

IN THIS ISSUE

ISSN 1144-0546 CODEN NJCHES 30(2) 125-288 (2006)



Cover

See Raymond Ziessel *et al.*, page 135. The cover exhibits the molecular structure of an amphiphilic iron(II)-terpyridine complex functionalized with hydrogen-bond donor-acceptor groups. The engineering of such ligands from 3,5-diacylamidotoluene scaffoldings allows preparation of mesomorphic materials and organogels stabilized by extended hydrogen bonded networks. The background represents the mesomorphic texture of the ligand and the inverted flask containing the emergent metallo-supramolecular gel. Image reproduced by permission of Franck Camerel, Raymond Ziessel, Bertrand Donnio and Daniel Guillon, *New J. Chem.*, 2006, **30**, 135.

CHEMICAL SCIENCE

C9

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Chemical Science

February 2006/Volume 3/Issue 2

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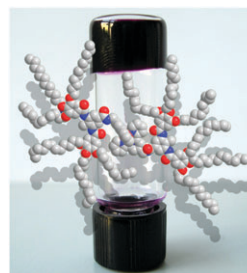
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Engineering of an iron-terpyridine complex with supramolecular gels and mesomorphic properties

Franck Camerel, Raymond Ziessel,* Bertrand Donnio and Daniel Guillon

An iron(II)-terpyridine complex gives a metallo-organogelator and a metallo-mesogen in which the molecular organization is controlled by hydrogen bonding of amide vectors.



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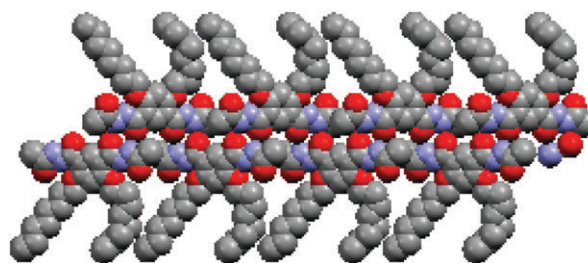


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A programmed hydrogen bonding array self-assembles into a polymeric zipper-like architecture

Yong Yang, Ya-Zhou Zhang, Ya-Lin Tang and Chuan-Feng Chen*

With two hydrazide motifs installed at one edge, a novel supramolecular system self-assembled into a polymeric zipper-like structure *via* two hydrogen bonds at each knot, both in solution and in the solid state.



PAPERS

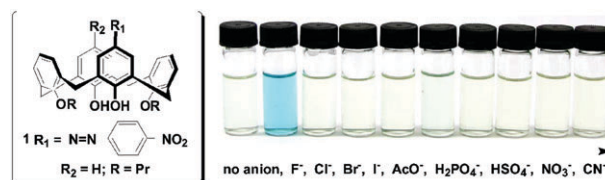


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Azocalix[4]arene-based chromogenic anion probes

Chuan-Feng Chen* and Qi-Yin Chen

Azocalix[4]arene derivatives were found to allow not only for highly selective and sensitive colorimetric detection but also easy colorimetric differentiation of F^- , AcO^- and $H_2PO_4^-$, of similar basicity, depending upon the azocalix[4]arene structure, guest basicity and conformational complementarity between the host and guest.

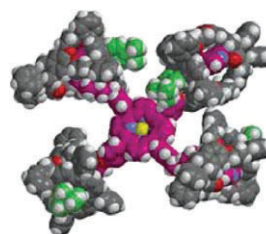


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Self-assembly studies of allosteric photosynthetic antenna model systems

Paul J. Thomassen, Jantien Foekema, Ribera Jordana i Lluch, Pall Thordarson, Johannes A. A. W. Elemans, Roeland J. M. Nolte* and Alan E. Rowan*

The first example of an allosteric supramolecular triad containing a zinc porphyrin (electron donor), a monosubstituted 4,4'-dipyridine and a gold porphyrin (both electron acceptors) and preliminary electron transfer studies are presented.

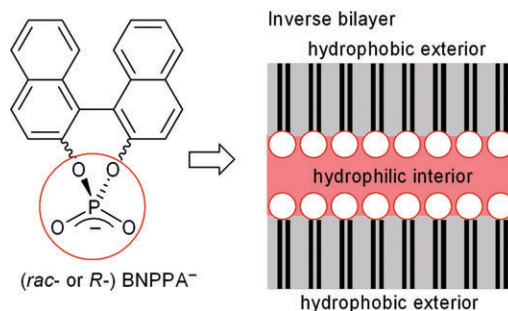


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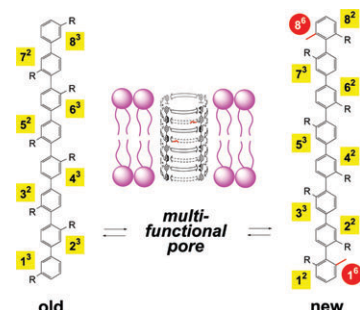
Hydrophilic interior between hydrophobic regions in inverse bilayer structures of cation-1,1'-binaphthalene-2,2'-diyl phosphate salts

Thomas Dorn, Anne-Christine Chamayou and Christoph Janiak*

Cation and solvent hydrogen bonding to the hydrophilic phosphate group of the anion $BNPPA^-$ leads to bilayers with an interior hydrophilic region and hydrophobic binaphthyl groups on both exterior sides.



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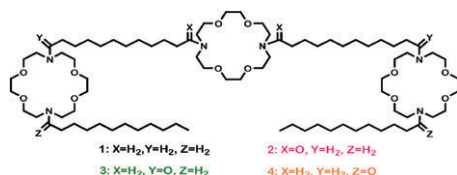


New staves for old barrels: regoisomeric (1²,2²,3³,4²,5³,6²,7³,8²)-*p*-octiphenyl rods with an NMR tag

Dawn Ronan, Damien Jeannerat, André Pinto, Naomi Sakai and Stefan Matile*

The absolute supramolecular chirality as well as the multifunctionality of rigid-rod β -barrel pores (including pH gating and blockage by α -helix recognition) is independent of the substitution pattern along their rigid-rod scaffolds.

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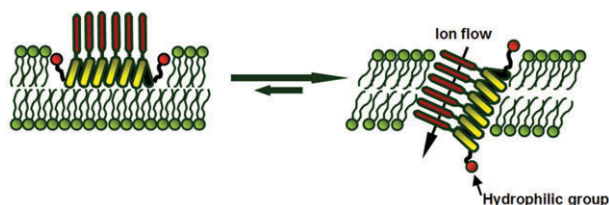


The influence of varied amide bond positions on hydrophile ion channel activity

Michelle E. Weber, Wei Wang, Sarah E. Steinhardt, Michael R. Gokel, W. Matthew Leevy and George W. Gokel*

Hydrophile channels incorporating amide residues prove to be good ionophores but their toxicity to bacteria does not correlate well with ion transport.

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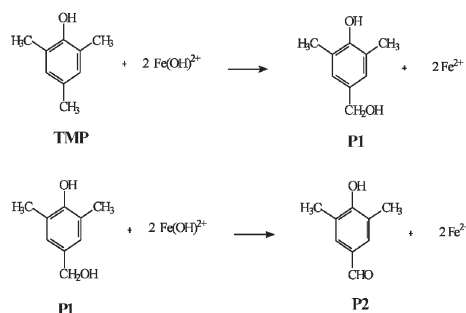


End group engineering of artificial ion channels

François Otis, Normand Voyer,* Ange Polidori and Bernard Pucci

Incorporation of hydrophilic terminal groups to crown α -helical peptides improves membrane stability and ion transport ability.

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Unexpected 2,4,6-trimethylphenol oxidation in the presence of Fe(III) aquacomplexes

Jean-Pierre Aguer,* Gilles Mailhot and Michèle Bolte

2,4,6-Trimethylphenol (TMP) was efficiently oxidised by Fe(III) aquacomplexes. The formation of the degradation products was concomitant with the reduction of Fe(III) into Fe(II).

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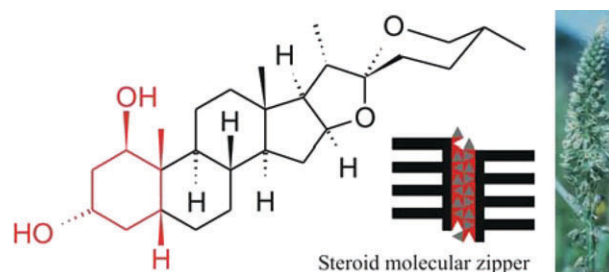


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Experimental and theoretical studies of a naturally occurring non-oligomeric steroidal supramolecular zipper

Orde Q. Munro,* Karen du Toit, Siegfried E. Drewes, Neil R. Crouch and Dulcie A. Mulholland

A novel spirostane steroid isolated from the bulbs of *Ornithogalum tenuifolium* forms a remarkable supramolecular zipper in which the steroid building blocks are held together by lateral and longitudinal hydrogen bonds to form the one-dimensional ladder-like structure.

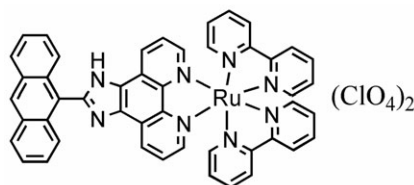


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Ruthenium(II) complex of 2-(9-anthryl)-1*H*-imidazo [4,5-*f*][1,10]phenanthroline: synthesis, spectrophotometric pH titrations and DNA interaction

Mei-Jiao Han, Li-Hua Gao and Ke-Zhi Wang*

The Ru(II) complex was a sensitive spectroscopic pH sensor and switch for the MLCT emissive route, and a DNA intercalator by means of the anthryl group on the complex.

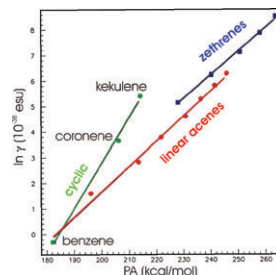


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The absolute proton affinity and the second order hyperpolarizability of some catacondensed linear polyacenes and pericondensed zethrenes

Andrea Knežević and Zvonimir B. Maksić*

The average second order hyperpolarizability is linearly related to the average absolute proton affinity on the logarithmic scale for linear polyacenes and zethrenes.

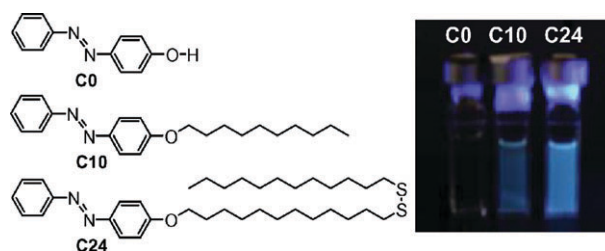


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Chain length-dependent photoinduced formation of azobenzene aggregates

Mina R. Han* and Masahiko Hara

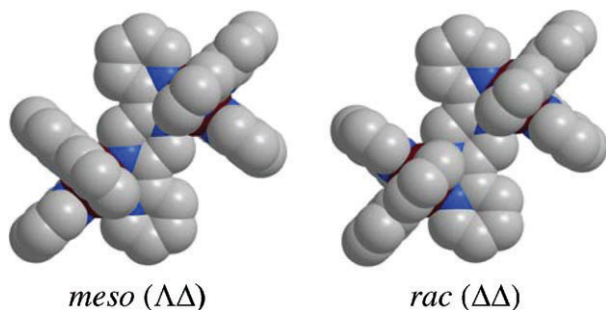
The blue fluorescence enhancement of azobenzene derivatives with long alkyl chain lengths is closely associated with the unique formation of self-assembled aggregates of azobenzene derivatives.



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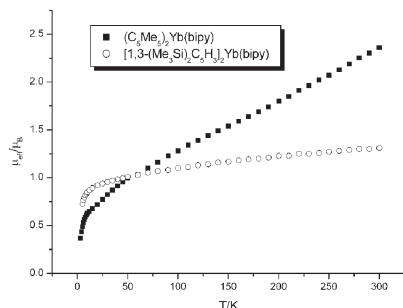
Metal–metal interactions in dinuclear ruthenium complexes incorporating “stepped-parallel” bridging ligands: synthesis, stereochemistry and intervalence charge transfer

Deanna M. D'Alessandro and F. Richard Keene*

Intervalence charge transfer (IVCT) studies on dinuclear ruthenium complexes incorporating “stepped-parallel” bridging ligands exhibit a high degree of metal–metal interaction, which is consistent with a negligible solvent dependence of the IVCT parameters.



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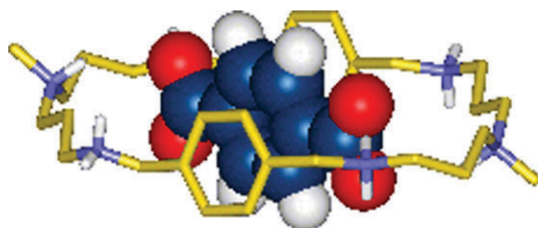


Weak paramagnetism in compounds of the type $\text{Cp}'_2\text{Yb}(\text{bipy})$

Marc D. Walter, Madeleine Schultz and Richard A. Andersen*

Magnetic susceptibility measurements on compounds that have low magnetic moments and are air and moisture sensitive are only reliably obtained using quartz tube containers.

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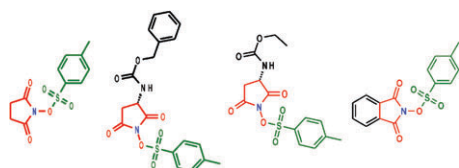
Recognition of dicarboxylate anions by a ditopic hexaazamacrocyclic containing bis-*p*-xylyl spacers

Sílvia Carvalho, Rita Delgado,* Nelson Fonseca and Vítor Félix*

The binding ability of $(\text{H}_6\text{Me}_2[30]\text{pbz}_2\text{N}_6)^{6+}$ towards aliphatic and aromatic carboxylate substrates was evaluated by potentiometry, ^1H NMR spectroscopy and molecular dynamics simulations (MD) in water solvent.



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Crystal-state studies on *p*-toluenesulfonates of *N*-oxyimides—a possible structural basis of serine proteases inhibition

Piotr Stefanowicz, Łukasz Jaremko,* Mariusz Jaremko* and Tadeusz Lis

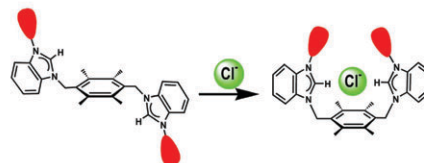
A series of *p*-toluenesulfonates of *N*-oxyimides has been synthesized and their X-ray structures show a flattened pyramidal geometry of the oxyimide ring nitrogen. This structural feature is considered to be responsible for a specific chemical reactivity towards nucleophiles and inhibitory properties against proteases of these compounds.

PAPERS

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Anion induced binding electrochemical signal transduction in ferrocenyl benzolimidazolium podandsYan Bai, Bing-Guang Zhang, Chun-Ying Duan,*
Dong-Bin Dang and Qing-Jin Meng

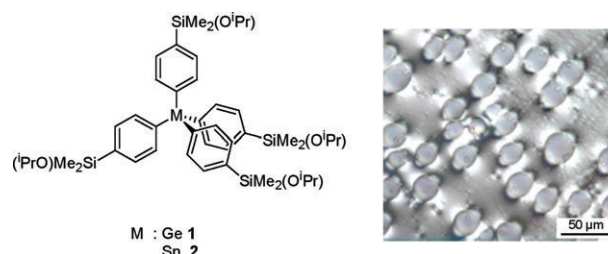
Binding electrochemical signaling transduction through anion templated conformational change of ferrocene-containing podands with two and three benzoimidazolium hydrogen bonding 'arms' was investigated for halide anions.



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The van der Waals induced supramolecular organization of hydrophobic tetrahedral units in the course of hydrolytic polycondensationFrédéric Lerouge, Geneviève Cerveau and
Robert J. P. Corriu*

Tetrahedral precursors, having four directions for polycondensation regularly distributed in space, led to highly polycondensed solids, organized at both the nanometric and the micrometric scale.

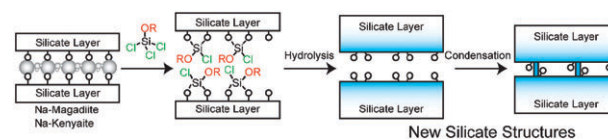


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Design of silicate nanostructures by interlayer alkoxysilylation of layered silicates (magadiite and kenyaite) and subsequent hydrolysis of alkoxy groups

Dai Mochizuki and Kazuyuki Kuroda*

Silica nanostructures are sophisticatedly designed by interlayer alkoxysilylation of layered silicates (magadiite and kenyaite) with alkoxytrichlorosilanes and the subsequent hydrolysis of alkoxy groups.



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