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Nanotoxic Impurities

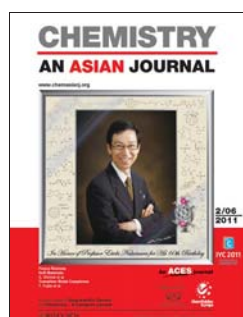
M. Giovanni, A. Ambrosi, M. Pumera*

Direct Determination of Bioavailable Molybdenum in Carbon Nanotubes

Checking availability: Metallic impurities within carbon nanotubes are responsible for toxicological effects to human health. From a toxicological point of view, it is crucial to know the amount of mobile, bioavailable metallic impurities as opposed to the total content of impurities. A facile and direct method to determine the content of bioavailable molybdenum impurities present in different CNT samples is proposed and discussed.



Chem. Eur. J.
DOI: 10.1002/chem.201002979

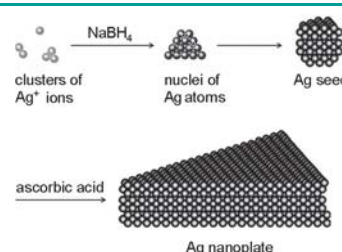


Silver Nanoplates

J. Zeng, J. Tao, W. Li, J. Grant, P. Wang, Y. Zhu, Y. Xia*

A Mechanistic Study on the Formation of Silver Nanoplates in the Presence of Silver Seeds and Citric Acid or Citrate Ions

The world on a plate: In addition to their roles as a capping agent that selectively binds to the {111} facets of silver, the carboxylate group can coordinate with Ag^+ ions to form complexes and thus substantially reduce the reduction rate of Ag^+ ions, leading to the formation of silver seeds with both twin planes and stacking faults.



Chem. Asian J.
DOI: 10.1002/asia.201000728

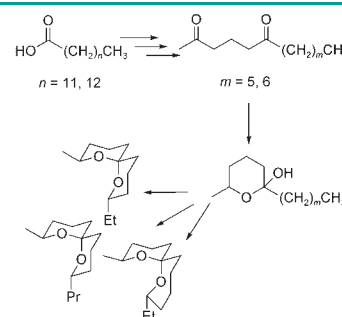


Oxidoreductases

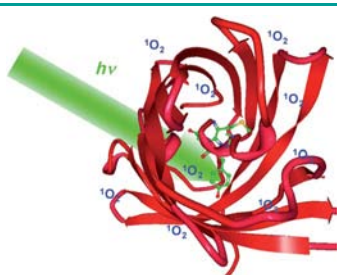
Y. K. Booth, W. Kitching, J. J. De Voss*

Biosynthesis of the Spiroacetal Suite in *Bactrocera tryoni*

Flying in spirals: The biosynthesis of the minor C_{12} and C_{13} spiroacetals released by female *Bactrocera tryoni* (Queensland fruit fly) is defined. Administration of over 30 deuterated potential precursors established that fatty acids are processed to 2,6-dioxygenated precursors by a modified β -oxidation pathway prior to oxidation of a tetrahydropyranol and cyclisation to the observed spiroacetals.



ChemBioChem
DOI: 10.1002/cbic.201000481



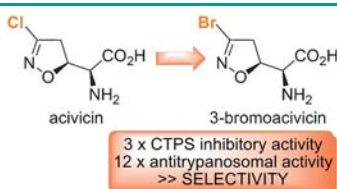
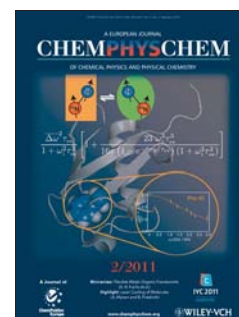
ChemPhysChem
DOI: 10.1002/cphc.201000919

Fluorescent Proteins

X. Ragàs, L. P. Cooper, J. H. White, S. Nonell,* C. Flors*

Quantification of Photosensitized Singlet Oxygen Production by a Fluorescent Protein

Singlet oxygen and fluorescent proteins: the fluorescent protein TagRFP is able to photosensitize singlet oxygen, with an estimated quantum yield of $\Phi_{\Delta} \approx 0.004$ (see figure). This is the first estimation of a Φ_{Δ} value for a GFP-like protein. The short triplet lifetime of TagRFP suggests relatively high oxygen accessibility to the chromophore.



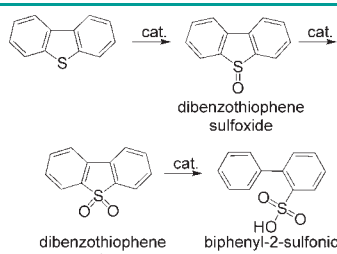
ChemMedChem
DOI: 10.1002/cmdc.201000417

Antiparasitic Agents

P. Conti,* A. Pinto, P. E. Wong, L. L. Major, L. Tamborini, M. C. Iannuzzi, C. De Micheli, M. P. Barrett,* T. K. Smith*

Synthesis and in vitro/in vivo Evaluation of the Antitrypanosomal Activity of 3-Bromoacivicin, a Potent CTP Synthetase Inhibitor

A tip of the HAT to bromine: The antitrypanosomal activity of the natural antibiotic acivicin can be substantially increased on passing to its 3-bromo analogue. 3-Bromoacivicin is threefold more potent than acivicin as an inhibitor of *T. b. brucei* CTP synthetase. Interestingly, this translates into a 12-fold increase in the antitrypanosomal activity and a marked improvement in selectivity.



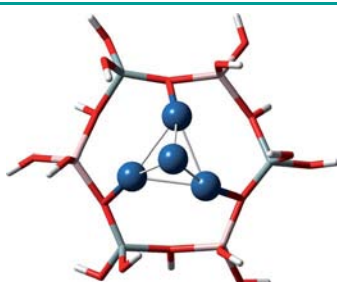
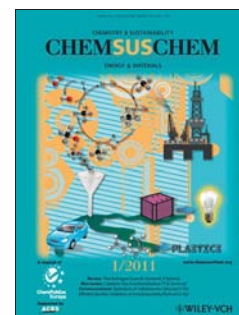
ChemSusChem
DOI: 10.1002/cssc.201000366

Desulfurization

M. Seredych, M. Khine, T. J. Bandosz*

Enhancement in Dibenzothiophene Reactive Adsorption from Liquid Fuel via Incorporation of Sulfur Heteroatoms into the Nanoporous Carbon Matrix

Sulfur atoms present in the carbon matrix increase the breakthrough capacity of dibenzothiophenes and the selectivity of dibenzothiophene adsorption owing to sulfur–sulfur and sulfur–oxygen interactions. The catalytic influence of the carbon functionality results in the oxidation of adsorbed dibenzothiophenes (see Scheme).



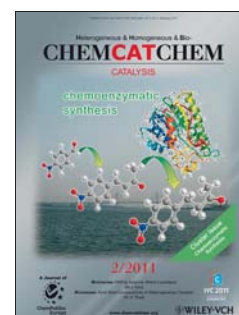
ChemCatChem
DOI: 10.1002/cctc.201000271

Supported Metal Clusters

A. Uzun, D. A. Dixon, B. C. Gates*

Prototype Supported Metal Cluster Catalysts: Ir₄ and Ir₆

Clusterophilia: Iridium offers a range of catalytic properties and forms numerous compounds with small, stable frameworks, including those with a tetrahedral Ir₄ framework (see figure) and those with an octahedral Ir₆ framework. Supported iridium clusters show catalytic activity in reactions such as ethylene hydrogenation. This Minireview discusses the synthesis, chemistry, and catalytic properties of Ir₄ and Ir₆ clusters.





Nanotoxicology

H. F. Krug,* P. Wick

Nanotoxicology: An Interdisciplinary Challenge

Nanotechnology safety research combines biology, chemistry, and physics with workplace hygiene and material sciences into a substantial interdisciplinary field of research. Sustainability and reliability are the pillars of the success of this new technology, and the safety of applications is founded on findings that are based on robust, reliable testing strategies.



Angew. Chem. Int. Ed.
DOI: 10.1002/anie.201001037

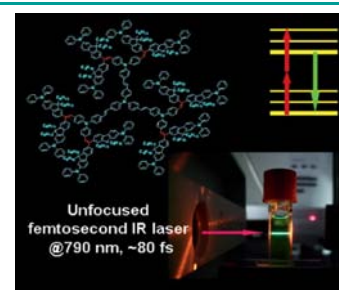


Two-Photon Chromophores

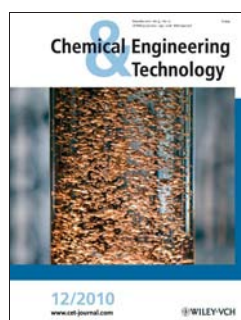
T.-C. Lin,* W.-L. Lin, C.-M. Wang, C.-W. Fu

Synthesis and Characterization of Highly Soluble Two-Photon-Absorbing Chromophores with Multi-Branched and Dendritic Architectures

A chromophore set containing four fluorene-based analogues was synthesized and shown to possess two-photon absorptivities proportional to their π -conjugation size. The optical-power-attenuation properties in the near-IR region indicate that such dyes could act as broadband and rapid-response power-limiters, especially against laser lights with longer pulses.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201001165

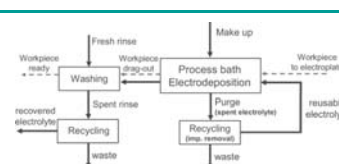


Ionic Liquids

J. L. Solà Cervera*, A. König

Recycling Concept for Aluminum Electrodeposition from the Ionic Liquid System EMIM[Tf_2N]- AlCl_3

The IL system formed by specific mixtures of 1-ethyl-3-methylimidazolium bis[(trifluoromethyl)sulfonyl]imide (EMIM[Tf_2N]) and AlCl_3 proved to be a very suitable electrolyte for the electro-deposition of aluminum. In order to establish an industrial process based on this novel electrolyte system, recycling strategies for the purged spent electrolyte and the generated dragged-out electrolyte were evaluated.



Chem. Eng. Technol.
DOI: 10.1002/ceat.201000200