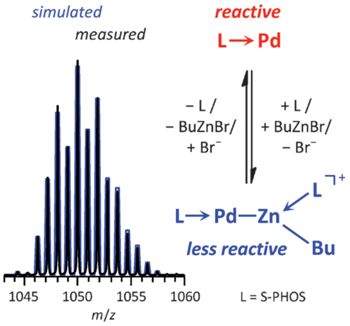
On these pages, we feature a selection of the excellent work that has recently been published in our sister journals. If you are reading these pages on a computer, click on any of the items to read the full article. Otherwise please see the DOIs for easy online access through Wiley Online Library.

Organic Chemistry

K. Böck, J. E. Feil, K. Karaghiosoff, K. Koszinowski*

Catalyst Activation, Deactivation, and Degradation in Palladium-Mediated Negishi Cross-Coupling Reactions

Catalytic Complexity: The Pd catalyst used in Negishi cross-coupling reactions shows an unexpected heterogeneity and complexity. Among the various species observed in solution, heterobimetallic Pd–Zn complexes are of particular interest (see figure). These species also seem key to understanding the kinetics of Negishi cross-coupling reactions.



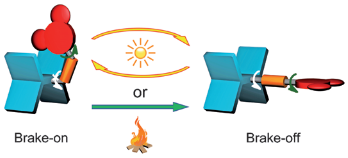
Chem. Eur. J.
DOI: **10.1002/chem.201406408**

Molecular Devices

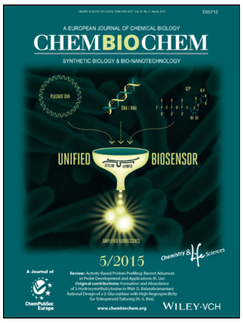
W. S. Tan, P.-Y. Chuang, C.-H. Chen, C. Prabhakar, S.-J. Huang, S.-L. Huang, Y.-H. Liu, Y.-C. Lin, S.-M. Peng, J.-S. Yang*

Light-Gated Molecular Brakes Based on Pentiptycene-Incorporated Azobenzenes

Braking pad: Three azobenzene derivatives that differed in their terminal substituent were investigated as molecular brakes, in which the rigid H-shaped pentiptycene group functioned as a rotor and the dinitrophenyl group as a brake pad. They are superior to the stilbene counterparts in the on-off switching efficiency.



Chem. Asian J.
DOI: **10.1002/asia.201403233**

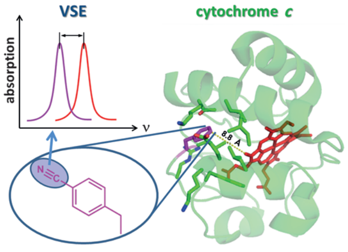


Bio-electrochemistry

J. Völler, H. Biava, B. Koksch, P. Hildebrandt, N. Budisa*

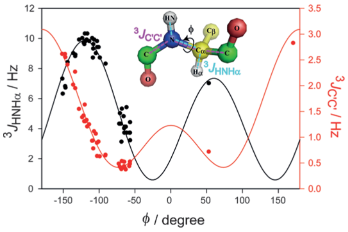
Orthogonal Translation Meets Electron Transfer: In Vivo Labeling of Cytochrome *c* for Probing Local Electric Fields

Orthogonal translation meets electron transfer: We have site-specifically incorporated genetically encoded *p*-cyanophenylalanine into cytochrome *c* as a noninvasive reporter for probing local electric fields by taking advantage of the vibrational Stark effect (VSE).



ChemBioChem
DOI: **10.1002/cbic.201500022**

NMR Spectroscopy



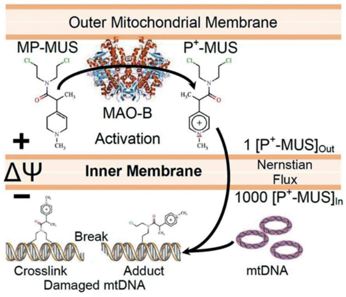
F. Li, J. H. Lee, A. Grishaev, J. Ying, A. Bax*

High Accuracy of Karplus Equations for Relating Three-Bond J Couplings to Protein Backbone Torsion Angles

The right match: $^3J_{HNH\alpha}$ and $^3J_{C'C'}$ couplings both are related to protein backbone dihedral angles φ through Karplus equations. However, the relation between $^3J_{HNH\alpha}$ and φ is indirect as it relies on the unknown exact position of backbone hydrogens, making $^3J_{C'C'}$ the better reporter for φ.

ChemPhysChem
DOI: **10.1002/cphc.201402704**

Drug Design

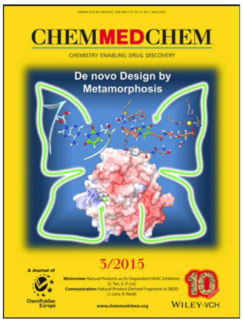


M. A. Sharpe, J. Han, A. M. Baskin, D. S. Baskin*

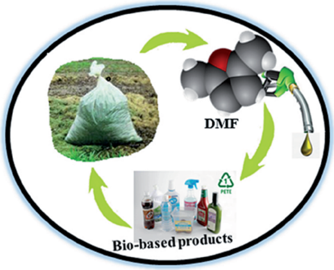
Design and Synthesis of a MAO-B-Selectively Activated Prodrug Based on MPTP: A Mitochondria-Targeting Chemotherapeutic Agent for Treatment of Human Malignant Gliomas

Specificity is key: We developed a MAO-B-activated prodrug, MP-MUS, for the treatment of brain gliomas. MP-MUS is nontoxic, and can be selectively oxidized by MAO-B, which is overexpressed in glioma cells, to form toxic P$^+$-MUS. P$^+$-MUS translocates inside mitochondria passively and alkylates fragile mitochondrial DNA, leading to specific apoptosis of glioma cells, but not normal cells.

ChemMedChem
DOI: **10.1002/cmdc.201402562**



Biomass

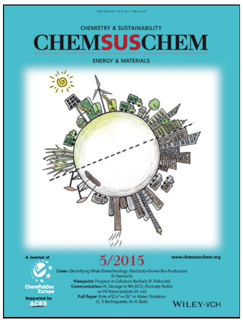


B. Saha,* M. M. Abu-Omar*

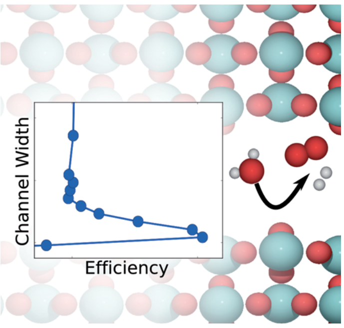
Current Technologies, Economics, and Perspectives for 2,5-Dimethylfuran Production from Biomass-Derived Intermediates

Biomass to valuable feedstock: A concise and up-to-date analysis of 2,5-dimethylfuran (DMF) production technologies and its further upgrade into *p*-xylene (pX) is given with critical discussion on catalytic systems, mechanistic insight, and process economics. The chemistry detailed in this review will guide researchers to develop more practical catalytic processes that enable the economic production of biorenewable DMF and pX.

ChemSusChem
DOI: **10.1002/cssc.201403329**



Electrocatalysis

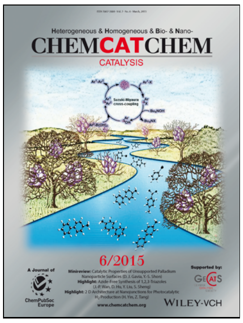


A. D. Doyle, J. H. Montoya, A. Vojvodic*

Improving Oxygen Electrochemistry through Nanoscopic Confinement

Nanostructuring catalysts: Density functional theory calculations show that well-defined reaction geometries substantially improve the activity of RuO_2 catalysts for electrochemical oxygen evolution. Enhanced efficiency is primarily due to hydrogen bonding, which breaks the previously limiting energetic scaling relationships of the reaction intermediates.

ChemCatChem
DOI: **10.1002/cctc.201402864**

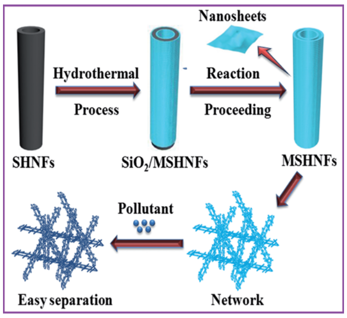


Nanostructures

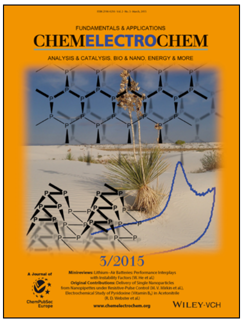
R. Jin, Y. Yang, Y. Li, X. Yu, Y. Xing,* S. Song,* Z. Shi

Facile Synthesis of Hierarchical Magnesium Silicate Hollow Nanofibers Assembled by Nanosheets as an Efficient Adsorbent

Drop out! A synthetic route is described for the fabrication of magnesium silicate double-walled hollow nanofibers (MSHNFs; see picture), which exhibit excellent adsorption performance and can be easily separated from solution, from electrospun silica hollow nanofibers (SHNFs). The MSHNFs are demonstrated to be an efficient adsorbent for water purification.



ChemPlusChem
DOI: **10.1002/cplu.201402293**

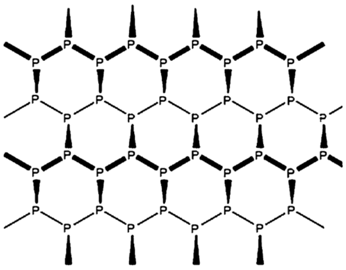


Phosphorus

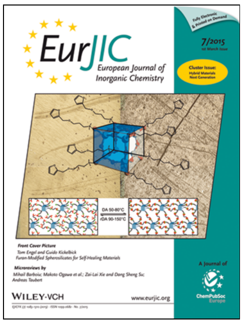
L. Wang, Z. Sofer, M. Pumera*

Voltammetry of Layered Black Phosphorus: Electrochemistry of Multilayer Phosphorene

Black is back: Layered black phosphorus crystals (multilayer phosphorene) is prepared by chemical vapor deposition method. The black phosphorus exhibits inherent electrochemistry in the sense that it is oxidizable ~560 mV (vs Ag/AgCl). This study is a first step in the utilization of black phosphorus in electrochemical applications.



ChemElectroChem
DOI: **10.1002/celc.201402363**

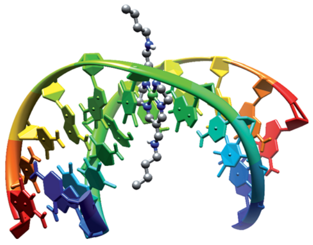


Binding Modes of Complexes to DNA

I. Mames, A. Rodger, J. Kowalski*

Tetraaza[14]macrocyclic Transition Metal Complexes as DNA Intercalators

This paper describes the synthesis of simple cyclidene-based DNA intercalators. Their ability to bind to DNA was studied using various methods including linear and circular dichroism. The determined binding constants are comparable to those calculated for analogous anthracene and pyrene derivatives.



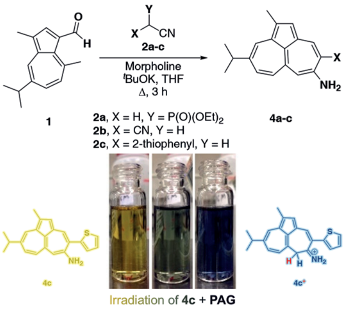
Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.201403042**

Chromophores

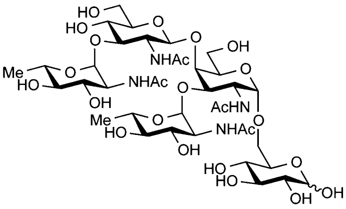
E. H. Ghazvini Zadeh, A. W. Woodward, D. Richardson, M. V. Bondar, K. D. Belfield*

Stimuli-Responsive Cyclopenta[*ef*]heptalenes: Synthesis and Optical Properties

Cyclopenta[*ef*]heptalenes **4a–c**, prepared by annulation of 3-formylguaiazulene (**1**), revealed a stimuli-responsive behavior upon treatment with strong acids. 1D and 2D NMR spectroscopy indicated that protonation occurred on C-6, while photoacid titrations demonstrated that the reported tricyclic systems can serve as efficient visible sensitizers of UV-activated photoacid generators (PAGs).



Eur. J. Org. Chem.
DOI: **10.1002/ejoc.201500059**



Carbohydrate Structures

C. Fontana, A. Weintraub, G. Widmalm*

Structural Elucidation of the O-Antigen Polysaccharide from *Escherichia coli* O181

Sugars from Shiga! The native O-antigen polysaccharide of *Escherichia coli* O181 and the oligosaccharide material obtained by its dephosphorylation with 48 % hydrofluoric acid have been characterized by NMR spectroscopy. Both polysaccharides (native and O-deacetylated) and the oligosaccharide display an unusual conformational behavior that causes some key resonances of the GlcNAc residue to broaden at temperatures below 85 °C.

ChemistryOpen
DOI: **10.1002/open.201402068**

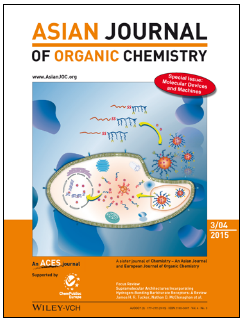
Microwave Chemistry

M. E. López-Reyes,* R. A. Toscano, J. G. López-Cortés, C. Alvarez-Toledano*

Fast and Efficient Synthesis of *Z*-Enol-γ-Lactones through a Cycloisomerization Reaction of β-Hydroxy-γ-Alkynoic Acids Catalyzed by Copper(I) under Microwave Heating in Water

Faster, easier: A stereo- and regioselective method for accessing a variety of highly functionalized *Z*-enol-γ-lactones in good yields through the cycloisomerization of β-hydroxy-γ-alkynoic acids catalyzed by CuBr (5 mol %) in water under microwave heating in a short time is described.

Asian J. Org. Chem.
DOI: **10.1002/ajoc.201500013**



Chemical Industry

International Chemical Trade

The international chemical industry has seen a slow recovery, while Asian chemicals production, especially in China, continues to outpace other regions. *ChemViews Magazine* gives a graphical overview of developments in the chemical trade.

ChemViews magazine
DOI: **10.1002/chemv.201500014**