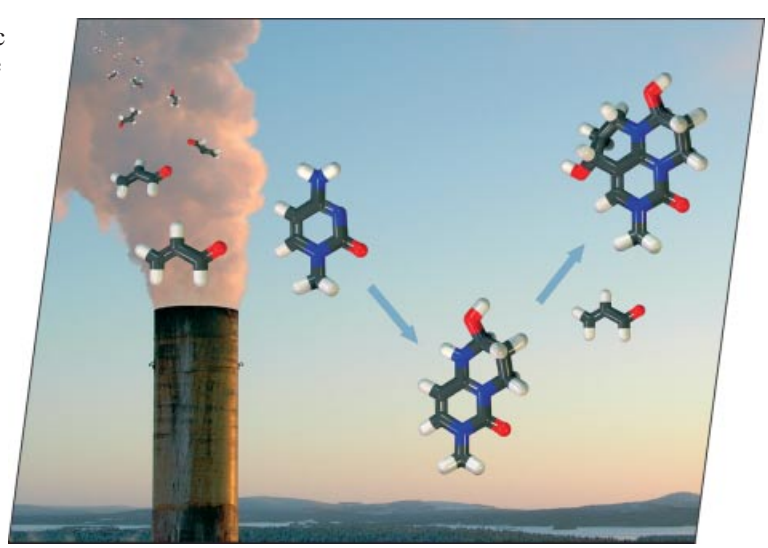
The EUChemSoc Societies have taken the significant step into the future by merging their traditional journals, to form two leading chemistry journals, the *European Journal of Inorganic Chemistry* and the *European Journal of Organic Chemistry.* Three further EUChemSoc Societies (Austria, Czech Republic and Sweden) are Associates of the two journals.

COVER PICTURE

The cover picture shows that acrolein, a mutagenic environmental pollutant formed during incomplete combustion, reacts with the cytosine base to yield exocyclic ring adducts. Identification and characterization of adducts are discussed in detail in the article by A. J. Pawłowicz, K. D. Klika, and L. Kronberg on p. 1429ff.



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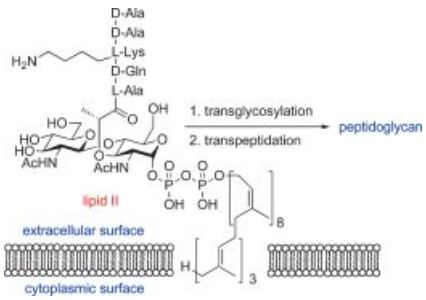
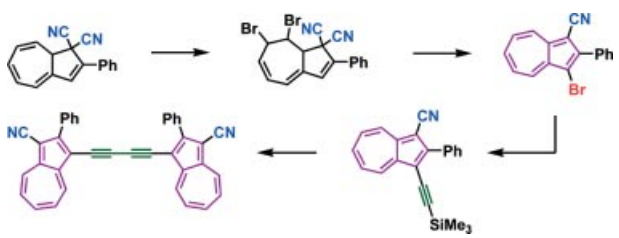
MICROREVIEW

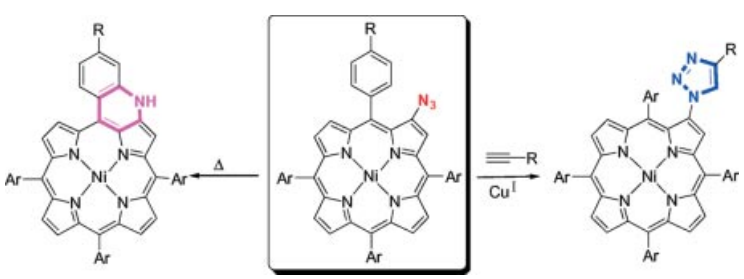


The bacterial cell wall biosynthesis pathway provides a number of potential targets for the development of novel antibacterial agents. This Microreview highlights the utility of organic synthesis for the preparation of substrates and biochemical probes for use in the study of this important biochemical pathway.

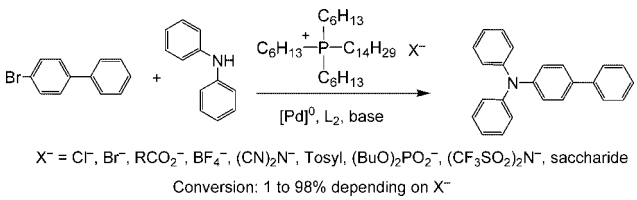
SHORT COMMUNICATIONS



Bromination of 1,1-dicyano-2-phenyl-1,8a-dihydroazulene followed by heating in the presence of bromide ions provides an efficient way to generate 3-bromo-1-cyano-2-phenylazulene. Functionalization hereof with trimethylsilylacetylene provides a new azulene building block for acetylenic scaffolding.



A simple and efficient synthesis of β-azidotetraarylporphyrins has been developed by diazotization of β-aminotetraarylporphyrins and their subsequent treatment with sodium azide. Their thermal reaction resulted in an interesting fused six-membered porphyrin. Introduction of 1,2,3-triazole into the porphyrin macrocycle was achieved with alkynes by Cu^{I}-catalyzed 1,3-dipolar cycloaddition.



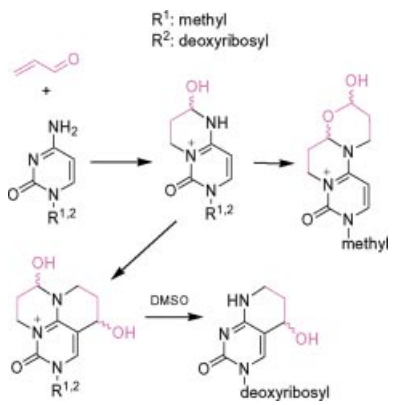
The Pd-mediated Buchwald–Hartwig amination reaction of aryl halides in a phosphonium salt ionic liquid consisting of a trihexyl(tetradecyl)phosphonium cation with a range of anions has been investigated. A pronounced anionic effect was uncovered with the reaction proceeding readily with weakly nucleophilic diarylamines only in the presence of noncoordinating anions. A mechanism is postulated to explain these results and it involves a rate-limiting ligand exchange step that proceeds through a dissociative pathway.

Pd-Catalyzed Amination

Keywords: Homogeneous catalysis / Amination / Phosphanes / Conducting materials

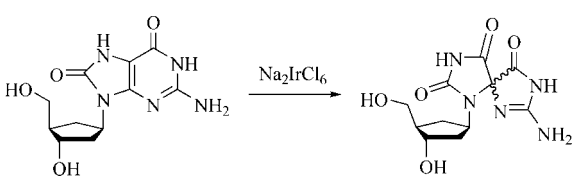
FULL PAPERS

Acrolein, a ubiquitous environmental mutagen, reacts with the cytosine bases to form one- and two-ring-fused adducts. The one-ring-fused adduct is shown to possess a higher reactivity towards acrolein than the cytosine base. The cyclic adducts of 2′-deoxycytidine are found in double- and single-stranded calf thymus DNA and may therefore contribute to the mutagenic effects of acrolein.



DNA Alkylation by Acrolein

Keywords: NMR spectroscopy / DNA alkylation / Nucleobases / Acrolein

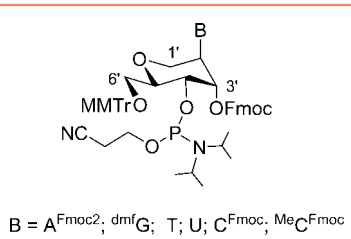


Carbocyclic DNA lesion analogs provide a powerful tool for the investigation of the recognition of DNA lesions by DNA glycosylases. Here, we report the synthesis of carbocyclic analogs of the DNA lesions 7,8-dihydro-8-oxo-2′-deoxyguanosine and spiroiminodihydantoin as a nucleoside as well as in single-stranded DNA.

Carbocyclic Spiroiminodihydantoin

Keywords: Oxidatively generated DNA lesion / Carbocyclic analog / 8-oxo-dG / Spiroiminodihydantoin

Six Fmoc-protected altritol nucleoside phosphoramidite building blocks with A, G, T, U, C and ^{Me}C as bases have been synthesized and used for the synthesis of altritol nucleic acid (ANA) and chimeric ANA-RNA oligonucleotides.



Oligonucleotide Synthesis

Keywords: Altritol nucleoside / Fmoc protecting group / Altritol nucleic acids / Phosphoramidite chemistry

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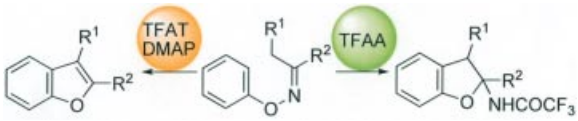
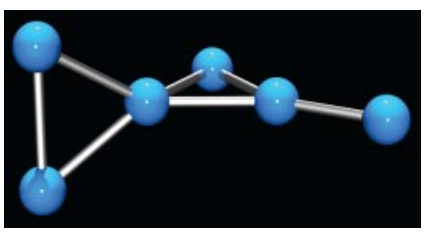
Synthesis of Benzofurans



Keywords: Benzofuran / Sigmatropic rearrangement / Total synthesis / Trifluoroacetic anhydride / Trifluoroacetyl triflate

A reagent-dependent rearrangement–cyclization: TFAA was found to be an effective agent for preparation of dihydrobenzofurans from oxime ethers through the acylation–rearrangement–cyclization reaction. On the other hand, TFAT/DMAP combination enabled the selective synthesis of various benzofurans. Furthermore, short and practical syntheses of Stemofuran A, Eupomatenoid 6, and Coumestan were achieved without protection of the hydroxy group in good overall yield.

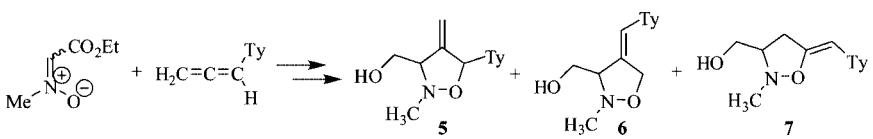
Ring Strain and Consequences



Keywords: Small ring systems / Rearrangement / High-temperature chemistry / Kinetics / Strained molecules

Methylenespiropentane, formed by thermal isomerization of bicyclopropylidene, rearranges at higher temperature to 1,2- and 1,3-dimethylenecyclobutane. Rate constants of these processes have been measured for the first time.

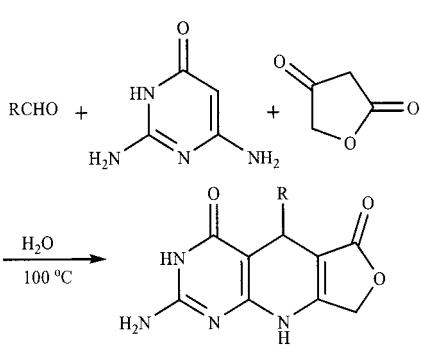
Modified Nucleosides



Keywords: Dipolar cycloaddition / Nucleosides / Nitrogen heterocycles / Oxygen heterocycles

The synthesis of hitherto unknown alkylidene isoxazolidinyl thymines **5**–**7** is described. The first compound can be regarded as a N,O-analogue of Entecavir and DMDC, which contains thymine as a nucleobase.

Aqueous Multicomponent Reactions



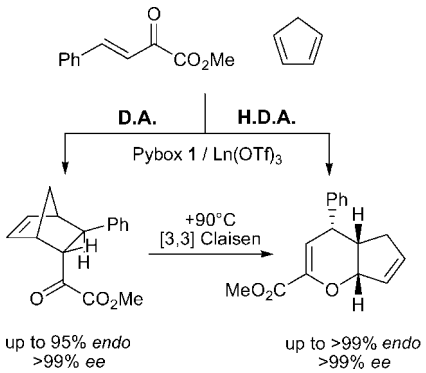
Keywords: Heterocycles / Multicomponent reactions / Aqueous medium / Tetronic acid

A series of furo[3′,4′:5,6]pyrido[2,3-*d*]-pyrimidine derivatives were synthesized by means of multicomponent reactions in water under both microwave irradiation and traditional heating conditions, without use of any catalyst. This method has the advantages of higher yields, lower cost, reduced environmental impact, and convenience of procedure.

CONTENTS

Asymmetric Diels–Alder Reactions

Keywords: Asymmetric synthesis / Enantioselectivity / Lanthanides / Pybox



The reaction of cyclopentadiene with methyl (*E*)-2-oxo-4-phenyl-3-butenoate is catalysed by the Sc^{III} complex of pybox (**1**) to give the *endo* Diels–Alder (DA) and hetero-Diels–Alder (HDA) adducts with *ee* > 99 %. The absolute configuration of the HDA adduct was determined from the stereospecific [3,3] Claisen rearrangement of the enantiopure DA adduct.

CORRECTION

Keywords: Alkynes / Diazo compounds / Cycloaddition / Nitrogen heterocycles / Radicals

If not otherwise indicated in the article, papers in issue 8 were published online on February 16, 2007

