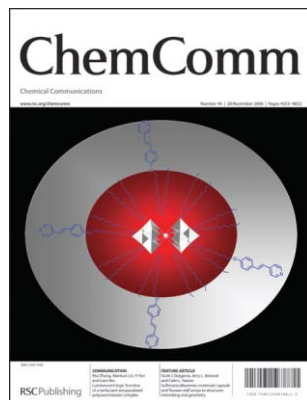


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ISSN 1359-7345 CODEN CHCOFS (44) 4553–4652 (2006)



Cover

See Hui Zhang, Xiankun Lin, Yi Yan and Lixin Wu, page 4575. A supramolecular organic/inorganic hybrid based on surfactant-encapsulated polyoxometalate exhibiting dual output luminescent logic function. Image reproduced by permission of Hui Zhang, Xiankun Lin, Yi Yan and Lixin Wu, from *Chem. Commun.*, 2006, 4575.



Inside cover

See Hualei Qian, Caiming Liu, Zhaohui Wang and Daoben Zhu, page 4587. Structure of the first double 5-heterocyclic annelated perylene bisimide and columnar arrangement of its 1 : 2 complexes with pyrene. Image reproduced by permission of Hualei Qian, Caiming Liu, Zhaohui Wang and Daoben Zhu, from *Chem. Commun.*, 2006, 4587.

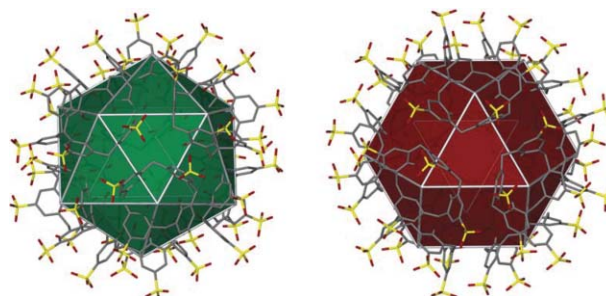
FEATURE ARTICLE

4567

Sulfonatocalixarenes: molecular capsule and ‘Russian doll’ arrays to structures mimicking viral geometry

Scott J. Dalgarno,* Jerry L. Atwood* and Colin L. Raston*

The *p*-sulfonatocalix[*n*]arenes are versatile materials that are capable of assembling into molecular capsules or ‘Russian dolls’ of varied size and complexity. The formation of these arrangements can be used to control the geometry of nanometre scale *p*-sulfonatocalix[4]arene assemblies in the solid state.



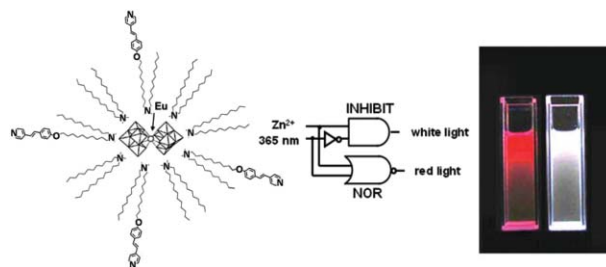
COMMUNICATIONS

4575

Luminescent logic function of a surfactant-encapsulated polyoxometalate complex

Hui Zhang, Xiankun Lin, Yi Yan and Lixin Wu*

A novel nano-scale luminescent organic/inorganic hybrid based on a surfactant-encapsulated polyoxometalate complex (SEC) is fabricated, which exhibits dual output (NOR and INHIBIT) logic function operated by light and metal ion as inputs.



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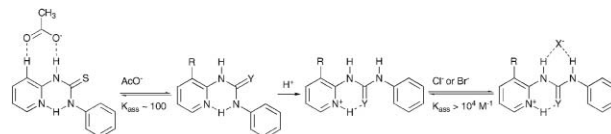
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4578

Pyridyl thioureas as switchable anion receptors

Suad Rashdan, Mark E. Light and Jeremy D. Kilburn*

The binding selectivity of simple pyridyl thioureas in acetonitrile can be completely switched by protonation; hence, the neutral thiourea binds acetate, but not chloride or bromide, whereas the protonated thiourea binds strongly to chloride or bromide, but is deprotonated by acetate.

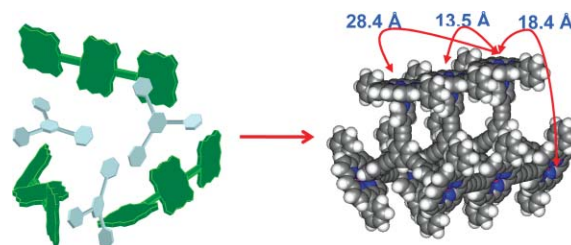


4581

Supramolecular porphyrinic prisms: coordinative assembly and solution phase X-ray structural characterization

Suk Joong Lee, Karen L. Mulfort, Jodi L. O'Donnell, Xiaobing Zuo, Andrew J. Goshe, Paul J. Wesson, SonBinh T. Nguyen, Joseph T. Hupp* and David M. Tiede

Highly chromophoric porphyrinic prisms have been obtained *via* coordinative assembly, and their solution phase structures established *via* X-ray scattering and diffraction.

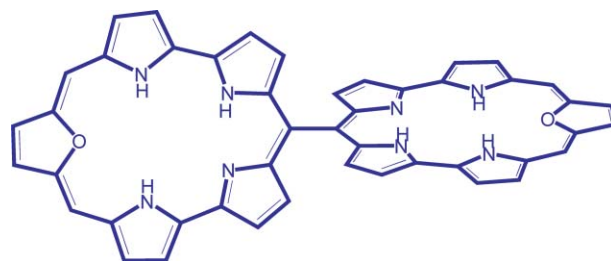


4584

Meso–meso linked core modified 22π smaragdyrins with unusual absorption properties

Rajneesh Misra, Rajeev Kumar, Tavarekere K. Chandrashekar* and C. H. Suresh

The synthesis of the first meso–meso linked core modified smaragdyrins with unusual single photon properties is reported.

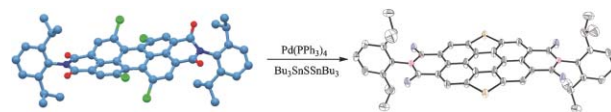


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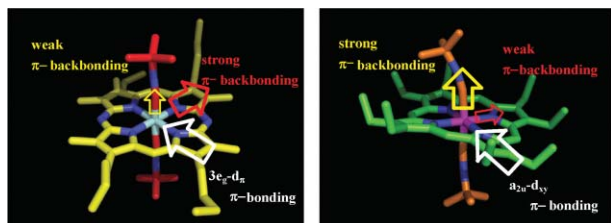
S-heterocyclic annelated perylene bisimide: synthesis and co-crystal with pyrene

Hualei Qian, Caiming Liu, Zhaohui Wang* and Daoben Zhu*

An S-heterocyclic annelated perylene bisimide (PBI) has been prepared from readily available tetrachloro-PBI by a one-step palladium-catalyzed reaction; when co-crystallized with pyrene it gives a unique columnar arrangement of 1 : 2 complexes.



4590

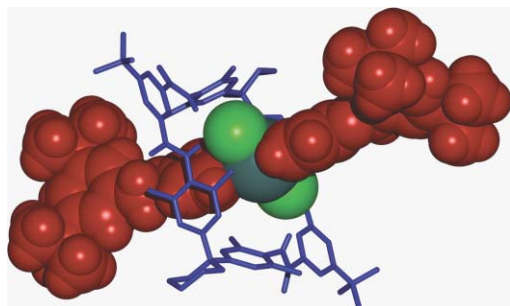


An isocyanide probe for heme electronic structure: bis(*tert*-butylisocyanide) complex of diazaporphyrin showing a unique $(d_{xy})^2(d_{xz}, d_{yz})^3$ ground state

Yoshiki Ohgo,* Saburo Neya, Hidehiro Uekusa and Mikio Nakamura*

Isocyanide-bound model hemes always adopt the $(d_{xz}, d_{yz})^4(d_{xy})^1$ ground state. Replacement of porphyrin by diazaporphyrin yielded, however, the unprecedented example of a low-spin complex with the $(d_{xy})^2(d_{xz}, d_{yz})^3$ ground state.

4593

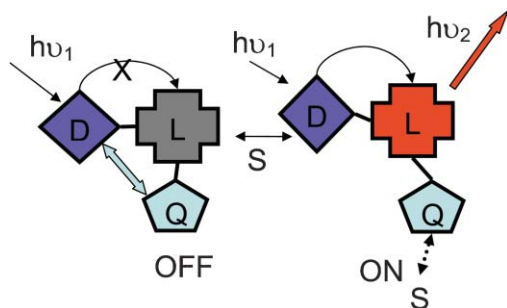


Synthesis of a [2]rotaxane through first- and second-sphere coordination

Barry A. Blight, James A. Wisner* and Michael C. Jennings

The synthesis and characterization of a new [2]rotaxane is described using both first- and second-sphere coordination of a palladium metal centre. This is a rare example of a metal centre acting simultaneously as both a template for formation of the interlocked structure and a covalent connection point in the backbone of the final product.

4596

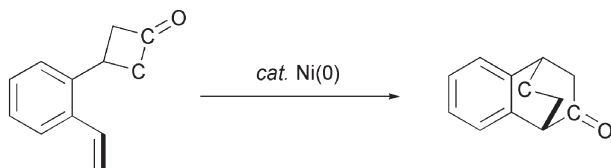


Synthesis of asymmetrically substituted 1,4,7,10-tetraazacyclododecanes for the triggered near infrared emission from lanthanide complexes

K. Eszter Borbas and James I. Bruce*

Asymmetrically substituted cyclen derivatives incorporating a donor (D) antenna and an excited state quencher (Q) have been synthesized as ligands for the luminescent lanthanides (L), ytterbium(III) and neodymium(III). The NIR luminescence lifetime is regulated through substrate (S) interaction with the quencher.

4599



Nickel-catalysed intramolecular alkene insertion into cyclobutanones

Masahiro Murakami* and Shinji Ashida

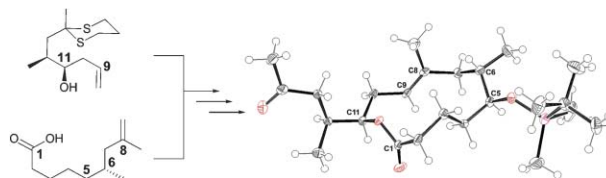
A nickel(0) catalyst converted 3-styrylcyclobutanones into benzobicyclo[2.2.2]octenones by an intramolecular insertion of the vinyl moiety into the cyclobutanone skeleton.

4602

Synthesis of the mycolactone core by ring-closing metathesis

Matthew D. Alexander, Shaun D. Fontaine,
James J. La Clair, Antonio G. DiPasquale,
Arnold L. Rheingold and Michael D. Burkart*

A two component strategy based on ring-closing metathesis was utilized in the synthesis of the mycolactone core and the *E*-stereochemistry of the trisubstituted ring olefin was confirmed by X-ray crystallography.

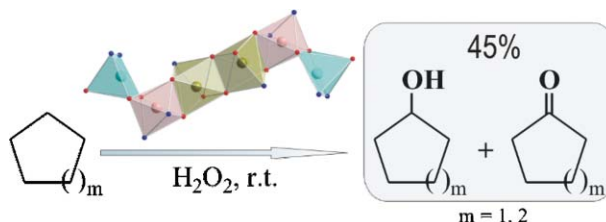


4605

An unprecedented heterotrimetallic Fe/Cu/Co core for mild and highly efficient catalytic oxidation of cycloalkanes by hydrogen peroxide

Dmytro S. Nesterov, Volodymyr N. Kokozay,*
Viktoriya V. Dyakonenko, Oleg V. Shishkin,
Julia Jezierska, Andrew Ozarowski, Alexander M. Kirillov,
Maximilian N. Kopylovich and Armando J. L. Pombeiro*

A self assembled complex with two $\text{Cu}(\mu\text{-O})_2\text{Co}(\mu\text{-O})_2\text{Fe}$ cores acts as a remarkable catalyst for the oxidation of cycloalkanes under mild conditions.

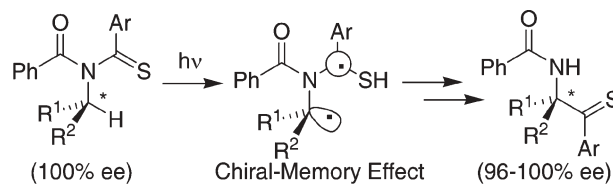


4608

Photochemical asymmetric synthesis of phenyl-bearing quaternary chiral carbons using chiral-memory effect on β -hydrogen abstraction by thiocarbonyl group

Masami Sakamoto,* Hiroya Kawanishi, Takashi Mino,
Yoshio Kasashima and Tsutomu Fujita

Quaternary chiral carbons were effectively generated from tertiary chiral carbons *via* photochemical intramolecular β -hydrogen abstraction reaction of thioimides involving the highly-controlled chiral-memory effect.



4611

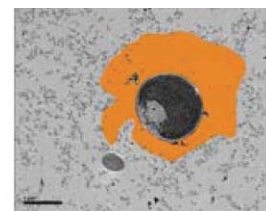
Sol-gel encapsulation extends diatom viability and reveals their silica dissolution capability

Clémentine Gautier, Jacques Livage, Thibaud Coradin and
Pascal J. Lopez*

Encapsulation of diatoms enhance cell viability and demonstrates their specific capability to remodel the surrounding silica-matrices.

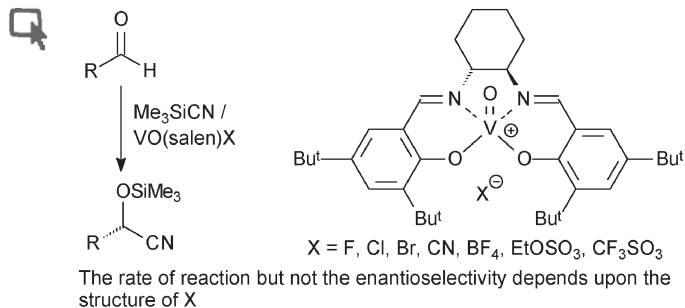


C. fusiformis



P. tricornutum

4614

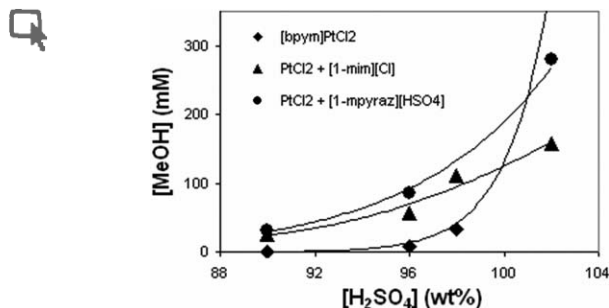


VO(salen)(X) catalysed asymmetric cyanohydrin synthesis: an unexpected influence of the nature of anion X on the catalytic activity

Yuri N. Belokon,* Victor I. Maleev, Michael North* and Dmitry L. Usanov

The nature of the anionic ligand X in vanadium(V)salen complexes $[V^+O(salen)X^-]$ was found to have a significant influence on the catalytic activity of the complexes, but not on their enantioselectivities; with the complexes in which X = Cl or F being most active and the complex with X = OSO_2CF_3 being totally inactive.

4617

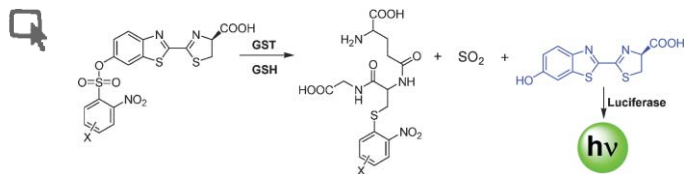


Direct methane conversion to methanol by ionic liquid-dissolved platinum catalysts

Jihong Cheng, Zaiwei Li, Mark Haught and Yongchun Tang*

Ternary systems of Pt species, ionic liquids and H_2SO_4 are effective in catalyzing the direct, selective oxidation of methane to methanol and appear to be more tolerant to water than the Catalytica reaction.

4620

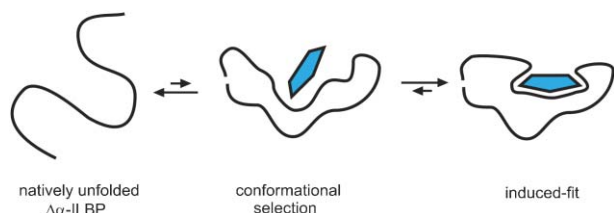


Electrophilic aromatic substituted luciferins as bioluminescent probes for glutathione S-transferase assays

Wenhui Zhou,* John W. Shultz,* Nancy Murphy, Erika M. Hawkins, Laurent Bernad, Troy Good, Leonard Moothart, Susan Frackman, Dieter H. Klaubert, Robert F. Balleit and Keith V. Wood

New highly sensitive latent bioluminescent luciferin substrates were designed and synthesized for monitoring glutathione S-transferase (GST) enzyme activities.

4623



Coupling ligand recognition to protein folding in an engineered variant of rabbit ileal lipid binding protein

Nikolaos Kouvatso, Jill K. Meldrum, Mark S. Searle* and Neil R. Thomas*

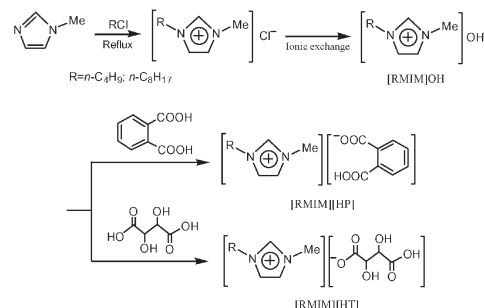
A "helix-less" mutant of the β -clam shell protein ILBP is shown to be unfolded under physiological conditions, but unexpectedly binds small bile acid substrates with high affinity, demonstrating strong thermodynamic coupling between ligand binding and folding.

4626

Ionic liquid buffers: a new class of chemicals with potential for controlling pH in non-aqueous media

Guang-nan Ou, Ming-xia Zhu, Jia-rong She and You-zhu Yuan*

Ionic liquids can be readily synthesized by neutralization of imidazolium hydroxide with aqueous solutions of phthalic and tartaric acid, respectively, in a molar ratio of 1 : 1. They exhibit buffering characteristics in non-aqueous media.

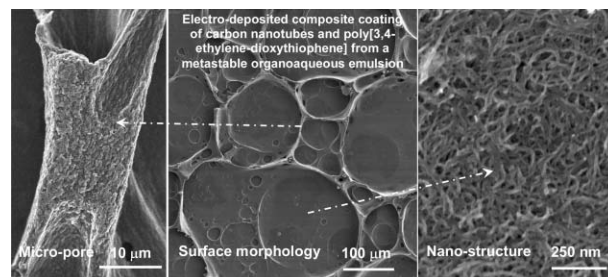


4629

Carbon nanotube stabilised emulsions for electrochemical synthesis of porous nanocomposite coatings of poly[3,4-ethylene-dioxythiophene]

Chuang Peng, Graeme A. Snook, Derek J. Fray, Milo S. P. Shaffer and George Z. Chen*

Amphiphobic carbon nanotubes can assist the formation of metastable organoaqueous emulsions (EDOT + acetonitrile + water), leading to successful electro-synthesis of uniquely structured nanocomposites of nanotubes and PEDOT with high electrochemical capacitance.

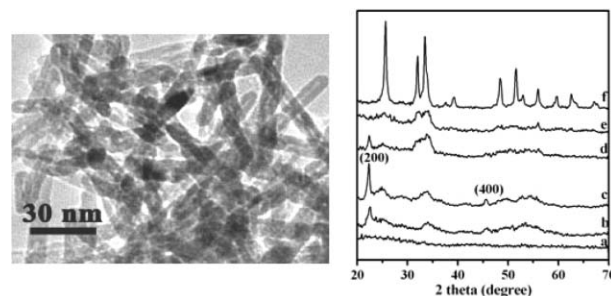


4632

Ultrathin corundum-type In₂O₃ nanotubes derived from orthorhombic InOOH: synthesis and formation mechanism

Changlong Chen, Dairong Chen,* Xiuling Jiao* and Cuiqing Wang

A solvothermal route to the orthorhombic InOOH nanotube precursor, followed by annealing under ambient pressure to the single-crystalline corundum-type (hexagonal) In₂O₃ nanotubes with closed ends, was introduced. The formation mechanism of InOOH nanotubes was proposed and discussed.

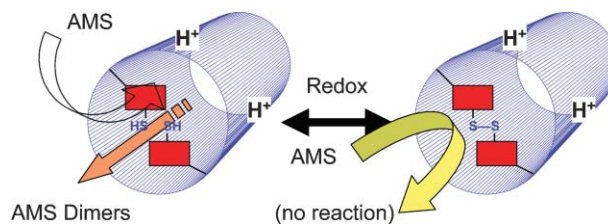


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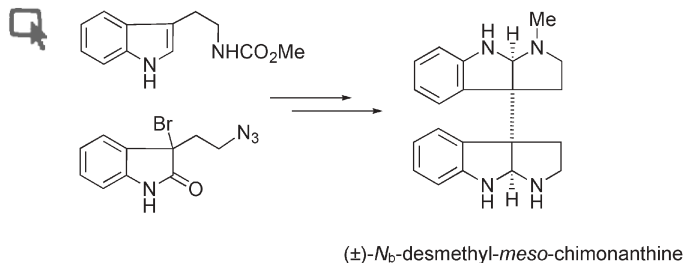
Switching catalytic reaction conducted in pore void of mesoporous material by redox gate control

Masahiro Fujiwara,* Shigeki Terashima, Yasuko Endo, Kumi Shiokawa and Hiroyoshi Ohue

A molecular gate attached on the pore outlet of a mesoporous material, which is opened and closed by redox system of thiol groups, effectively switched the progress of a catalytic reaction promoted by the acidic site in the pore void.



4638

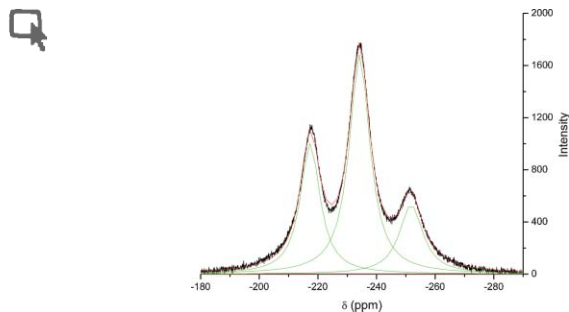


Concise synthesis of the (±)-*N_b*-desmethyl-*meso*-chimonanthine

Candice Menozzi, Peter I. Dalko* and Janine Cossy

The first total synthesis of the bis-pyrroloindoline alkaloid (±)-*N_b*-desmethyl-*meso*-chimonanthine, having a pseudo C_2 -symmetry, was realised in a seven-step convergent sequence without using protecting groups.

4641

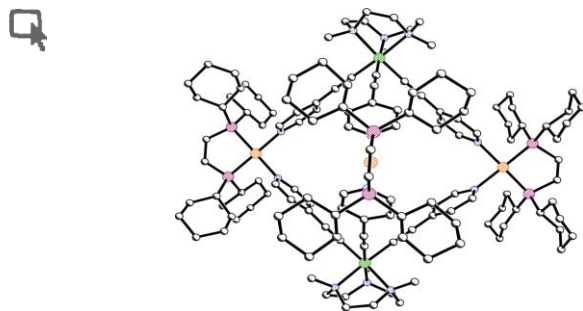


Self-exchange electron transfer in high oxidation state non-oxo metal complexes: amavadin

Jeremy Lenhardt, Bharat Baruah, Debbie C. Crans* and Michael D. Johnson*

The electron transfer self-exchange rate constant between the oxidized and reduced forms of amavadin equals $\sim 1 \times 10^5 \text{ dm}^3 \text{ mol}^{-1} \text{ s}^{-1}$ at 25 °C and represents the first unambiguous example for a vanadium(IV/V) couple.

4644



Synthesis and characterization of a trigonal bipyramidal supramolecular cage based upon rhodium and platinum metal centers

Jered C. Garrison, Matthew J. Panzner, Paul D. Custer, D. Venkat Reddy, Peter L. Rinaldi, Claire A. Tessier and Wiley J. Youngs*

Condensation of the square planar complex *cis*-(DCPE)Pt(NO₃)₂ with the facial octahedral complex (Me₃tacn)Rh(CCPy)₃ results in a self-assembled trigonal bipyramidal cage with Rh(III) and Pt(II) atoms occupying the vertices.

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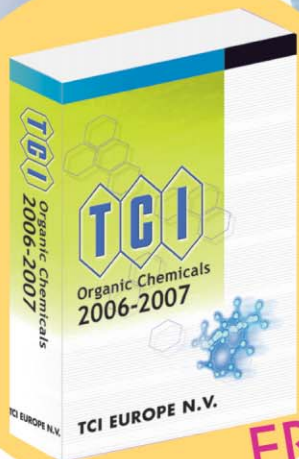
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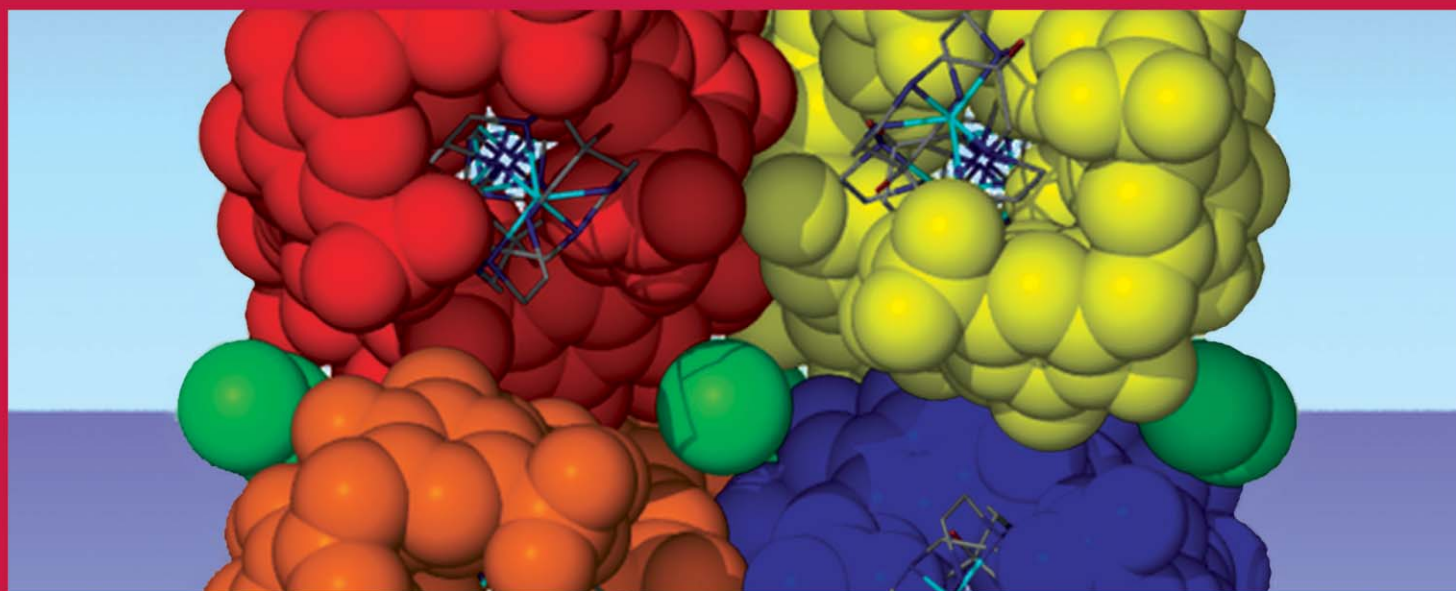
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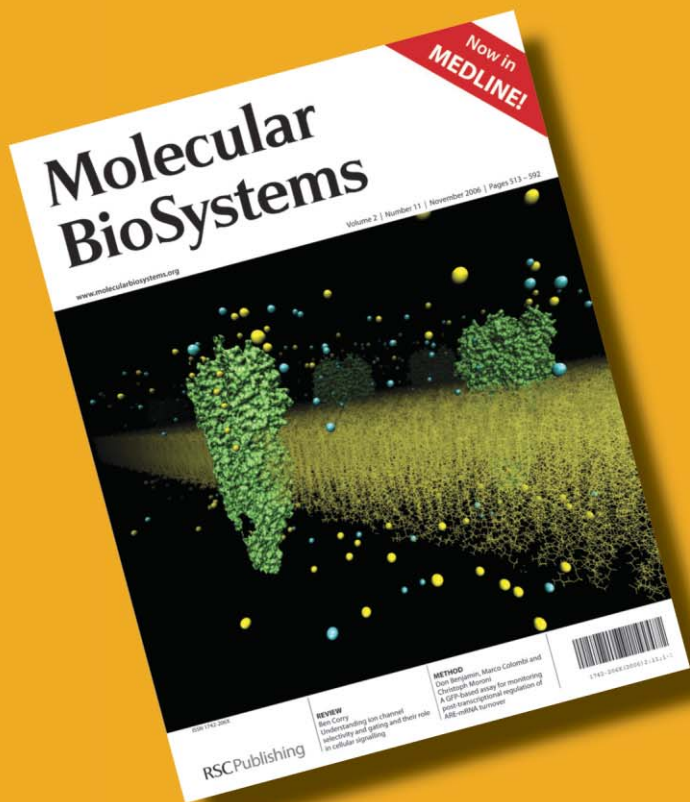
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