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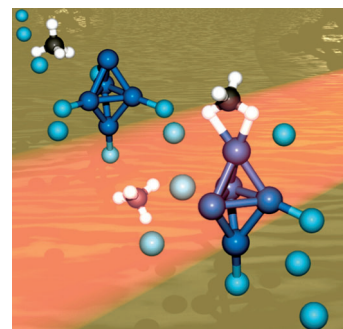


Model Catalysis

D. J. Harding, A. Fielicke*

Platinum Group Metal Clusters: From Gas-Phase Structures and Reactivities towards Model Catalysts

Caught in the act: Transition-metal clusters have long been proposed as model systems to study heterogeneous catalysts. This Concept article shows how advanced spectroscopic techniques can be used to investigate gas-phase metal clusters and their complexes with small molecules, with the aim of developing an understanding of their reactivity (see figure).



Chem. Eur. J.
DOI: 10.1002/chem.201304586

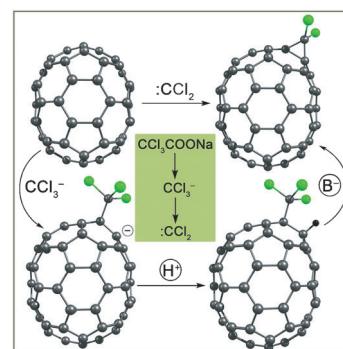


Reaction Mechanisms

M. G. Apenova, V. A. Akhmetov, N. M. Belov, A. A. Goryunkov,*
I. N. Ioffe, N. S. Lukonina, V. Y. Markov, L. N. Sidorov

Alkali-Metal Trichloroacetates for Dichloromethylenation of Fullerenes: Nucleophilic Addition-Substitution Route

Looking for clues: The first experimental evidence that fullerenes react with alkali-metal trichloroacetates through a nucleophilic addition-substitution route to ultimately yield dichloromethylenefullerenes is reported (see picture). The structures of $C_{60}(CCl_3)H$ and four isomeric $C_{70}(CCl_3)H$ derivatives were unambiguously determined by means of NMR and UV/Vis spectroscopy.



Chem. Asian J.
DOI: 10.1002/asia.201301413

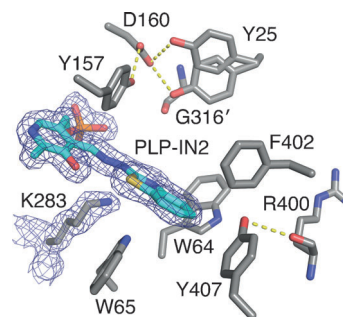


Tuberculosis

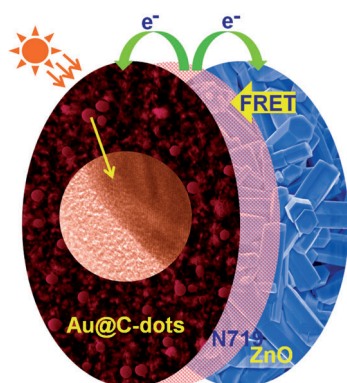
R. Dai, D. J. Wilson, T. W. Geders, C. C. Aldrich, B. C. Finzel*

Inhibition of *Mycobacterium tuberculosis* Transaminase BioA by Aryl Hydrazines and Hydrazides

TB or not TB: 7,8-Diaminopelargonic acid synthase (BioA) of *Mycobacterium tuberculosis* (*Mtb*) is a recently validated target in therapeutic interventions for tuberculosis (TB). In this paper, an aryl hydrazine *Mtb* BioA inhibitor is described that reversibly reacts with the PLP cofactor to form a stable *cis*-azo quinonoid species, which was structurally characterized by X-ray crystallography.



ChemBioChem
DOI: 10.1002/cbic.201300748



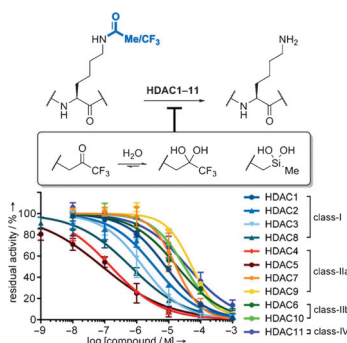
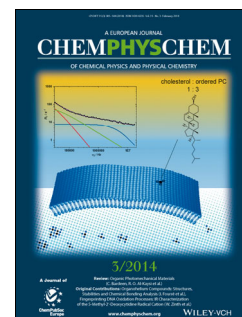
ChemPhysChem
DOI: 10.1002/cphc.201300958

Solar Cells

R. Narayanan, M. Deepa,* A. K. Srivastava, S. M. Shivaprasad

Efficient Plasmonic Dye-Sensitized Solar Cells with Fluorescent Au-Encapsulated C-Dots

Covering all possibilities: Au@C-dots function as plasmonic electron conduits and also undergo photo-induced charge separation in FRET-enabled high-performance ZnO based dye-sensitized solar cells.



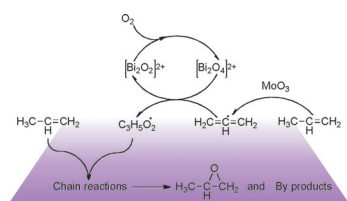
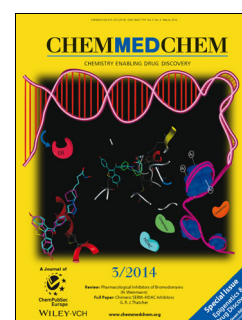
ChemMedChem
DOI: 10.1002/cmdc.201300433

Epigenetics

A. S. Madsen, H. M. E. Kristensen, G. Lanz, C. A. Olsen*

The Effect of Various Zinc Binding Groups on Inhibition of Histone Deacetylases 1–11

Zinc about it: We synthesized a series of compounds containing diverse zinc binding motifs and profiled their inhibitory activity against the 11 human histone deacetylases (HDAC1–11). From the results, we discovered silanediol to be a novel functionality with potential as a suitable design element in the preparation of new HDAC inhibitors. Compounds of this type show promise as future drug leads.



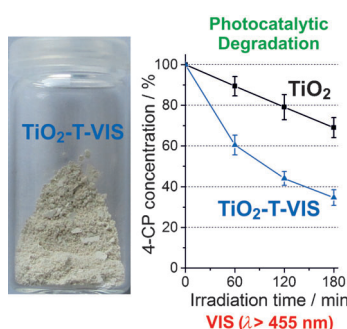
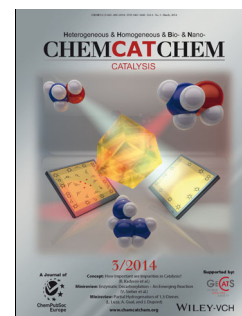
ChemCatChem
DOI: 10.1002/cctc.201300811

Epoxidation

Y. Pang, X. Chen,* C. Xu, Y. Lei, K. Wei

High Catalytic Performance of MoO₃-Bi₂SiO₅/SiO₂ for the Gas-Phase Epoxidation of Propylene by Molecular Oxygen

A new sensation in epoxidation: We describe the probable synergistic effects of MoO₃ and Bi₂SiO₅ in propylene epoxidation. The reactive centers consist of nanoparticulate species of crystalline MoO₃ to activate the propylene and bismuth oxide cluster cations to activate O₂.



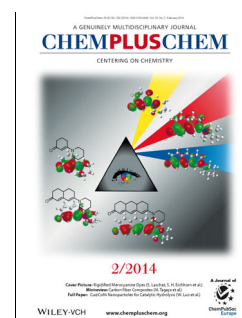
ChemPlusChem
DOI: 10.1002/cplu.201300277

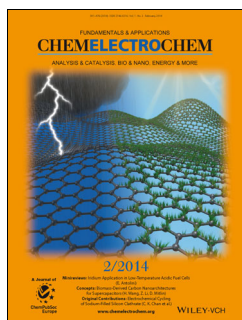
Photocatalysis

S. Neubert, A. Ramakrishnan, J. Strunk, H. Shi, B. Mei, L. Wang, M. Bledowski, D. A. Guschin, M. Kauer, Y. Wang, M. Muhler, R. Beranek*

Surface-Modified TiO₂ Photocatalysts Prepared by a Photosynthetic Route: Mechanism, Enhancement, and Limits

Shedding light on things: Aromatic molecules like benzene or toluene can be activated by visible light ($\lambda > 455$ nm) at the surface of TiO₂, which leads to the formation of carbonaceous polymeric deposits on TiO₂ (see figure). The photosynthesized surface-modified TiO₂ shows enhanced photoactivity in the complete mineralization of 4-chlorophenol under visible-light irradiation.



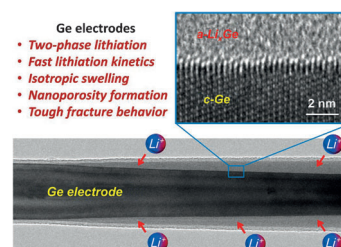


Energy Materials

Y. Liu, S. Zhang,* T. Zhu*

Germanium-Based Electrode Materials for Lithium-Ion Batteries

In situ TEM electrochemistry is a powerful tool to study lithiation/delithiation and degradation mechanisms in battery electrodes in real time with high spatial resolution. Novel phenomena are uncovered in germanium-based electrode materials by using this technique.



ChemElectroChem
DOI: 10.1002/celc.201300195

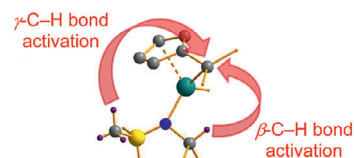


Titanium Complexes

C. Adler, A. Bekurds, D. Haase, W. Saak, M. Schmidtman, R. Beckhaus*

Bulky Titanium Amides: C–H Bond Activation under Mild Conditions

The solid-state structures of tetrahedral and octahedral titanium amide complexes with bulky dicyclohexylamido ligands reveal a characteristic close contact between the titanium atom and a carbon atom in the β -position. The exchange of a chlorine atom by a bulky pentafulvene ligand increases this effect. The introduction of other sterically demanding amines to complexes initiates a spontaneous C–H activation.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201400022

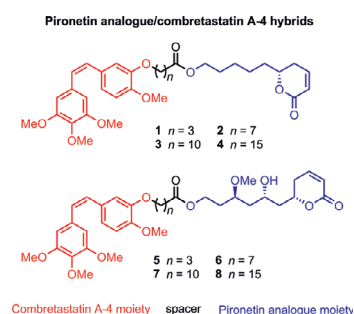


Drug Design

S. Torijano-Gutiérrez, C. Vilanova, S. Díaz-Oltra, J. Murga,* E. Falomir, M. Carda, J. A. Marco*

Design and Synthesis of Pironetin Analogue/Combretastatin A-4 Hybrids and Evaluation of Their Cytotoxic Activity

The preparation of a series of hybrid molecules containing a combretastatin A-4 moiety and a pironetin analogue fragment linked by a spacer of variable length is described. The relationship between structure and cytotoxicity is discussed. Cytotoxicity values of some compounds were similar to those of the parent molecules, combretastatin A-4 and pironetin, and some were less toxic than the latter for normal cells.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201301725

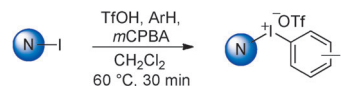


Heterocycles

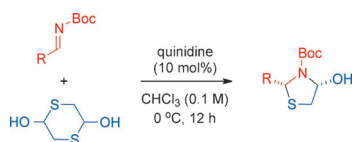
M. Bielawski, J. Malmgren, L. M. Pardo, Y. Wikmark, B. Olofsson*

One-Pot Synthesis and Applications of N-Heteroaryl Iodonium Salts

N-Heteroarylation: An efficient one-pot synthesis of N-heteroaryl iodonium triflates from the corresponding N-heteroaryl iodide has been developed. The reactivity and chemoselectivity of these iodonium salts were demonstrated by selectively introducing a pyridyl moiety onto both oxygen and carbon nucleophiles in good yields.



ChemistryOpen
DOI: 10.1002/open.201300042



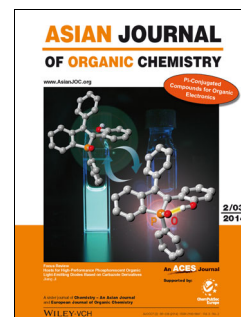
Asian J. Org. Chem.
DOI: 10.1002/ajoc.201400025

Organocatalysis

H. Qian, J. Sun*

Organocatalytic Enantio- and Diastereoselective Assembly of Thiazolidine Scaffolds by Formal [3+2] Annulation

Great balls of thia: An organocatalytic formal [3+2] annulation is described. With readily available achiral starting materials, a range of thiazolidines can be assembled in excellent yield and with moderate to good enantioselectivity and diastereoselectivity.



ChemViews magazine
DOI: 10.1002/chemv.201400002

Nanorods

J. Faiz

Copolymerization of Metal Nanoparticles

Professor Eugenia Kumacheva, Canada, talks to Dr. Jonathan Faiz, Senior Associate Editor for *Angewandte Chemie*, about her recent article. She discusses the significance of the molecular copolymerization approach described and how this strategy can have a broader impact by offering control over the structure and properties of nanoparticle assemblies.

