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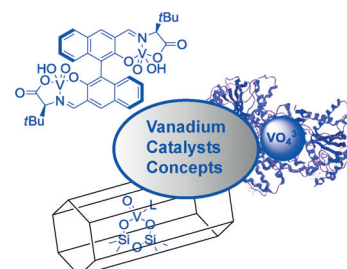


Asymmetric Synthesis

S. Takizawa, H. Gröger,* H. Sasai*

Vanadium in Asymmetric Synthesis: Emerging Concepts in Catalyst Design and Applications

Vanadium catalysis successfully extended: Inspired by nature's way to activate substrates and reagents, bifunctional and dinuclear vanadium catalysts for C–C coupling have been designed. In addition, vanadium catalysis was “merged” with protein chemistry by developing “hybrid catalysts” through incorporation of vanadium into enzymes and by combining vanadium chemocatalysts with enzymes in the dynamic kinetic resolution of alcohols.



Chem. Eur. J.
DOI: 10.1002/chem.201406444

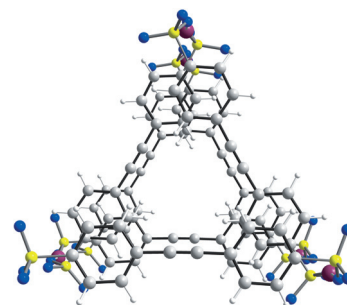


Coordination Polymers

C. Zitzer, T. W. T. Muesmann, J. Christoffers, M. S. Wickleder*

Crystal Engineering with the New Linker Tolanedisulfonic Acid (H_2TDS): Helical Chains in $Zn(TDS)(DMA)_3$, Linear Chains in $Zn(TDS)(NMP)_3$, and Complex Anions in $[HDMA]_2[Zn(TDS)_2(DMA)_3](DMA)_2$

Linked by many a hidden chain: A new tolannedisulfonic acid has been used for the preparation of zinc coordination polymers under solvothermal conditions. Interestingly, even chiral helical chains were obtained using this rod-shape linker.



Chem. Asian J.
DOI: 10.1002/asia.201403392

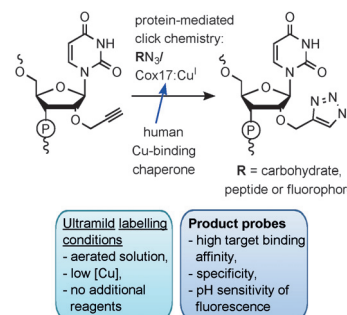


Click Chemistry

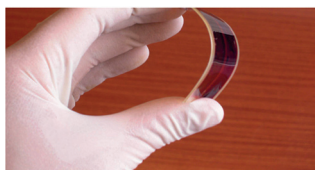
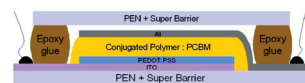
L. J. Nâbo, C. S. Madsen, K. J. Jensen, J. Kongsted, K. Astakhova*

Ultramild Protein-Mediated Click Chemistry Creates Efficient Oligonucleotide Probes for Targeting and Detecting Nucleic Acids

Functionalized oligonucleotides were prepared in good yields by protein-mediated CuAAC click reactions for the first time with a human copper-binding chaperone. The carbohydrate, peptide, and fluorescent derivatives display high binding affinity and selectivity for DNA/RNA targets, as well as pH-sensitive fluorescence when 5-JOE dye is incorporated.



ChemBioChem
DOI: 10.1002/cbic.201500145



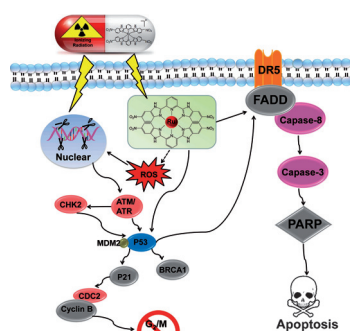
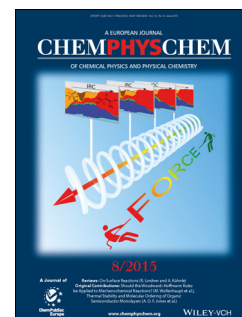
ChemPhysChem
DOI: 10.1002/cphc.201402749

Organic Photovoltaics

M. Giannouli,* V. M. Drakonakis, A. Savva, P. Eleftheriou, G. Florides, S. A. Choulis

Methods for Improving the Lifetime Performance of Organic Photovoltaics with Low-Costing Encapsulation

Getting to the core of it: Recent advances in improving the stability and lifetime of organic photovoltaics (OPVs) are reviewed. New materials are developed to replace those responsible for the rapid degradation of OPVs in each part of the device. Major breakthroughs leading to improved device stability include inverted device structures, the use of more photostable active-layer materials, and the introduction of interfacial buffer layers.



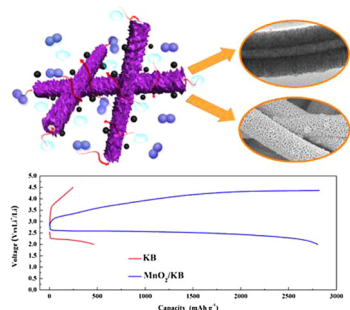
ChemMedChem
DOI: 10.1002/cmdc.201500127

Metals in Medicine

Z. Deng, L. Yu, W. Cao, W. Zheng, T. Chen*

Rational Design of Ruthenium Complexes Containing 2,6-Bis(benzimidazolyl)pyridine Derivatives with Radiosensitization Activity by Enhancing p53 Activation

Oh, 2b a super sensitizer! A novel Ru complex Ru(bnbp)₂Cl₂ (bnbp = 2,6-bis-(6-nitrobenzimidazol-2-yl)pyridine) was synthesized and was found to enhance radiation-induced DNA damage through the overproduction of reactive oxygen species. Studies into its mechanism of action revealed it to cause G2M cell-cycle arrest and apoptosis by activating the p53 pathway. This study provides a rational design strategy for the development of benzimidazole-containing Ru complexes as potential radiosensitizers.



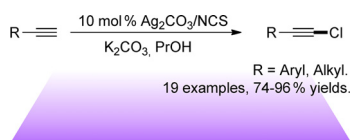
ChemSusChem
DOI: 10.1002/cssc.201500306

Batteries

P. Zhang, D. Sun, M. He, J. Lang, S. Xu, X. Yan*

Synthesis of Porous δ -MnO₂ Submicron Tubes as Highly Efficient Electrocatalyst for Rechargeable Li–O₂ Batteries

Battery powered: Tubular δ -MnO₂ is developed by a facile template-induced hydrothermal method. The synthesized δ -MnO₂ exhibits a porous tube wall assembled by highly dispersed tiny nanosheets, which facilitates the diffusion of electrolyte and oxygen. As an electrocatalyst in Li–O₂ batteries, the δ -MnO₂ tubes exhibit suppressed overpotentials, superior rate properties, and good cycle stability.



ChemCatChem
DOI: 10.1002/cctc.201500243

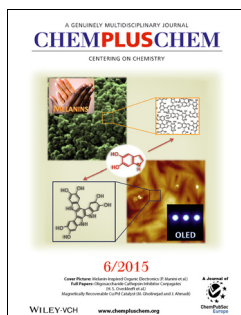
Silver Catalysis

D. Shi, Z. Liu, Z. Zhang, W. Shi,* H. Chen*

Silver-Catalyzed Synthesis of 1-Chloroalkynes Directly from Terminal Alkynes

A silver lining: A mild and efficient method for the preparation of 1-chloroalkynes from readily available terminal alkynes by using a catalytic amount of a silver salt with N-chlorosuccinimide (NCS) as the chlorinating agent is reported. This method can be applied to both aryl and alkyl alkynes. Over 95 % of the silver catalyst can be recycled by simple filtration.



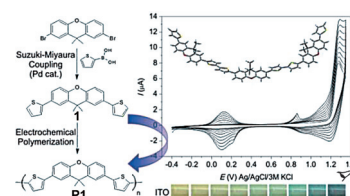


Electrochromic Polymers

K. Olech, R. Gutkowski, V. Kuznetsov, S. Roszak, J. Sołoducho,*
W. Schuhmann*

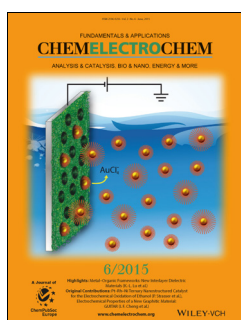
Synthesis and Electrochromic Properties of Conducting Polymers Based on Highly Planar 2,7-Disubstituted Xanthene Derivatives

One and up: 2,7-Disubstituted xanthene monomers and their corresponding electrochromic polymers **P1** and **P2** obtained upon anodic polymerization are characterized in detail by spectroscopic and electrochemical methods. Computational and experimental data are used to explain the influence of the alkyl chain substitution on the optoelectronic properties of the copolymers (see figure).



ChemPlusChem

DOI: 10.1002/cplu.201402349

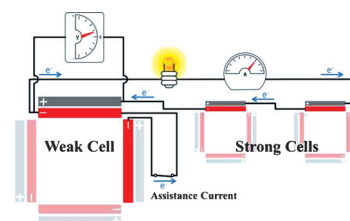


Microbial Fuel Cells

B. Kim, B.-G. Lee, B. H. Kim, I. S. Chang*

Assistance Current Effect for Prevention of Voltage Reversal in Stacked Microbial Fuel Cell Systems

Need some assistance? The stacking of microbial fuel cells (MFCs) is an attractive method of increasing voltage to produce practically usable electricity. One of the biggest drawbacks of stacked MFCs, however, is the voltage reversal that commonly occurs. An assistance-current method is proposed to prevent voltage reversal (see figure).



Prevention of Voltage Reversal in Stacking of MFCs

ChemElectroChem

DOI: 10.1002/celec.201402388

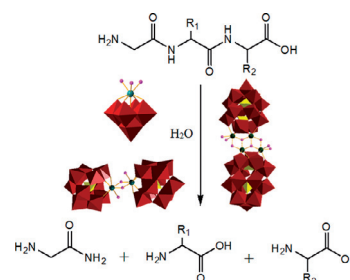


Polymetalates

H. G. T. Ly, G. Absillis, T. N. Parac-Vogt*

Comparative Study of the Reactivity of Zirconium(IV)-Substituted Polyoxometalates towards the Hydrolysis of Oligopeptides

The hydrolytic activity of Zr^{IV} -substituted Lindqvist-, Keggin-, and Wells–Dawson-type polyoxometalates towards the peptide bonds in tri- and tetrapeptides is investigated by kinetic methods and multinuclear NMR spectroscopy. The peptides are hydrolyzed completely in nearly neutral and neutral pH media. The Keggin complex is the most active towards peptide bond hydrolysis in the studied peptides.



Eur. J. Inorg. Chem.

DOI: 10.1002/ejic.201500161

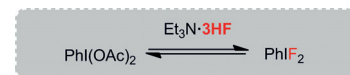


Fluorination

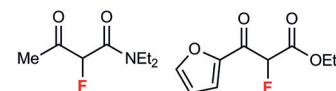
T. J. Nash, G. Pattison*

Apparent Electrophilic Fluorination of 1,3-Dicarbonyl Compounds Using Nucleophilic Fluoride Mediated by $PhI(OAc)_2$

The apparent electrophilic fluorination of 1,3-dicarbonyl compounds using $Et_3N \cdot 3HF$ mediated by the in-situ formation of $PhIF_2$ from $PhI(OAc)_2$ is reported. This can be performed safely in standard laboratory glassware, and this approach may reduce our reliance on difficult-to-handle fluorine gas and expensive electrophilic fluorinating agents derived from elemental fluorine.

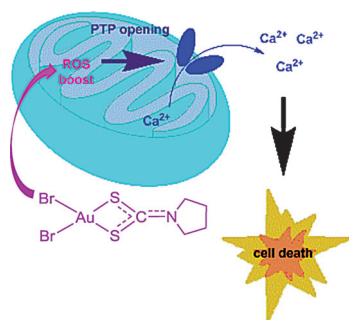


- In-situ preparation of active fluorinating agent
- Apparent electrophilic fluorination using fluoride
- Study of fluoride exchange
- Control of mono-/di-fluorination



Eur. J. Org. Chem.

DOI: 10.1002/ejoc.201500370



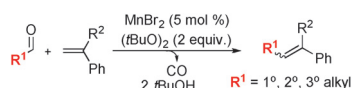
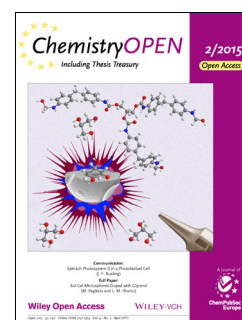
ChemistryOpen
DOI: 10.1002/open.201402091

Antitumor Drug Design

C. Nardon, F. Chiara, L. Brustolin, A. Gambalunga, F. Ciscato, A. Rasola, A. Trevisan, D. Fregona*

Gold(III)-pyrrolidinedithiocarbamate Derivatives as Antineoplastic Agents

Gold versus cancer! We report here on the synthesis, physico-chemical characterization, and solution behavior of two gold(III) pyrrolidinedithiocarbamates (PDT): $[\text{Au}^{\text{III}}\text{Br}_2(\text{PDT})]$ and $[\text{Au}^{\text{III}}\text{Cl}_2(\text{PDT})]$, with the bromide compound being more cytotoxic towards different cancer cell lines. A chemical and biological evaluation of the bromide compound shows it is able to trigger a ROS cascade, which possibly lead to apoptosis from the opening of the permeability transition pore.



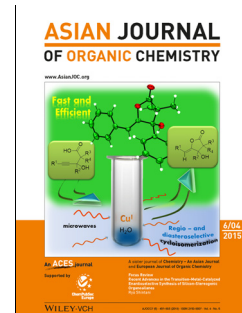
Asian J. Org. Chem.
DOI: 10.1002/ajoc.201500148

Heck Reaction

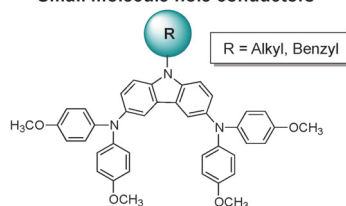
Z. Zong, W. Wang, X. Bai, H. Xi, Z. Li*

Manganese-Catalyzed Alkyl-Heck-Type Reaction via Oxidative Decarbonylation of Aldehydes

Man power: An alkyl-Heck-type cross-coupling reaction is developed by manganese-catalyzed oxidative decarbonylation of aldehydes. A variety of primary, secondary, and tertiary aliphatic aldehydes can participate in this alkenylation. The reaction is initiated by an alkyl radical, which is generated by oxidative decarbonylation of the aldehyde.



Small molecule hole conductors



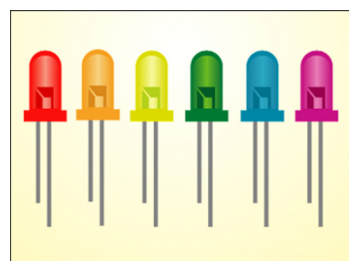
ChemNanoMat
DOI: 10.1002/cnma.201500014

Solar Cells

T.-T. Bui,* S. K. Shah, M. Abbas, X. Sallenave, G. Sini, L. Hirsch,* F. Goubard*

Carbazole-Based Molecular Glasses as Hole-Transporting Materials in Solid State Dye-Sensitized Solar Cells

Do you need glasses? Carbazole-based molecular glasses were synthesized and incorporated as hole conductors in solid state dye-sensitized solar cells. The maximum power conversion efficiency is 1.8 % for one of these compounds. Stability tests of unencapsulated devices in air under continuous illumination are reported.



ChemViews magazine
DOI: 10.1002/chemv.201500033

Semiconductors

J. Meyer, F. Tappe, N. Schmidt

The Future of Lighting

Artificial lighting accounts for up to 20 % of the energy consumed in private households. Highly energy-efficient light-emitting diodes (LEDs) have the potential to change this, but finding materials that give white, yet warm, light is a challenge. While incandescent light sources are already at their technological limit, there is still a lot of potential for improvement in LEDs.

