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Essay

Open Source Research — the Power of Us

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Stephen M. Maurer, Arti K. Rai,
Ginger Taylor, Matthew H. Todd

Aust. J. Chem. **2006**, 59, 291–294.

Academic and industrial scientific research has delivered enormous successes but there are clear failures, such as the provision of drugs for some of the most prevalent diseases. Open source methods have delivered tangible benefits in the computer science community. Described here are efforts to extend these principles to science generally, and in particular biomedical research, illustrated with a specific problem in medicinal chemistry.

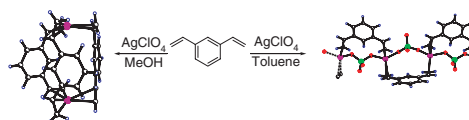
Rapid Communications

The Silver–Alkene Interaction as a Supramolecular Synthon: Divinylbenzene-Based Assemblies

Jennifer Burgess, Justine R. A. Cottam,
Peter J. Steel

Aust. J. Chem. **2006**, 59, 295–297.

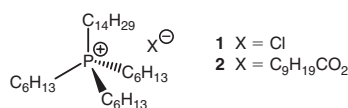
The interaction of silver(I) salts with alkenes is shown to be a useful synthon for the assembly of both discrete and polymeric metallosupramolecular architectures. The three isomers of divinylbenzene lead to a diverse range of adducts, seven of which have been structurally characterized by X-ray crystallography.



Phosphonium-Based Ionic Liquids as Efficient Borane Carriers

Taramatee Ramnial, Michelle K. Hauser,
Jason A. C. Clyburne

Aust. J. Chem. **2006**, 59, 298–301.



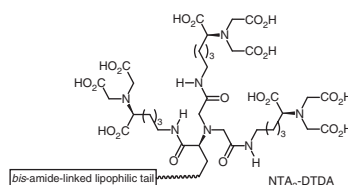
Treatment of the salts shown with BH₃ generates new ionic liquids. These new materials retain borane's reductive attributes but offer simpler liquid-state handling characteristics.

Full Papers

Synthesis of NTA₃-DTDA — A Chelator-Lipid that Promotes Stable Binding of His-Tagged Proteins to Membranes

Joseph G. Altin, Martin G. Banwell,
Phillip A. Coghlan, Christopher J. Easton,
Michael R. Nairn, Daniel A. Offermann

Aust. J. Chem. **2006**, 59, 302–306.

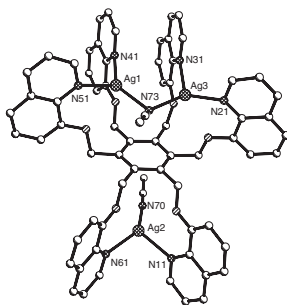


A practical method for the preparation of the illustrated compound that delivers gram quantities of pure forms of this material has been established.

Discrete Metal Complexes of Two Multiply Armed Ligands

Muna R. A. Al-Mandhary,
Christopher M. Fitchett, Peter J. Steel

Aust. J. Chem. **2006**, 59, 307–314.

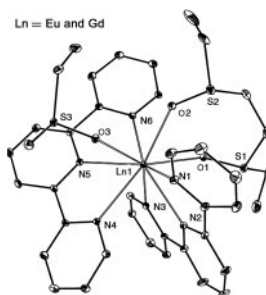


The synthesis and X-ray crystal structures of five complexes of two multidentate ligands are described. The ligands are shown to adopt a variety of coordination modes as a consequence of the flexibility imparted by the nature of the connecting groups present in their arms.

Dinuclear Eu(III), Gd(III), and Tb(III) Complexes of *meso*-1,2-Bis(ethylsulfinyl)ethane with 2,2':6',2''-Terpyridine as Co-ligand

Jian-Rong Li, Ruo-Hua Zhang,
Xian-He Bu

Aust. J. Chem. **2006**, 59, 315–319.

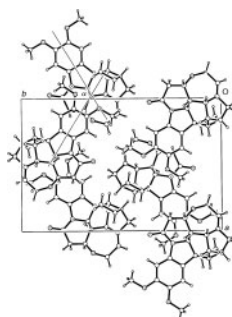


The synthesis and crystal structures of dinuclear title complexes are reported. Three complexes exhibit two types of compositions and structures, attributed to the influence of the lanthanide contraction. In addition, the disulfoxide ligands in such complexes take two kinds of coordination modes, bridging and chelating, indicative of its flexibility in the formation of such complexes.

Molecular Recognition in Proton-Transfer Compounds of Brucine with Achiral Substituted Salicylic Acid Analogues

Graham Smith, Urs D. Wermuth,
Peter C. Healy, Jonathan M. White

Aust. J. Chem. **2006**, 59, 320–328.

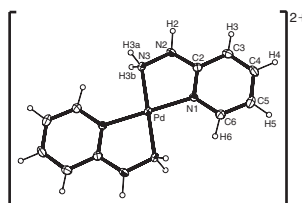


The selectivity of brucine for *meta*-substituted benzoic acids is revealed, in which X-ray crystallography shows three-dimensional hydrogen-bonded framework host structures. The two methoxy groups of brucine, which shares an otherwise identical structure to stychnine, lend it a remarkably improved selectivity compared to strychnine.

Crystal Structure and Infrared Spectroscopy of Bis(2-hydrazinopyridine)palladium(II) Chloride and its Isotopomers

Piotr Drożdżewski, Marta Musiała,
Maria Kubiak

Aust. J. Chem. **2006**, 59, 329–335.

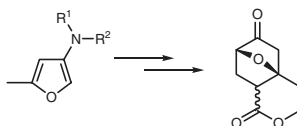


In addition to the crystal structure determination of the title compound, isotope labelling experiments ($^1\text{H}/^2\text{H}$, $^{104}\text{Pd}/^{110}\text{Pd}$) supported by DFT-level calculations were employed to establish bands in the IR spectrum related to metal–ligand vibrations. Rearrangement of the ligand upon chelation cause such large displacements of far-IR bands shows that these additional tools are vital for distinguishing which bands are new and which are shifted.

Diels–Alder Reactions of 3-Furylamines in Organic and Aqueous Solvents

Anthony R. Lingham, Helmut M. Hügel,
Trevor J. Rook

Aust. J. Chem. **2006**, 59, 336–339.

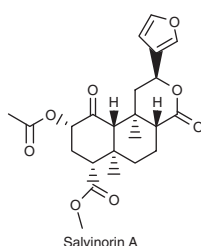


5-Methyl-3-aminofurans of varying size have been shown to undergo facile Diels–Alder reaction in aqueous media. Cycloadduct intermediates were hydrolyzed in situ to afford 7-oxabicyclo[2.2.1]heptanones in high yields.

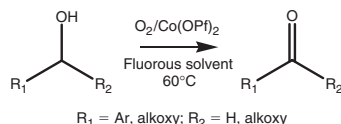
Studies Towards the Synthesis of Salvinorin A

Anthony R. Lingham, Helmut M. Hügel,
Trevor J. Rook

Aust. J. Chem. **2006**, 59, 340–348.



Salvinorin A, a psychoactive neoclerodane diterpinoid from the Mexican sage *S. divinorum*, has gained interest as a selective κ -opioid receptor agonist. A Diels–Alder approach towards enantioselective synthesis of the ketone ring has been devised, along with a model route to the 3-furyllactone fragment.

Cobalt(II) Perfluorooctane Sulfonate Catalyzed Highly Efficient Aerobic Oxidation of Alcohols in Fluorous Biphasic Systems*Wen-Bin Yi, Chun Cai**Aust. J. Chem.* **2006**, 59, 349–353.

Cobalt(II) perfluorooctane sulfonate acts as a homogeneous pre-catalyst for the oxidation of various alcohols to carbonyl compounds. The reaction takes place under an atmospheric pressure of oxygen in fluorous biphasic systems. The fluorous phase is recoverable by phase separation and can be used repeatedly. Such systems may reduce the use of toxic heavy metals for the oxidation process.

Focus**Cucurbit[*n*]uril: A New Molecule in Host–Guest Chemistry***Nial J. Wheate**Aust. J. Chem.* **2006**, 59, 354.

Since the discovery of cucurbit[6]uril, cucurbit[*n*]urils of different sizes, substituted cucurbit[*n*]urils, and even inverted cucurbit[*n*]urils have been synthesized. Applications of the cucurbit[*n*]uril family include gas or pollutant extraction, drug delivery, and nanomachine components.
