

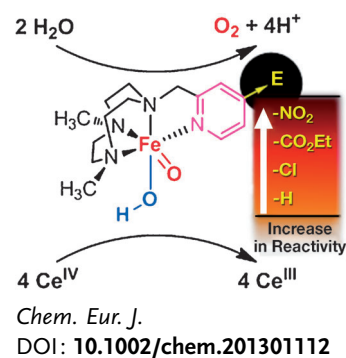


Homogeneous Catalysis

Z. Codolà, I. Garcia-Bosch, F. Acuña-Parés, I. Prat, J. M. Luis, M. Costas,* J. Lloret-Fillol*

Electronic Effects on Single-Site Iron Catalysts for Water Oxidation

Getting in tune: Systematic tuning of the electronic properties of modular non-heme iron coordination complexes can be used to extract important information on the reaction mechanism and intermediates, which in turn, help to explain the activity of these systems as water oxidation catalysts.

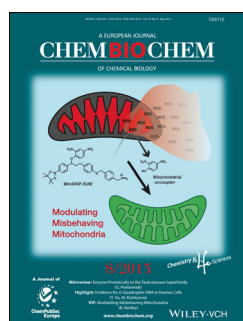
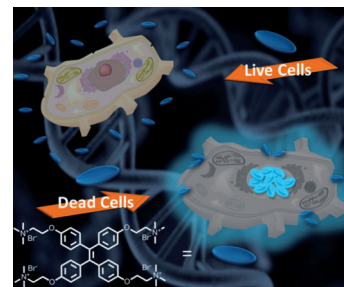


Fluorescent Probes

Y. Hong, S. Chen, C. W. T. Leung, J. W. Y. Lam, B. Z. Tang*

Water-Soluble Tetraphenylethene Derivatives as Fluorescent "Light-Up" Probes for Nucleic Acid Detection and Their Applications in Cell Imaging

Nucleic acids stand out: Cationic tetraphenylethenes selectively light up nucleic acids by fluorescence and thus can be applied for DNA/RNA quantitation and visualization, chromosome staining, and differentiation of live/dead cells (see figure).

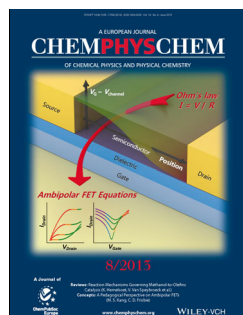
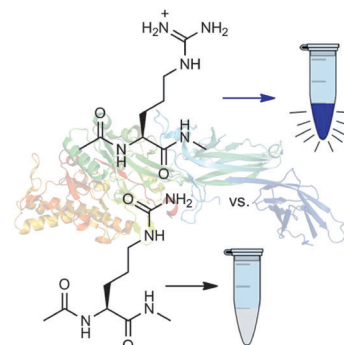


Citrullination

E. Wildeman, M. M. Pires*

Facile Fluorescence-Based Detection of PAD4-Mediated Citrullination

PAD off, fluorescence on: Protein arginine deiminase 4 (PAD4), an enzyme that has been found to be overexpressed in numerous human cancers and autoimmune diseases, converts peptidyl-arginine to citrulline. We report a new fluorescence-based assay for the detection of PAD4 activity that exploits the substrate specificity of trypsin.

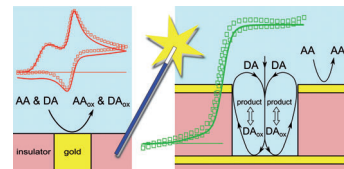


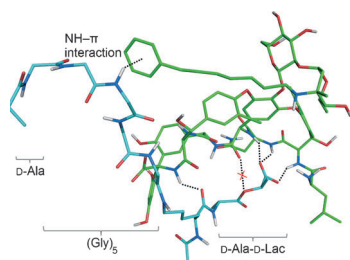
Electroanalysis

A. Oleinick, F. Zhu, J. Yan, B. Mao, I. Svir,* C. Amatore*

Theoretical Investigation of Generator–Collector Microwell Arrays for Improving Electroanalytical Selectivity: Application to Selective Dopamine Detection in the Presence of Ascorbic Acid

Well separated: A microwell array integrating collector–generator amplification into a diffusional faradaic cage virtually eliminates irreversible redox interferences, for example, in dopamine (DA) detection in the presence of ascorbic acid (AA). Thus, AA is scavenged but DA enters the nanocavities for oxidation at the disk electrodes, and its signal is further amplified by redox cycling (see picture).





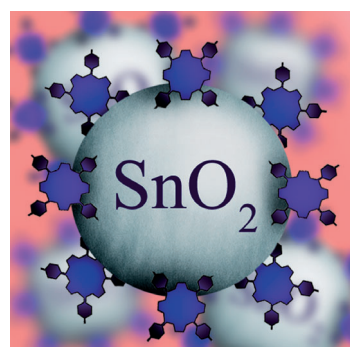
ChemMedChem
DOI: 10.1002/cmdc.201300011

Antibacterial Agents

J. Chang, S.-J. Zhang, Y.-W. Jiang, L. Xu, J.-M. Yu, W.-J. Zhou,*
X. Sun*

Design, Synthesis, and Antibacterial Activity of Demethylvancomycin Analogues against Drug-Resistant Bacteria

The best of five: N-Substituted demethylvancomycin derivatives were rationally designed and synthesized by using a structure-based approach. One of the compounds was found to exhibit more potent antibacterial activity against drug-resistant bacteria than vancomycin or demethylvancomycin, suggesting its promise as an antibacterial drug candidate.



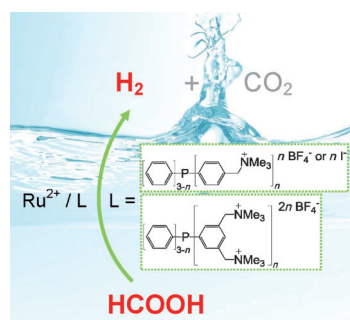
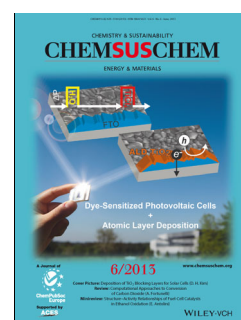
ChemSusChem
DOI: 10.1002/cssc.201300149

Semiconductors

D. A. Cristaldi, A. Gulino*

Functionalization of SnO₂ Crystals with a Covalently-Assembled Porphyrin Monolayer

All wrapped up: SnO₂ crystals are functionalized with a porphyrin monolayer and the resulting functionalized material is fully characterized. The obtained system shows luminescent properties and has the potential to find application in optical and electronic devices. The two-step procedure for the functionalization of metal-oxide crystals with dye-sensitizers could be applied to a range of metal-oxide semiconductors.



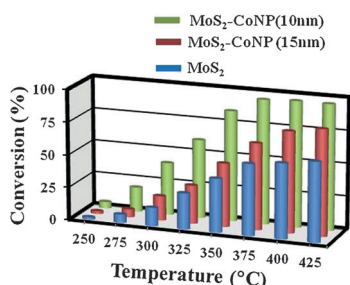
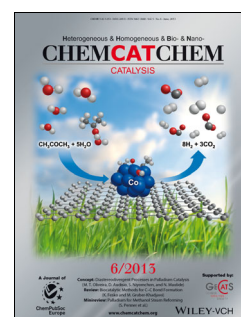
ChemCatChem
DOI: 10.1002/cctc.201200782

Hydrogen Generation

W. Gan, D. J. M. Snelders, P. J. Dyson, G. Laurenczy*

Ruthenium(II)-Catalyzed Hydrogen Generation from Formic Acid using Cationic, Ammoniomethyl-Substituted Triarylphosphine Ligands

Proceed with cation: New Ru^{II} catalysts for aqueous-phase HCOOH decomposition into H₂ and CO₂ that use a series of oligocationic, ammoniomethyl-substituted triarylphosphine ligands are developed. Excellent activities are achieved, that is, TOFs of 1950 h⁻¹ and TONs of over 10000.



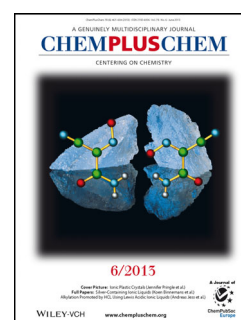
ChemPlusChem
DOI: 10.1002/cplu.201300012

Hydrodesulfurization of Thiophene

B. G. Rao, H. S. S. R. Matte, P. Chaturbedy, C. N. R. Rao*

Hydrodesulfurization of Thiophene over Few-Layer MoS₂ Covered with Cobalt and Nickel Nanoparticles

Less is more: Hydrodesulfurization of thiophene has been carried out using graphene-like few-layer MoS₂ with conversion of approximately 64%. Further conversion was enhanced to 98% when Co or Ni nanoparticles covered the surface of MoS₂ (see figure).



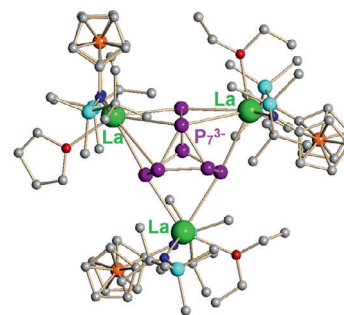


La and Lu Polyphosphide Complexes

W. Huang, P. L. Diaconescu*

P₄ Activation by Lanthanum and Lutetium Naphthalene Complexes Supported by a Ferrocene Diamide Ligand

Zintl-type P₇³⁻ complexes were synthesized from direct activation of P₄ by lanthanum and lutetium naphthalene complexes. The P₇³⁻ complexes showed fluxional behavior dependent on the rare-earth metal.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201300225

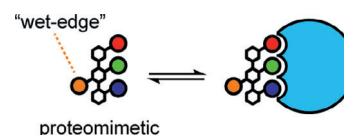


Foldamers

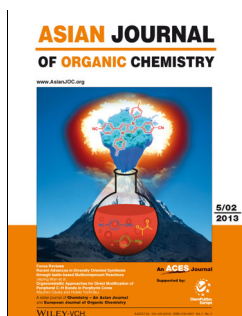
P. Prabhakaran, A. Barnard, N. S. Murphy, C. A. Kilner, T. A. Edwards, A. J. Wilson*

Aromatic Oligoamide Foldamers with a "Wet Edge" as Inhibitors of the α -Helix-Mediated p53–hDM2 Protein–Protein Interaction

A 3-O-alkylated aromatic oligoamide foldamer incorporating an additional and hydrophilic 6-O-alkyl substituent in the central monomer is shown to have improved solubility, adopt an active binding conformation and disrupt the p53–hDM2 interaction.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201300069

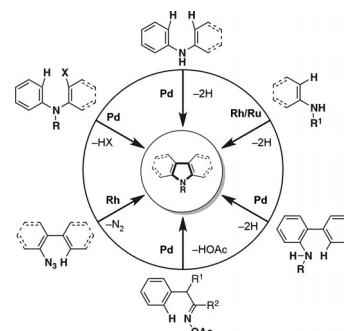


C–H Activation

N. Yoshikai,* Y. Wei

Synthesis of Pyrroles, Indoles, and Carbazoles through Transition-Metal-Catalyzed C–H Functionalization

Activate! Pyrroles, indoles, and carbazoles are among the most important families of nitrogen-containing heterocycles that occur frequently in functional molecules. This Focus Review describes recent advances in transition-metal-catalyzed C–H activation approaches for making these privileged heterocycles. The reactions discussed here showcase the latest developments in organometallic chemistry and homogeneous catalysis.



Asian J. Org. Chem.
DOI: 10.1002/ajoc.201300016

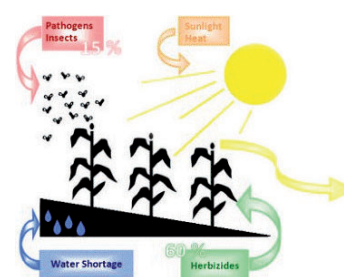


Genetic Modification

Lisa-Marie Rauschendorfer

GM Crops

Selective breeding has been used for hundreds of years to optimize crops. Since the mid-1980s it has been possible to directly modify the genes of crops in the lab and to specifically introduce selected properties. Biotech crops reached 170 million hectares in 2012. *ChemViews magazine* pictorially explains how genetically modified (GM) crops are made and shows their advantages and risks.



ChemViews magazine
DOI: 10.1002/chemv.201300052