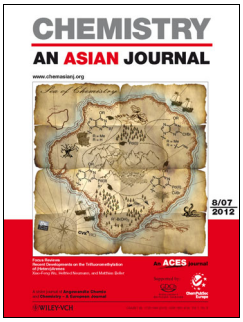
Structure Elucidation

S. Moser, T. Müller, A. Holzinger, C. Lütz, B. Kräutler*

Structures of Chlorophyll Catabolites in Bananas (*Musa acuminata*) Reveal a Split Path of Chlorophyll Breakdown in a Ripening Fruit

Ripe result: In ripening bananas, chlorophyll disappears to give colorless chlorophyll-breakdown products. Their analysis and structure elucidation revealed an unprecedented structural variety, indicating two breakdown paths. The surprisingly abundant fluorescent chlorophyll catabolites make freshly ripe bananas luminesce blue (see figure). Our findings call for attention as to possible biological roles of the catabolites.

Chem. Eur. J.
DOI: **10.1002/chem.201201023**

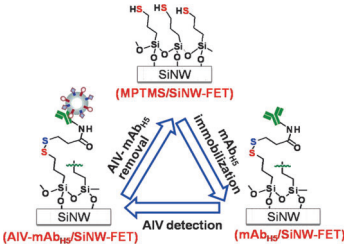


Biosensors

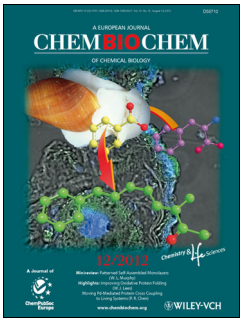
P.-L. Chiang, T.-C. Chou, T.-H. Wu, C.-C. Li, C.-D. Liao, J.-Y. Lin, M.-H. Tsai, C.-C. Tsai, C.-J. Sun, C.-H. Wang, J.-M. Fang,* Y.-T. Chen*

Nanowire Transistor-Based Ultrasensitive Virus Detection with Reversible Surface Functionalization

Catching the flu: The surface of a silicon nanowire field-effect transistor (SiNW-FET) is functionalized with a mercaptosilane, which forms a disulfide bond to a monoclonal antibody against avian influenza virus (AIV). This mAb_{H5}/SiNW-FET device shows an electrical response when the virus is bound. The sensor can be regenerated by cleaving the disulfide bond to release the antibody–virus complex and adding another portion of antibody.



Chem. Asian J.
DOI: **10.1002/asia.201200222**

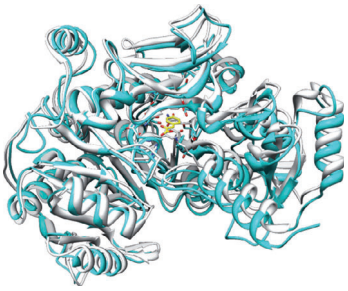


Natural Products

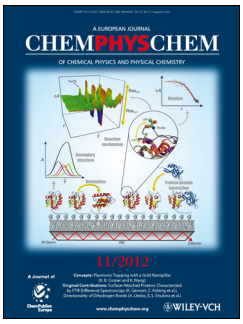
B. Wackler, G. Lackner, Y. H. Chooi, D. Hoffmeister*

Characterization of the *Suillus grevillei* Quinone Synthetase GreA Supports a Nonribosomal Code for Aromatic α-Keto Acids

The keto being accepted: The atromentin synthase GreA represents a peptide synthetase-like enzyme from the basidiomycete *Suillus grevillei*. The GreA adenylation domain preferably accepts 4-hydroxyphenylpyruvic acid. Through in silico simulation of the adenylation domain structure a nonribosomal code emerged which appears specific to aromatic α-keto acids.



ChemBioChem
DOI: **10.1002/cbic.201200187**

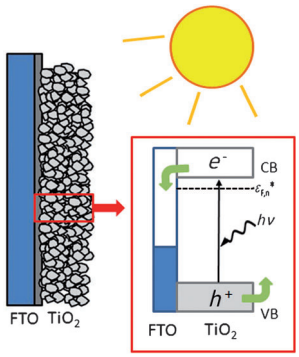


Electrode Materials

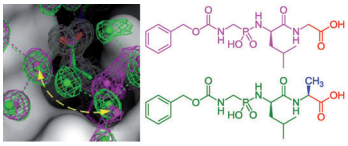
T. Berger, D. Monllor-Satoca, M. Jankulovska, T. Lana-Villarreal, R. Gómez*

The Electrochemistry of Nanostructured Titanium Dioxide Electrodes

Ubiquitous titania electrodes: The electrochemistry of nanostructured titanium dioxide electrodes is reviewed with a focus on the fundamental aspects that determine their behavior both in the dark and under illumination (see picture). Some applications in the fields of environmental remediation (heterogeneous photocatalysis), and energy saving (electrochromism), generation (artificial photosynthesis) and accumulation (Li-ion batteries) are also dealt with.



ChemPhysChem
DOI: **10.1002/cphc.201200073**



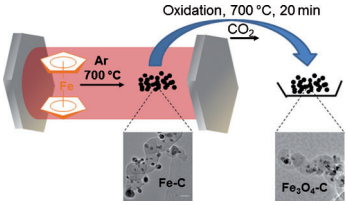
Protein–Ligand Interactions

A. Biela, M. Betz, A. Heine, G. Klebe*

Water Makes the Difference: Rearrangement of Water Solvation Layer Triggers Non-additivity of Functional Group Contributions in Protein–Ligand Binding

Water makes the difference! Rupture in a contiguously connected network of water molecules in the first solvation layer next to a protein binding pocket results in surprising non-additivity effects of functional group replacements in the congeneric series of thermolysin inhibitors.

ChemMedChem
DOI: **10.1002/cmdc.201200206**



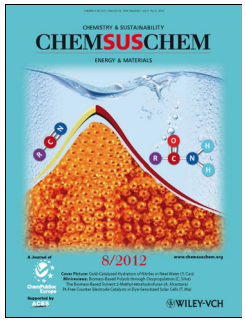
Batteries

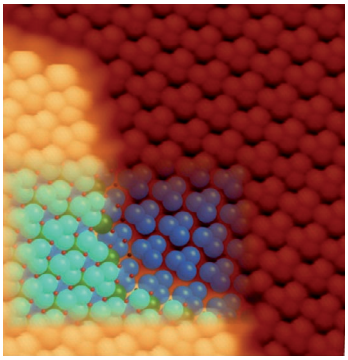
S. Ren, R. Prakash, D. Wang, V. S. K. Chakravadhanula, M. Fichtner*

Fe_3O_4 Anchored onto Helical Carbon Nanofibers as High-Performance Anode in Lithium-Ion Batteries

Feeling the fiber: A composite material comprising Fe_3O_4 particles anchored onto carbon nanofibers is formed through a simple, solvent-free, two-step process. The carbon fibers self-organize in a helical manner during the pyrolysis process. Synergistic effects between the Fe_3O_4 and the carbon support lead to a composite with high capacity, and good cycling stability and rate capability.

ChemSusChem
DOI: **10.1002/cssc.201200139**





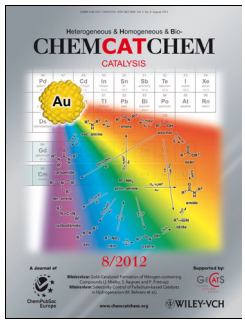
Hydrogenation

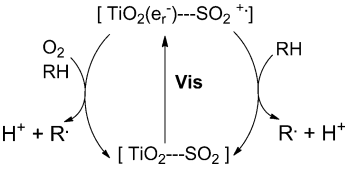
M. Armbrüster, M. Behrens,* F. Cinquini, K. Föttinger, Y. Grin, A. Haghofer, B. Klötzer, A. Knop-Gericke, H. Lorenz, A. Ota, S. Penner, J. Prinz, C. Rameshan, Z. Révay, D. Rosenthal, G. Rupprechter, P. Sautet, R. Schlögl, L. Shao, L. Szentmiklósi, D. Teschner, D. Torres, R. Wagner, R. Widmer, G. Wowsnick

How to Control the Selectivity of Palladium-based Catalysts in Hydrogenation Reactions: The Role of Subsurface Chemistry

Find the beauty on the inside: Recent work is reviewed that shows how the modification of Pd surfaces by incorporation of foreign species X in the sub-surface of Pd metal (X = H, C, Ga) can be developed into a design tool for hydrogenation catalyst development.

ChemCatChem
DOI: **10.1002/cctc.201200100**





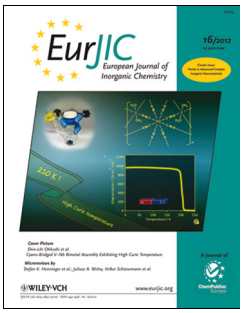
Photocatalysis

F. Parrino, A. Ramakrishnan, C. Damm, H. Kisch*

Visible-Light-Induced Sulfoxidation of Alkanes in the Presence of Titania

Visible-light photosulfoxidation: Titanium dioxide photocatalyzes visible-light-induced sulfoxidation of alkanes through an optical charge-transfer excitation of a titania–sulfur dioxide complex (see proposed mechanism). The reaction exhibits typical features of a photoinduced radical chain reaction.

ChemPlusChem
DOI: **10.1002/cplu.201200097**

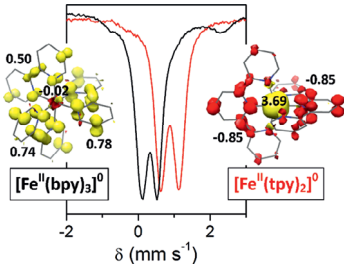


Electronic Structures

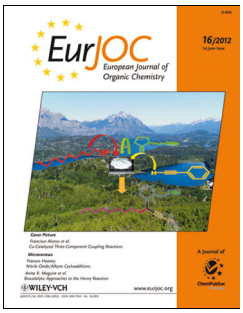
J. England, C. C. Scarborough, T. Weyhermüller, S. Sproules, K. Wieghardt*

Electronic Structures of the Electron Transfer Series $[M(bpy)_3]^n$, $[M(tpy)_2]^n$, and $[Fe(^tbpy)_3]^n$ (M = Fe, Ru; $n = 3+, 2+, 1+, 0, 1-$): A Mössbauer Spectroscopic and DFT Study

The electronic structures of $[M(tpy)_2]^n$, $[M(bpy)_3]^n$, and $[Fe(^tbpy)_3]^n$ (M = Fe, Ru; $n = 1+, 0, 1-$) have been investigated and assigned. They all contain divalent metal centers, with the excess electrons localized on the ligands. Furthermore, the metal ions are all low spin ($S = 0$), except in $[Fe(tpy)_2]^{0/1-}$, where they are high spin ($S = 2$).



Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.201200232**

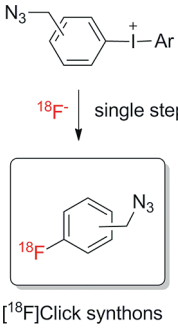


Radiochemistry

J.-H. Chun, V. W. Pike*

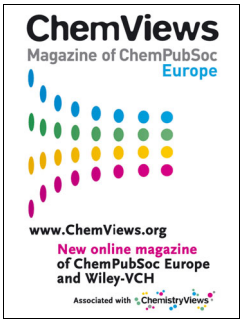
Single-Step Radiosynthesis of "^{18}F-Labeled Click Synthons" from Azide-Functionalized Diaryliodonium Salts

[^{18}F]Click synthons from diaryliodonium salts: [^{18}F]Fluorobenzyl azides have been readily prepared through single-step radiofluorinations of diaryliodonium salt precursors.



[^{18}F]Click synthons

Eur. J. Org. Chem.
DOI: **10.1002/ejoc.201200695**



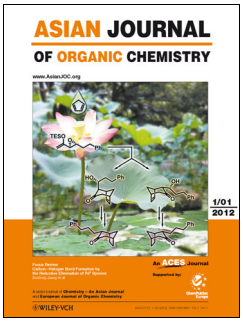
Book Recommendations

ChemViews

Summer Reading

Looking for something to read this summer? ChemViews magazine, together with journal and book editors, recommends chemistry and science related books that make ideal summer reading, from the personalities and rivalries that made modern chemistry to some of the most intriguing scientific mysteries of our time.

ChemViews magazine
DOI: **10.1002/chemv.201200085**

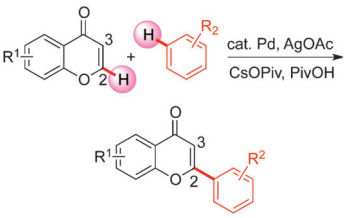


Cross-coupling Reactions

M. Min, H. Choe, S. Hong*

Regioselective Cross-Dehydrogenative Coupling of Chromones and Non-Activated Arenes

Flavone from benzene: An efficient regiocontrolled C–H functionalization of chromones at the C2 position is described. This method enables facile oxidative cross-coupling reactions with non-activated arenes by a palladium-catalyzed twofold C–H functionalization. The substrate scope is broad and permits the construction of various flavone derivatives, which are privileged structures as well as prevalent motifs in many biologically active compounds.



Asian J. Org. Chem.
DOI: **10.1002/ajoc.201200036**