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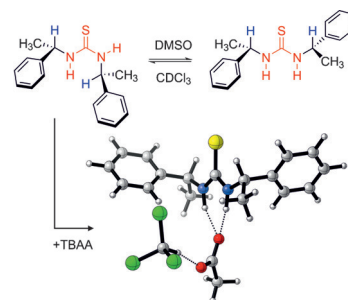


Catalyst Analysis

N. M. Kreienborg, C. H. Pollok, C. Merten*

Towards an Observation of Active Conformations in Asymmetric Catalysis: Interaction-Induced Conformational Preferences of a Chiral Thiourea Model Compound

Good vibrations: Using vibrational circular dichroism (VCD) spectroscopy, the conformational preferences of a chiral thiourea in different solvents and its interaction with an acetate anion were investigated. Characteristic spectral signatures were found for different groups of conformers and showcase the potential of using VCD spectroscopy for studying reactant–catalyst interactions (see scheme).



Chem. Eur. J.
DOI: 10.1002/chem.201602097

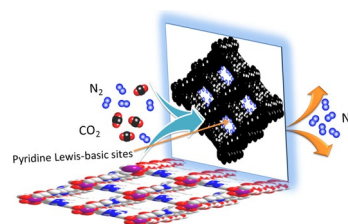


Metal–Organic Frameworks

L. Li, Y. Wang, X. Gu, Q. Yang, X. Zhao*

Increasing the CO₂/N₂ Selectivity with a Higher Surface Density of Pyridinic Lewis Basic Sites in Porous Carbon Derived from a Pyridyl-Ligand-Based Metal–Organic Framework

Working with the pore: Porous carbons with doped pyridinic sites were prepared from the carbonization of a pyridyl-ligand-based metal–organic framework (MOFC). Owing to the high content of pyridinic-N groups, the CO₂/N₂ selectivity on the four synthesized MOFCs is also high (see figure). Correlation studies validated the synergistic effect of the doped pyridinic-N groups on CO₂ adsorption selectivity.



Chem. Asian J.
DOI: 10.1002/asia.201600427

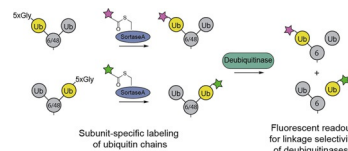


Ubiquitin chains

S. O. Crowe, G. H. Pham, J. C. Ziegler, K. K. Deol, R. G. Guenette, Y. Ge, E. R. Strieter*

Subunit-Specific Labeling of Ubiquitin Chains by Using Sortase: Insights into the Selectivity of Deubiquitinases

Subunit sortagging: Sortagging is used to fluorescently label individual subunits of ubiquitin chains. This method enables the biochemical characterization of deubiquitinases by examining the selectivity toward specific isopeptide linkages and chain topologies. In this work, we demonstrate that the ubiquitin-specific protease USP15 prefers branched over linear ubiquitin chains.



ChemBioChem
DOI: 10.1002/cbic.201600276



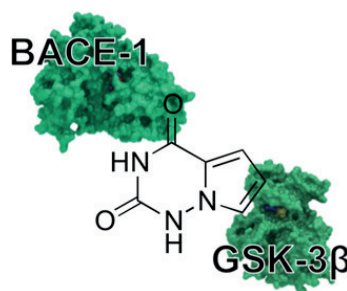
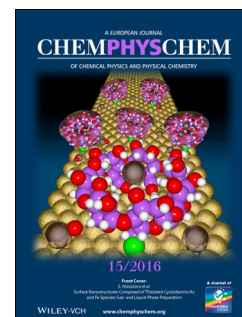
ChemPhysChem
DOI: 10.1002/cphc.201600173

Enzymes

B. E. Fratto, J. M. Lewer, E. Katz*

An Enzyme-Based Half-Adder and Half-Subtractor with a Modular Design

Enzymes do the math: A half-adder and a half-subtractor operate with metabolite input signals processed by modular enzyme systems. The individual modules are modified with different enzymes and can be arranged in a variety of ways to be used in cascade in a flow device to perform logic operations and arithmetic functions. The final output signals are based on the absorbance of redox-active species $[\text{Fe}(\text{CN})_6]^{3-/4-}$ or NADH/NAD^+ .



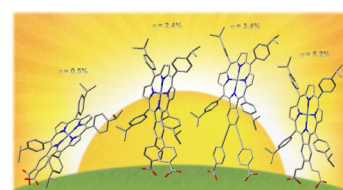
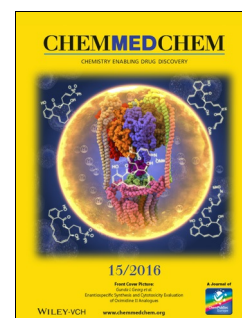
ChemMedChem
DOI: 10.1002/cmdc.201500521

Polypharmacology: Alzheimer's Disease

G. Bottegoni,* M. Veronesi, P. Bisignano, P. Kacker, A. D. Favia, A. Cavalli

Development and Application of a Virtual Screening Protocol for the Identification of Multitarget Fragments

Multitasking for memory: Classical virtual ligand screening protocols can be efficiently adapted to work with fragments within the framework of polypharmacology. Herein we report the in silico discovery of a dual inhibitor of β -secretase 1 and glycogen synthase kinase 3 β , highlighting a new and promising approach in the treatment of Alzheimer's disease.



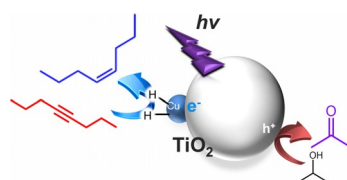
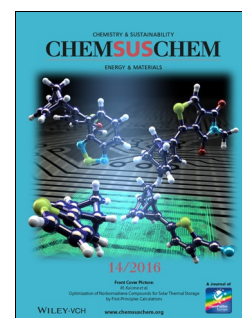
ChemSusChem
DOI: 10.1002/cssc.201600619

Solar Cells

R. G. W. Jinadasa, B. Li, B. Schmitz, S. Kumar, Y. Hu, L. Kerr, H. Wang*

Monobenzoporphyrins as Sensitizers for Dye-Sensitized Solar Cells: Observation of Significant Spacer-Group Effect

A spacer odyssey: Monobenzoporphyrins bearing conjugated spacer groups are synthesized as sensitizers for dye-sensitized solar cells. These monobenzoporphyrins demonstrate a significant spacer-group effect and give power conversion efficiencies in the range 0.5 to 5.2%.



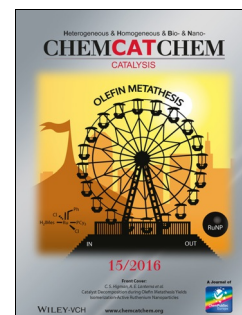
ChemCatChem
DOI: 10.1002/cctc.201600290

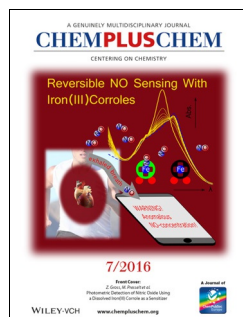
Hydrogenation

H. Kominami,* M. Higa, T. Nojima, T. Ito, K. Nakanishi, K. Hashimoto, K. Imamura

Copper-Modified Titanium Dioxide: A Simple Photocatalyst for the Chemoselective and Diastereoselective Hydrogenation of Alkynes to Alkenes under Additive-Free Conditions

A "healthy" photocatalyst: Internal alkynes are chemoselectively and diastereoselectively hydrogenated to the corresponding *cis*-alkenes in alcoholic suspensions of a copper-loaded TiO_2 photocatalyst without the use of additives and poisons often used in the case of Lindlar's catalyst.





Water Splitting

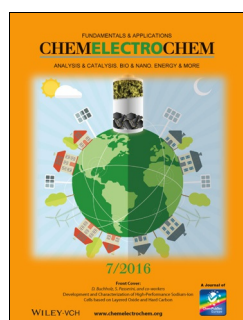
B. You, Y. Sun*

Chalcogenide and Phosphide Solid-State Electrocatalysts for Hydrogen Generation

The way to H₂: Clean H₂ generation from water catalyzed by efficient, robust, and cheap transition-metal chalcogenides and phosphides has attracted intense interest of late (see figure). This Minireview highlights the current status of these two categories of electrocatalyst for H₂ evolution, starting with an introduction to the fundamental concepts and concluding with our perspective on the challenges and future opportunities in this vibrant field.



ChemPlusChem
DOI: 10.1002/cplu.201600029

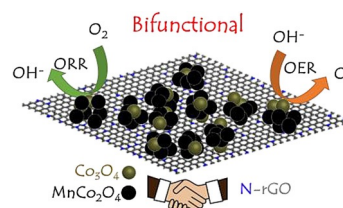


Electrocatalysis

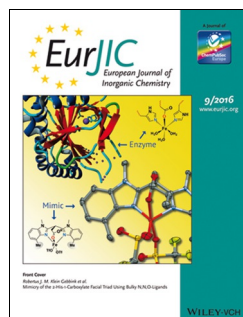
X. He, F. Yin,* S. Yuan, N. Liu, X. Huang

Hybrid Spinel Oxides/N-Doped Reduced Graphene Oxide as Highly-Active Bifunctional Electrocatalysts for Oxygen Reduction/Evolution Reactions

Coming together: A Co₃O₄–MnCo₂O₄ (CMO)/N-doped reduced graphene oxide (N-rGO) nanocomposite electrocatalyst is developed by using a two-step synthetic method. The efficient combination of oxygen reduction reaction (ORR) and oxygen evolution reaction (OER) active sites from CMO hybrid oxides and N-rGO, as well as the enhanced charge transfer from N-rGO, enhances the bifunctional activity for ORR/OER.



ChemElectroChem
DOI: 10.1002/celec.201600061

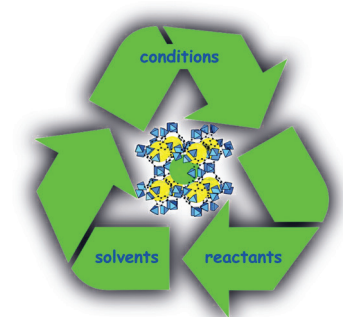


"Green" Synthesis

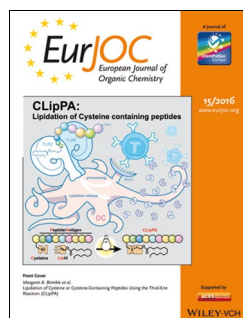
H. Reinsch*

"Green" Synthesis of Metal-Organic Frameworks

During the recent years the research in the field of MOFs has gradually shifted towards a focus on more sustainable and industrially feasible conditions. This microreview gives several concise examples from this emerging field of research and also depicts some perspectives.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201600286

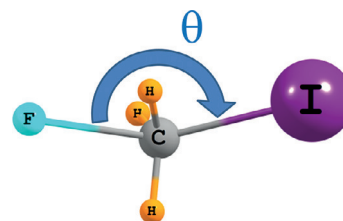


Bent Transition States

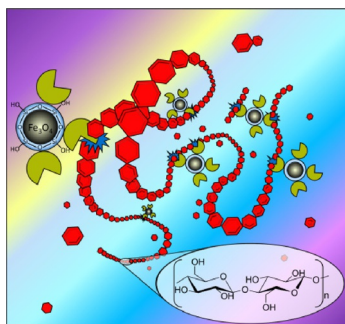
V. P. N. Nziko, S. Scheiner*

Effects of Angular Deformation on the Energetics of the S_N2 Reaction

The classic S_N2 reaction is thought to progress through a linear transition state, but nonlinearity can be imposed by enzymes. Quantum calculations show that such imposed distortion has little effect upon the activation energy. This lack of sensitivity arises, because the energy of the transition state is raised by the distortion, but so is that of the reaction complex.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201600712



ChemistryOpen

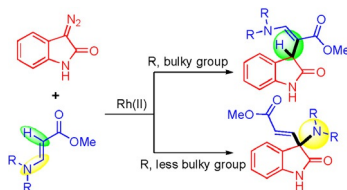
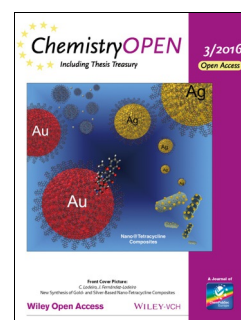
DOI: 10.1002/open.201600028

Biocatalysis

H.-C. Roth, S. P. Schwaminger, F. Peng, S. Berensmeier*

Immobilization of Cellulase on Magnetic Nanocarriers

Small particles, great potential: Magnetic nanoscale carrier materials can reduce negative mass-transfer effects and thus facilitate high enzymatic activity in the hydrolysis and degradation of highly molecular cellulose to single reducing sugars, such as glucose. We immobilized cellulase on bare and silica-coated magnetite nanoparticles and were able to achieve high loadings and no loss in activity over ten process cycles.



Asian J. Org. Chem.

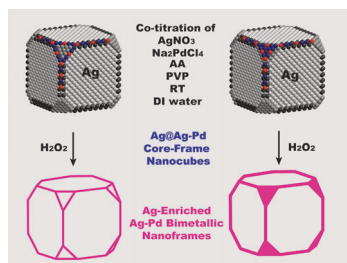
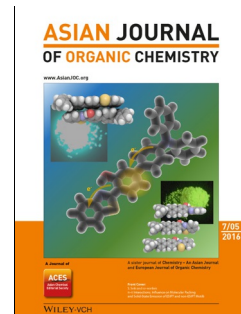
DOI: 10.1002/ajoc.201600226

Oxindoles

S. H. Yun, L. Xia, S. H. Kim, Y. R. Lee*

Rh(II)-Catalyzed Chemoselective Synthesis of 3-Substituted Oxindoles by C(sp²)-H and C(sp²)-N Functionalization of β-Enaminoesters

Controlled chemoselectivity: Chemoselective synthesis of diverse 3-substituted oxindoles has been developed through a Rh(II)-catalyzed reaction of 3-diazoindolin-2-ones by C(sp²)-H and C(sp²)-N functionalization of β-enaminoesters. The chemoselectivity was controlled by the N-substituents on the β-enaminoesters as a result of their electronic and steric effects. The *trans* geometry of the β-enaminoesters is retained in the C–N/H insertion products.



ChemNanoMat

DOI: 10.1002/cnma.201600080

Noble Metal Nanomaterials

J. Li, X. Sun, D. Qin*

Ag-Enriched Ag-Pd Bimetallic Nanoframes and Their Catalytic Properties

The fabrication of a Ag-enriched Ag-Pd nanoframe involves the co-reduction of Ag and Pd precursors by ascorbic acid to generate atoms, followed by their co-deposition onto a Ag nanocube and the subsequent removal of the Ag core.



ChemViews magazine

DOI: 10.1002/chemv.201600057

Microreactors

B. Boeck, G. Chen

Microreactor for Scent and Drug Production

In “Behind the Science”, *ChemViews Magazine* gives readers a peek behind the scenes of a research article. This time, Barbara Boeck, *Chemical Engineering & Technology*, talks to Guangwen Chen, Chinese Academy of Sciences, about his recent article on a microreactor system for the preparation of ionones, which are used in the perfume and pharmaceutical industry.

