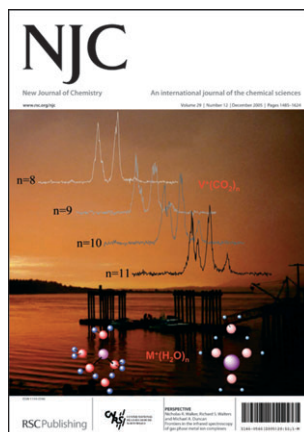


In this issue...

Chemical Science – a ‘snapshot’ of the latest news and developments across the chemical sciences. See p. C89
www.rsc.org/chemicalscience



Cover

See Nicholas R. Walker *et al.*, page 1495. Infrared spectroscopy allows the structures of gas phase metal ion complexes to be examined as a function of cluster size. The cover features spectra obtained during studies of $V^+(CO_2)_n$. Similar work on $M^+(H_2O)_n$ has also revealed details of cluster structure. The photograph was taken in Tofino, British Columbia, by N. R. Walker. Image reproduced by permission of Nicholas R. Walker, Richard S. Walters and Michael A. Duncan, *New J. Chem.*, 2005, **29**, 1495.

CHEMICAL SCIENCE

C89

Drawing together the research highlights and news from all RSC publications, *Chemical Science* provides a ‘snapshot’ of the latest developments across the chemical sciences showcasing newsworthy articles, as well as the most significant scientific advances.

Chemical Science

December 2005/Volume 2/Issue 12

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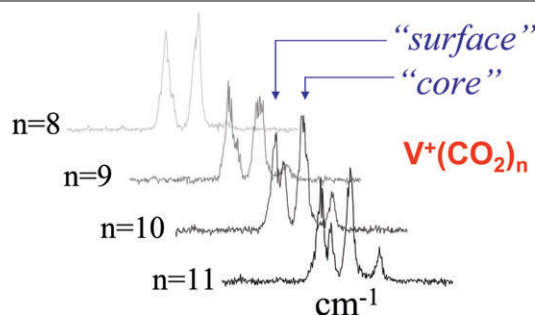
PERSPECTIVE

1495

Frontiers in the infrared spectroscopy of gas phase metal ion complexes

Nicholas R. Walker,* Richard S. Walters and Michael A. Duncan

Infrared spectroscopy allows the structures of gas phase metal ion complexes to be studied as a function of cluster size.



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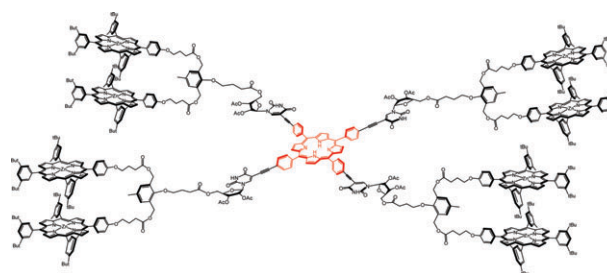
LETTER

1504

A photoactive nona-porphyrin with nucleosidic linkers

Nathalie Solladié,* Chloé Sooambar, Haiko Herschbach, Jean-Marc Strub, Emmanuelle Leize, Alain Van Dorsselaer,* Anna Maria Talarico, Barbara Ventura and Lucia Flamigni*

A nona-porphyrin exists as several conformers, resulting in various donor–acceptor pairs with different distances and orientations, and shows an energy transfer from the Zn(II) peripheral porphyrins to the free-base core for the non-extended one.



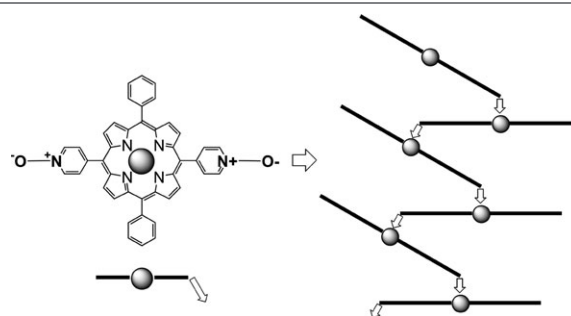
PAPERS

1508

**Molecular tectonics: coordination networks based on porphyrins bearing pyridine *N*-oxide groups as coordinating sites**

Emmanuel Deiters, Véronique Bulach,* Nathalie Kyritsakas and Mir Wais Hosseini*

The zinc complexes of the two positional isomers of the diphenyl-bis(pyridyl-*N*-oxide)porphyrin are self-complementary tectons which generate 1-D zigzag type coordination networks in the crystalline phase.

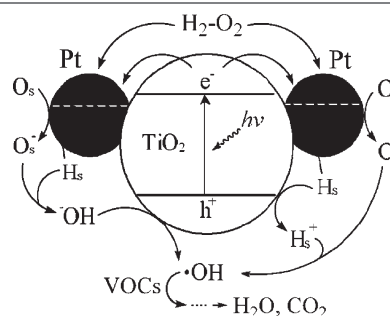


1514

Promoting effects of H₂ on photooxidation of volatile organic pollutants over Pt/TiO₂

Yilin Chen, Danzhen Li, Xinchun Wang, Ling Wu, Xuxu Wang and Xianzhi Fu*

Superior photocatalytic activity and durability of Pt/TiO₂ for decomposing volatile organic pollutants have been obtained by adding trace H₂ into an O₂-rich photooxidation system. A mechanism is proposed to elucidate the promoting effects of H₂.

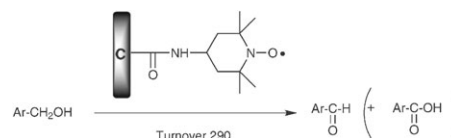


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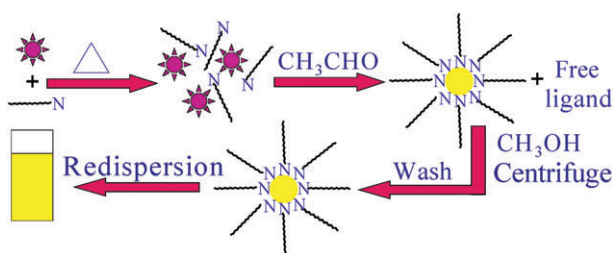
Covalent attachment of TEMPO onto a graphite felt electrode and application in electrocatalysis

Florence Geneste,* Claude Moinet, Soraya Ababou-Girard and Francine Solal

The electrocatalytic activity of the modified electrode towards alcohol oxidation and the stability of the amide link between the catalyst and the electrode surface are shown.



1527

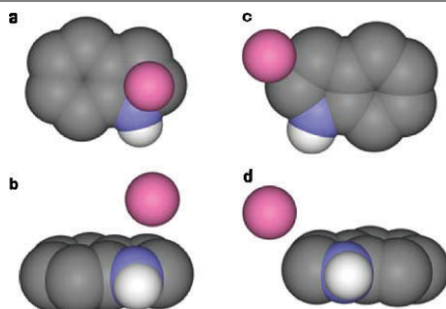


Silver organosol: synthesis, characterisation and localised surface plasmon resonance study

Sudip Nath, Sujit Kumar Ghosh, Snigdhamayee Praharaj, Sudipa Panigrahi, Soumen Basu and Tarasankar Pal*

A silver organosol of unique stability has been synthesised and exploited to study the localised surface plasmon resonance phenomenon.

1535

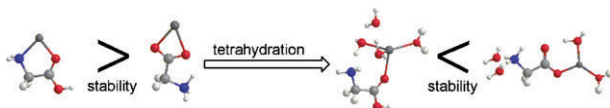


Cation– π interaction: a case for macrocycle–cation π -interaction by its ureidoarene counteranion

Carole Arnal-Herault, Mihail Barboiu,* Eddy Petit, Mathieu Michau and Arie van der Lee

Interaction between the [18-crown-6- K^+] macrocyclic cation and the non-covalently bound π -donor residues of the discrete benzoureidoarene anion receptors results in the formation of specific cation– π contacts, despite the entropically unfavourable conditions.

1540

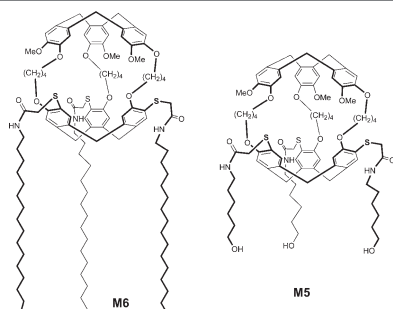


The regulatory roles of metal ions ($\text{M}^{+/2+} = \text{Li}^+, \text{Na}^+, \text{K}^+, \text{Be}^{2+}, \text{Mg}^{2+}, \text{and Ca}^{2+}$) and water molecules in stabilizing the zwitterionic form of glycine derivatives

Hongqi Ai, Yuxiang Bu,* Ping Li and Chong Zhang

Water molecules can regulate the relative stability of the zwitterionic/non-zwitterionic forms of glycine derivatives.

1549

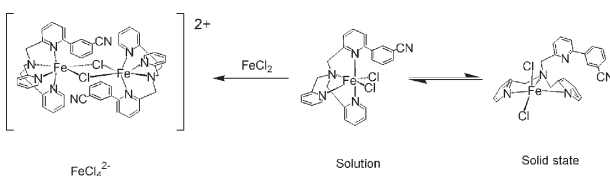


Synthesis and interfacial properties of amphiphatic cryptophanes

Isabelle Gosse, Jean-Paul Chauvet and Jean-Pierre Dutasta*

Cryptophanes **M5** and **M6** with long chain substituents form stable monolayers at the air–water interface. Their synthesis and the formation of organized 2D self-assemblies are described. This offers new perspective in the design of sensor devices based on cryptophane hosts.

1555



Square pyramidal geometry around the metal and tridentate coordination mode of the tripod in the [6-(3'-cyanophenyl)-2-pyridylmethyl]bis(2-pyridylmethyl) amine FeCl_2 complex: a solid state effect

Nasser K. Thallaj, Ahmed Machkour, Dominique Mandon* and Richard Welter

The coordination chemistry of the title ligand to ferrous chloride is reported in solution as well as in the solid state. Important differences in geometries and coordination mode of the ligand are observed.

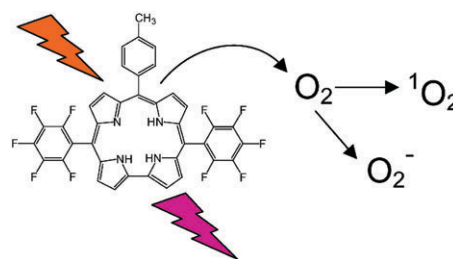
PAPERS

1559

Photophysical characterization of free-base corroles, promising chromophores for light energy conversion and singlet oxygen generation

Barbara Ventura, Alessandra Degli Esposti, Beata Koszarna, Daniel T. Gryko* and Lucia Flamigni*

The excited state properties of a series of free-base corroles have been investigated in detail and point to promising, potential applications as singlet oxygen photosensitizers and as chromophores for light energy conversion.



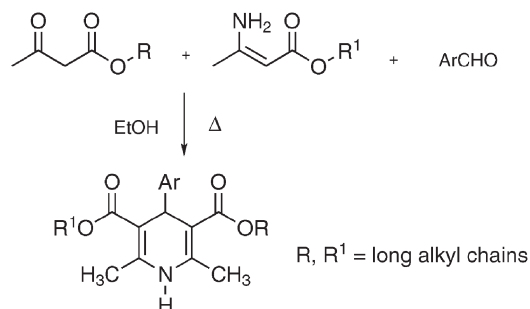
1567



Synthesis and structural study of new highly lipophilic 1,4-dihydropyridines

Margarita Suárez,* Merly de Armas, Oney Ramírez, Amaury Alvarez, Roberto Martínez-Alvarez,* Dolores Molero, Carlos Seoane, Ramón Liz, Hector Novoa de Armas, Norbert M. Blaton, Oswald M. Peeters and Nazario Martín*

The long functionalised alkoxy chains influence the lipophilic properties without modifying the structural features required for biological activity.



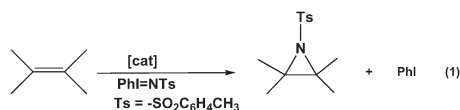
1577



Catalytic aziridinations with copper(II) salen complexes

Wei Sun, Eberhardt Herdtweck and Fritz E. Kühn*

Three copper(II) complexes coordinated with salen ligands are synthesized, characterized, and examined for catalytic nitrene transfer reactions with a set of olefins. Complex **3** is characterized by X-ray crystallography, showing a highly distorted octahedral ligand surrounding the Cu atom having included in its coordination sphere an acetate ligand.



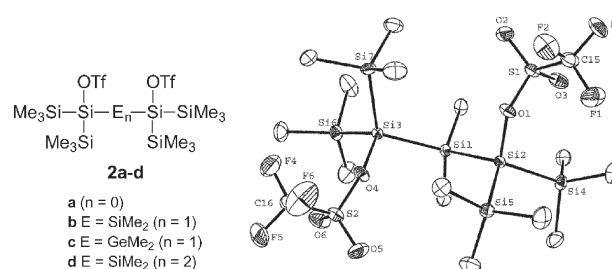
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Highly reactive oligosilyltriflates—synthesis, structure and rearrangement

C. Krempner,* U. Jäger-Fiedler, C. Mamat, A. Spannenberg and K. Weichert

Reactions between TfOH and $[\text{Ph}(\text{Me}_3\text{Si})_2\text{Si}]_2\text{E}$ (**1a–c**) and $[\text{H}(\text{Me}_3\text{Si})_2\text{Si}]_2\text{E}$ (**5d**), respectively, are shown to proceed facilely to give by elimination of benzene and hydrogen the oligosilyltriflates of formula $[\text{TfO}(\text{Me}_3\text{Si})_2\text{Si}]_2\text{E}$ (**2a–d**).

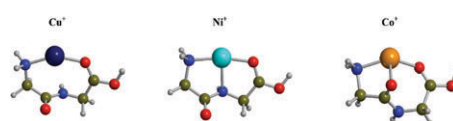


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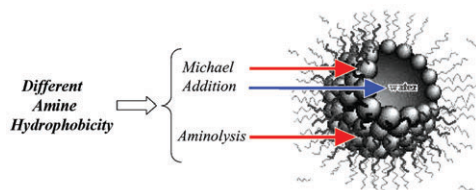
Coordination properties of glycylglycine to Cu^+ , Ni^+ and Co^+ . Influence of metal cation electronic configuration

Erika Constantino, Albert Rimola, Luis Rodríguez-Santiago and Mariona Sodupe*

The influence of the electronic configuration of the Cu^+ (d^{10}), Ni^+ (d^9) and Co^+ (d^8) metal cations on the coordination properties of glycylglycine is discussed through B3LYP density functional calculations.



1594

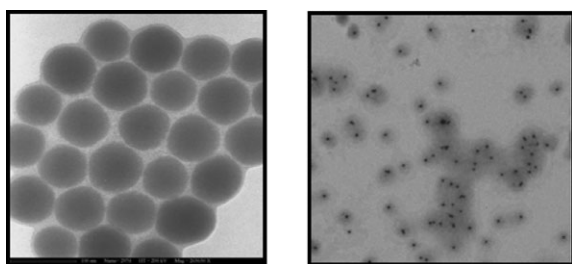


Michael addition and ester aminolysis in w/o AOT-based microemulsions

Esperanza Fernández, Luís García-Río,* J. Ramón Leis, Juan C. Mejuto and Moisés Pérez-Lorenzo

The different effect of water-in-oil microemulsions on ester aminolysis and Michael addition reactions is a consequence of the different reagent distribution along the colloidal aggregate.

1601

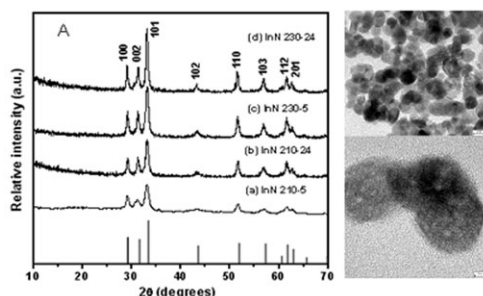


Synthesis of poly(ε-caprolactone)-silica nanocomposites: from hairy colloids to core-shell nanoparticles

Mathieu Joubert, Christelle Delaite,* Elodie Bourgeat Lami and Philippe Dumas

Synthesis of poly(ε-caprolactone)-silica nanocomposites: from hairy colloids to core/shell nanoparticles.

1610

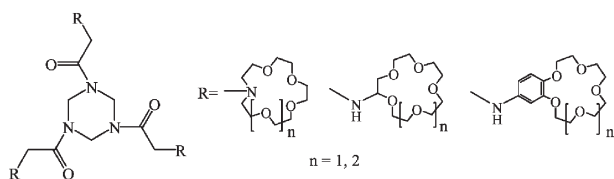


Indium nitride from indium iodide at low temperatures: synthesis and their optical properties

Changzheng Wu, Tanwei Li, Lanyu Lei, Shuangquan Hu, Yi Liu and Yi Xie*

An effective synthetic protocol has been successfully used to produce high quality InN nanocrystals using indium iodide (InI_3), one member of the indium halide family, as the indium source at a low temperature of $<250^\circ\text{C}$.

1616



Synthesis, characterization and complexation behavior investigations of novel starburst-like tris-crown ethers

Zhi Bin Huang, Tai Jong Kang and Seung Hyun Chang*

Novel structures of starburst-like tris-crown ethers were successfully synthesized from 1,3,5-triacryloyl-hexahydro-1,3,5-triazine with amino and 1-aza crown ethers through Michael addition.

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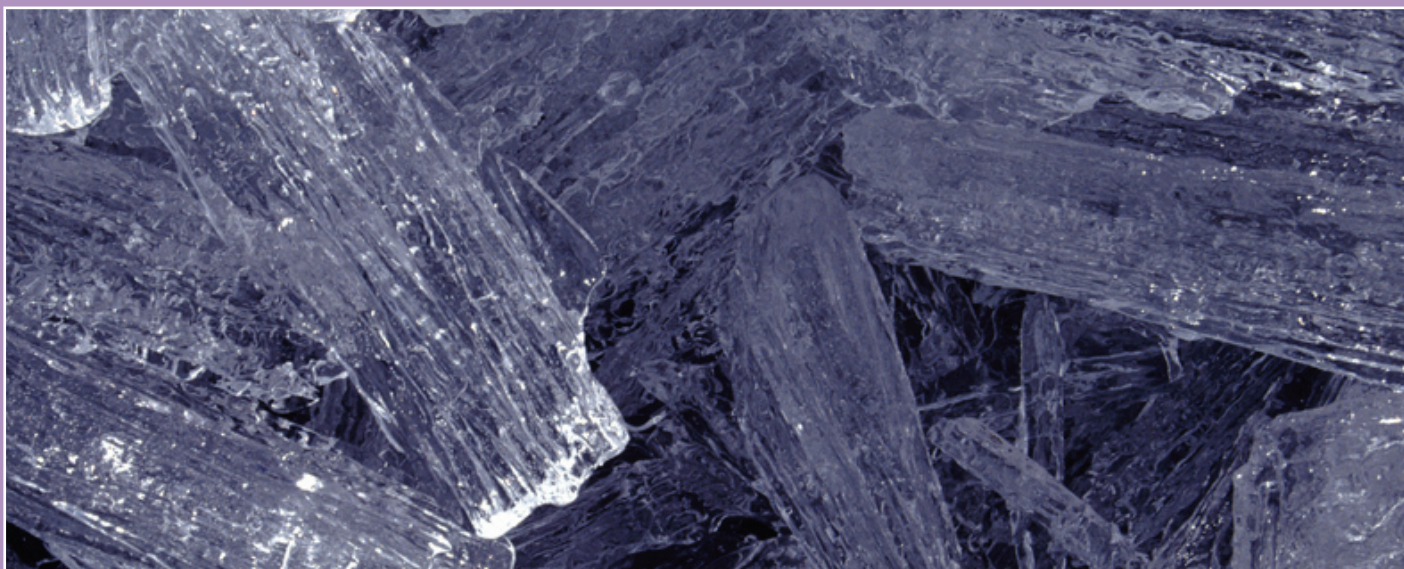
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