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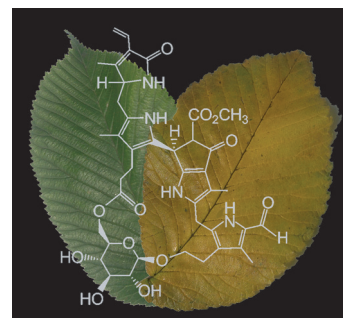


Chlorophyll Metabolism

M. Scherl, T. Müller, C. R. Kreutz, R. G. Huber, E. Zass,* K. R. Liedl,* B. Kräutler*

Chlorophyll Catabolites in Fall Leaves of the Wych Elm Tree Present a Novel Glycosylation Motif

Winter is coming: A colorless chlorophyll catabolite from fall leaves of the wych elm tree (*Ulmus glabra*) features a bicyclo[17.3.1]glycoside moiety, spanning a 20-membered structured macrocycle. This new glycosylation motif is unprecedented in heterocyclic natural products.



Chem. Eur. J.
DOI: 10.1002/chem.201601739

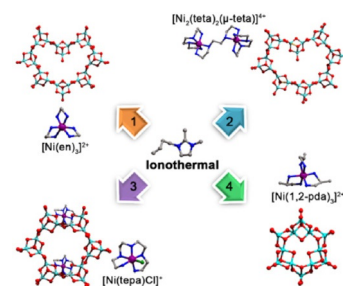


Selenidostannates

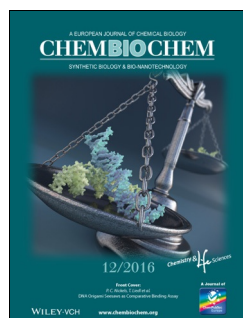
C.-F. Du, N.-N. Shen, J.-R. Li, M.-T. Hao, Z. Wang, X.-Y. Huang*

Synthesizing 2D and 3D Selenidostannates in Ionic Liquids: The Synergistic Structure-Directing Effects of Ionic Liquids and Metal–Amine Complexes

MAC it happen: Presented is a study of the synergistic structure-directing effect of metal–amine complexes (MACs) with different chelating polyamine ligands and imidazolium-based ionic liquid (IL) cations. For the first time, a layered selenidostannate with an asymmetric eight-membered ring, an organic-decorated layered selenidostannate, and a 3D selenidostannate with both the MAC and IL cations as structure-directing agents and counterions are obtained. en = ethylenediamine, tetra = triethylenetetramine, tepa = tetraethylenepentamine, 1,2-pda = 1,2-diaminopropane.



Chem. Asian J.
DOI: 10.1002/asia.201600073

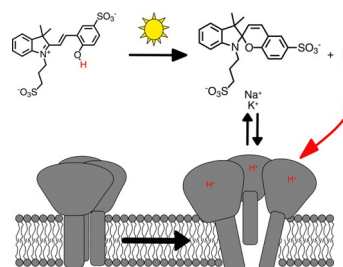


Optogenetics

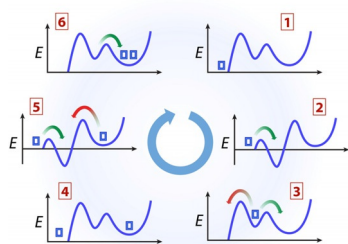
O. S. Shafaat, J. R. Winkler, H. B. Gray,* D. A. Dougherty*

Photoactivation of an Acid-Sensitive Ion Channel Associated with Vision and Pain

Intentional irradiation: We describe the reversible photoactivation of the acid-sensitive pentameric ligand-gated ion channel GLIC, achieved by using visible light irradiation of a newly synthesized water-soluble merocyanine photoacid. The results demonstrate that irradiation can induce rapid, local pH changes that can be used to investigate the kinetics of proton transfer reactions.



ChemBioChem
DOI: 10.1002/cbic.201600230



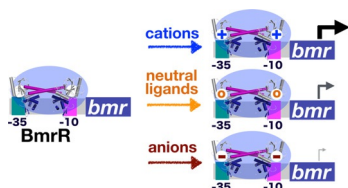
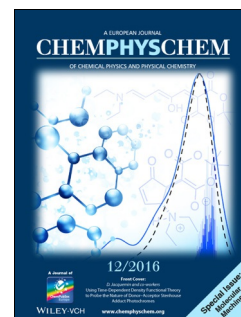
ChemPhysChem
DOI: 10.1002/cphc.201501155

Synthetic Molecular Machines

C. Cheng, J. F. Stoddart*

Wholly Synthetic Molecular Machines

A machine for every season: This minireview traces the development of artificial molecular machines from their prototypes in the form of shuttles and switches to their emergence as motors and pumps where supplies of energy in the form of chemical fuel, electrochemical potential and light activation become a minimum requirement for them to function away from equilibrium.



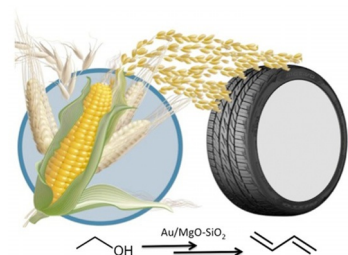
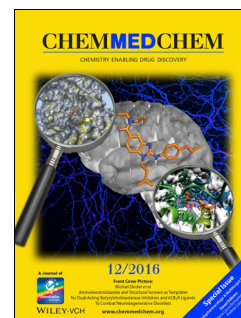
ChemMedChem
DOI: 10.1002/cmdc.201600059

Multidrug Resistance

S. Bachas, B. Kohrs, H. Wade*

Charge is Major Determinant of Activation of the Ligand-Responsive Multidrug Resistance Gene Regulator, BmrR

Charged allostery: A medium-throughput in vitro transcription approach has been used to elucidate ligand structural requirements for allosteric control in BmrR, a multidrug resistance gene regulator in *Bacillus subtilis*. Results obtained for cationic, zwitterionic, charge-neutral and anionic probes highlight a central importance for charge in ligand-activated transcription. An analysis of ligand-charge distribution of the *E. coli* metabolome suggests that charge may be an importance factor in identifying xenobiotics.



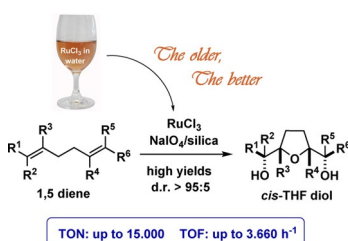
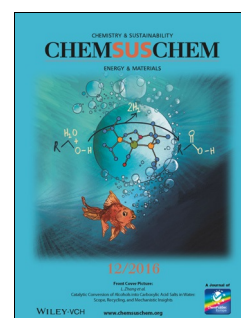
ChemSusChem
DOI: 10.1002/cssc.201600195

Renewables

S. Shylesh, A. A. Gokhale, C. D. Scown, D. Kim, C. R. Ho, A. T. Bell*

From Sugars to Wheels: The Conversion of Ethanol to 1,3-Butadiene over Metal-Promoted Magnesia-Silicate Catalysts

Step up in one step: A new catalyst and process for the one-step conversion of ethanol to 1,3-butadiene (1,3-BD), a high-value chemical intermediate, is investigated. The catalyst is prepared by the impregnation of magnesium oxide onto a silica support followed by the deposition of Au nanoparticles by deposition-precipitation. The production of 1,3-BD by this process can reduce greenhouse gas emissions by as much as 155 % relative to the conventional petroleum-based production of 1,3-BD.



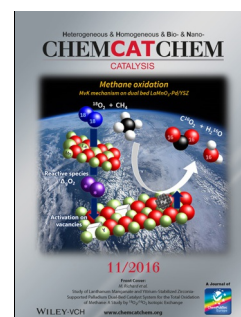
ChemCatChem
DOI: 10.1002/cctc.201600179

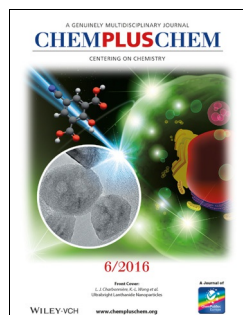
Cyclization

J. Adrian, S. Roth, C. B. W. Stark*

An Aged Precatalyst Solution Leads to High Catalytic Activity: Oxidative Cyclization of 1,5-Dienes Using ppm Amounts of Ruthenium

The older, the better: Aged aqueous solutions of ruthenium(III) chloride exhibit an extraordinarily high reactivity in the direct oxidative cyclization of representative 1,5-dienes. The corresponding THF diols are obtained in good to high yields and with excellent stereoselectivity (usually > 95:5). Turnover numbers of 15 000 and turnover frequencies of up to 3660 h⁻¹ are reached.



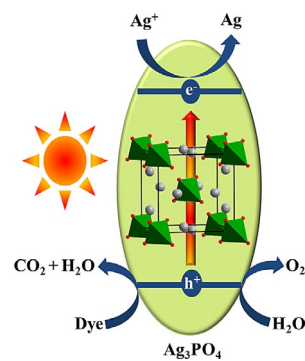


Water Oxidation

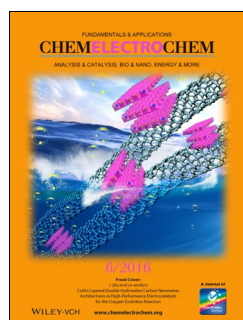
P. W. Menezes, A. Indra, M. Schwarze, F. Schuster, M. Driess*

Morphology-Dependent Activities of Silver Phosphates: Visible-Light Water Oxidation and Dye Degradation

Morphology is the key: A facile, scalable, and convenient strategy for the preparation of silver phosphates with diverse morphology for visible-light water oxidation as well as dye degradation has been uncovered (see figure).



ChemPlusChem
DOI: 10.1002/cplu.201500538

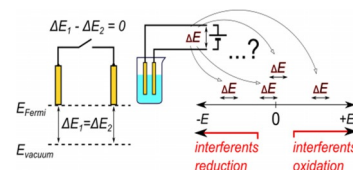


Electroanalysis

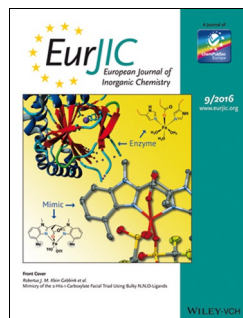
K. Lacina,* P. Vanýsek, P. Bednář, L. Trnková, P. Skládal

Redox-Pair-Defined Electrochemical Measurements: Biamperometric Setup for Elimination of Interferent Effects and for Sensing of Unstable Redox Systems

Removing interference: Biamperometry is introduced as a powerful electroanalytical tool for biosensing and other applications (see figure). The superiority of this technique is illustrated by the determination of glucose in blood plasma.



ChemElectroChem
DOI: 10.1002/celc.201600076

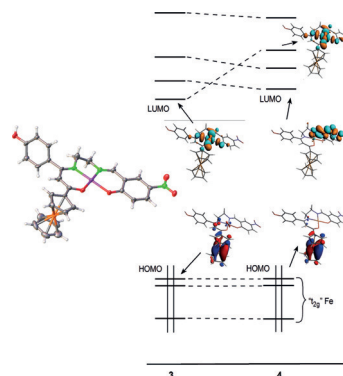


NLO Complexes

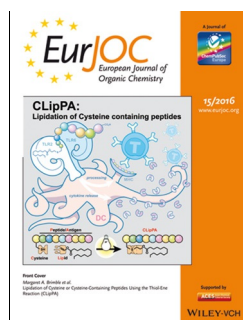
S. Celedón, M. Fuentealba, T. Roisnel, I. Ledoux-Rak, J.-R. Hamon,* D. Carrillo, C. Manzur*

Side-Chain Metallopolymers Containing Second-Order NLO-Active Bimetallic Ni^{II} and Pd^{II} Schiff-Base Complexes: Syntheses, Structures, Electrochemical and Computational Studies

The redox active heterobimetallic subunits and their derived side-chain metallopolymer Schiff-base compounds exhibit good thermal stability and high second-order NLO responses. The electronic structure of the bimetallic species is analyzed by DFT and TD-DFT calculations.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201600236

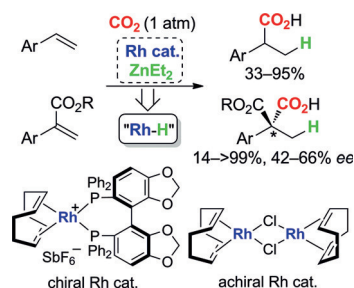


Hydrocarboxylation

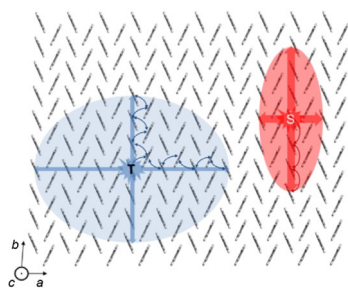
S. Kawashima, K. Aikawa, K. Mikami*

Rhodium-Catalyzed Hydrocarboxylation of Olefins with Carbon Dioxide

The Rh-catalyzed hydrocarboxylation of styrene derivatives and α,β -unsaturated carbonyl compounds with CO₂ is shown. The use of [RhCl(cod)]₂ (cod = cyclooctadiene) as a catalyst and diethylzinc as a hydride source provides the corresponding α -aryl carboxylic acids in moderate to excellent yields. Additionally, this catalyst system can be used in the asymmetric version of this reaction.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201600338



ChemistryOpen

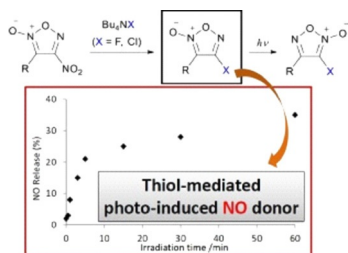
DOI: 10.1002/open.201500214

Optoelectronics

X. Xie, H. Ma*

Opposite Anisotropy Effects of Singlet and Triplet Exciton Diffusion in Tetracene Crystal

Some exciton news! Anisotropy difference for singlet and triplet excitons is shown to occur in organic crystals, ascribed to their distinct excitonic coupling mechanisms (Coulomb Förster vs. exchange Dexter). Such a finding provides a new framework to understand a vast range of photophysical problems and optimize the energy transfer efficiency of organic optoelectronic materials.



Asian J. Org. Chem.

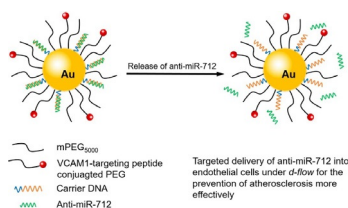
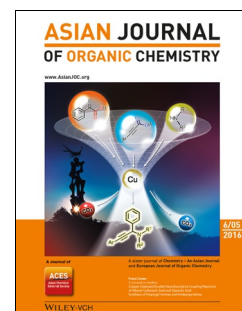
DOI: 10.1002/ajoc.201600149

Photochemistry

A. Ando, R. Matsubara,* S. Takazawa, T. Shimada, M. Hayashi

Fluorofuroxans: Synthesis and Application as Photoinduced Nitric Oxide Donors

NO spells NO: 3- and 4-fluorofuroxans have been synthesized for the first time. Under photoirradiation and physiological conditions, 4-fluorofuroxans with weaker nitric oxide-releasing ability are converted into 3-fluorofuroxans, which show remarkable thiol-mediated nitric oxide-releasing properties, suggesting that 4-fluorofuroxans are potent photoinduced nitric oxide donors.



ChemNanoMat

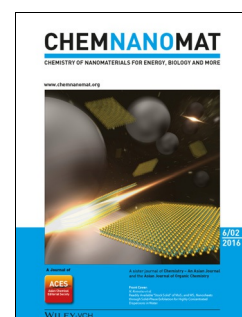
DOI: 10.1002/cnma.201600043

miRNA Delivery

T. Sun, R. Simmons, D. Huo, B. Pang, X. Zhao, C. W. Kim, H. Jo,* Y. Xia*

Targeted Delivery of Anti-miR-712 by VCAM1-Binding Au Nanospheres for Atherosclerosis Therapy

Gold nanospheres have been used for the targeted delivery of miRNA and thus prevention of atherosclerosis. This delivery system shows high selectivity toward the inflamed endothelial cells and exhibits great potential for the gene therapy of atherosclerosis.



ChemViews magazine

DOI: 10.1002/chemv.201600039

Scientific Process

V. Koester

How Discoveries Are Made

Professor K. Barry Sharpless won the Nobel Prize in Chemistry in 2001 for his influential work on stereoselective reactions. In a video, he explains how scientific discoveries are really made, that breakthroughs cannot be planned out in research proposals, and why humans are hard-wired to turn surprises into stories of well-ordered research.

