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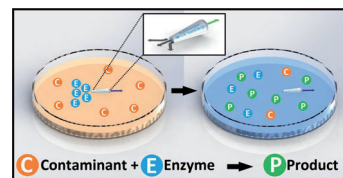


Pollutant Degradation

J. Orozco, D. Vilela, G. Valdés-Ramírez, Y. Fedorak, A. Escarpa, R. Vazquez-Duhalt, J. Wang*

Efficient Biocatalytic Degradation of Pollutants by Enzyme-Releasing Self-Propelled Motors

Keep the motor running: Catalytic degradation of pollutants by enzyme-releasing motors is reported. The first example of a self-propelled tubular motor that releases an enzyme in a controlled fashion for the efficient biocatalytic degradation of chemical pollutants is described (see figure).



Chem. Eur. J.
DOI: 10.1002/chem.201304179

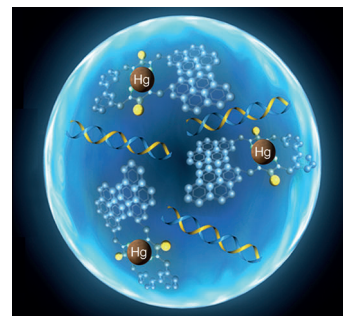


Fluorescent Probes

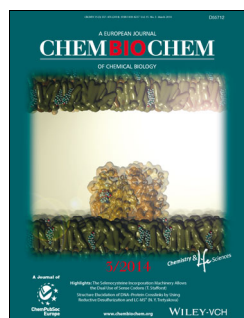
G. K. Wang, Q. L. Mi, L. Y. Zhao, J. J. Hu, L. E. Guo, X. J. Zou, B. Liu, X. G. Xie, J. F. Zhang,* Q. H. Zhao,* Y. Zhou*

A Pyrene Derivative for Hg²⁺-Selective Fluorescent Sensing and Its Application in In Vivo Imaging

A bright sandwich: An Hg²⁺-selective fluorescent sensor (**1**) bearing pyrene as a fluorophore was synthesized. A sandwich-stacking binding mode was formed during the binding process, which increased the excimer fluorescence 22-fold at 490 nm (see figure). Compound **1** was successfully applied in in vivo imaging to trace the enrichment and distribution of mercury in *Caenorhabditis elegans*.



Chem. Asian J.
DOI: 10.1002/asia.201301123

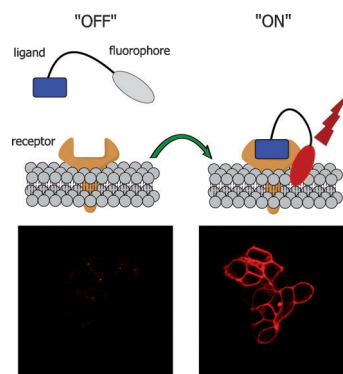


Fluorescent Probes

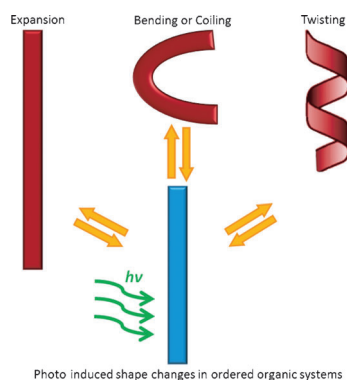
I. A. Karpenko, R. Kreder, C. Valencia, P. Villa, C. Mendre, B. Mouillac, Y. Mély, M. Hibert, D. Bonnet,* A. S. Klymchenko*

Red Fluorescent Turn-On Ligands for Imaging and Quantifying G Protein-Coupled Receptors in Living Cells

Receptor, you can turn me on: The first red fluorescent turn-on ligands for a G protein-coupled receptor (oxytocin) are reported. The molecular design, a fluorogenic dye connected to a peptide agonist by a polar spacer, ensures a strong specific turn-on response, thus enabling imaging and rapid quantification of receptors at the cell surface.

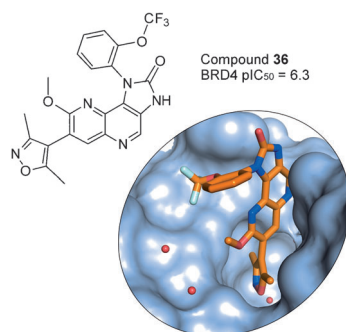


ChemBioChem
DOI: 10.1002/cbic.201300738



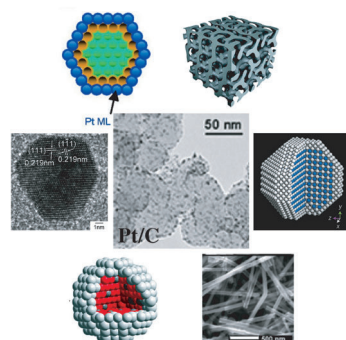
ChemPhysChem

DOI: 10.1002/cphc.201300906



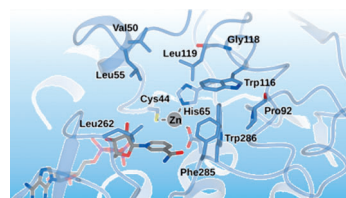
ChemMedChem

DOI: 10.1002/cmdc.201300259



ChemSusChem

DOI: 10.1002/cssc.201300823



ChemCatChem

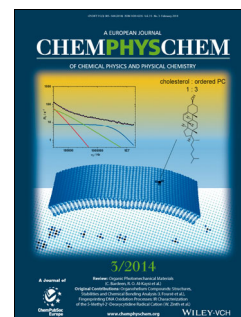
DOI: 10.1002/cctc.201300788

Materials Science

T. Kim, L. Zhu, R. O. Al-Kaysi,* C. J. Bardeen*

Organic Photomechanical Materials

Putting organic photochemistry to work: Structures composed of organic photoreactive molecules can exhibit various types of large-scale (micron to millimeter) motions. This review covers basic principles and classes of organic photomechanical materials, including polymeric materials, microcrystals, and nanocrystals. Photoinduced thermal and charge-transfer-mediated mechanical motions are also discussed, as well as potential directions for future research.

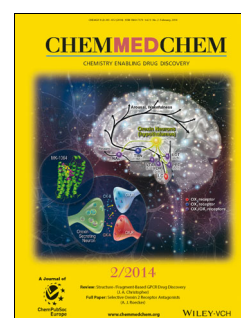


Epigenetics

O. Mirguet,* Y. Lamotte, C.-w. Chung, P. Bamborough, D. Delannée, A. Bouillot, F. Gellibert, G. Krysa, A. Lewis, J. Witherington, P. Huet, Y. Dudot, L. Trottet, E. Nicodeme

Naphthyridines as Novel BET Family Bromodomain Inhibitors

Place your BET! Naphthyridine derivatives were designed and synthesized as potent inhibitors of the BET bromodomain family with good cell activity and oral pharmacokinetic parameters. X-ray crystal structures were solved and quantum mechanical calculations were used to explain the higher affinity of the 1,5-isomer over the others. The best compounds were progressed in a mice model of inflammation and exhibited dose-dependent anti-inflammatory pharmacology.



Fuel Cells

L. Su, W. Jia, C.-M. Li,* Y. Lei*

Mechanisms for Enhanced Performance of Platinum-Based Electrocatalysts in Proton Exchange Membrane Fuel Cells

Going platinum: Expensive catalyst materials prevent the wide-spread commercialization of fuel cells. This article reviews platinum-based electrocatalysts with improved catalytic performance and lower cost. Enhanced activity for the oxygen reduction reaction is achieved through crystallographic control, ligand effect, or geometric effect. Improved durability is realized by the incorporation of another noble metal or the morphological control of nanostructures.

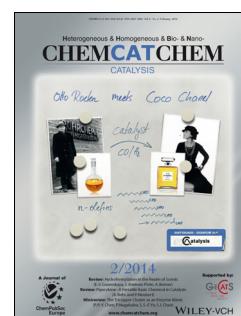


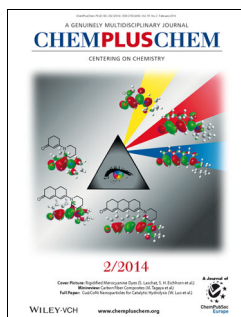
Biocatalysis

H. Man, C. Loderer, M. B. Ansorge-Schumacher,* G. Grogan*

Structure of NADH-Dependent Carbonyl Reductase (CPCR2) from Candida parapsilosis Provides Insight into Mutations that Improve Catalytic Properties

Mutant ninja enzymes: The structure of the carbonyl reductase CPCR2 reveals the context of the mutational sites that have led to its improved performance, including mutations within the active-site channel that affect substrate recognition and those at the dimer interface that improve stability. The structure also provides further evidence for the dynamic coordination of catalytic zinc within the active site of the medium-chain reductase family of enzymes.



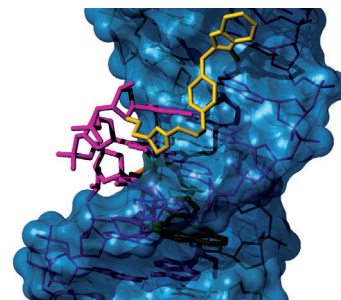


DNA recognition

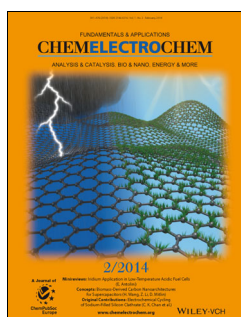
O. Doluca, T. K. Hale, P. J. B. Edwards, C. González, V. V. Filichev*

Assembly Dependent Fluorescence Enhancing Nucleic Acids in Sequence-Specific Detection of Double-Stranded DNA

A single attachment of the thiazole orange derivative to 2'-O-propargyl nucleotide in the structure of triplex-forming oligonucleotides (TFOs) led to probes with low fluorescent intensity in the single-stranded state ($\Phi_F = 0.09$ – 1.5% ; see figure). A significant increase in fluorescent intensity was detected after formation of DNA triplexes ($\Phi_F = 23.5$ – 34.9%). Under similar conditions, Watson–Crick-type duplexes showed low fluorescent intensities.



ChemPlusChem
DOI: 10.1002/cplu.201300310

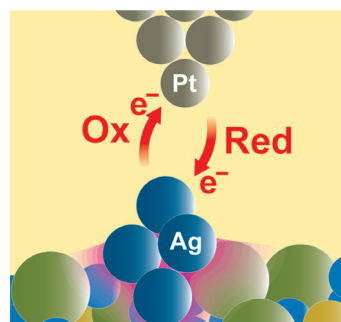


Solid-State Electrochemistry

I. Valov*

Redox-Based Resistive Switching Memories (ReRAMs): Electrochemical Systems at the Atomic Scale

Atomically scaled memories: Redox-based resistive switching memories (ReRAMs) are nanoscaled solid-state electrochemical systems with a great potential for applications in the future nanoelectronics and information technology. The role of the electrified interfaces is highlighted and the electrode kinetics is discussed, relating them to the more fundamental issue of microscopic description of electrochemical processes at the atomic level.



ChemElectroChem
DOI: 10.1002/celc.201300165

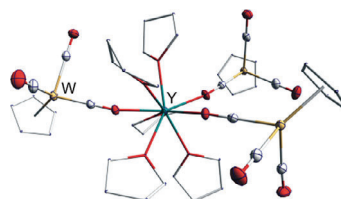


Bimetallic Complexes

A. P. Sobaczynski, J. Obenaus, R. Kempe*

Alkane Elimination Reactions between Yttrium Alkyls and Tungsten Hydrides

The alkane elimination reaction of $[\text{HW}(\text{CO})_3\text{Cp}]$ (Cp = cyclopentadienyl) with various yttrium alkyls leads to multinuclear yttrium–tungsten complexes. Depending on the chosen yttrium alkyls and solvents, the nuclearity of the resulting compounds can be varied. Isocarbonyl linkage is the dominating interaction/bonding between the Y and W complex moieties.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201301476

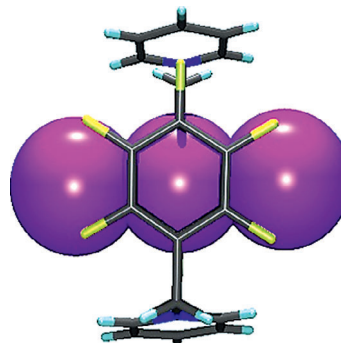


Anion– π Interactions

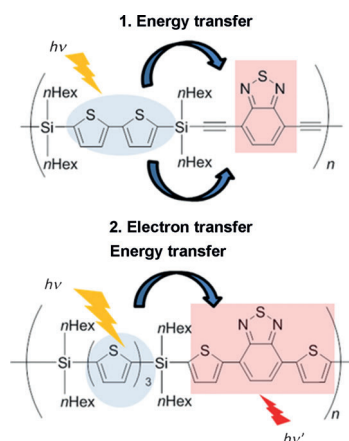
M. Giese, M. Albrecht,* T. Repenko, J. Sackmann, A. Valkonen, K. Rissanen*

Single-Crystal X-ray Diffraction and Solution Studies of Anion– π Interactions in *N*-(Pentafluorobenzyl)pyridinium Salts

The interactions of *N*-(pentafluorobenzyl)pyridinium salts are investigated in the solid state as well as in solution. The triiodide salt shows distinct evidence of anion– π interactions with both the pyridinium and the pentafluorophenyl unit. Solution investigations to prove the attractive nature of the noncovalent force failed, but they did not rule out the presence of the interaction.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201301336



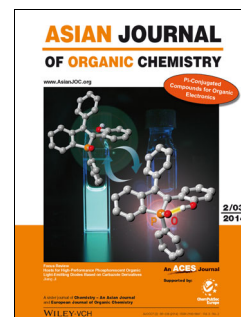
Asian J. Org. Chem.
DOI: 10.1002/ajoc.201300288

Photoluminescent Polymers

J. Ohshita,* F. Kaneko, D. Tanaka, Y. Ooyama

Preparation and Photoinduced Energy and Electron Transfer of Donor-Silicon-Acceptor Polymers

Free transfer: The photoluminescence properties of two polymers with donor-silicon-acceptor repeating units were investigated. One with bithiophene and diethynylbenzothiadiazole units as the donor and acceptor exhibits clear photoinduced electron transfer even in nonpolar cyclohexane. In contrast, for the other with more expanded π -conjugated units, terthiophene and dithienylbenzothiadiazole, only energy transfer occurred in cyclohexane.



ChemViews magazine
DOI: 10.1002/chemv.201300135

Chemical Industry

Alexandra Carrick

Win-Win Situation for Industry and Academia

Dr. Anton A. Kiss, AkzoNobel, talks about his role in promoting cooperation between chemical industry and universities. As an expert in separation technology, process intensification, and process systems engineering, he also discusses how the development of new methods, tools, and processes, such as reactive distillation, can contribute in making the chemical industry a green place.

