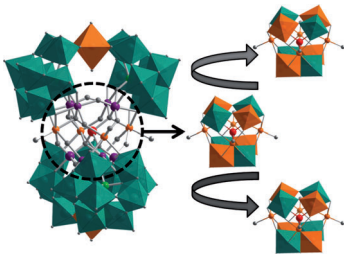
Polyoxometalates

R. S. Winter, J. Yan, C. Busche, J. S. Mathieson, A. Prescimone, E. K. Brechin, D.-L. Long, L. Cronin*

Nanoscale Control of Polyoxometalate Assembly: A $\{Mn_8W_4\}$ Cluster within a $\{W_{36}Si_4Mn_{10}\}$ Cluster Showing a New Type of Isomerism

Nanoassembly: Assembly isomers of a $\{Mn_8W_4\}$ Keggin cluster within a $[W_{36}Mn_{10}Si_4O_{136}(OH)_4(H_2O)_8]^{24-}$ cluster is reported. The clusters are formed through the aggregation of new $\{\gamma\text{-}SiMnW_9\}$ fragments in a tetrahedral fashion. Investigation of the crystal growth of these clusters revealed two intermediate clusters, which unveiled a mechanism of formation (see scheme). Physical analysis of the magnetic and solution behaviour of the isomers is also reported.



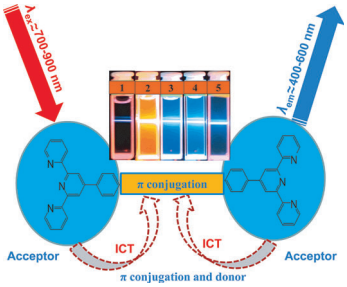
Chem. Eur. J.
DOI: **10.1002/chem.201204345**

Two-Photon Absorption

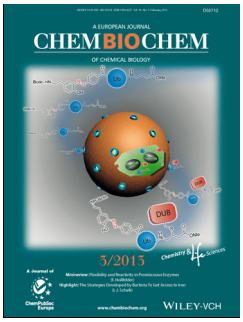
T. He, Z. B. Lim, L. Ma, H. Li, D. Rajwar, Y. Ying, Z. Di, A. C. Grimsdale,* H. Sun*

Large Two-Photon Absorption of Terpyridine-Based Quadrupolar Derivatives: Towards their Applications in Optical Limiting and Biological Imaging

Quadrupolar leap: Two-photon absorption (TPA) properties of five novel terpyridine-based quadrupolar derivatives have been investigated to clarify the influences of molecular structures and molecular environment on their nonlinear optical behaviors in organic solvents and aqueous media. We found that alkylcarbazole as the donor and bis-(styryl)benzene as a conjugation bridge can enhance TPA cross-sections of chromophores in both organic solvent and aqueous media.



Chem. Asian J.
DOI: **10.1002/asia.201201009**



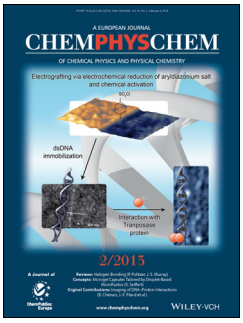
Biosynthesis

M. Kunert, P. Rahfeld, K. H. Shaker, B. Schneider, A. David, K. Dettner, J. M. Pasteels, W. Boland*

Beetles Do It Differently: Two Stereodivergent Cyclisation Modes in Iridoid-Producing Leaf-Beetle Larvae

Defensive circles: Leaf-beetle larvae synthesise the iridoid monoterpene chrysomelidial as a defensive compound. Feeding experiments with the deuterated precursor $[^2H_5]$8-hydroxygeraniol indicated two stereodivergent cyclisation modes towards chrysomelidial. To study the influence of the cyclisation mode on the stereochemistry, the configurations of chrysomelidials from seven species of leaf-beetle larvae were determined.

ChemBioChem
DOI: **10.1002/cbic.201200689**

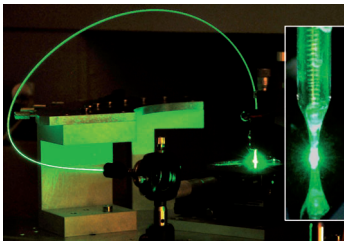


Photoelectrochemistry

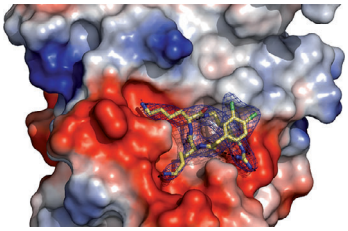
J. P. Kollender, A. I. Mardare, A. W. Hassel*

Photoelectrochemical Scanning Droplet Cell Microscopy (PE-SDCM)

Spot the drop: Principles of localised photoelectrochemistry are summarised and an experimental approach, the photoelectrochemical scanning droplet cell microscopy (PE-SDCM, see picture), is described which allows the performance of the most important photoelectrochemical experiments within a diameter of 100 μm. Its general applicability is demonstrated by investigating n- and p-doped Si.



ChemPhysChem
DOI: **10.1002/cphc.201200656**



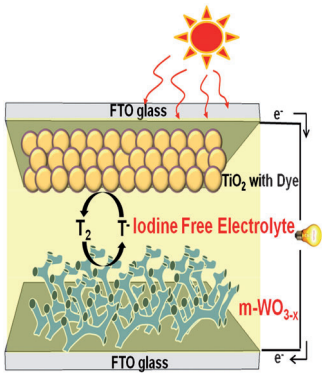
Antiviral Agents

M. Z. Hammamy, C. Haase, M. Hammami, R. Hilgenfeld, T. Steinmetzer*

Development and Characterization of New Peptidomimetic Inhibitors of the West Nile Virus NS2B–NS3 Protease

Crystal clear: A series of new substrate analogue inhibitors of the WNV NS2B–NS3 protease with an improved selectivity profile was developed, which contain decarboxylated arginine mimetics at the P1 position. For one of the most potent inhibitors, a crystal structure in complex with the WNV protease was determined.

ChemMedChem
DOI: **10.1002/cmdc.201200497**



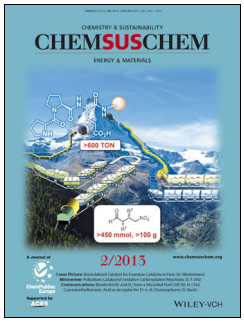
Solar Cells

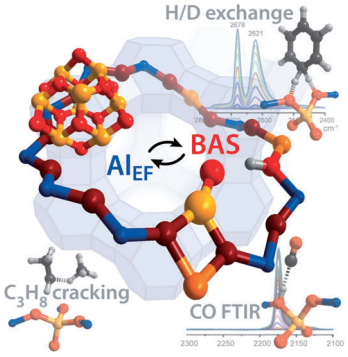
I. Jeong, C. Jo, A. Anthonysamy, J.-M. Kim, E. Kang, J. Hwang, E. Ramasamy, S.-W. Rhee, J. K. Kim, K.-S. Ha, K.-W. Jun, J. Lee*

Ordered Mesoporous Tungsten Suboxide Counter Electrode for Highly Efficient Iodine-Free Electrolyte-Based Dye-Sensitized Solar Cells

WO_x before Pt: Ordered mesoporous tungsten suboxide (m-WO_{3-x}) is synthesized by using a hard template and a partial reduction process. The m-WO_{3-x} is used as an alternative catalyst for a counter electrode (CE) instead of Pt for iodine-free electrolyte (T_2/T^-)-based dye-sensitized solar cells. The catalytic activity of m-WO_{3-x} CE is superior to that of conventional Pt CEs.

ChemSusChem
DOI: **10.1002/cssc.201200647**





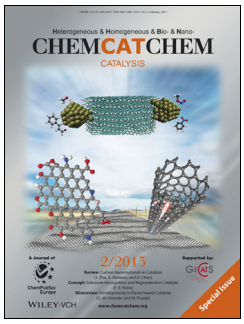
Zeolites

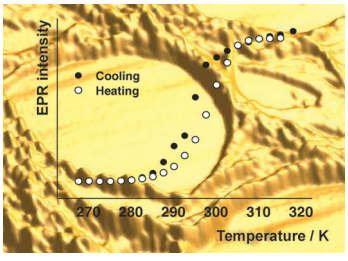
S. M. T. Almutairi, B. Mezari, G. A. Filonenko, P. C. M. M. Magusin, M. S. Rigutto, E. A. Pidko, E. J. M. Hensen*

Influence of Extraframework Aluminum on the Brønsted Acidity and Catalytic Reactivity of Faujasite Zeolite

Paraffin cracking by Brønsted acid sites (BAS) in faujasite zeolites is strongly influenced by the presence of nearby extraframework aluminum (Al_{EF}) species (see picture). Although enhanced acidity of faujasites with decreasing framework Al density is directly evident from CO_{ads} FTIR spectroscopy, H/D exchange reactions, and paraffin cracking activities, such correlations are less evident for Al_{EF} modified zeolites, which is also discussed in terms of structure.

ChemCatChem
DOI: **10.1002/cctc.201200612**





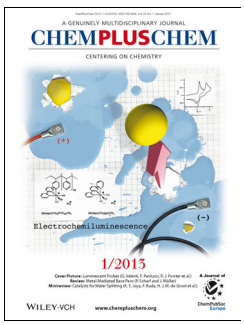
Radical-Functionalised Gel

M. Mannini, S. Cicchi, D. Berti, A. Caneschi, A. Brandi, L. Lascialfari,* L. Sorace*

Radical-Functionalised Gel: A Building-Block Strategy for Magnetochiral Assembly

A radically new gel: AFM and ESR spectroscopic studies are used to investigate a radical-functionalised gel and the gelation process (see graph). The analyses also provide evidence that the fibrillar structure is maintained below the gelling concentration. This opens relevant perspectives in terms of the realization of complex supramolecular chiral structures incorporating paramagnetic functions.

ChemPlusChem
DOI: **10.1002/cplu.201200250**

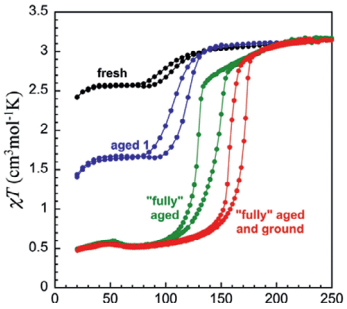


Spin Crossover

G. A. Craig, J. S. Costa, O. Roubeau, S. J. Teat, G. Aromí*

An Fe^{II} Spin-Crossover Complex Becomes Increasingly Cooperative with Ageing

Improving with ageing! A bpp-type [bpp = bis(pyrazol-3-yl)pyridine)] ligand, H_4L, designed to enhance intermolecular interactions, leads to the spin-crossover (SCO) compound $[Fe(H_4L)_2](ClO_4)_2 \cdot 2THF \cdot H_2O$, which exhibits enhanced spin transition cooperativity with ageing. The intermolecular



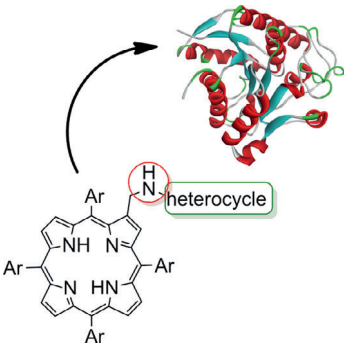
Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.201201041**

Porphyrinoid Photosensitizers

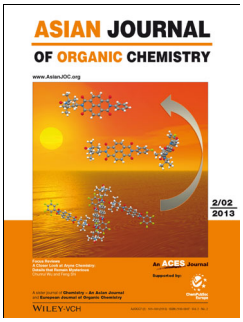
M. M. Bastos, A. T. P. C. Gomes, M. G. P. M. S. Neves, A. M. S. Silva, O. A. Santos-Filho, N. Boechat,* J. A. S. Cavaleiro*

Synthesis of β-Substituted Porphyrin Derivatives Containing Heterocyclic Moieties as Potential Photosensitizers Against Cutaneous Leishmaniasis

This publication reports the synthesis of porphyrin derivatives bearing aminoheterocyclic moieties at a β position. Molecular modeling and docking calculations show that all compounds synthesized have high affinity values to leishmanial arginase. These derivatives are potential leishmaniasis agents.



Eur. J. Org. Chem.
DOI: **10.1002/ejoc.201201501**

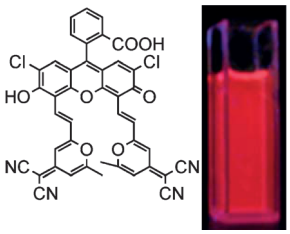


Fluorescein Derivatives

X. Xiong, F. Song,* S. Sun, J. Fan, X. Peng*

Red-Emissive Fluorescein Derivatives and Detection of Bovine Serum Albumin

Red light: Two fluorogenic compounds were synthesized by derivatization of 2′,7′-dichlorofluorescein at the C4′ and C5′ positions. These compounds have excellent photostability and emit at red wavelengths. Both compounds are highly selective for detecting bovine serum albumin because of their particular dyad structures.



Asian J. Org. Chem.
DOI: **10.1002/ajoc.201200109**

Energy Technology

John Uhlrich

Sunggyu Lee on the Future of Energy Technology

Solutions to the pressing problem of energy demand will vary depending upon regional strengths, technoeconomic factors, and resource utilization and availability according to Professor Sunggyu Lee, Director of the Sustainable Energy and Advanced Materials Laboratory at Ohio University, USA. He talks about where energy technology is heading, the role of governments in its development, and his latest research.

ChemViews magazine
DOI: **10.1002/chemv.201200150**