



Plant-derived smoke elicits germination processes in a number of plant species, and identification of the active components in smoke will benefit horticulture, agriculture, and land restoration. Learn more in the Communication by Ghisalberti and coworkers (p. 505).

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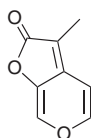
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## Rapid Communications

### Structural Analysis of a Potent Seed Germination Stimulant

Gavin R. Flematti, Emilio L. Ghisalberti,  
Kingsley W. Dixon, Robert D. Trengove,  
Brian W. Skelton, Allan H. White

*Aust. J. Chem.* **2005**, 58, 505–506.



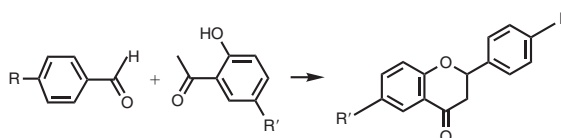
Exposure to plant-derived smoke stimulates seed germination for a number of plant species. The structure shown has been isolated and identified spectroscopically as a potent germination stimulant, and herein the structure is confirmed through crystallographic means.

### Direct Synthesis and Catalytic Reactivity of Highly Ordered Large-Pore Methylaminopropyl-Functionalized SBA-15 Materials

Xueguang Wang, Soofin Cheng

*Aust. J. Chem.* **2005**, 58, 507–510.

Mesoporous silica functionalized with amino groups is effective in base-catalyzed reactions. This paper outlines the first synthesis of methylaminopropyl-functionalized SBA-15 materials with a highly ordered mesostructure and high loadings of amine groups. These were used as a catalyst in the Claisen–Schmidt condensation (pictured) to produce flavanones in the absence of solvent.



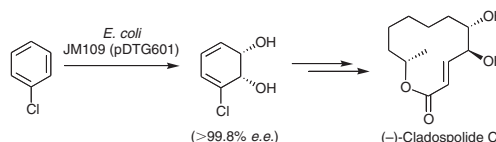
## Full Papers

### A Chemoenzymatic Total Synthesis of the Undecenolide (–)-Cladospolide C

Martin G. Banwell, David T. J. Loong,  
Anthony C. Willis

*Aust. J. Chem.* **2005**, 58, 511–516.

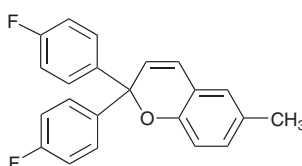
The illustrated macrolide has been prepared in 15 steps from the monochiral *cis*-1,2-dihydrocatechol. The latter compound is available through the whole-cell biotransformation of chlorobenzene using a genetically engineered strain of *E. coli* that over-expresses toluene dioxygenase. This study confirms that the structure of the natural product (+)-cladospolide has been correctly assigned.



### Synthesis and NMR Spectroscopic Characterization of Some Fluoro-2*H*-1-Benzopyran Derivatives

Yannick Téral, Gabriel Roubaud,  
Claude Aubert, Robert Faure,  
Mylène Campredon

*Aust. J. Chem.* **2005**, 58, 517–521.



Interest in photochromic molecules has grown as a result of their commercial use in the field of variable optical materials, and efforts are ongoing to synthesize new examples. In this paper, seven novel fluorobenzopyrans were synthesized (one shown) and characterized using NMR and UV/visible spectroscopy as well as mass spectrometry.

### Synthesis, Crystal Structures, and Reactions of 2-Oxomalonylbis(arylimido) Chlorides and Hydroxymethane Tris(arylimido) Chlorides

Richard J. Bowen, Judy Caddy,  
Mabel E. Coyanis, Manuel A. Fernandes,  
Marcus Layh, Linda Z. Linganis,  
Winny K. Maboya, Bernard Omondi

*Aust. J. Chem.* **2005**, 58, 522–530.

Imadoyl chlorides are versatile compounds used, for example, in the synthesis of nitrogen-containing heterocycles and in palladium-mediated cross-coupling reactions. Here, the synthesis of 2-oxomalonylbis(arylimido) chlorides from arylformamides and an excess of phosgene is reported. Their subsequent conversion into hydroxymethane tris(arylimido)chlorides and tris(arylformamide)s is described and full characterization, including some crystal structures, is given.

### The Through-Bond Interaction of a Sulfur Lone Pair with Oxygenated Substituents in the Thiacyclohexane Framework

Laura Andrau, Jonathan M. White

*Aust. J. Chem.* **2005**, 58, 531–534.

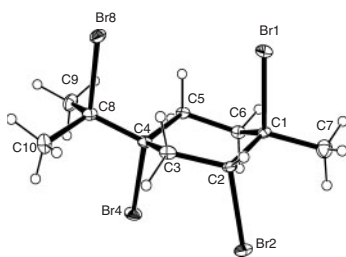


Donor–acceptor interactions, whether through space or bonds, can have a huge impact on both the ground state and reactivity properties of a molecule. As part of their interest in the way that such interactions manifest themselves in the cyclohexane framework, the authors investigated whether a through-bond interaction arises between the sulfur lone pair and the oxygenated substituent of a number of thiacyclohexanol derivatives.

### The 1,3-Diaxial Dibromo Interaction

Paul V. Bernhardt, Raymond M. Carman,  
Tri T. Le

*Aust. J. Chem.* **2005**, 58, 535–538.



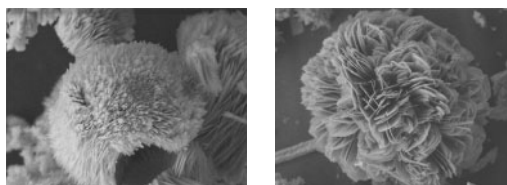
Considerable repulsion must occur between two non-bonded 1,3-diaxial bromine atoms on a cyclohexane ring as the distance between two bromine atoms in molecular bromine is 2.29 Å, while the interatomic distance between two non-bonded atoms on an undistorted cyclohexyl system is 1.78 Å. By examining the crystal structure of the compound depicted, the authors were able to ascertain the structural distortions that such substitution imposes.

### Surfactant-Assisted Controlled Synthesis of Antimony and Bismuth Three-Dimensional Superstructures in Different Hydrothermal Emulsion Systems

Meng Zhang, Zhenghua Wang,  
Dekun Ma, Rui Zhang, Yitai Qian

*Aust. J. Chem.* **2005**, 58, 539–543.

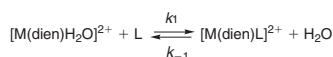
Antimony and bismuth three-dimensional (3D) superstructures are synthesized by a hydrothermal reaction process at low temperature. The controlled morphology of products can be readily achieved through selection of a suitable emulsion system (oil/water or water/oil) and surfactants. This convenient method may be extended to prepare 3D superstructures of other layered inorganic materials by choosing the appropriate reaction parameters.



### Kinetic and Mechanistic Study on the Reactions of [Pd(dien)H<sub>2</sub>O]<sup>2+</sup> and [Pt(dien)H<sub>2</sub>O]<sup>2+</sup> with L-Cysteine and S-Methyl-L-cysteine

Biljana V. Petrović, Živadin D. Bugarčić

*Aust. J. Chem.* **2005**, 58, 544–550.



The reactions of [M(dien)H<sub>2</sub>O]<sup>2+</sup> (M = Pd, Pt) with a ligand L (L = L-cysteine and S-methyl-L-cysteine) were studied at different temperatures and pH using stopped-flow and conventional UV-vis spectrophotometry. Reaction rate constants for forward and reverse complexing reactions, and activation parameters, are presented. An associative complex formation mechanism is discussed.

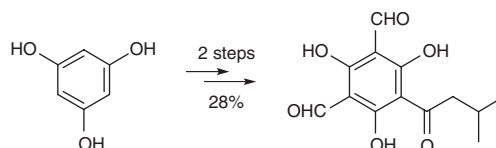
## Short Communications

### An Efficient Two-Step Synthesis of Jensenone Isolated from *Eucalyptus jensenii*. Synthesis of Analogues and Evaluation as Antioxidants

Sandip B. Bharate, Siddheshwar K. Chauthe,  
Kamlesh K. Bhutani, Inder P. Singh

*Aust. J. Chem.* **2005**, 58, 551–555.

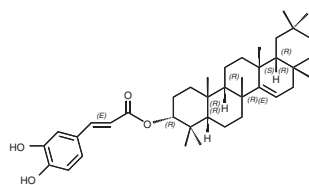
A phloroglucinol derivative, jensenone, has been synthesized for the first time by a short and efficient two-step procedure starting from phloroglucinol. The method provides a simplified route to introduce a diformyl moiety for synthesis of many biologically active formylated phloroglucinol compounds. Jensenone and several of its analogues were evaluated for antioxidant capacity.



### Triterpenoid Esters from *Bruguiera cylindrica*

Chatchanok Karalai, Surat Laphookhieo

*Aust. J. Chem.* **2005**, 58, 556–559.



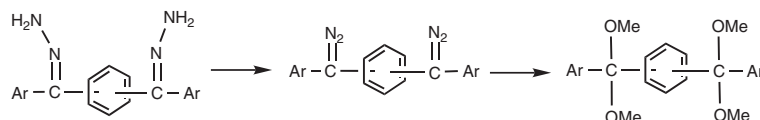
*Bruguiera cylindrica*, a medicinal plant of Thailand, has yielded three new pentacyclic triterpenoid esters (one of which is shown) and is a rich source of lupeol derivatives.

### Electrooxidative Conversion of Dibenzoylbenzene Dihydrazones into the Corresponding Bis-diazo Compounds and Bis-dimethyl Acetals

Mitsuhiro Okimoto, Kaori Numata,  
Kenta Tomozawa, Takamasa Shigemoto,  
Masayuki Hoshi, Yukio Takahashi

*Aust. J. Chem.* **2005**, 58, 560–563.

A simple electrochemical method for the oxidation of title compounds into the corresponding bis-diazo compounds or bis-dimethyl acetals is reported. This is an attractive alternative to reported methods that demand excessive amounts of chemical oxidant. This new method also requires very mild reaction conditions, provides good control over the product, and needs minimal post-reaction work-up.



## Focus

### ‘Perfect Match’—Combining Density Functional Calculations with Spectroscopic Characterization of Transition Metal Clusters

Magdalene A. Addicoat

*Aust. J. Chem.* **2005**, 58, 564.

Transition metal clusters are showing promise as new ‘super’ catalysts, yet their dense vibronic manifold hampers most ordinary characterization techniques. This paper outlines some of the recent advances in using density functional theory and various spectroscopic techniques to study these reactions and emphasizes the synergistic interplay between experiment and theory.