



The cover shows the catalytic cycle of ring-closing metathesis and some of its catalysts; learn more in the Review by Aitken and Abell (p. 3).

# AUSTRALIAN JOURNAL OF CHEMISTRY

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## Editorial

### Increasing our Impact

Alison J. Green

*Aust. J. Chem.* **2005**, 58, 1–2.

# 1.434

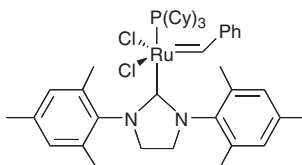
Developments at *Australian Journal of Chemistry*—an *International Journal for Chemical Science* cooked up over the past few years have come to the boil in 2004 and we look forward to serving you a banquet in 2005. We invite you to dine on our increased impact factor and feast on our enhanced electronic features.

## Review

### Olefin Metathesis: Catalyst Development, Microwave Catalysis, and Domino Applications

Steven G. Aitken, Andrew D. Abell

*Aust. J. Chem.* **2005**, 58, 3–13.



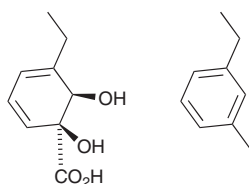
Olefin metathesis is reviewed, with reference to the historical development of functional catalysts (such as the one shown) and improved reaction conditions. These developments can be applied to 'atom economic' and 'green' approaches to complex and difficult to prepare synthetic targets.

## Rapid Communications

### Whole-Cell Biotransformation of *m*-Ethyltoluene into 1*S*,6*R*-5-Ethyl-1,6-dihydroxycyclohexa-2,4-diene-1-carboxylic Acid as an Approach to the C-Ring of the Binary Indole–Indoline Alkaloid Vinblastine

Martin G. Banwell, Alison J. Edwards, David W. Lupton, Gregg Whited

*Aust. J. Chem.* **2005**, 58, 14–17.

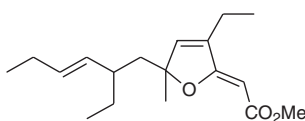


The microorganism *Pseudomonas putida* BGXM1 biotransforms *m*-ethyltoluene (right structure) in the metabolite shown (left), the absolute stereochemistry of which has been established through single-crystal X-ray analysis of a derivative incorporating a heavy atom.

### Spongisoritin A: A New Polyketide from a Fijian Marine Sponge, *Spongisorites* sp.

Robert J. Capon, Sachin Singh, Sadaquat Ali, Subramaniam Sotheeswaran

*Aust. J. Chem.* **2005**, 58, 18–20.

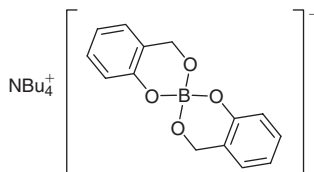


Spongisoritin A (shown), isolated from the title sponge species, is a rare  $\alpha,\beta$ -unsaturated  $\gamma$ -lactone. This differs markedly from the bis-indole alkaloids more typically associated with the genus *Spongisorites*.

### Enhanced Anti-Fungal Activity of the Organo-Soluble Borate Ester, Tetra-*n*-butylammonium Bis(*ortho*-hydroxymethylphenolato)borate

Jenny M. Carr, Peter J. Duggan,  
David G. Humphrey, Edward M. Tyndall

*Aust. J. Chem.* **2005**, 58, 21–25.

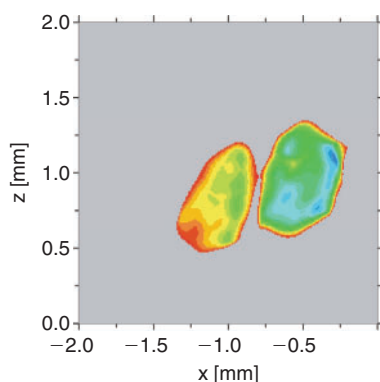


The anti-fungal activity of the title borate ester, prepared here for the first time, is substantially higher than that of Na[B(*o*-hmp)<sub>2</sub>] and the reactants used in its preparation—boric acid, the phenol (*o*-hmpH<sub>2</sub>), and simple NBU<sub>4</sub><sup>+</sup> salts (*o*-hmp = *ortho*-hydroxymethylphenolate).

### Functional and Highly Spatially Resolved ESR Imaging

Malte Drescher

*Aust. J. Chem.* **2005**, 58, 26–28.



ESR imaging is technically demanding but the number of applications is growing steadily, such as for functional imaging of biological objects or spatially resolved detection of reactions. Described here is a method to increase the resolution of ESR imaging to 10 μm by means of back-projection reconstruction. Shown is an ESR image of two crystals separated by a thin polymeric film.

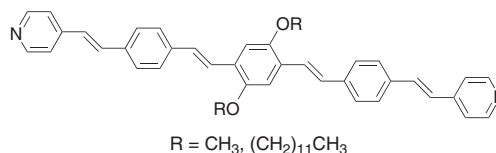
## Full Papers

### Synthesis, Characterization, and Non-Linear Optical Properties of Two New Symmetrical Two-Photon Photopolymerization Initiators

Yunxing Yan, Xutang Tao, Guibao Xu,  
Huaping Zhao, Yuanhong Sun,  
Chuankui Wang, Jiaxiang Yang,  
Xiaoqiang Yu, Xian Zhao, Minhua Jiang

*Aust. J. Chem.* **2005**, 58, 29–33.

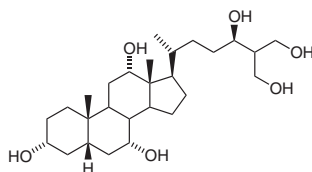
Two new symmetrical two-photon photopolymerization initiators (pictured) were synthesized from triphosphonium chloride by a Wittig and Pd(II)-catalyzed Heck coupling methodology. One- and two-photon fluorescence were investigated. Two-photon polymerization microfabrication experiments were carried out using the initiators and a possible photopolymerization mechanism is discussed.



### A Scalable Stereoselective Synthesis of Scymnol

Raju Adhikari, Darren J. Cundy,  
Craig L. Francis, Mariana Gebara-Coghlan,  
Beata Krywult, Carolyn Lubin,  
Gregory W. Simpson, Qi Yan

*Aust. J. Chem.* **2005**, 58, 34–38.



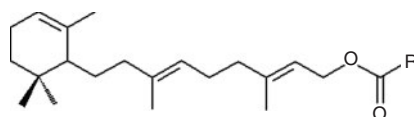
Scymnol (shown), a derivative of which was isolated from the gall bladder of the shark *Scymnus borealis*, has been found to be biologically active against various skin conditions and liver dysfunction. Described here is a stereoselective and high-yielding synthesis of scymnol from cholic acid that is amenable to large-scale processing.

### Secondary Metabolites from the Marine Alga *Caulerpa brownii* (Chlorophyta)

Jackie T. Handley, Adrian J. Blackman

*Aust. J. Chem.* **2005**, 58, 39–46.

*Caulerpa* species, found worldwide, yield terpenoid metabolites with aldehyde or enol acetate functional groups and these compounds have been shown to exhibit significant biological (cytotoxic, ichthyotoxic, antimicrobial) properties. Reported here is the isolation and structural elucidation of a number of secondary metabolites from *C. brownii*, such as the terpenoid ester shown.

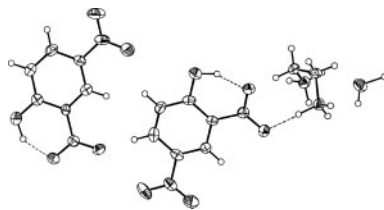


R = C<sub>19</sub>H<sub>31</sub>, C<sub>19</sub>H<sub>29</sub>,  
C<sub>17</sub>H<sub>33</sub>, C<sub>17</sub>H<sub>31</sub>,  
C<sub>17</sub>H<sub>29</sub>, C<sub>15</sub>H<sub>25</sub>

### 5-Nitrosalicylic Acid and its Proton-Transfer Compounds with Aliphatic Lewis Bases

Graham Smith, Andy W. Hartono,  
Urs D. Wermuth, Peter C. Healy,  
Jonathan M. White, A. David Rae

*Aust. J. Chem.* **2005**, 58, 47–52.



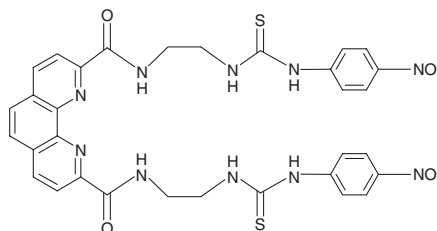
This paper details the synthesis and X-ray characterization of the proton-transfer complexes of 5-nitrosalicylic acid (5-nsa) and Lewis bases including ethylenediamine (shown). A comparison between these structures and the analogous 3,5-dinitrosalicylic acid complexes sheds light on the poor crystallizing properties of 5-nsa complexes.

### A New Two-Armed Colorimetric Chemosensor for Fluoride

Jin-Long Wu, Yong-Bing He, Lan-Hua Wei,  
Ling-Zhi Meng, Ting-Xian Yang, Xin Liu

*Aust. J. Chem.* **2005**, 58, 53–57.

The receptor shown, which consists of *p*-nitrophenylthiourea chromophores and a rigid phenanthroline subunit, is selective for fluoride ions. A detectable colorimetric change from yellow to blood red is observed upon the addition of F<sup>−</sup>. The method of binding and stoichiometry of the complex is examined by <sup>1</sup>H NMR and UV-vis spectroscopy.

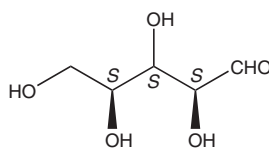


## Short Communications

### L-Ribose: an Easily Prepared Rare Sugar

Stephen J. Angyal

*Aust. J. Chem.* **2005**, 58, 58–59.

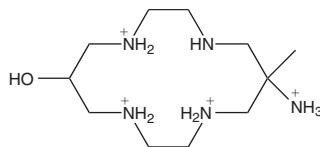


Of late, L-ribose has been used in the synthesis of a number of biologically important compounds. Unfortunately, recently published synthetic procedures of L-ribose, which is not a natural sugar, involve multiple reactions that require expensive reagents. Reported here is the optimization of a one-step procedure.

### Novel and Disparate Hydrogen-Bonding Associations in 13-Amino-6-hydroxy-13-methyl-1,4,8,11-tetraazacyclotetradecane Tetrahydrochloride Monohydrate

Jack M. Harrowfield, Yang Kim,  
Young Hoon Lee, Gareth L. Nealon,  
Brian W. Skelton, Allan H. White

*Aust. J. Chem.* **2005**, 58, 60–62.



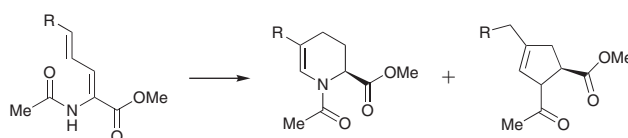
13-Amino-6-hydroxy-13-methyl-1,4,8,11-tetraazacyclotetradecane (shown), a pentamine, is found to crystallize as its tetrahydrochloride in the monoclinic space group *Pn* with two independent molecules (which differ in their interesting hydrogen-bonding interactions) in the asymmetric unit. The presence of both *cis* and *trans* isomers in the lattice was also observed.

### Cyclic $\alpha$ -Amino Acids via Enantioselective Metal-Catalyzed Cascade Reactions of Dienamides in Supercritical Carbon Dioxide

Euneace Teoh, W. Roy Jackson,  
Andrea J. Robinson

*Aust. J. Chem.* **2005**, 58, 63–65.

Preparation of cyclic amino acids with excellent enantioselectivity (>98% *e.e.*) has been achieved by a tandem asymmetric hydrogenation–hydroformylation–cyclization–dehydration sequence. This reaction occurs in a single pot, with a Rh–phosphine catalyst and supercritical CO<sub>2</sub> as solvent.



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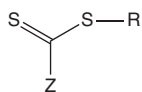
## Focus

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### Chain Transfer Agents for RAFT Polymerization: Molecules to Design Functionalized Polymers

*Pittaya Takolpuckdee*

*Aust. J. Chem.* **2005**, 58, 66.



A succinct overview of the development and use of reversible addition fragmentation chain transfer agents (an example is shown) is given. A particular focus is on their use to generate amphiphilic block copolymers or biodegradable block copolymers and for grafting polymers onto cotton.

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## Book Reviews

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*Michael H. Benn* p. 67

*Uta Wille* p. 68

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## Notice to Authors 2005

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