

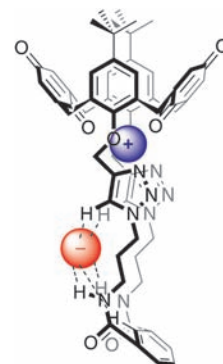


Host–Guest Systems

S. C. Picot, B. R. Mullaney, P. D. Beer*

Ion-Pair Recognition by a Heteroditopic Triazole-Containing Receptor

Two-timing triazole: A new heteroditopic calix[4]diquinone triazole containing receptor that recognises both cations and anions by respective Lewis base and C–H hydrogen-bonding modes of the triazole motif has been prepared (see figure). The receptor cooperatively binds cation (Na^+ , K^+ , NH_4^+)/halide ion-pair species in an aqueous solvent mixture. The dual cation/anion binding role of the receptor's triazole groups is further demonstrated by X-ray crystallography.



Chem. Eur. J.
DOI: 10.1002/chem.201200251

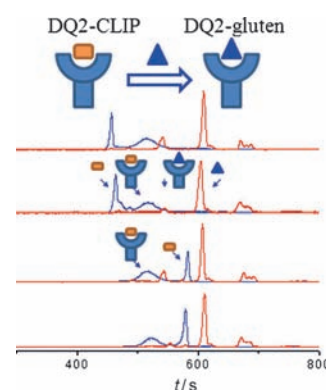


Protein–Peptide Binding

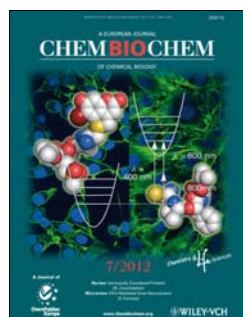
J. Wang, X. Jin, J. Liu, C. Khosla,* J. Xia*

Resolving Multiple Protein–Peptide Binding Events: Implication for HLA-DQ2 Mediated Antigen Presentation in Celiac Disease

Complexity resolved: The key step of antigen presentation in celiac disease is the binding of immunogenic gluten peptide to HLA-DQ2 protein through displacement of endogenous CLIP peptides. We developed capillary electrophoresis coupled to fluorescence detection to monitor this complex process for the first time. We showed that gluten peptide can be efficiently loaded on CLIP-bound DQ2 at neutral pH (on the surface of cells) but not at acidic pH (in the endosome).



Chem. Asian J.
DOI: 10.1002/asia.201101041

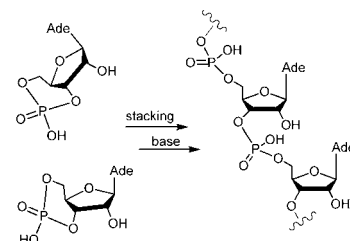


RNA Polymerization

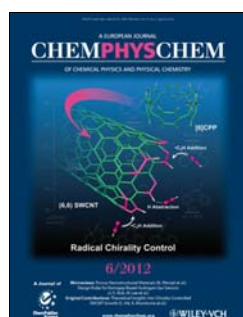
G. Costanzo, R. Saladino, G. Botta, A. Giorgi, A. Scipioni, S. Pino, E. Di Mauro*

Generation of RNA Molecules by a Base-Catalysed Click-Like Reaction

Spontaneous polymerization of 3',5'-cyclic GMP occurs in water, in formamide, in dimethylformamide, and (in water) in the presence of a Brønsted base such as 1,8-diazabicycloundec-7-ene. The reaction is thermodynamically favoured and selectively yields 3',5'-bonded ribopolymers.



ChemBioChem
DOI: 10.1002/cbic.201200068

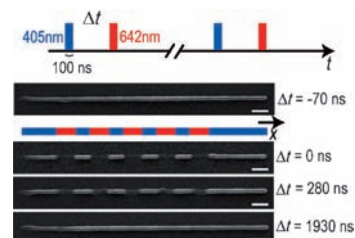


Lithography

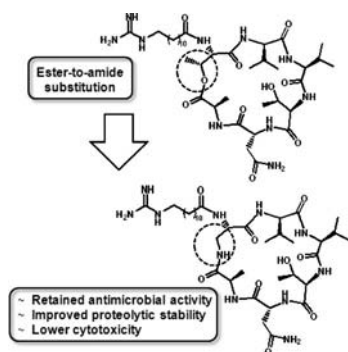
B. Harke,* P. Bianchini, F. Brandi, A. Diaspro

Photopolymerization Inhibition Dynamics for Sub-Diffraction Direct Laser Writing Lithography

Selective inhibition of the polymerization leads to sub-diffraction feature sizes in direct writing lithography—a principle based on the idea of stimulated emission depletion (STED) microscopy. However, the detailed understanding of the inhibition process is a key point to further enhance the resolution of the system. The authors present experiments focused on the time dynamics of the inhibition process, clarifying possible photophysical pathways.



ChemPhysChem
DOI: 10.1002/cphc.201200006



ChemMedChem

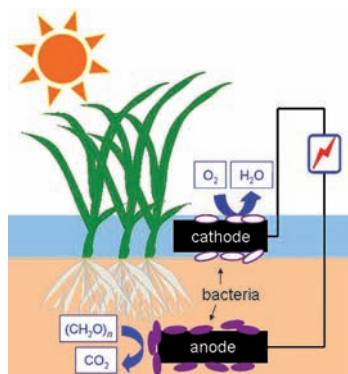
DOI: 10.1002/cmdc.201200016

Antibacterial Agents

N. Bionda, M. Stawikowski, R. Stawikowska, M. Cudic, F. López-Vallejo, D. Treitl, J. Medina-Franco, P. Cudic*

Effects of Cyclic Lipodepsipeptide Structural Modulation on Stability, Antibacterial Activity, and Human Cell Toxicity

Improving bioactivity: Ester-to-amide substitution in naturally occurring depsipeptide antimicrobials affords equally potent analogues with improved stability and greatly decreased cytotoxicity. Lower overall hydrophobicity and amphiphilicity of amide analogues relative to their parent depsipeptides may explain this dissociation of antibacterial activity from human cell cytotoxicity.



ChemSusChem

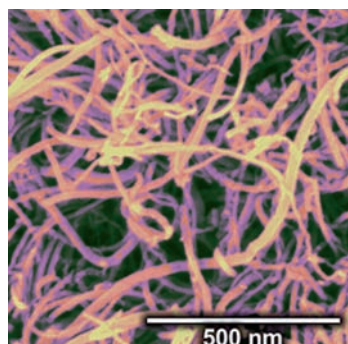
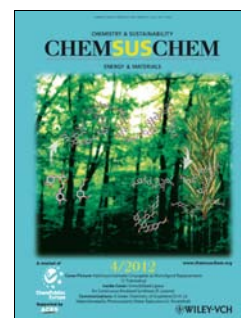
DOI: 10.1002/cssc.201100257

Plant–Microbial Fuel Cells

H. Deng, Z. Chen, F. Zhao*

Energy from Plants and Microorganisms: Progress in Plant–Microbial Fuel Cells

Down to the roots: Plant–microbial fuel cells convert solar energy into electrical power by using microorganisms, which degrade root exudates and pollutants at the anode and pass the electrons to acceptors at the cathode. This setup can provide auxiliary power while reducing the emission of greenhouse gas, that is, methane, from fields.



ChemCatChem

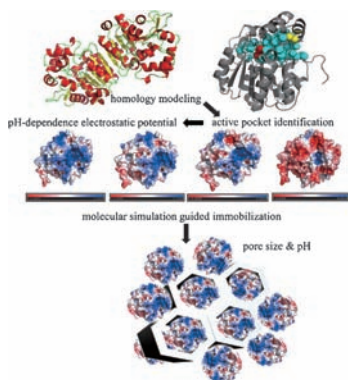
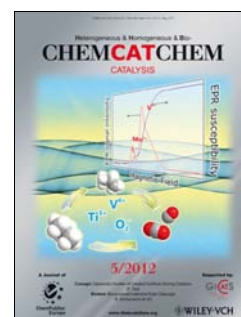
DOI: 10.1002/cctc.201100434

Water Splitting

K. Mette, A. Bergmann, J.-P. Tessonnier,* M. Hävecker, L. Yao, T. Ressler, R. Schlögl, P. Strasser,* M. Behrens*

Nanostructured Manganese Oxide Supported on Carbon Nanotubes for Electrocatalytic Water Splitting

Slippery when wet: A nanostructured manganese oxide has been supported on carbon nanotubes for use in electrocatalytic water splitting. This catalytic material is cheap and easily prepared. It exhibits relatively stable performance and high activity showing great potential for hydrogen production from waste and sea water under neutral, hence environmentally benign conditions.



ChemPlusChem

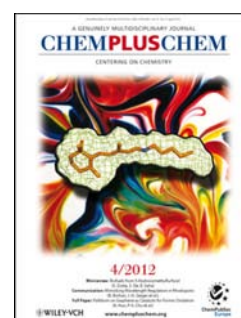
DOI: 10.1002/cplu.201100041

Immobilized Biocatalysts

H. Zhou, Y. Qu,* Y. Bu, X. Li, C. Kong, Q. Ma, Q. Zhang, X. Zhang, J. Zhou

Molecular-Simulation-Assisted Immobilization and Catalytic Performance of C–C Hydrolase MfphA on SBA-15 Mesoporous Silica

The right strategy: A molecular simulation approach based on homology modeling and electrostatic potential calculations has been proposed to assist the immobilization process of a C–C hydrolase MfphA onto a mesoporous silicate (see figure). The theoretical molecule size, isoelectric point, and immobilization site were first predicted and then verified by adsorption kinetics and catalytic activity assays. The stability, activity, and reusability of the immobilized enzyme are also investigated.



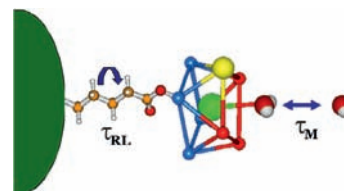


MRI Nanoprobes

M. Botta,* L. Tei

Relaxivity Enhancement in Macromolecular and Nanosized Gd^{III}-Based MRI Contrast Agents

The development of more effective nanosystems for magnetic resonance imaging (MRI) applications, ranging from protein-based to silica nanoparticles, has scarcely been combined with an attempt at enhancing the relaxivity of the individual Gd chelate. Optimization of the physicochemical properties of the chelate and its conjugation mode enables large increases in relaxivity.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201101305

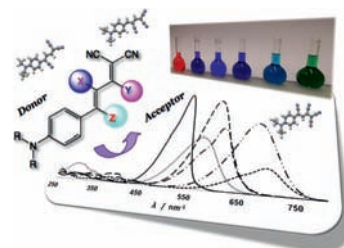


Push–Pull Chromophores

F. Tancini, Y.-L. Wu, W. B. Schweizer, J.-P. Gisselbrecht, C. Boudon, P. D. Jarowski, M. T. Beels, I. Biaggio, F. Diederich*

1,1-Dicyano-4-[4-(diethylamino)phenyl]buta-1,3-dienes: Structure–Property Relationships

Increasingly cyanated 1,1-dicyano-4-(*N,N*-diethylanilino)-substituted buta-1,3-dienes were synthesized by unusual routes and characterized by X-ray analyses. Their opto-electronic properties strongly depend on both the number and position of the additional CN groups. Substitution in positions 2 and 4 affects the intramolecular charge-transfer bands more strongly than substitution in position 3, which is rationalized by theoretical calculations.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201200111



Society Publishing

Richard Threlfall

Organic Chemistry in Asia – Interview with K. Maruoka

On the eve of the launch of the *Asian Journal of Organic Chemistry*, ChemViews magazine spoke to one of the Chairmen of the Editorial Board. Keiji Maruoka, Kyoto University, explained the rapid development of organic chemistry in Asia means a new journal is needed, and that this journal is special as it is the first pan-Asia society journal focused on organic chemistry.



ChemViews magazine
DOI: 10.1002/chemv.201200032

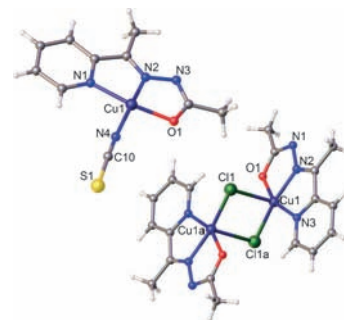


Bioactive Complexes

K. Das, A. Datta,* C. Sinha, J.-H. Huang,* E. Garribba, C.-S. Hsiao, C.-L. Hsu

End-to-End Thiocyanato-Bridged Helical Chain Polymer and Dichlorido-Bridged Copper(II) Complexes with a Hydrazone Ligand: Synthesis, Characterisation by Electron Paramagnetic Resonance and Variable-Temperature Magnetic Studies, and Inhibitory Effects on Human Colorectal Carcinoma Cells

A complex situation! The reactions of the tridentate hydrazone ligand, *N'*-[1-(pyridin-2-yl)ethylidene]acetohydrazide (HL) with copper nitrate in the presence of thiocyanate, or copper chloride produce a one-dimensional helical coordination chain of [CuL(NCS)]_n and a doubly chlorido-bridged dinuclear complex [Cu₂L₂Cl₂], respectively. Both complexes induce a decrease in cell-population growth of human colorectal carcinoma cells.



ChemistryOpen
DOI: 10.1002/open.201100011