

# AUSTRALIAN JOURNAL OF CHEMISTRY

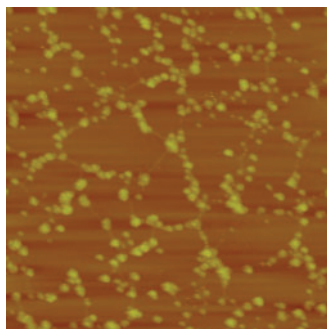
AN INTERNATIONAL JOURNAL FOR CHEMICAL SCIENCE

## Rapid Communication

### Gold Nanoparticle Aggregate Morphology with Controllable Interparticle Spacing Prepared by a Polyelectrolyte Network Template

Feng Zhao, Jing Kun Xun, Shu Feng Liu

*Aust. J. Chem.* **2008**, *61*, 1–4.



Metal nanoparticle self-assemblies have received much attention as potentially useful materials for surface-enhanced Raman scattering (SERS) substrates. Here, we provide a simple and efficient approach for the preparation of SERS substrates with the gold nanoaggregate films prepared by a polymer network template. By adjusting the gold aqueous concentrations, the spacing between nanoparticles can be controlled for tunable SERS substrates for optimal signal amplification.

## Full Papers

### Aminimides as Potential CNS Acting Agents. II Design, Synthesis, and Receptor Binding of 4'-Arylalkyl Aminimide Analogues of Clozapine as Prospective Novel Antipsychotics

Ben Capuano, Ian T. Crosby,  
Edward J. Lloyd, Juliette E. Neve,  
David A. Taylor

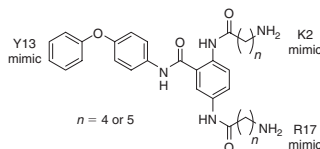
*Aust. J. Chem.* **2008**, *61*, 5–10.

This paper describes the synthesis of a second series of aminimide-containing analogues of the antipsychotic clozapine. Aminimides are reported to improve physicochemical drug-like properties in that they have both improved aqueous and lipid solubility. The derived analogues showed modest activity at receptors implicated in schizophrenia.

### Synthesis and $\text{Ca}_v2.2$ Binding Data for Non-Peptide Mimetics of $\omega$ -Conotoxin GVIA based on a 5-Amino-Anthranilamide Core

Peter J. Duggan, Jonathan M. Faber,  
Janease E. Graham, Richard J. Lewis,  
Natalie G. Lumsden, Kellie L. Tuck

*Aust. J. Chem.* **2008**, *61*, 11–15.



A simple and efficient method has been developed for the synthesis of two anthranilamide-based non-peptide mimetics of  $\omega$ -conotoxin GVIA. These anthranilamide derivatives aim to mimic the K2, R17, and Y13 residues of the peptide. The synthetic route described enables the rapid synthesis of anthranilamide analogues with identical alkyl chain lengths. The target compounds show affinity to rat N-type voltage gated calcium channels ( $\text{Ca}_v2.2$ ) with  $\text{EC}_{50}$  values of 42 and 75  $\mu\text{M}$ .

### A Hückel-Level Kinetic-Stability-Based Approach to Aromaticity: Cyclic Even Alternant Hydrocarbons

Richard F. Langler

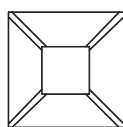
*Aust. J. Chem.* **2008**, *61*, 16–25.

Experimental organic chemists associate aromaticity of hydrocarbon structures with, amongst other things, unique stability. The present report introduces two new parameters ( $A_c$  and  $T$ ) that permit one to predict Hückel-level reactivities of the Lewis structures in question. The calculations are very simple and do not employ linear algebra.

### The Complex Roles of $4N$ and $4N + 2$ Rings in Determining Hückel-Level Kinetic Stabilities of Even Alternant Hydrocarbons

Richard F. Langer

*Aust. J. Chem.* **2008**, *61*, 26–35.



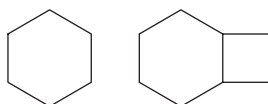
$$\begin{aligned} |a_{n-2}| &= 28 \\ |a_n| &= 9 \\ r_f &= 1.0000 \end{aligned}$$

Application of new parameters ( $A_c$ ,  $T$ ) permit one to anticipate that either  $4N$  or  $4N + 2$  fused rings may be kinetically stabilizing or kinetically destabilizing. An assortment of polycycles are examined and a new polycycle (aromaticene) is revealed that features only  $4N$  rings but, at the Hückel level, is at least as aromatic as benzene.

### Facilitating Kinetic Stability Estimates for Classical 2m Alternant Hydrocarbons

Richard F. Langer

*Aust. J. Chem.* **2008**, *61*, 36–48.



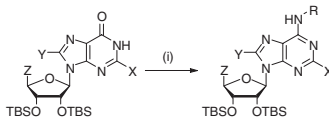
$$\begin{aligned} |a_{n-2}|_{\text{part}} &= (1)(9) + (4)(16) = 73 \\ |a_n|_{\text{part}} &= (4)(1) = 4 \end{aligned}$$

Substantially improved methodology for determining the pair of numbers which provide Hückel-level kinetic stability assessments of even alternant hydrocarbon  $\pi$ -systems is described. Convenient assessments of kinetic stability are essential for the development of chemical-reactivity-driven structural-engineering protocols.

### Microwave-Assisted Direct Amination: Rapid Access to Multi-Functionalized $N^6$ -Substituted Adenosines

Trent D. Ashton, Peter J. Scammells

*Aust. J. Chem.* **2008**, *61*, 49–58.

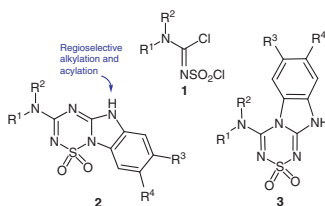


Biologically active adenosine analogues are of interest for their potential therapeutic applications. The use of a microwave-assisted amination reaction between an appropriately substituted inosine and an amine in the presence of PyBroP is proving the key step in the efficient preparation of highly functionalized  $N^6$ -substituted adenosines. The synthesis also boasts high yields and use of hindered amines.

### $N,N$ -Dialkyl- $N'$ -Chlorosulfonyl Chloroformamidines in Heterocyclic Synthesis. V The Preparation of some Benzimidazo-Fused [1,2,4,6] Thiatriazine Dioxides

Teresa Cablewski, Craig L. Francis, Andris J. Liepa

*Aust. J. Chem.* **2008**, *61*, 59–65.



$N,N$ -Dialkyl- $N'$ -chlorosulfonyl chloroformamidines **1** are versatile 1,3-dielectrophiles for the synthesis of new heterocycles. This paper reports the preparation of a series of new benzimidazo-fused [1,2,4,6]thiatriazine dioxides **2** (and **3**) via reaction of **1** with 2-aminobenzimidazoles. The regioselectivity of thiatriazine formation is discussed and some regioselective alkylation and acylation reactions of an example of **2** demonstrate the potential of these compounds as scaffolds for synthetic and medicinal chemistry.

### Preparation of Silver–Gold Alloy Nanoparticles at Higher Concentration Using Sodium Dodecyl Sulfate

Angshuman Pal, Sunil Shah, Surekha Devi

*Aust. J. Chem.* **2008**, *61*, 66–71.

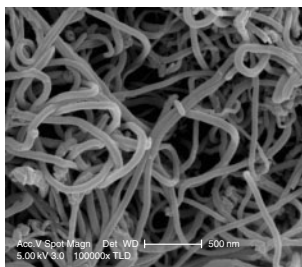
The article reports the preparation of stable, spherical, monodispersed silver, gold, and silver–gold alloy nanoparticles at higher concentration than previous concentrations reported. The synthesized particles (at more than 100 times reported earlier concentrations) were observed to be stable for more than 6 months. A combination of sodium dodecyl sulfate and sodium citrate as a stabilizing and reducing agent is responsible for the observed monodispersity and stability.

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**Synthesis of Carbon Nanotubes, and  
the Effect on Thermal Stability in  
High-Impact Polystyrene**

*Qinghong Kong, Junhao Zhang*

*Aust. J. Chem.* **2008**, *61*, 72–76.



The thermal stability of high-impact polystyrene (HIPS) is improved upon the formation of HIPS/carbon nanotube (CNT) nanocomposites. The CNTs are prepared by a solvothermal process with ethanol as a carbon source and  $\text{LaNiO}_3$  as catalyst. The nanocomposites are made by a melt-intercalation process and their thermal stability is interrogated by various techniques, e.g., TGA, DSC and pyrolysis-GC MS.

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