



The cover features a selection of hosts capable of encapsulating gases, as reviewed by Rudkevich and Leontiev (p. 713).

AUSTRALIAN JOURNAL OF CHEMISTRY

AN INTERNATIONAL JOURNAL FOR CHEMICAL SCIENCE

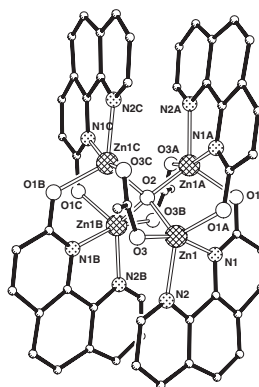
www.publish.csiro.au/journals/ajc

Reviews

Recent Advances in Luminescent Monomeric, Multinuclear, and Polymeric Zn(II) and Cd(II) Coordination Complexes

Shao-Liang Zheng, Xiao-Ming Chen

Aust. J. Chem. **2004**, 57, 703–712.

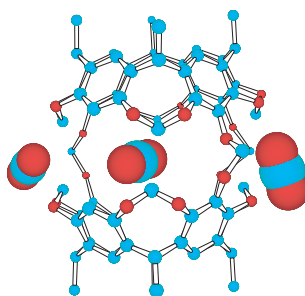


The luminescent Zn(II) and Cd(II) (d^{10} metal) coordination complexes are of interest for potential applications. Luminescence is a subtle mechanism, dependent on the nature of the metal centres, ligands, and the rigid metal-oxy (or -hydroxy) clusters. This review summarizes recent progress in understanding the factors governing these mechanisms and the important lowest-lying emissive state of Zn(II)/Cd(II) coordination complexes.

Molecular Encapsulation of Gases

Dmitry M. Rudkevich,
Alexander V. Leontiev

Aust. J. Chem. **2004**, 57, 713–722.



The supramolecular chemistry of gases is emerging, with interesting applications in gas sensing and separation, as storage devices for fuel cells, and even in synthetic methods and anaesthetics. The principles and techniques of molecular encapsulation are reviewed here, for environmentally, biologically, and industrially important gases in both natural (clathrates, cyclodextrins) or synthetic (cryptophanes, carcerands, calixarenes) cavities.

Full Papers

The Synthesis of Carbohydrate α -Amino Acids Utilizing the Corey–Link Reaction

Adrian Scaffidi, Brian W. Skelton,
Robert V. Stick, Allan H. White

Aust. J. Chem. **2004**, 57, 723–732.

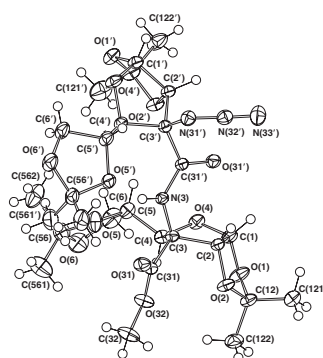
By employing a novel method for the synthesis of α -amino acids, the authors prepared and fully characterized (including X-ray structures) a series of carbohydrate α -amino acids. The synthesis involves the reaction of a trichloromethyl alcohol with sodium azide in aqueous base (pictured), followed by reduction, to obtain the amino acid.



The Synthesis of Some Oligopeptides Derived from Novel Carbohydrate α -Amino Acids

Adrian Scaffidi, Brian W. Skelton,
Robert V. Stick, Allan H. White

Aust. J. Chem. **2004**, 57, 733–740.

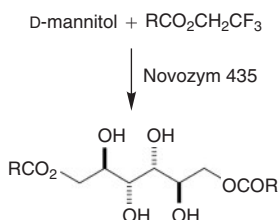


The formation of di-, tri-, tetra-, penta-, and hexa-peptides by the coupling of a carbohydrate α -azido acid with a carbohydrate α -amino ester proved successful in the presence of 4-toluenesulfonyl chloride in pyridine. The peptides were fully characterized with a crystal structure even determined for one of the dipeptides.

Lipase-Catalyzed 1,6-Acylation of D-Mannitol

Peter J. Duggan, David G. Humphrey,
Victoria McCarl

Aust. J. Chem. **2004**, 57, 741–745.



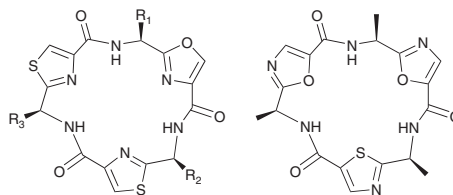
The selective acylation of D-mannitol by transesterification from 2,2,2-trifluoroethyl esters, catalyzed by lipases, has been examined. In most cases, the lipase method gave better yields and cleaner products than reactions that used either a standard acid chloride/pyridine or boronate-assisted approach.

Solution-Phase Synthesis of Linear and Cyclic Peptidomimetics Based on 2-Aminoalkyloxazole-4- or -5-carboxylates

Matthew O. Cox, Rolf H. Prager,
Carina E. Svensson

Aust. J. Chem. **2004**, 57, 747–758.

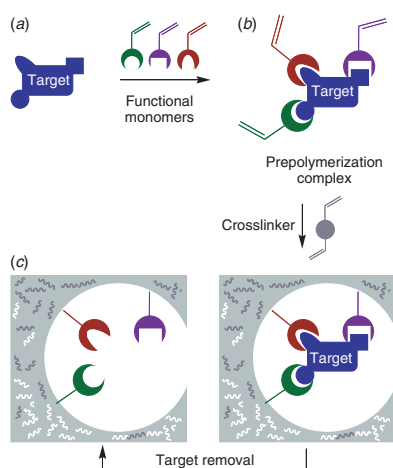
For many marine invertebrates, heterocycle-containing cyclic peptides employed a form of chemical defence. Their hydrophobic exocyclic surface protects the amide bonds from peptidases and also facilitates crossing cell membranes. This work sought to prepare a range of structures based upon 2-aminoalkyloxazole carboxylic acids and selectively orient the heteroatoms towards the centre of the macrocycle, as shown. Cyclization to form cyclic tri-oxazoles was successful, but not of tetra-oxazoles.



Synthesis and Evaluation of a Molecularly Imprinted Polymer Selective to 2,4,6-Trichlorophenol

Lachlan Schwarz, Clovia I. Holdsworth,
Adam McCluskey, Michael C. Bowyer

Aust. J. Chem. **2004**, 57, 759–764.

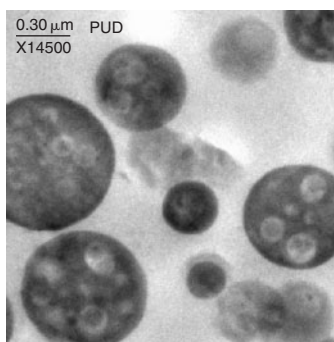


Using the non-covalent method shown in the graphic, polymers could be molecularly imprinted with 2,4,6-trichlorophenol (2,4,6-TCP). The imprinted polymers are highly selective towards the phenolic contaminant in dichloromethane (imprinting factor *I* 13.2). Competitive binding studies for a range of close structural analogues to 2,4,6-TCP with these molecularly imprinted polymers are reported, and the factors determining selectivity for 2,4,6-TCP are discussed.

Synthesis and Structure–Property Relations of Latexes Containing Graft Copolymers between Telechelic Polybutadiene and Dodecyl Methacrylate

Binh T. T. Pham, Robert G. Gilbert,
Christopher M. Fellows

Aust. J. Chem. **2004**, 57, 765–777.

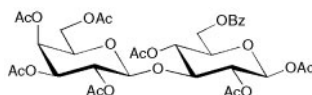


Seeded emulsion polymerization, a highly controllable and reproducible method, was used in the preparation of the title methacrylate-coated, polybutadiene/polyurethane core latexes. The intimate yet discrete mixing of the components is shown in the TEM image. This material is of interest for speciality adhesives; a suite of measurements, from imaging to mechanical analysis, revealed a critical polymer ratio for emergent adhesive properties.

Modifying the Regioselectivity of Glycosynthase Reactions Through Changes in the Acceptor

Robert V. Stick, Keith A. Stubbs,
Andrew G. Watts

Aust. J. Chem. **2004**, 57, 779–786.

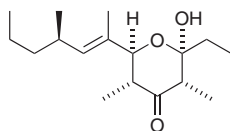


To date, glycosynthases have been used to construct β -1,3-, β -1,4-, β -1,6-, and α -1,4-glycosidic linkages. Here, the authors report the formation of unconventional products, such as that depicted, upon glycosylation of a number of D-glucopyranose derivatives, as well as 4-O-benzyl-D-xylopyranose.

Total Synthesis of a Hemiacetal Polypropionate from *Siphonaria australis*

Troy Lister, Michael V. Perkins

Aust. J. Chem. **2004**, 57, 787–797.

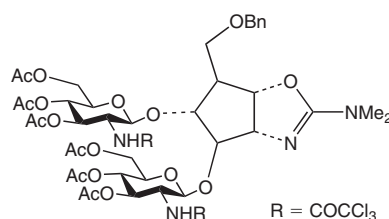


The asymmetric total synthesis of the depicted polypropionate-based natural product allowed the authors to confirm the absolute and relative stereochemistry previously proposed. Key features of the synthesis of this compound, which was isolated from the marine pulmonate *Siphonaria australis*, included a Mukaiyama aldol condensation and a thermodynamically controlled cyclization of the acyclic penultimate precursor.

Unusual Glycosylation of 9-*O*-Benzylallosamizoline

Regine Blattner, Richard H. Furneaux, Graeme J. Gainsford, Herbert Wong

Aust. J. Chem. **2004**, 57, 799–802.



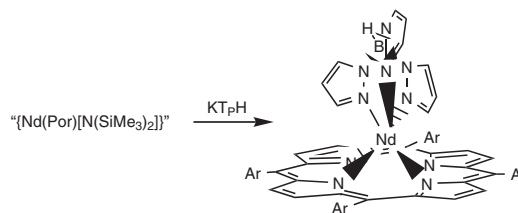
The intended selective glycosylation of the 9-*O*-benzyl ether of allosamizoline with a slight molar excess of 3,4,6-tri-*O*-acetyl-2-deoxy-2-trichloroacetamido- β -D-glucopyranosyl trichloroacetimidate unexpectedly and predominantly gave the di-*O*-glycosylated product illustrated.

Synthesis, Characterization, and Near-Infrared Photoluminescence of Novel Neodymium(III) Complexes

Hongshan He, Wai-Kwok Wong, Jianping Guo, King-Fai Li, Wai-Yeung Wong, Wing-Kit Lo, Kok-Wai Cheah

Aust. J. Chem. **2004**, 57, 803–810.

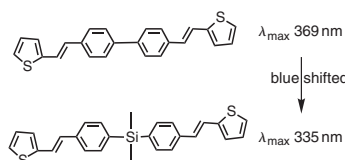
Direct interaction of potassium hydridotris(pyrazol-1-yl)borate with $\{\text{Nd}(\text{Por})[\text{N}(\text{SiMe}_3)_2]\}$, generated in situ, gave novel seven-coordinate, stable monoporphyrate neodymium(III) complexes, which emitted efficiently in the near-infrared region upon excitation by visible light. Luminescence spectroscopy for these complexes indicates efficient energy transfer from the porphyrin ligand to the metal ion.



Organosilicon Compounds with Blue Photoluminescence Properties

Guorong Zheng, Wei Li, Zixing Wang, Ping Lu

Aust. J. Chem. **2004**, 57, 811–814.



The insertion of silica into a series of π -conjugated diphenyl-based compounds, and their corresponding photoluminescent properties, are reported. The silica-containing compounds were soluble in organic solvents and their λ_{max} were blue-shifted an average of 35 nm compared to those of the diphenyl-based compounds, indicating a potential use in OLEDs.

Focus

Cyclodextrins and Stilbenes as Components of Supramolecular Structures

Marta Maria Cieslinski

Aust. J. Chem. **2004**, 57, 815.

Cyclodextrin-based supramolecules have assumed importance since such assemblies may be either prototypes for, or components of, molecular devices with potential uses in nanotechnology. This article summarizes the synthesis of rotaxanes from cyclodextrins and stilbenes (pictured), and the potential applications of such structures for use in supramolecular assemblies.



Book Reviews

Paul Smith

p. 817

Helen Hansma

p. 818

Author Index

- Blattner, R. 799
 Bowyer, M. C. 759
 Cheah, K.-W. 803
 Chen, X.-M. 703
 Cieslinski, M. M. 815
 Cox, M. O. 747
 Duggan, P. J. 741
 Fellows, C. M. 765
 Furneaux, R. H. 799
 Gainsford, G. J. 799
 Gilbert, R. G. 765
 Guo, J. 803
 Hansma, H. 818
 He, H. 803
 Holdsworth, C. I. 759
 Humphrey, D. G. 741
 Leontiev, A. V. 713
 Li, K.-F. 803
 Li, W. 811
 Lister, T. 787
 Lo, W.-K. 803
 Lu, P. 811
 McCarl, V. 741
 McCluskey, A. 759
 Perkins, M. V. 787
 Pham, B. T. T. 765
 Prager, R. H. 747
 Rudkevich, D. M. 713
 Scaffidi, A. 723, 733
 Schwarz, L. 759
 Skelton, B. W. 723, 733
 Smith, P. 817
 Stick, R. V. 723, 733, 779
 Stubbs, K. A. 779
 Svensson, C. E. 747
 Wang, Z. 811
 Watts, A. G. 779
 White, A. H. 723, 733
 Wong, H. 799
 Wong, W.-K. 803
 Wong, W.-Y. 803
 Zheng, G. 811
 Zheng, S.-L. 703