



The cover depicts a silica-carbohydrate structure, as reported by Bond and McAuliffe (p. 7).

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Editorial

Hot Topics, Special Issues

Alison J. Green

Aust. J. Chem. **2003**, *56*, 1–2.



A guide to the exciting developments planned for the *Journal* in 2003 and a review of the successes of 2002.

Notice to Authors 2003

Page 3–6.

Current Chemistry

Silicon Biotechnology: New Opportunities for Carbohydrate Science

Risha Bond, Joseph C. McAuliffe

Aust. J. Chem. **2003**, *56*, 7–11.



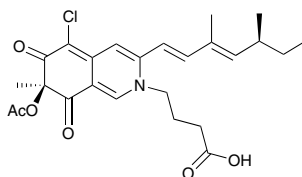
Sweet silanes or silylated sugars? Hybrid materials prepared from silicon and carbohydrates are arguably both! Silicon biotechnology aims to combine silicon chemistry with the life sciences, including the synthesis of hybrid polymers, nanocomposites, and new tools for synthesis. Nature, as is often the case, leads the way, as illustrated here by the delicate biosilica skeleton of a marine sponge.

Rapid Communications

Isochromophilone IX, a Novel GABA-Containing Metabolite Isolated from a Cultured Fungus, *Penicillium* sp.

*Adam P. Michael, Emily J. Grace,
Mike Kotiw, Russell A. Barrow*

Aust. J. Chem. **2003**, *56*, 13–15.

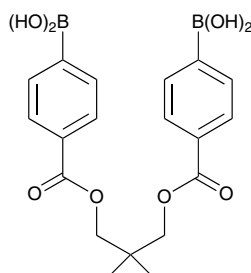


A new isochromophilone incorporating γ -amino butyric acid (GABA), isochromophilone IX (shown) has been isolated and identified as an antibiotic from the cultured mycelia of a fungus, *Penicillium* sp. The structure was assigned on the basis of detailed analysis of the spectroscopic data and constitutes only the fourth naturally occurring member of this structure class to be isolated.

Selective Fructose Transport Mediated by Di-Boronic Acids Derived from Neopentyl Glycol

Peter J. Duggan, Melanie L. Szydzik

Aust. J. Chem. **2003**, *56*, 17–21.



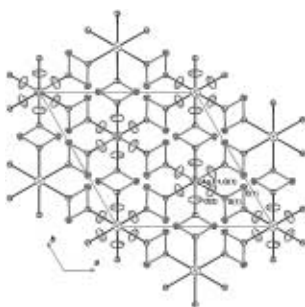
The abilities of di-boronic acids derived from neopentyl glycol to transport monosaccharides through a lipophilic membrane have been examined. A di-boronic acid linked to the neopentyl glycol core through carboxylate esters (shown) gave a fructose:glucose transport selectivity of 9.9:1.0, whereas a benzyl ether linked di-boronic acid gave a selectivity of 4.1:1.0.

Short Communications

Synthesis and Structural Characterization of Some Adducts of 1,4-Dithian and -Oxathian with Silver(I) Nitrate and Perchlorate

Effendy, Sidik bin Silong,
Brian W. Skelton, Allan H. White

Aust. J. Chem. **2003**, 56, 23–26.

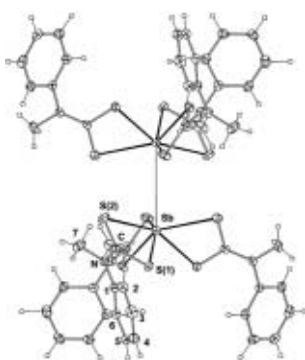


The crystallographic structures of 1,4-oxathian ($\text{O}(\text{CH}_2\text{CH}_2)_2\text{S}$) and its 1 : 1 silver(I) nitrate adduct were redetermined. The 1 : 1 and 1.5 : 1 adducts of 1,4-dithian ($\text{S}(\text{CH}_2\text{CH}_2)_2\text{S}$) with silver(I) nitrate and perchlorate, respectively, were also determined. The nitrate complexes formed two-dimensional polymers while the perchlorate formed a three-dimensional polymer (see Figure). The Ag coordination environments were unique in each complex formed.

Lone Pairs in Confrontation in $[\text{M}(\text{S.CS.XR}_m)_3]$ Systems. Crystal and Molecular Structure of Tris(*N*-methyl-*N*-phenyldithiocarbamate) antimony(III)

Ibrahim bin Baba, Brian W. Skelton,
Allan H. White

Aust. J. Chem. **2003**, 56, 27–29.

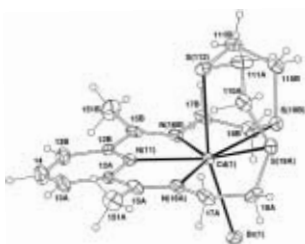


Tris(dithiochelatate) complexes of group 15 metals may crystallize with the metal atom disposed on a $\bar{3}$ -axis confronting its inversion image (the title compound, shown, being the first such dithiocarbamate thus defined). The confrontation of the associated ‘lone pairs’ leads to interesting speculation as to the packing forces in play. Structural features, e.g., $\text{M}\cdots\text{M}$ distances, are examined for the available examples.

A Novel Seven-Coordinate Adduct of Cadmium(II) in an N_3S_3 Macrocyclic Environment

A. R. Ismail, Sidik bin Silong,
Brian W. Skelton, Allan H. White

Aust. J. Chem. **2003**, 56, 31–33.

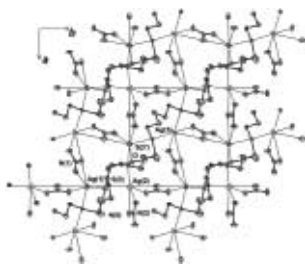


The structural characterization of the 1 : 1 adduct of the 2,16-dimethyl-6,9,12-trithia-2,15,21-triazabicyclo-[15.3.1]-henicosa-1(21),2,15,17,19-pentaene (L) with cadmium(II) bromide, the first recorded for an adduct of L with a divalent group 12 metal, is reported. The asymmetric unit of this structure carries two ligands in examples of the novel seven-coordinate $[\text{BrCdL}]^+$ species, which again show different conformational isomers, but now within the same crystal.

A Two-Dimensional Cationic Polymeric Complex of Silver(I) Nitrate with a Protonated Macrocyclic Precursor with SOS Donor Atoms

Sidik bin Silong, Effendy, John D. Kildea,
Brian W. Skelton, Uncharee Tooptakong,
Allan H. White

Aust. J. Chem. **2003**, 56, 35–37.



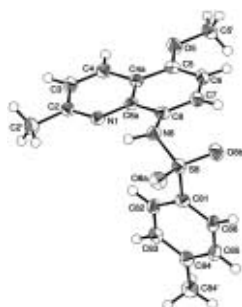
An adduct of silver(I) nitrate with a protonated macrocycle precursor ($\text{O}((\text{CH}_2)_2\text{S}(\text{CH}_2)_2\text{NH}_3^+)_2$) (as its bisnitrate) forms an interesting two-dimensional polymer in the *ab* plane of a tetragonal P4_12_12 cell, comprising three independent Ag atoms, two on two-fold axes, cross-linked by strings of, unusually, dipositively charged, oligodentate SOS ligands and two of the four independent NO_3^- groups, the other nitrates comprising interleaving layers of ‘free’ anions.

Full Papers

A Preparative and Preliminary Spectroscopic Study of Analogues of a Zinquin-Related Fluorophore

Marc C. Kimber, Jason P. Geue,
Stephen F. Lincoln, A. David Ward,
Edward R. T. Tiekink

Aust. J. Chem. **2003**, 56, 39–44.

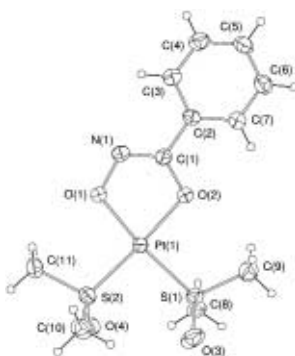


Detection of available zinc within a biological system is difficult to establish, but recently alkoxy quinolines such as Zinquin ester (structure shown) have been developed as $\text{Zn}(\text{II})$ -specific fluorophores. This report describes the synthesis of a number of Zinquin methoxy analogues, which have been found to possess enhanced fluorescent properties upon complexation with $\text{Zn}(\text{II})$.

Insights into Pt(II)–Hydroxamate Bonding Through the Crystal Structures of DMSO Complexes

Timothy W. Failes, Trevor W. Hambley

Aust. J. Chem. **2003**, 56, 45–48.

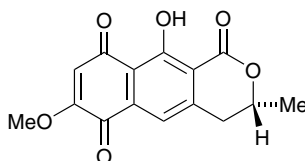


It has been shown that hydroxamates do not generally bind to Pt(II) by an (*O,O*)-coordination mode but will preferentially bind to other chelating moieties in the ligand. In this report the authors describe Pt(II)–hydroxamate complexes in which the benzo- (shown) or salicylhydroxamate ligand binds in an (*O,O*) fashion if stabilized by the presence of soft ligands *trans* to the hydroxamate.

Pigments of Fungi. Part 70. Total Synthesis of (*R*)-Semixanthomegnin and the X-Ray Crystal Structure of (±)-7-Chloro-10-methoxy-3-methyl-3,4-dihydro-1*H*-naphtho[2,3-*c*]pyran-1,6,9-trione

Ann S. Cotterill, Christopher D. Donner, Melvyn Gill, Jonathan M. White

Aust. J. Chem. **2003**, 56, 49–57.

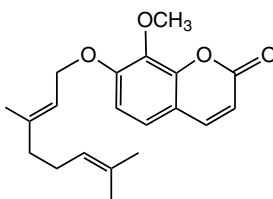


Xanthomegnin, a phenolically coupled dimer of the illustrated naphthoquinone (*R*)-semixanthomegnin, shows antibiotic and antifungal activity and was first isolated in 1963 from the mould *Trichophyton megnini*. Described here is the first total synthesis of (*R*)-semixanthomegnin in monochiral form, which also constitutes the first formal total synthesis (3*R*,3'*R*)-xanthomegnin.

Synthesis of Collinin, an Antiviral Coumarin

Massimo Curini, Francesco Epifano, Federica Maltese, Maria Carla Marcotullio, Sylvia Prieto Gonzales, Juan Carlos Rodriguez

Aust. J. Chem. **2003**, 56, 59–60.

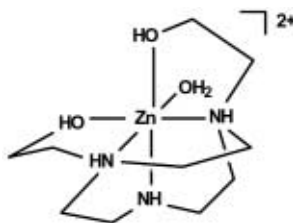


Collinin (shown), a geranyloxycoumarin isolated from *Flindersia maculata*, *Haplophyllum alberti-regelli*, and *Zanthoxylum schinifolium* has been shown to possess antiviral activity, but a full biological profile is lacking. The authors report an efficient synthesis of collinin that provides an alternative and valuable route to collinin and its analogues, and which will facilitate structure–activity relationship studies.

Complexation of Zinc(II) and Cadmium(II) by Hydroxyethyl- and Bis(hydroxyethyl)-1,4,7-triazacyclononane in Water

Steffen P. Creaser, Simon M. Pyke, Stephen F. Lincoln

Aust. J. Chem. **2003**, 56, 61–64.



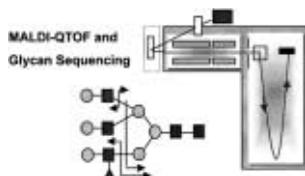
Complexation of Zn^{2+} by hydroxyethyl- and bis(hydroxyethyl)-1,4,7-triazacyclononane (see Figure) in aqueous solution is characterized by equilibrium constants of $\log K = 10.45$ and 11.32 and deprotonation and $\text{p}K_a$ values of 8.87 and 8.50 for coordinated water, respectively. For the analogous Cd^{2+} complexes $\log K = 8.74$ and 9.79 , respectively, and no deprotonation of coordinated water is detected.

Focus

Application of MALDI-QTOF in Proteomics and Glycomics

Hung-Hsiang Huang

Aust. J. Chem. **2003**, 56, 65.



The development of new, powerful mass spectrometric techniques, specifically matrix-assisted laser desorption/ionization–quadrupole time-of-flight machines, have opened the possibility of reliable and automated data acquisition for peptide mass fingerprinting and sequencing. Such new methods are a timely advance for the revolutionary advances emerging from glycobiology.

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