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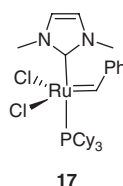
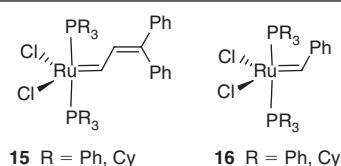
AN INTERNATIONAL JOURNAL FOR CHEMICAL SCIENCE

Review

Development of Aqueous Metathesis Catalysts

Shazia Zaman, Owen J. Curnow,
Andrew D. Abell

Aust. J. Chem. **2009**, 62, 91–100.



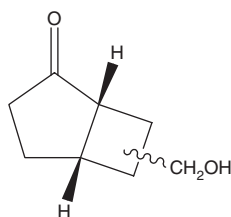
The modification of both ill-defined [e.g., $\text{RuCl}_3 \cdot \text{H}_2\text{O}$ and $\text{Ru}(\text{H}_2\text{O})_6(\text{tos})_2$] and more well-defined ruthenium-based alkylidene complexes (based on **15**, **16**, and **17**) for metathesis in protic solvents by the introduction of water-solubilizing ligands and by immobilization onto a suitable support is reviewed. Historically, metathesis in aqueous and protic (green) media has been somewhat limited because of catalyst instability and incompatibility with such solvents.

Full Papers

Cyclobutanes and Cyclobutenes from Photochemical Cleavage of Some Bicyclo[3.2.0]heptan-2-ones

Leiv K. Sydnnes, Doan Van Ha

Aust. J. Chem. **2009**, 62, 101–107.



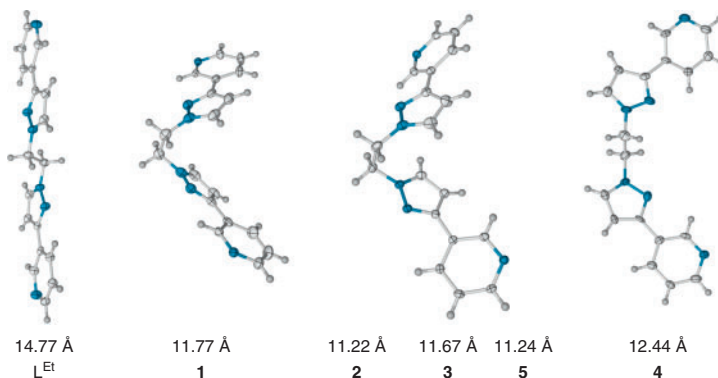
The photochemical cleavage of some bicyclo[3.2.0]heptan-2-ones has been investigated. The focus is on the influence of the stereochemistry and the substitution pattern on the outcome of the reaction. It appears that photolysis of such ketones provides a good method for the synthesis of functionalized cyclobutanes.

Solvent-Induced Structural Changes in Complexes of 1,2-Bis(3-(3-pyridyl)pyrazolyl)ethane

Yuniar P. Prananto, David R. Turner,
Jinzheng Lu, Stuart R. Batten

Aust. J. Chem. **2009**, 62, 108–114.

Crystal engineering of coordination polymers with flexible ligands provides many challenges. With the ligand 1,2-bis(3-(3-pyridyl)pyrazolyl)ethane it is found that the bridging length varies by as much as 3.5 Å, and solvent dependant supramolecular isomers are formed. The results illustrate again the variety of structures that can be obtained from subtle variations in synthesis.

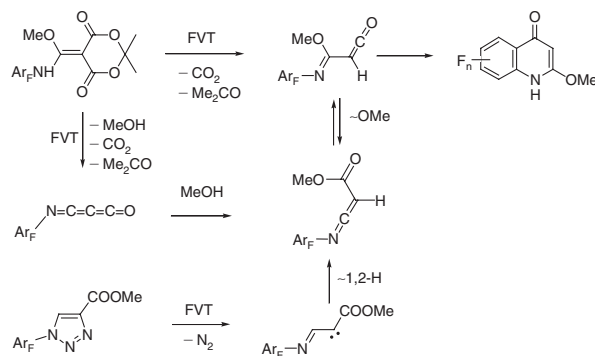


Fluoroquinolones from Imidoalkylenes and Iminopropadienones, $R-N=C=C=C=O$

Belinda E. Fulloon, Curt Wentrup

Aust. J. Chem. **2009**, 62, 115–120.

Fluorinated aryliminopropadienones $Ar-N=C=C=C=O$ are generated by flash vacuum thermolysis (FVT) of appropriately substituted Meldrum's acid derivatives. Reaction with methanol affords interconverting imidoalkylenes and oxoketenimines, which are employed in a synthesis of fluoroquinolones. The same quinolones are obtained from methyl 1-fluoroaryl-1,2,3-triazole-4-carboxylates, which on FVT eliminate N_2 to generate oxoketenimines. Rearrangement of the oxoketenimines to imidoalkylenes and cyclization affords the quinolones.



Interactions of MKr_n^+ ($M = Cu, Ag$, and Au ; $n = 1-3$): Ab Initio Calculations

Li Xinying, Cao Xue, Zhao Yongfang

Aust. J. Chem. **2009**, 62, 121–125.

The new compounds of $RgMX$ are gradually discovered and the interactions are well investigated. In the present research, we investigate the MKr_n^+ ($M = Cu, Ag$, and Au , $n = 1-3$) series to give an insight into the nature of the interaction between rare gas and noble metal atoms.

The Synthesis of Potential DNA Intercalators. 2. Tri- and Tetra-Cyclic Heterocycles

Ali Reza Molla Ebrahimlo,
Jabbar Khalafy, Rolf H. Prager

Aust. J. Chem. **2009**, 62, 126–132.

Polycyclic heterocyclic molecules containing a number of hydrogen-donating and -accepting groups have been found to interact with DNA in a manner that allows potential use as therapeutic agents. This paper describes a two-step synthesis of some novel types of these agents from readily accessible starting materials. The compounds described, and the general procedure, may lead to new medicinal applications.

Vapour-Phase Polymerization of Pyrrole and 3,4-Ethylenedioxythiophene Using Iron(III) 2,4,6-Trimethylbenzenesulfonate

Priya Subramanian, Noel Clark,
Bjorn Winther-Jensen, Douglas
MacFarlane, Leone Spiccia

Aust. J. Chem. **2009**, 62, 133–139.

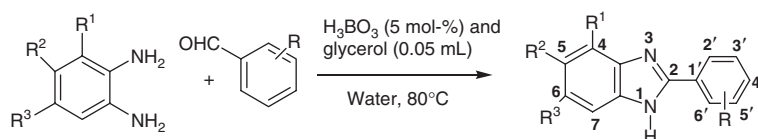
Vapour-Phase Polymerization (VPP) of conducting polymers, involving deposition of an oxidant followed by exposure to the vapour of the monomer precursor, is being intensely studied as it can be applied in the patterning of substrates using well-established technologies, such as ink-jet printing. The application of this printing technology requires the development of oxidants that lead to uniform and highly conductive polymer films. We have developed a new iron(III) sulfonate salt that when used as an oxidant in VPP has produced the most conductive VPP polypyrrole films reported to date.

Water-Mediated Synthesis of 2-Substituted Benzimidazoles by Boric Acid and Glycerol

Chhanda Mukhopadhyay, Pradip Kumar Tapaswi, Ray J. Butcher

Aust. J. Chem. **2009**, 62, 140–144.

A very simple, mild, and highly efficient green catalyst has been developed for the synthesis of 2-substituted benzimidazoles in excellent yields by treatment of substituted ortho-phenylenediamines and aldehydes in the presence of boric acid (5 mol-%) and glycerol (0.05 mL) in a one-pot operation in water (4 mL) at 80°C.

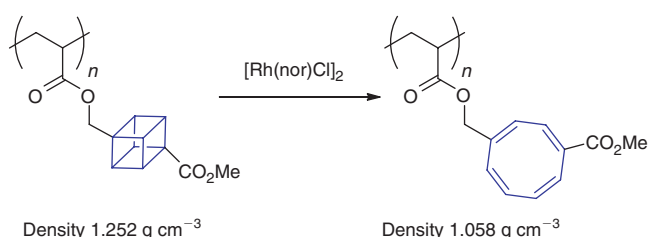


Free-Radical Polymerization and Ring-Expansion of a Cubane Acrylate: a Unique Low-Shrink Polymer

Alison E. McGonagle, G. Paul Savage

Aust. J. Chem. **2009**, 62, 145–149.

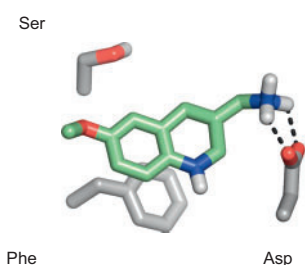
Addition polymerization normally occurs with a reduction in the volume (shrinkage) of the reactants, which frequently diminishes the performance, mechanical properties and durability of bulk polymeric materials. One method to inhibit this undesired outcome is to trigger ring-opening reactions that will expand the molecular volume of the polymer. This report describes the use of an unusual cubane-containing acrylate as a novel ‘low-shrink’ monomer.



Synthesis of Quinoline Derivatives as 5-HT₄ Receptor Ligands

Amir Hanna-Elias, David T. Manallack, Isabelle Berque-Bestel, Helen R. Irving, Ian M. Coupar, Magdy N. Iskander

Aust. J. Chem. **2009**, 62, 150–156.



Clinical agents that activate 5-HT₄ receptors have utility in gastroesophageal reflux disease and irritable bowel syndrome. To improve the lack of receptor selectivity in current 5-HT₄ compounds, a range of novel analogues has been synthesized. Good activity is shown, and a novel scaffold that will allow further exploration of this important area is reported.

A Density Functional Theory Study on the Ring-Opening Polymerization of D-Lactide Catalyzed by a Bifunctional-Thiourea Catalyst

Rong-Xiu Zhu, Ruo-Xi Wang, Dong-Ju Zhang, Cheng-Bu Liu

Aust. J. Chem. **2009**, 62, 157–164.

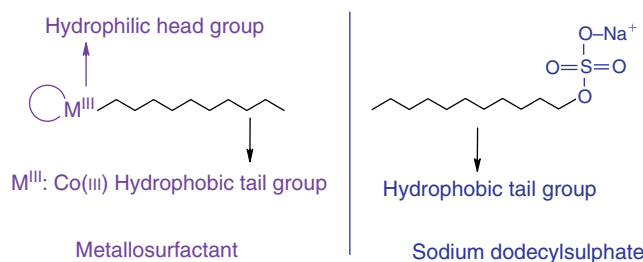
The thiourea-catalyzed methanolysis of D-lactide has been studied by performing density functional theory calculations. Two typical mechanisms (the covalent binding mechanism and the hydrogen-bonding mechanism) have been discussed in detail. Theoretical results rationalize the early experimental findings well and provide a prototype for understanding the ring-opening polymerization of D-lactide catalyzed by a bifunctional-thiourea catalyst.

Micellization Behaviour, DNA Binding, Antimicrobial, and Cytotoxicity Studies of Surfactant–Cobalt(III) Complexes Containing Di- and Tetramine Ligands

Rajendran Senthil Kumar,
Sankaralingam Arunachalam,
Vaiyapuri S. Periasamy,
Christo P. Preethy,
Anvarbatcha Riyasdeen,
Mohammad A. Akbarsha

Aust. J. Chem. **2009**, 62, 165–175.

A new class of surfactant–cobalt(III) complexes, *cis*-[Co(en)₂(C₁₁H₂₃NH₂)Cl](ClO₄)₂ (**1**), (en = ethylenediamine) and *cis*-[Co(trien)(C₁₁H₂₃NH₂)Cl](ClO₄)₂ (**2**) (trien = triethylenetetramine) have been synthesized and characterized. The complexes are found to bind DNA and are demonstrated by various methods to have antimicrobial and cytotoxic activities against certain human pathogenic microorganisms and cervical cancer cells. Such designer molecules may find use as anti-tumour agents.



Short Communication

Elucidation of the Mechanism for the S–N-type Smiles Rearrangement on Pyridine Rings

Jinghua Li, Lushan Wang

Aust. J. Chem. **2009**, 62, 176–180.

The Smiles rearrangement (SR) is an important strategy for synthesizing heterocyclic compounds. We report here a theoretical study on a typical S–N-type SR reaction involved in the synthesis of thiazinone-fused pyridines. The calculated results rationalize the experimentally observed product and provide a clear picture for understanding the S–N-type SR.