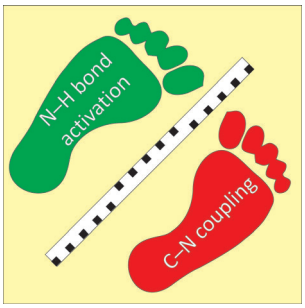
On these pages, we feature a selection of the excellent work that has recently been published in our sister journals. If you are reading these pages on a computer, click on any of the items to read the full article. Otherwise please see the DOIs for easy online access through Wiley Online Library.

Gas-Phase Chemistry

R. Kretschmer, M. Schlangen, H. Schwarz*

Mechanistic Aspects and Elementary Steps of N–H Bond Activation of Ammonia and C–N Coupling Induced by Gas-Phase Ions: A Combined Experimental/Computational Exercise

Step by step: Due to its extraordinary potential, N–H bond activation and C–N coupling processes have formed the focus of broad research activities. This Minireview will describe examples of these processes mediated by gaseous "bare" or ligated ions and provide detailed insights into the underlying mechanisms and elementary steps.



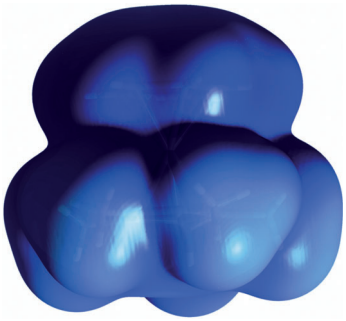
Chem. Eur. J.
DOI: **10.1002/chem.201102494**

Organometallic Complexes

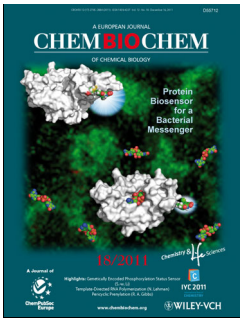
B. T. Loughrey,* B. V. Cunning, P. C. Healy, C. L. Brown, P. G. Parsons, M. L. Williams

Selective, Cytotoxic Organoruthenium(II) Full-Sandwich Complexes: A Structural, Computational and In Vitro Biological Study

Ru positive? A diverse range of lipophilic, cationic full-sandwich complexes of ruthenium(II) have been prepared and structurally characterized. Computational experiments predict each molecule to possess a delocalized δ+ electrostatic potential, and in vitro cytotoxicity studies demonstrate these lipophilic cations to be potent and selective growth inhibitors of tumorigenic cells lines.



Chem. Asian J.
DOI: **10.1002/asia.201100637**

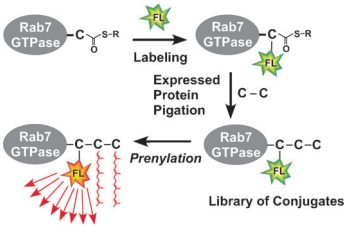


Protein Prenylation

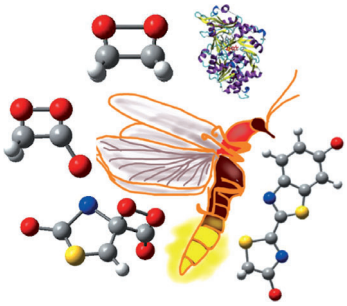
Y.-W. Wu,* R. S. Goody, K. Alexandrov*

Intein-Mediated Construction of a Library of Fluorescent Rab GTPase Probes

Taking the Rab: Expressed protein ligation allows site-specific incorporation of unnatural functionalities, such as fluorophores, into proteins. This requires synthesis of peptides with such functionalities and their subsequent ligation onto proteins. To construct a library of fluorescent RabGTPase sensors we developed an alternative approach in which proteins are labeled on a free cysteine and then ligated to an unlabeled peptide.



ChemBioChem
DOI: **10.1002/cbic.201100377**



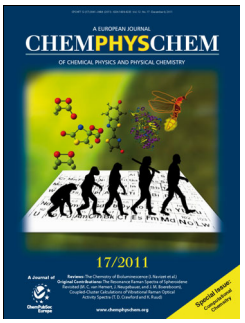
ChemPhysChem
DOI: **10.1002/cphc.201100504**

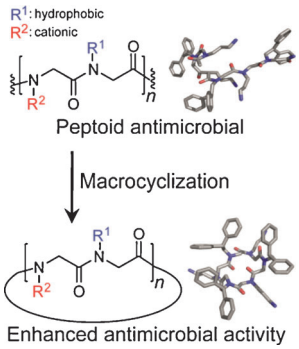
Bioluminescence

I. Navizet,* Y.-J. Liu, N. Ferré, D. Roca-Sanjuán, R. Lindh

The Chemistry of Bioluminescence: An Analysis of Chemical Functionalities

Evolution of oxyluciferin: Starting from simple models expanding to more complex ones (see picture) this review shows how theoretical calculations give insights for the color modulation of firefly luciferin.





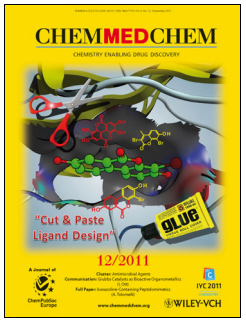
ChemMedChem
DOI: **10.1002/cmdc.201100358**

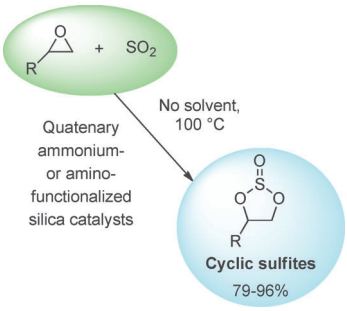
Peptidomimetics

M. L. Huang, S. B. Y. Shin, M. A. Benson, V. J. Torres, K. Kirshenbaum*

A Comparison of Linear and Cyclic Peptoid Oligomers as Potent Antimicrobial Agents

Cycling builds endurance! A family of linear N-substituted glycine "peptoid" oligomers bearing cationic and hydrophobic side chains were subjected to macrocyclization, thereby enhancing antimicrobial potency. These compounds are active against Gram-negative and Gram-positive bacteria and are non-hemolytic toward human erythrocytes.





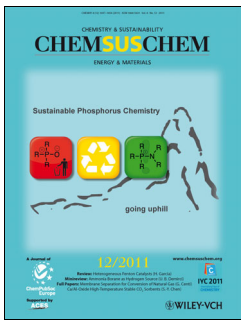
ChemSusChem
DOI: **10.1002/cssc.201100492**

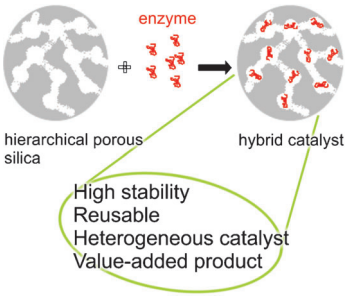
Sustainable Chemistry

Y. Takenaka,* T. Kiyosu, G. Mori, J.-C. Choi, N. Fukaya, T. Sakakura, H. Yasuda*

Synthesis of Cyclic Sulfites from Epoxides and Sulfur Dioxide with Silica-Immobilized Homogeneous Catalysts

Immobilized for crimes of pyrolysis: Quaternary ammonium- and amino-functionalized silica catalysts promote the cycloaddition of sulfur dioxide to epoxides to produce cyclic sulfites in high yields (79–96%) that are comparable to those with the homogeneous catalysts. Separation of the functionalized silica catalyst from the product solution by filtration avoids pyrolysis of the cyclic sulfites during purification by distillation.





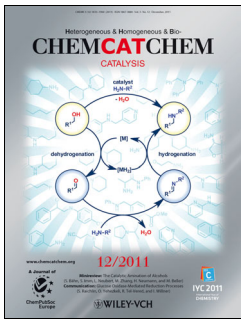
ChemCatChem
DOI: **10.1002/cctc.201100174**

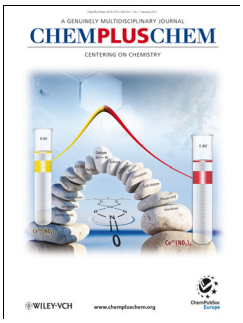
Enzyme Immobilization

C. Bernal, L. Sierra, M. Mesa*

Application of Hierarchical Porous Silica with a Stable Large Porosity for β-Galactosidase Immobilization

Pin that enzyme down: Hierarchical porous silica, synthesized by using sodium silicate, is used as support for immobilization of β-galactosidase by the adsorption pathway. Their loading capacity and enzyme retention are explained in terms of their large mesopores and macropores and the surface silanol groups. Under extreme conditions, the hybrid biocatalyst is more stable than the soluble β-galactosidase.



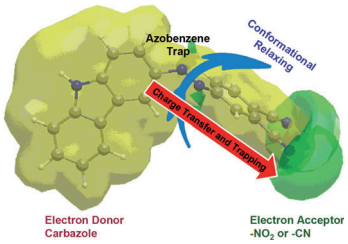


Polymers

B. Zhang, G. Liu, Y. Chen,* C. Wang, K.-G. Neoh, T. Bai, E.-T. Kang*

Electrical Bistability and WORM Memory Effects in Donor–Acceptor Polymers Based on Poly(*N*-vinylcarbazole)

Make the switch: Poly(*N*-vinylcarbazole) derivatives with pendant donor–trap–acceptor structures exhibit electrical effects. The origin of the electrical bistability, which arises from the intramolecular charge transfer, trapping, and conformational relaxation of the electrostatic energy of the Al/polymer/indium tin oxide sandwich structure (see figure), was established by spectroscopic, microscopic, and molecular computational techniques.



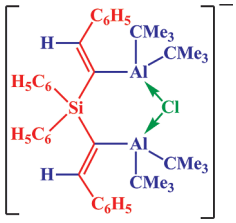
ChemPlusChem
DOI: **10.1002/cplu.201100007**

Hydroalumination/Carbalumination

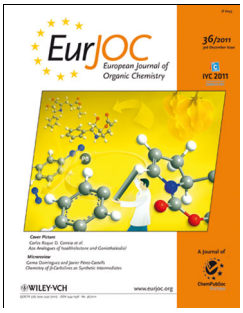
W. Uhl,* D. Heller, J. Kösters, E.-U. Würthwein, N. Ghavtadze

Hydroalumination of Bis(alkynyl)silanes: Generation of Chelating Lewis Acids, Their Application in the Coordination of Chloride Ions and a 1,1-Carbalumination Reaction

Chelating Lewis acids containing two coordinatively unsaturated, tri-coordinate aluminium atoms were obtained from a facile route by the twofold hydroalumination of dialkynylsilanes. An intermediately formed alkenyl–alkynylsilane gave a silacyclobutene derivative by 1,1-carbalumination.



Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.201100890**

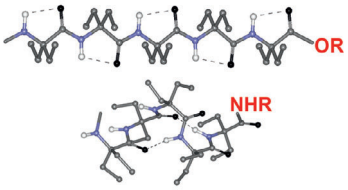


Helical Peptides

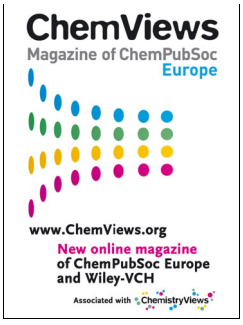
F. Formaggio,* M. Crisma, C. Peggion, A. Moretto, M. Venanzi, C. Toniolo*

Looking for a Robust, Synthetic, Fully-Extended (2.0_5-Helical) Peptide Structure – Effect of Terminal Groups

The fully-extended structure, albeit appealing for its potential applications, is the least investigated among polypeptide conformations. Here, we show that this 3D structure is stabilized by a C-terminal ester moiety. However, C-termination with a –CONHR (R = H, alkyl) group will convert it into the much more contracted 3_{10} helix.



Eur. J. Org. Chem.
DOI: **10.1002/ejoc.201101273**



Design by Evolution

Vera Köster

Design by Evolution

Caltech Professor Frances H. Arnold sees laboratory evolution designing biology as solution to human problems. In her interview she also talks about creating proteins that expand the alphabet beyond the 20 natural amino acids and the few prosthetic groups that biology uses. If you use chemical knowledge, say from organocatalysis or inorganic chemistry, you can expand the chemical palette that's accessible to biology. There is a lot of room for creativity and imagination in these ideas that we are going to see developed in the near future.

ChemViews magazine
DOI: **10.1002/chemv.201000143**