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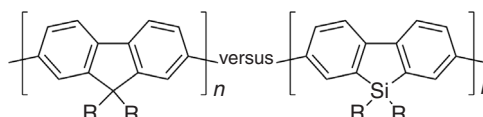
Review

Silicon Analogues of Polyfluorene as Materials for Organic Electronics

Wallace W. H. Wong, Joel F. Hooper,
Andrew B. Holmes

Aust. J. Chem. **2009**, 62, 393–401.

Silicon analogues of fluorene-based polymers have emerged as materials for a variety of organic electronic applications. In organic light emitting diodes, these silicon analogues are more stable than polyfluorene with increased colour stability and device lifetimes crucial in commercial applications. The use of the dibenzosilole unit in materials for organic solar cells and organic field effect transistors is increasing.



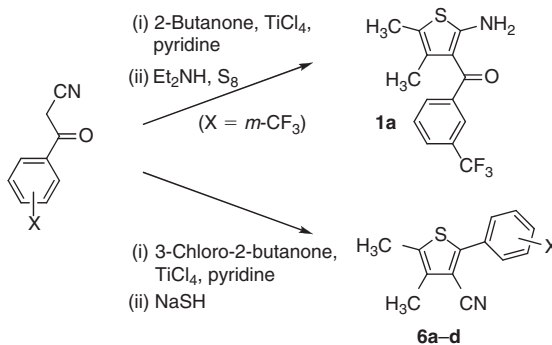
Rapid Communications

Reaction Pathways to 2-Aminothiophenes and Thiophene-3-carbonitriles

Luigi Aurelio, Bernard L. Flynn,
Peter J. Scammells

Aust. J. Chem. **2009**, 62, 402–406.

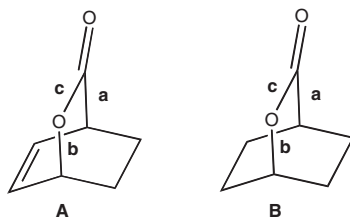
The synthesis and fully characterization of the important adenosine A₁ receptor allosteric enhancer, PD81723 **1a**, is described. As part of this study an unexpected reaction pathway to 2-phenylthiophene-3-carbonitriles was also discovered.



Structural Studies on α -Pyrone Cycloadducts. Manifestation of the Early Stages of CO₂ Extrusion by retro Hetero-Diels–Alder Reaction

Jesse Roth-Barton, Yit Woi Goh,
Asimo Karnezis, Jonathan M. White

Aust. J. Chem. **2009**, 62, 407–412.



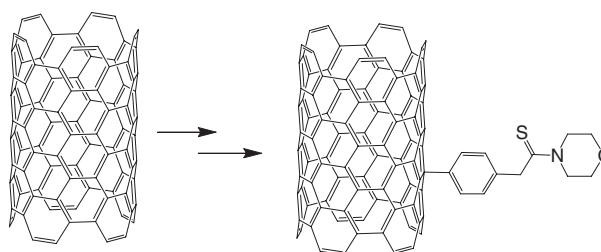
In α -pyrone cycloadducts **A**, bonds **a** and **b** are lengthened and bond **c** is shortened compared to 'normal' values obtained from structures that contain the corresponding saturated fragment **B**. The structural effects are consistent with manifestation of the early stages of the retro hetero-Diels–Alder decarboxylation reaction in the ground state structures.

Thioamidation of Single-Walled Carbon Nanotubes: a New Chemical Functionalization Protocol by the Willgerodt–Kindler Reaction

Hossein Reza Darabi,
Shabnam Mohandessi,
Kioumars Aghapoor,
Farshid Mohsenzadeh,
Mohammad Hashemi Karouei,
Fatemeh Tahoori, Rainer Herges

Aust. J. Chem. **2009**, 62, 413–418.

The Willgerodt–Kindler (*WK*) reaction is an important strategy for synthesizing thioamides. We report here a new and convenient method for covalent attachment of thioamide groups to the side-walls of carbon nanotubes via the *WK* reaction. The resulting functionalized nanotubes can be regarded as potential convenient building blocks in medicine and chemistry.



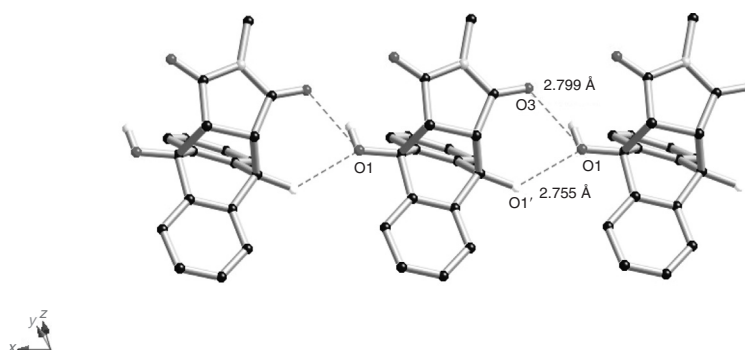
Full Papers

Structure Correlation Study of Some Diels–Alder Cycloadducts of Anthracene

Yit W. Goh, Jonathan M. White

Aust. J. Chem. **2009**, 62, 419–424.

The synthesis and structural characterization of a number of symmetrical and unsymmetrical cycloadducts derived from anthracene is reported. The crystal structures and, in particular, the reactive C–C bonds lengths, are investigated to determine the effect of the structure on the cycloadducts' reactivity towards the retro Diels–Alder reaction.

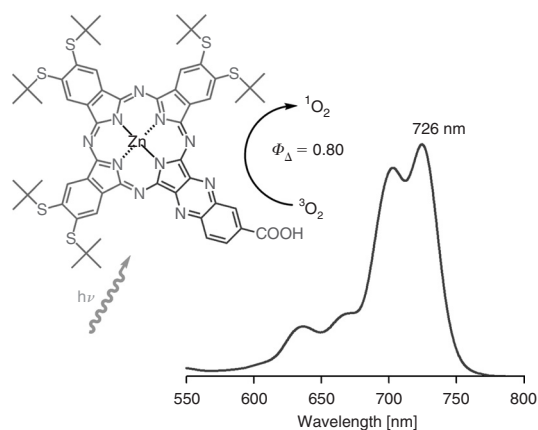


Effective Monofunctional Azaphthalocyanine Photosensitizers for Photodynamic Therapy

Petr Zimcik, Miroslav Miletin,
Veronika Novakova, Kamil Kopecky,
Marcela Nejedly, Vendula Stara,
Katerina Sedlackova

Aust. J. Chem. **2009**, 62, 425–433.

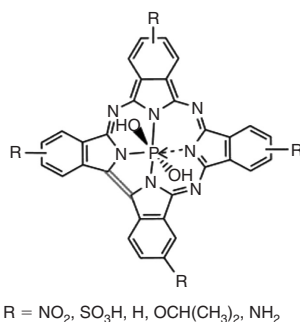
Photodynamic therapy is the progressive treatment of cancer based on absorption of light with subsequent production of cytotoxic species. However, localization of photosensitizers (PS) is often not optimal and that is why they are conjugated with special carriers. Herein, we report suitable PS for such conjugates with optimal photophysical properties and high photosensitizing efficiency.



Substituted Phosphorous Triazatetrabenzocorroles: Correlation Between Structure and Excited State Properties

Xian-Fu Zhang, Yakuan Chang,
Yanling Peng, Fushi Zhang

Aust. J. Chem. **2009**, 62, 434–440.



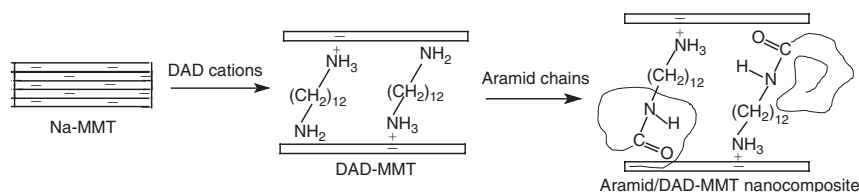
Photodynamic therapy (PDT) is very effective for some types of cancers. The drugs in use, however, still exhibit several shortcomings. This study shows that the photoactivity of phosphorous triazatetrabenzocorrole does not suffer from substitution and medium change, and hence is very promising for PDT.

Probing the Properties of Nanocomposites Synthesized from Aramid and Surface-Modified Clay

Sonia Zulfiqar, Zahoor Ahmad,
Muhammad Ilyas Sarwar

Aust. J. Chem. **2009**, 62, 441–447.

Surface modification of montmorillonite and its subsequent incorporation into aramid matrix yield nanocomposites with enhanced mechanical and thermal properties. Delaminated and disordered intercalated nanostructures were observed by transmission electron microscopy and X-Ray powder diffraction at different loadings of organoclay. Glass transition temperature improved while the water absorption decreased with increasing organoclay content.

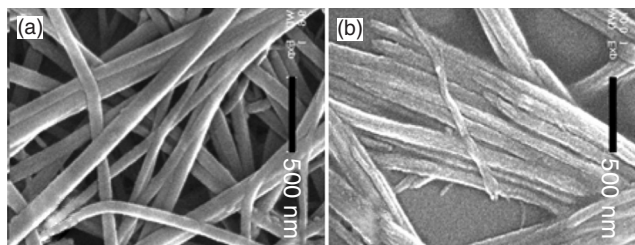


Structural and Optical Properties of ZnS Nanowires and CdS Nanorods Synthesized by a Two-Step Solvothermal Method

Libo Fan, Tuanhui Feng, Peng Wang,
Zhibo Feng, Chunli Zhang

Aust. J. Chem. **2009**, 62, 448–454.

ZnS nanowires (see (b)) and CdS nanorods can be synthesized by a two-step solvothermal method. The obtained ZnS nanowires and the CdS nanorods largely retain the morphologies of their precursors, ZnS/CHA hybrid nanowires (see (a)) and CdS/CHA hybrid nanofibres. Their structures and optical properties have also been studied.

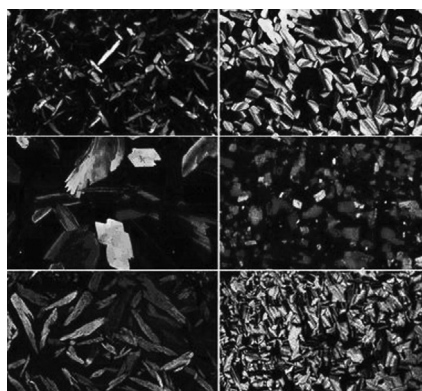


Liquid Crystal Behaviour of 2,3,9,10,16,17,23,24-Octakis(octyloxy)phthalocyanine-containing Gadolinium Sandwich Complexes

Ying Zhang, Jianzhuang Jiang,
Xuan Sun, Qingbin Xue

Aust. J. Chem. **2009**, 62, 455–463.

Columnar mesophase liquid crystals with anisotropic charge carrier transport capability and 'large area uniformity' show great potential application in electronic devices. This work reveals the relationship between the molecular structures and the liquid-crystalline (LC) behaviour of a series of phthalocyaninato sandwiches. Textures formed in the LC mesophase are retained and highly stable even at room temperature.

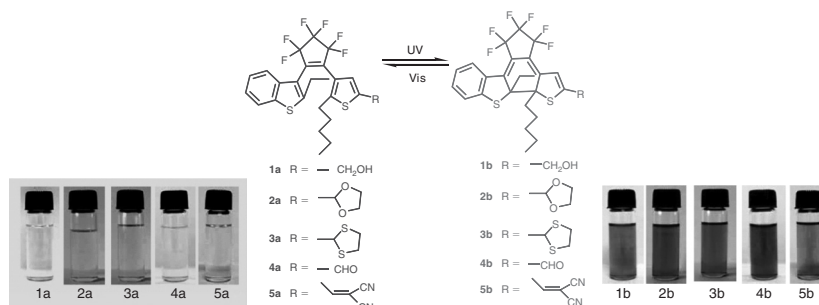


Syntheses and Substituent Effects on the Properties of Unsymmetrical Photochromic Diarylethenes Bearing a Benzothiophene Unit

Shouzhi Pu, Min Li, Gang Liu,
Zhanggao Le

Aust. J. Chem. **2009**, 62, 464–474.

Photochromic unsymmetrical diarylethene derivatives **1a–5a**, which have different electron-donating or electron-withdrawing substitutes at the 5-position of the thiophene ring, have been synthesized. Substituent effects on their photochemical and electrochemical properties are investigated in detail.

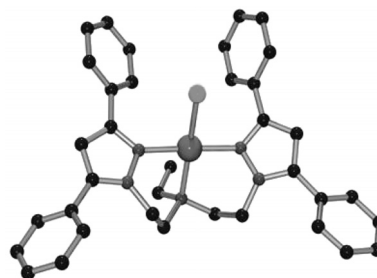


Synthesis and Characterization of New Palladium(II) Complexes Containing *N*-Alkylamino-3,5-diphenylpyrazole Ligands. Crystal Structure of [PdCl(L2)](BF₄) {L2 = Bis[2-(3,5-diphenyl-1-pyrazolyl)ethyl]ethylamine}

Gemma Aragay, Josefina Pons,
Jordi García-Antón, Ángeles Mendoza,
Guillermo Mendoza-Díaz, Teresa Calvet,
Mercè Font-Bardia, Josep Ros

Aust. J. Chem. **2009**, 62, 475–482.

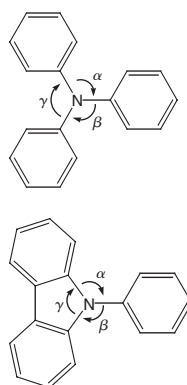
Coordination chemistry studies are of high importance because of the useful information that they provide to understand nature's systems, among other interesting fields. Two new bis(pyrazolyl)alkylamine ligands have been synthesized and their reactivity with palladium(II) has been studied. These compounds provide new information about the coordination behaviour of alkylaminopyrazole ligands.



Theoretical Investigation of Organic Amines as Hole Transporting Materials: Correlation to the Hammett Parameter of the Substituent, Ionization Potential, and Reorganization Energy Level

Jiunn-Hung Pan, Yu-Ma Chou,
Houn-Lin Chiu, Bo-Cheng Wang

Aust. J. Chem. **2009**, 62, 483–492.



The ionization potentials and reorganization energy for hole transport of a range of triphenylamine and 9-phenyl-9*H*-carbazole derivatives, with potential for use as hole-transporting materials (HTMs) in multilayer organic light emitting diodes, have been calculated. The effect of substitution pattern and type of substituent (electron donating/withdrawing) is also investigated. The good agreement between experimental and calculated results may lead to the design of improved HTMs.

Kinetics and Mechanistic Study on the Reaction of Iodo (diethylenetriamine) Platinum(II) with L-Cystine

Trilochan Swain, Prakash Mohanty

Aust. J. Chem. **2009**, 62, 493–500.

The biological activity of some Pt^{II} complexes such as [Pt(dien)Z]²⁺, Z = biological activity ligands, have been investigated. The focus of this manuscript is determination of rate constants of products, [{Pt(dien)}₂(cystine)₂]⁴⁺ and [{Pt(dien)}₂cystine]⁴⁺ by Scheme 1, by new method and also new mechanism is adopted on basis of its formation.

