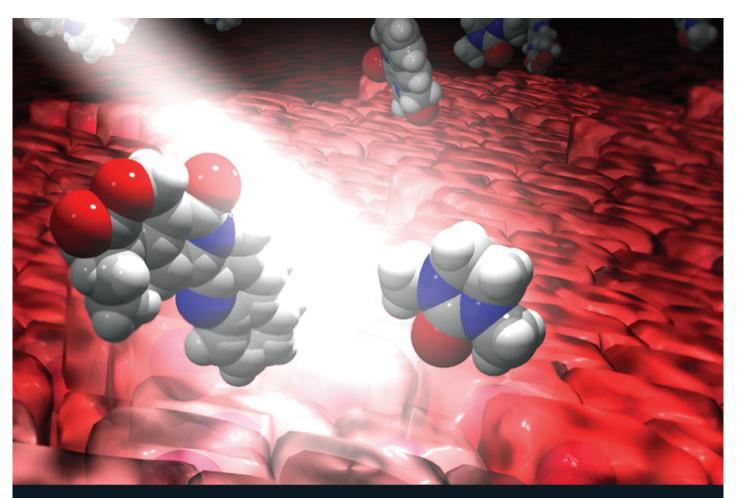
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Effects of remote chiral centers on encapsulated molecules

Michael P. Schramm and Julius Rebek, Jr.*

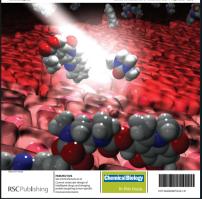
Two homotopic methyl groups become diastereotopic when encapsulated in a chiral hybrid assembly; remotely situated chiral centers at the base of the resorcinarene relay information through space, and these effects are shown to be a function of distance.





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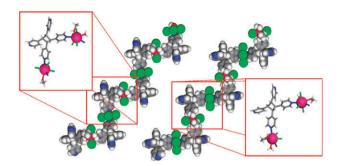
LETTERS



A lanthanide-based helicate coordination polymer derived from a rigid monodentate organic bridge synthesized in the solid state

Deian-Krešimir Bučar, Giannis S. Papaefstathiou. Tamara D. Hamilton and Leonard R. MacGillivray*

A molecule synthesized in the organic solid state is shown to serve as a rigid and angular building block of a metallosupramolecular architecture, with a structure that conforms to a helicate.



PAPERS



Ternary and quaternary co-crystals of 1,3-cis,5-ciscyclohexanetricarboxylic acid and 4,4'-bipyridines

Balakrishna R. Bhogala and Ashwini Nangia*

Co-crystals of 1,3,5-cyclohexanetricarboxylic acid · 4,4'-bipyridine1 · bipyridine2 have hexagonal or square supramolecular network depending on the nature of methylene/ethene tether between the bipy groups. A self-assembly model to explain the formation of different network architectures from similar node and connector building blocks is proposed.

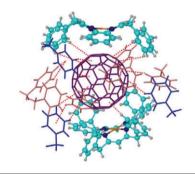




Controlling the confinement of fullerene C_{60} molecules using a saddle shape Ni(II) macrocycle

Marck Norret, Mohamed Makha, Alexandre N. Sobolev and Colin L. Raston*

Synthesis of a novel saddle-shaped Ni-macrocycle (NiTBTAA) and solid-state inclusion structure with fullerene C_{60} : interaction of sterically demanding ligand with fullerene C₆₀ effect dispersion of the fullerene in a overall hexagonal array.

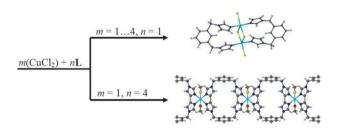




Influence of the metal-to-ligand ratio on the formation of metal organic complexes

Liliana Dobrzańska, Dewald J. Kleinhans and Leonard J. Barbour*

Three Cu(II) salts with Cl⁻, Br⁻ or NO₃⁻ counterions in combination with the ditopic ligand 1,3-bis(imidazol-1vlmethyl)benzene (L) were used to study the influence of the metal to ligand molar ratio on the formation of the final product. Single-crystal X-ray analysis revealed structural diversity of the products formed, ranging from discrete species to extended 1D and 2D coordination polymers.









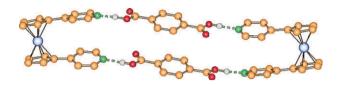
PAPERS



Mechanochemical assembly of hybrid organicorganometallic materials. Solid-solid reactions of 1,1'-di-pyridyl-ferrocene with organic acids

Dario Braga,* Stefano Luca Giaffreda, Fabrizia Grepioni,* Giuseppe Palladino and Marco Polito

Manual kneading of the organometallic complex [Fe(η^5 -C₅H₄-C₅H₄N)₂] with solid fumaric, succinic, tridecanedioic, terephthalic, trimesic and thiophene-2.5-dicarboxylic acids generated the corresponding adducts, whether salts or molecular complexes.

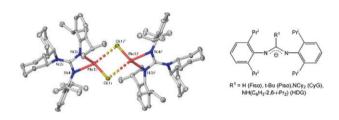


829

Thermally stable lead(II) amidinates and guanidinates

Andreas Stasch, Craig M. Forsyth, Cameron Jones and Peter C. Junk*

Synthetically discriminating, bulky amidinate and guanidinate ligands (A) provide stable lead(II) complexes [Pb(L)₂] (L = Fiso) or $[Pb(L)Cl]_2$ (L = Piso, CvG, HDG), the latter existing as loosely associated dimers in the solid state.



835

Group 13 metal(I) and (II) guanidinate complexes: effect of ligand backbone on metal oxidation state and coordination sphere

Guoxia Jin, Cameron Jones,* Peter C. Junk, Andreas Stasch and William D. Woodul

Reactions of guanidinate and phosphaguanidinate salts with group 13 metal(I) halides are reported. These have given a variety of metal(I) and (II) complexes that reveal how subtle changes to the sterics and electronics of the backbone substituents of the ligands can have a significant effect on the product obtained.

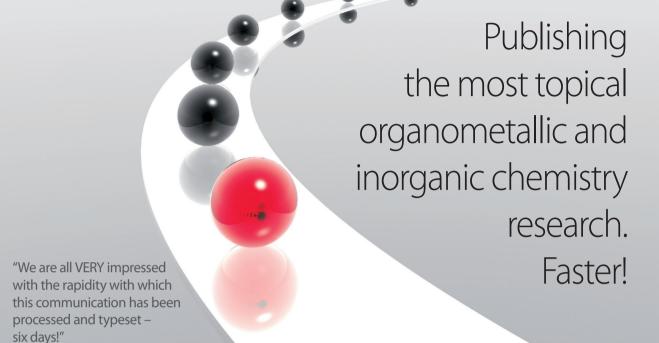
843

Crossing the threshold from accelerated substitution to elimination with a bifunctional macrocycle

Jeremiah J. Gassensmith, Jung-Jae Lee, Bruce C. Noll and Bradley D. Smith*

A macrocyclic amine with anion binding amide residues undergoes a highly accelerated substitution reaction with 1,2-dichloroethane but the outcome with 3-halopropionitriles is accelerated substitution.

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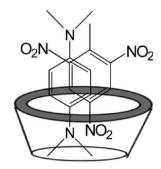
PAPERS

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Pattern recognition based identification of nitrated explosives

Aravindan Ponnu, Nicola Y. Edwards and Eric V. Anslyn*

We report an effective approach for the identification of nitro explosives by the reaction of an electron-acceptor with an electron-donor with and without the addition of γ -cyclodextrin $(\gamma$ -CD). Pattern recognition analysis was applied to analyze the data collected and it showed successful discrimination of the nitro explosives. This work represents the simplest colorimetric chemical sensor technique to be used in monitoring the range of common nitro explosives.

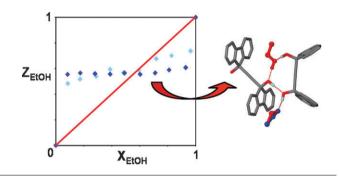


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Selectivity and structure of mixed guest clathrates

Tanya le Roex,* Luigi R. Nassimbeni and Edwin Weber

Crystal structure analyses of mixed guest clathrates are correlated to their selectivity profiles giving surprising results.

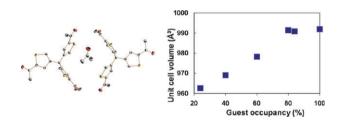


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Guest capture, storage and removal in the TATM host framework: a single-crystal study

Tara J. Burchell, Gary D. Enright and John A. Ripmeester*

Herein we examine the effects of guest removal on the crystallographic parameters of TATM host-guest inclusion compounds and the degree to which simple organic guest molecules can be removed from the inclusion before framework collapse.

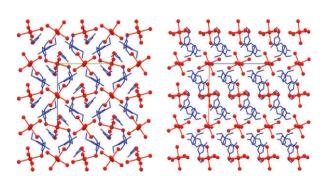


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Flexible coordination environments of lanthanide complexes grown from chloride-based ionic liquids

C. Corey Hines, David B. Cordes, Scott T. Griffin, Savannah I. Watts, Violina A. Cocalia and Robin D. Rogers*

Hydrated lanthanide(III) chlorides readily dissolve in the low melting ionic liquid 1-ethyl-3-methylimidazolium chloride in an open vessel at 110 °C, and upon cooling crystallize as the anhydrous [C₂mim]₃[LnCl₆].



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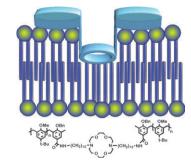
PAPERS

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Synthetic cation transporters incorporating crown ethers and calixarenes as headgroups and central relays: a comparison of sodium and chloride selectivity

José Carlos Iglesias-Sánchez, Wei Wang, Riccardo Ferdani, Pilar Prados, Javier de Mendoza and George W. Gokel*

Calixarenes, explored as headgroups and central relay elements in synthetic hydraphile-like ion channels, afforded poor transporters but amide elements incorporated as central relay controls showed chloride over sodium selectivity.



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