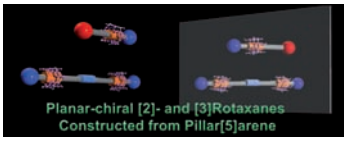
Chiral Rotoxanes



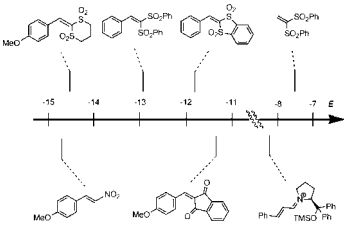
T. Ogoshi,* D. Yamafuji, T. Aoki, K. Kitajima, T.-a. Yamagishi, Y. Hayashi, S. Kawauchi

High-Yield Diastereoselective Synthesis of Planar Chiral [2]- and [3]Rotaxanes Constructed from per-Ethylated Pillar[5]arene and Pyridinium Derivatives

Wheels in motion: Planar chiral [2]- and [3]rotaxanes constructed from pillar[5]arenes as wheels and pyridinium derivatives as axles (see figure) were obtained in high yield using click reactions. The procedure developed in this study is a starting point for the creation of pillar[5]arene-based interlocked molecules.

Chem. Eur. J.
DOI: **10.1002/chem.201200122**

Electrophilicity Parameters

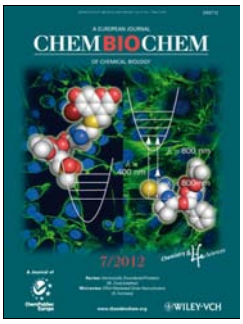


H. Asahara, H. Mayr*

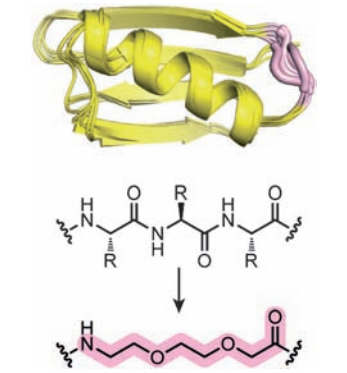
Electrophilicities of Bissulfonyl Ethylenes

Quantifying Electrophilicity: Kinetics of the reactions of 1,1-bissulfonyl-ethylenes with carbon nucleophiles have been determined to integrate these Michael acceptors in our comprehensive electrophilicity scales and to compare them with other electrophiles. The electrophilicities depend only slightly on conformational restrictions, and as a rule of thumb, one can assume that two geminal phenylsulfonyl groups exert a similar activation as one nitro group.

Chem. Asian J.
DOI: **10.1002/asia.201101046**



Proteins

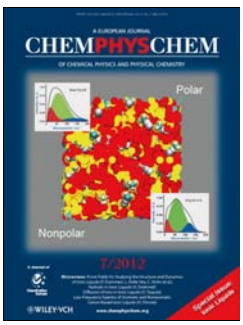


Z. E. Reinert, E. D. Musselman, A. H. Elcock, W. S. Horne*

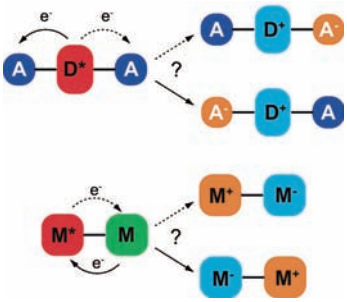
A PEG-Based Oligomer as a Backbone Replacement for Surface-Exposed Loops in a Protein Tertiary Structure

PEGged out: Poly(ethylene glycol), a simple biocompatible polymer, can replace natural loop segments in a 56-residue protein domain with a well-defined tertiary structure. Biophysical characterization of chimeras of the protein GB1 coupled with molecular dynamics simulations show that PEG enhances local backbone torsional freedom without compromising the overall protein fold or function.

ChemBioChem
DOI: **10.1002/cbic.201200200**



Symmetry Breaking

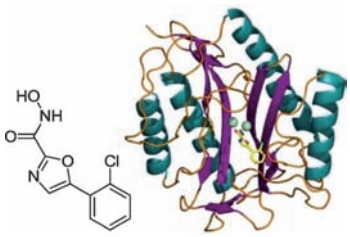


E. Vauthey*

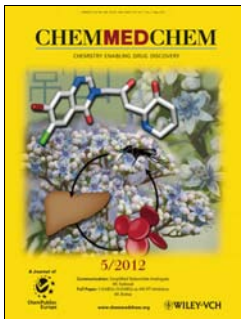
Photoinduced Symmetry-Breaking Charge Separation

Fearful symmetry: In some molecular systems, two or more apparently equivalent charge separation pathways exist upon photoexcitation (see picture). In all cases, charge separation involves symmetry breaking. The conditions for such process to be operative as well as the origin of the symmetry breaking are discussed.

ChemPhysChem
DOI: **10.1002/cphc.201200106**



Antibacterial Agents

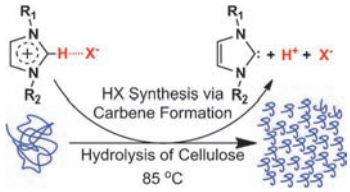


F. Huguet, A. Melet, R. Alves de Sousa, A. Lieutaud, J. Chevalier, L. Maigre, P. Deschamps, A. Tomas, N. Leulliot, J.-M. Pages, I. Artaud*

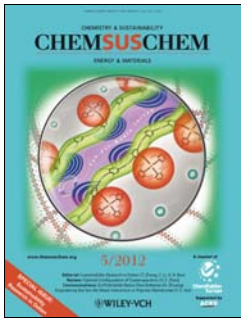
Hydroxamic Acids as Potent Inhibitors of Fe^{II} and Mn^{II} *E. coli* Methionine Aminopeptidase: Biological Activities and X-ray Structures of Oxazole Hydroxamate–*Ec*MetAP-Mn Complexes

Great rings of five! New hydroxamic acids linked to furan, oxazole, oxadiazole, imidazole, and indole heterocycles were prepared and assayed against *E. coli* methionine aminopeptidase (*Ec*MetAP). They showed selectivity for Mn^{II} and Fe^{II} metalloforms. Two X-ray crystal structures of oxazole hydroxamic acid–*Ec*MetAP-Mn complexes were solved, and a molecular model of the indole derivative–*Ec*MetAP-Mn complex was built.

ChemMedChem
DOI: **10.1002/cmdc.201200076**



Biomass Processing

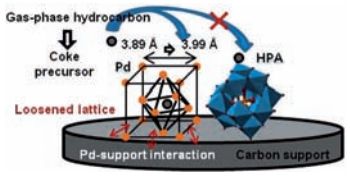


O. M. Gazit, A. Katz*

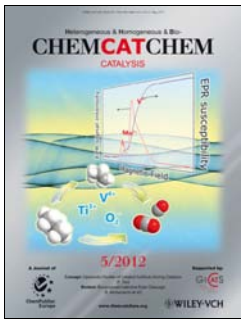
Dialkylimidazolium Ionic Liquids Hydrolyze Cellulose Under Mild Conditions

Break it down: The average molecular weight of cellulose derived from different sources (filter paper, poplar, and Avicel) decreases by up to two orders of magnitude during typical mild dissolution protocols using ionic liquids (ILs). Counter-intuitively, greater IL purity results in greater cellulose depolymerization. The data suggest an acid-catalyzed cellulose hydrolysis mechanism, in which the acid is presumably synthesized via IL decomposition to generate a carbene and proton.

ChemSusChem
DOI: **10.1002/cssc.201100803**



Heteropoly Acid

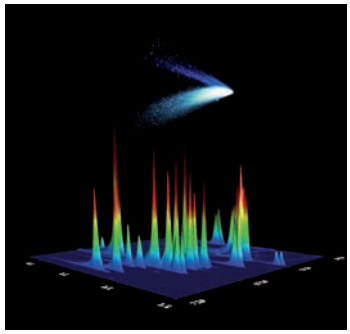


D. S. Park, B. K. Kwak, N. D. Kim, J. R. Park, J.-H. Cho, S. Oh, J. Yi*

Capturing Coke Precursors in a Pd Lattice: A Carbon-Supported Heteropoly Acid Catalyst for the Dehydration of Glycerol into Acrolein

Coke almost zero: Expansion of the Pd lattice by the insertion of coke occurred more easily on a carbon support. The Pd lattice on the carbon support was easily loosened. This phenomenon led to a decrease in the amount of coke that was deposited onto the carbon-supported heteropoly acid catalyst. The Pd-added PWC catalyst showed stable catalytic activity and the amount of coke formed was decreased.

ChemCatChem
DOI: **10.1002/cctc.201100473**



Origins of Life

C. Meinert,* J.-J. Filippi, P. de Marcellus, L. L. S. d'Hendecourt, U. J. Meierhenrich*

N-(2-Aminoethyl)glycine and Amino Acids from Interstellar Ice Analogues

Interstellar ices were simulated by condensing and UV irradiating molecules such as H_2O, CH_3OH, and NH_3 at 80 K. Multidimensional gas chromatography analyses allowed for the identification of 26 amino and diamino acids (see graph). The results support the suggestion that potentially prebiotic molecules originating from the photochemistry of interstellar ices could have been incorporated in cometary dust and delivered to the early Earth.

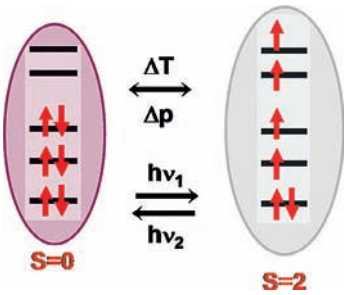
ChemPlusChem
DOI: **10.1002/cplu.201100048**

Spin-Crossover Complexes

J. A. Wolny*, R. Diller, V. Schünemann*

Vibrational Spectroscopy of Mono- and Polynuclear Spin-Crossover Systems

Recent applications of infrared and Raman spectroscopy, as well as nuclear inelastic scattering (NIS), with respect to the study of spin-crossover (SCO) phenomena are reviewed. A special focus lies on micro- and nanostructures of SCO complexes as well as on time-dependent phenomena.



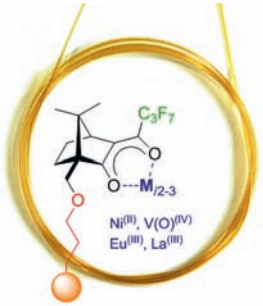
Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.201200059**

Gas Chromatography

M. J. Spallek, G. Storch, O. Trapp*

Straightforward Synthesis of Poly(dimethylsiloxane) Phases with Immobilized (1*R*)-3-(Perfluoroalkanoyl)camphorate Metal Complexes and Their Application in Enantioselective Complexation Gas Chromatography

A novel synthetic approach to camphor-based chemically bonded Chirasil-Metal-OC_3 [Ni, Eu, La, V(O)] stationary phases and thir application in enantioselective complexation GC is presented. Immobilization and metal incorporation was studied with a range of selector concentrations using NMR and IR spectroscopy. Overall, 29 compounds with different functionalities were separated with α-values up to 1.66.



Eur. J. Org. Chem.
DOI: **10.1002/ejoc.201200075**

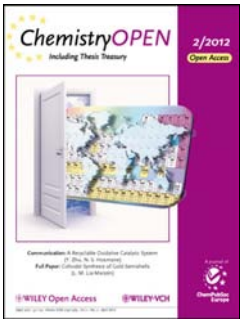
Sustainable Technologies

Vera Koester

Michael Schütze on the Future of DECHEMA's Research

The research institute of the DECHEMA recently became an independent non-profit foundation. Connected to this, traditional key competences like corrosion and electrochemistry are now supplemented by interdisciplinary research clusters important for the future of an industrial society. Professor M. Schütze, Director of the Institute, details these changes and the future of the field.

ChemViews magazine
DOI: **10.1002/chemv.201200046**

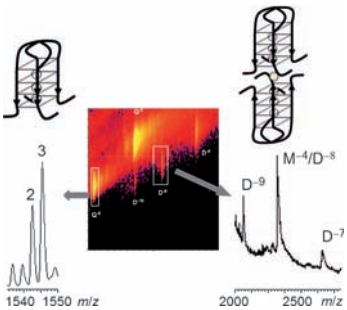


DNA Structures

R. Ferreira, M. Alvira, A. Aviñó, I. Gómez-Pinto, C. González, V. Gabelica, R. Eritja*

Synthesis and Structural Characterization of Stable Branched DNA G-Quadruplexes Using the Trebler Phosphoramidite

Tuning the treble! Herein, we describe a method to prepare highly stable G-quadruplexes by linking four guanine (G)-rich DNA strands on one end. This approach allows the introduction of specific modifications in one of the strands. For instance, we prepared a quadruplex with a single antiparallel strand. In this case, all-parallel or 3+1 structures are observed depending on the cation present. In addition to the expected monomolecular species, we observed the presence of dimeric G-quadruplex structures.



ChemistryOpen
DOI: **10.1002/open.201200009**