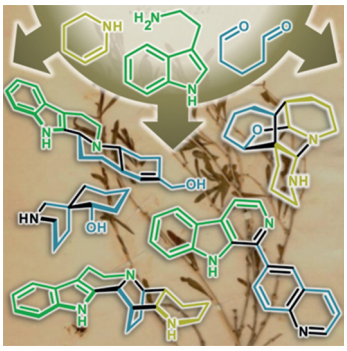
On these pages, we feature a selection of the excellent work that has recently been published in our sister journals. If you are reading these pages on a computer, click on any of the items to read the full article. Otherwise please see the DOIs for easy online access through Wiley Online Library.

Biomimetic Synthesis

E. Poupon,* E. Gravel

Manipulating Simple Reactive Chemical Units: Fishing for Alkaloids from Complex Mixtures

Set it and forget it: When mixing reactive units (especially the ones presumably derived from L-lysine in Nature) in simple reaction conditions complex mixtures are formed (see figure). Despite poor atom economy, interesting natural product-like scaffolds and even natural substances spontaneously assemble in this kind of crude mixtures that usually end up in the waste bins in most laboratories.



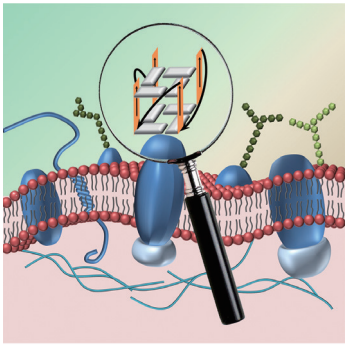
Chem. Eur. J.
DOI: **10.1002/chem.201500366**

G-Quadruplexes

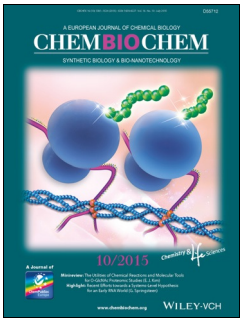
J. Hu, Z. Zhao, Q. Liu, M. Ye, B. Hu, J. Wang, W. Tan*

Study of the Function of G-Rich Aptamers Selected for Lung Adenocarcinoma

Pick and choose: The secondary structure, binding ability, internalization, and antiproliferation activity of two truncated G-rich aptamers, S13 and S50, were investigated in cancer and noncancer cells, and compared with those of nucleolin-binding AS1411 and thrombin-binding aptamer. Tumor-selective antiproliferation of G-rich oligonucleotides may not directly depend on the binding of the G-rich aptamers to cells (see figure).



Chem. Asian J.
DOI: **10.1002/asia.201500187**

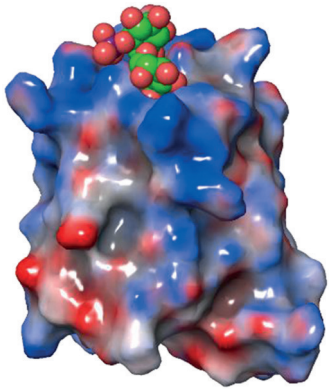


Carbohydrate Microarrays

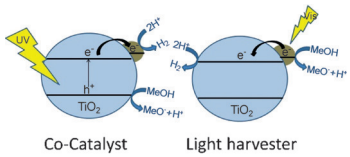
S. Hanashima, S. Götze, Y. Liu, A. Ikeda, K. Kojima-Aikawa, N. Taniguchi, D. Varón Silva, T. Feizi, P. H. Seeberger, Y. Yamaguchi*

Defining the Interaction of Human Soluble Lectin ZG16p and Mycobacterial Phosphatidylinositol Mannosides

Mycobacterial glycolipids trapped by a human lectin: Human lectin ZG16p is expressed in the gastrointestinal mucosa, but its function is unclear. Glycan microarray revealed that human ZG16p interacts with mycobacterial phosphatidylinositol mannosides (PIMs). Precise NMR interaction analysis established the PIM-glycan–ZG16p binding mode.



ChemBioChem
DOI: **10.1002/cbic.201500103**



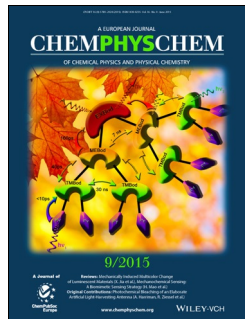
Hydrogen Evolution

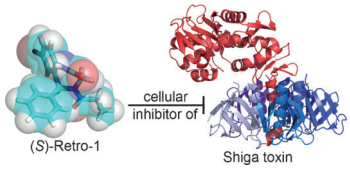
M. Serra, J. Albero, H. García*

Photocatalytic Activity of Au/TiO_2 Photocatalysts for H_2 Evolution: Role of the Au Nanoparticles as a Function of the Irradiation Wavelength

Making light work of H_2 evolution: The Au nanoparticles in Au/TiO_2 photocatalysts are shown to play different roles depending on the wavelength of the light irradiation. These roles include absorbing light and acting as either co-catalysts or electron traps.

ChemPhysChem
DOI: **10.1002/cphc.201500141**





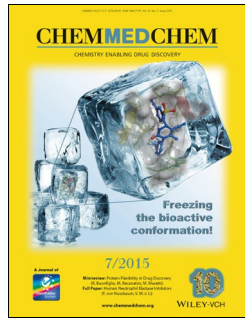
Antibacterial Agents

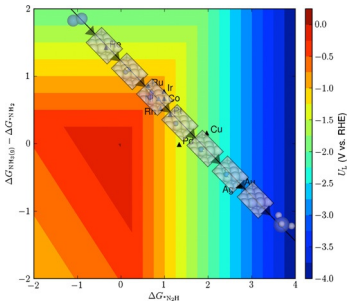
H. Abdelkafi, A. Michau, A. Clerget, D.-A. Buisson, L. Johannes, D. Gillet,* J. Barbier, J.-C. Cintrat*

Synthesis, Chiral Separation, Absolute Configuration Assignment, and Biological Activity of Enantiomers of Retro-1 as Potent Inhibitors of Shiga Toxin

Stopping traffic: We report the synthesis of Retro-1 and the separation of its enantiomers. Our data demonstrate that the stereochemistry is not crucial for this compound's activity, as both enantiomers are active at protecting cells against Shiga toxin. Nevertheless, the absolute stereochemistry of the eutomer was assigned by X-ray diffraction data; (*S*)-Retro-1 is slightly more active than the *R* isomer.

ChemMedChem
DOI: **10.1002/cmdc.201500139**





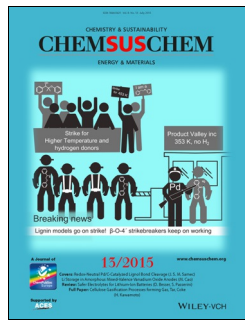
Ammonia

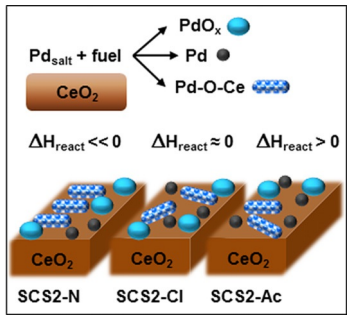
J. H. Montoya,* C. Tsai, A. Vojvodic, J. K. Nørskov*

The Challenge of Electrochemical Ammonia Synthesis: A New Perspective on the Role of Nitrogen Scaling Relations

Towards renewable fertilizer: The synthesis of ammonia has played a key role in our society for its uses in fertilizer and other reactive nitrates. The traditional Haber–Bosch method of this synthesis requires extensive capital, making alternative technologies attractive. We outline an alternative route that might be achieved at ambient conditions. Using DFT, we demonstrate why an electrochemical process is severely limited by the energetics of metal catalysts.

ChemSusChem
DOI: **10.1002/cssc.201500322**





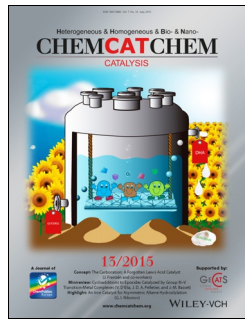
Methane Combustion

S. Colussi,* A. Gayen, M. Boaro, J. Llorca, A. Trovarelli

Influence of Different Palladium Precursors on the Properties of Solution-Combustion-Synthesized Palladium/Ceria Catalysts for Methane Combustion

Solid solution: Pd/CeO_2 catalysts prepared by solution combustion synthesis (SCS) from Pd precursors show a Pd-Ce solid solution. This appears as an ordered supercell structure only on SCS catalysts prepared from palladium nitrate. This is correlated to the heat of reaction during synthesis. The high reaction rates recorded on all SCS samples are attributed to the presence of a Pd-O-Ce solid solution, ordered or not.

ChemCatChem
DOI: **10.1002/cctc.201500390**

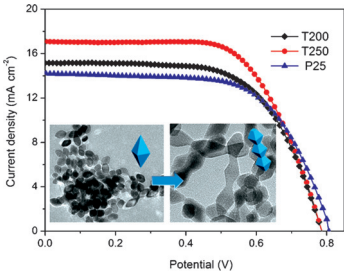


Dye-Sensitized Solar Cells

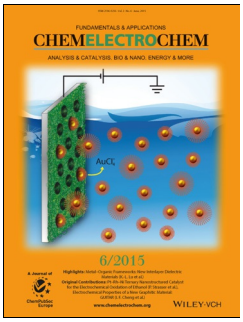
S. Yang, Y. C. Zheng, Y. Hou, H. G. Yang*

Controlled Oriented Attachment of Bipyramidal-Shaped Anatase TiO_2 and Their Enhanced Performance in Dye-Sensitized Solar Cells

A low-cost and facile method was used to synthesize bipyramidal single-crystals of TiO_2 having a high percentage of (101) facets, which were further attached along the [001] direction to form connected nanorods. These single crystals showed enhanced long-range atomic arrangement with significantly improved energy conversion efficiency owing to its superior charge transport ability and high surface area (see figure).



ChemPlusChem
DOI: **10.1002/cplu.201402449**

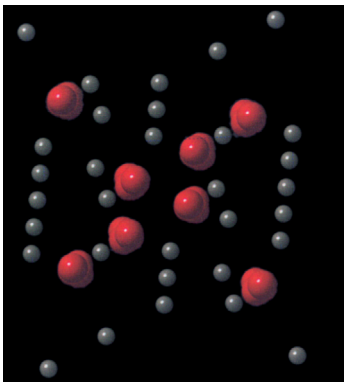


Oxygen Reduction Reaction

R. J. Toh, A. Y. S. Eng, Z. Sofer, D. Sedmidubsky, M. Pumera*

Ternary Transition Metal Oxide Nanoparticles with Spinel Structure for the Oxygen Reduction Reaction

In a spin-el: Mixed-valence transition-metal oxides with a spinel structure are explored as electrocatalysts for the oxygen reduction reaction (ORR). Four different types of spinel oxide nanocrystals ($NiCo_2O_4$, $NiMn_2O_4$, $ZnCo_2O_4$, and $ZnMn_2O_4$) are investigated to determine the influence of the transition metal on the ORR performance.



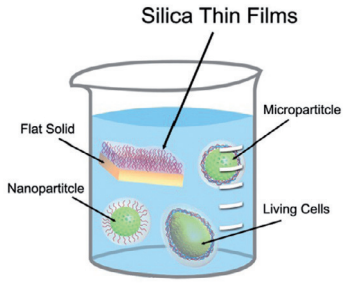
ChemElectroChem
DOI: **10.1002/celc.201500070**

Bio-Inspired Si Coatings

W. K. Cho, S. H. Yang*

Bio-Inspired Formation of Silica Thin Films: From Solid Substrates to Cellular Interfaces

The bio-inspired formation of silica thin films on the surfaces of flat solids, microparticles, nanoparticles, and living cells is reviewed.



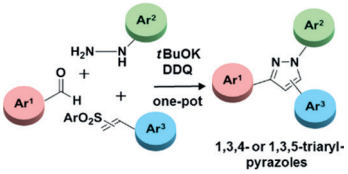
Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.201500308**

Pyrazole Synthesis

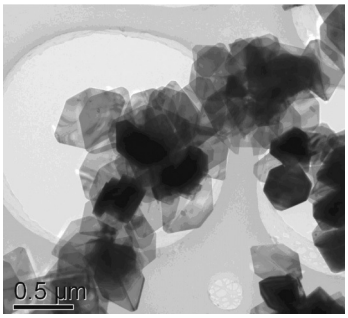
S. Fuse,* H. Sugiyama, D. Kobayashi, Y. Iijima, K. Matsumura, H. Tanaka, T. Takahashi*

Regioselective, One-Pot, Three-Component Synthesis of 1,3,4- and 1,3,5-Triarylpyrazoles from 1- and 2-Aryl-1-alkenyl Sulfones

One-pot, three-component couplings of aldehydes with hydrazines and arylalkenyl sulfones for the regioselective syntheses of 1,3,4- and 1,3,5-triarylpyrazoles were demonstrated. In our developed procedure, DDQ worked as an effective oxidant, and the addition of a strong acid was not required. This allowed the synthesis of various pyrazoles in good yields.



Eur. J. Org. Chem.
DOI: **10.1002/ejoc.201500562**



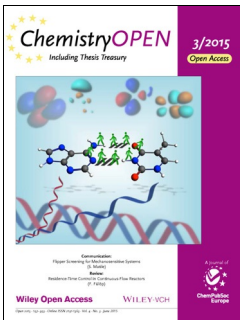
ChemistryOpen
DOI: **10.1002/open.201402163**

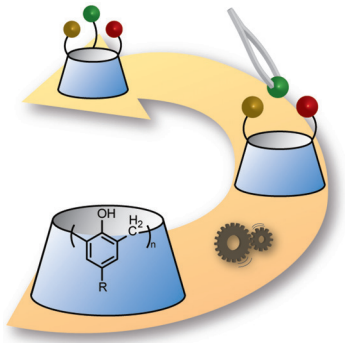
Photocatalysis

X. Yang, W. Zuo, F. Li, T. Li*

Surfactant-Free and Controlled Synthesis of Hexagonal $CeVO_4$ Nanoplates: Photocatalytic Activity and Superhydrophobic Property

Nanoplates to go! Nanomaterials with superhydrophobic surface properties as well as photocatalytic activities could have important applications. $CeVO_4$ hexagonal nanoplates were synthesized under simple and mild conditions. Solutions of the nanoparticles could photocatalytically degrade rhodamine B dye. The nanoplates were also used to coat glass substrates, forming superhydrophobic surfaces, with contact angles reaching 169.5°.





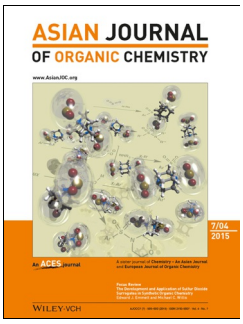
Asian J. Org. Chem.
DOI: **10.1002/ajoc.201500178**

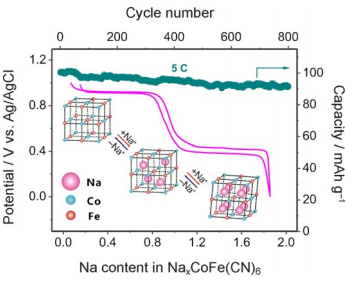
Supramolecular Chemistry

R. Lavendomme, S. Zahim, G. De Leener, A. Inthasot, A. Mattiuzzi, M. Luhmer, O. Reinaud, I. Jabin*

Rational Strategies for the Selective Functionalization of Calixarenes

Tailored calixarenes: Calixarenes are widely used as molecular platforms in supramolecular chemistry. Due to the presence of multiple identical functional groups, their selective functionalization is highly challenging. This review describes rational methods leading to a high degree of selectivity and classifies them into strategies. Many of these strategies are conceptually general and could be applied to other macrocyclic platforms.





ChemNanoMat
DOI: **10.1002/cnma.201500021**

Sodium-Ion Batteries

X. Wu, M. Sun, S. Guo, J. Qian,* Y. Liu, Y. Cao, X. Ai, H. Yang*

Vacancy-Free Prussian Blue Nanocrystals with High Capacity and Superior Cyclability for Aqueous Sodium-Ion Batteries

No vacancy: Vacancy-free and perfectly shaped $Na_2CoFe(CN)_6$ nanocubes are synthesized by a controlled crystallization reaction. These nanocubes exhibit a high reversible capacity of 130 mA h g^{-1}, a strong rate capability at 20 C, and superior cyclability with 90% capacity retention over 800 cycles. As such, they may possibly serve as a high-performance and long-life cathode for aqueous Na-ion batteries.

ChemViews magazine
DOI: **10.1002/chemv.201500039**

Medicinal Chemistry

Natural Poisons

Chemists discovered the active compounds in many medicinal plants in the early 19th century. While some of them have important uses, they can also be highly toxic. *ChemViews Magazine* gives a graphical overview of some of the most deadly among these compounds.