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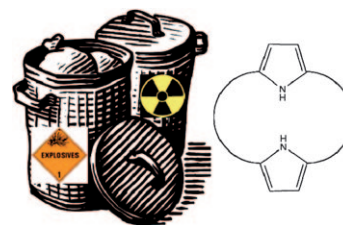


Supramolecular Receptors

B. M. Rambo,* J. L. Sessler*

Oligopyrrole Macrocycles: Receptors and Chemosensors for Potentially Hazardous Materials

Sequestering, removal, and detection of hazardous materials: The ability to bind and subsequently sense radioactive and explosive materials is critical in protecting the environment and could prove useful in a variety of security-related applications. Oligopyrroles provide a versatile receptor platform that can be exploited for these purposes, as well as for the recognition of certain potentially hazardous anionic species. The unique electronic features of oligopyrroles make them particularly useful as colorimetric and fluorimetric chemosensors.



Chem. Eur. J.
DOI: 10.1002/chem.201100050

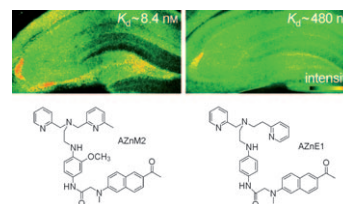


Fluorescent Probes

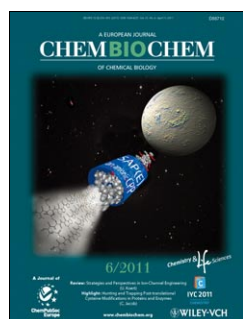
I. A. Danish, C. S. Lim, Y. S. Tian, J. H. Han, M. Y. Kang, B. R. Cho*

Two-Photon Probes for Zn^{2+} Ions with Various Dissociation Constants. Detection of Zn^{2+} Ions in Live Cells and Tissues by Two-Photon Microscopy

A-tissue a-tissue, we all fall down: A series of Zn^{2+} -ion selective two-photon fluorescent probes with a wide range of dissociation constants ($K_d^{TP} = 8 \text{ nM} - 12 \text{ }\mu\text{M}$) were developed to be able to detect the Zn^{2+} ions in live cells and intact tissues at a depth of $> 80 \text{ }\mu\text{m}$ without the drawbacks of mistargeting and photobleaching.



Chem. Asian J.
DOI: 10.1002/asia.201000720

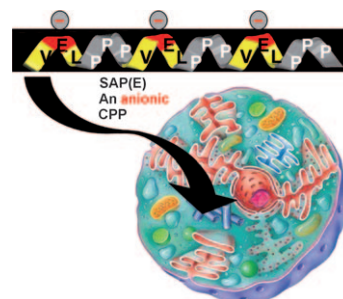


Peptides

I. Martín, M. Teixidó,* E. Giralt*

Design, Synthesis and Characterization of a New Anionic Cell-Penetrating Peptide: SAP(E)

A SAP delivery: SAP(E) is an amphipathic proline-rich peptide derived from sweet arrow peptide (SAP) and adopts a defined PPII secondary structure in solution. Despite its overall negative charge it can be internalized into different cell lines without toxicity (see scheme). By making use of the noncationic nature of SAP(E) intracellular delivery of new cargoes might be possible.



ChemBioChem
DOI: 10.1002/cbic.201000679



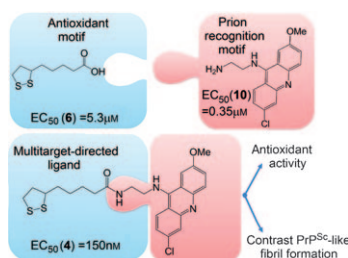
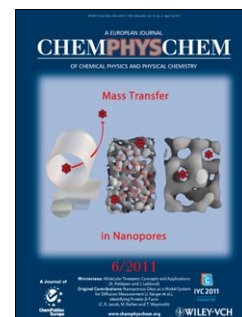
ChemPhysChem
DOI: 10.1002/cphc.201000963

Crystal Growth

A. Shtukenberg,* E. Gunn, M. Gazzano,* J. Freudenthal, E. Camp, R. Sours, E. Rosseeva, B. Kahr*

Bernauer's Bands

Twisted crystals: Ferdinand Bernauer proposed in "*Gedrillte*" Kristalle (1929), that a great number of simple, crystalline substances grow from solution or from the melt as polycrystalline spherulites with helically twisting radii that give rise to concentric optical bands between crossed polarizers (see picture). In fact, rhythmic precipitation and helical twisting often coexist, complicating optical analyses and presenting Bernauer with difficulties in the characterization and classification of the objects of his interest.



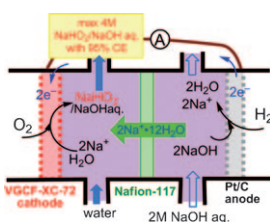
ChemMedChem
DOI: 10.1002/cmdc.201100072

Drug Discovery

S. Bongarzone, H. N. A. Tran, A. Cavalli, M. Roberti, M. Rosini, P. Carloni, G. Legname, M. L. Bolognesi*

Hybrid Lipolic Acid Derivatives to Attack Prion Disease on Multiple Fronts

Attack from all sides! The presence of a prion recognition motif (10) along with an antioxidant fragment (6) could potentially lead to compounds with multiple mechanisms of action against prion disease. Our studies identified lipoyl acridine derivative 4, which inhibits PrP^{Sc} accumulation, delays fibril formation, and decreases oxidative stress.



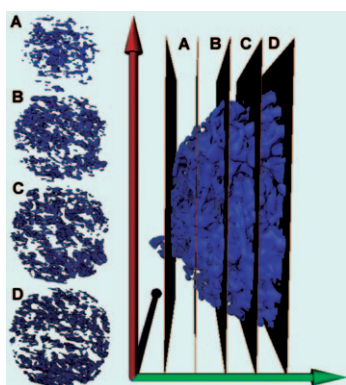
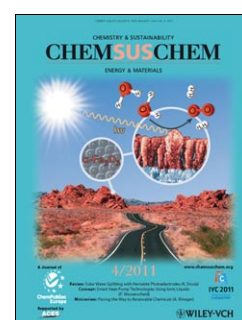
ChemSusChem
DOI: 10.1002/cssc.201000263

Fuel Cells

I. Yamanaka,* T. Onisawa, T. Hashimoto, T. Murayama

A Fuel-Cell Reactor for the Direct Synthesis of Hydrogen Peroxide Alkaline Solutions from H₂ and O₂

Divided we stand: A divided fuel-cell system is effective for the selective formation of hydrogen peroxide (see picture). The theoretical concentration of H₂O₂ is 4.3 M, but the solution is diluted to below 4.0 M to prevent deposition of Na₂O₂ at the cathode.



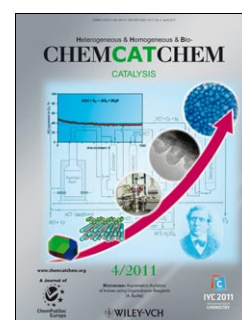
ChemCatChem
DOI: 10.1002/cctc.201000403

Tomography

F. Nan, C. Song, J. Zhang, R. Hui, J. Chen, C. Fairbridge, G. A. Botton*

STEM HAADF Tomography of Molybdenum Disulfide with Mesoporous Structure

Not so heavy in the dark: Scanning transmission electron microscopy with high-angle annular dark field tomography to give spatial information on nanometre scale has been used to investigate the porous structure of a MoS₂ catalyst developed for heavy oil refining, offering direct view of individual porous particles in three-dimensions.

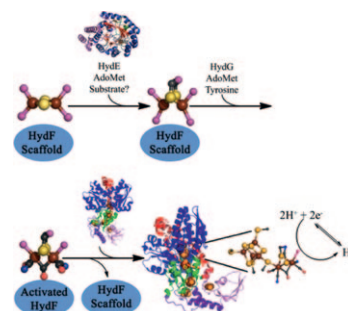




H-Cluster Biosynthesis

K. D. Swanson, B. R. Duffus, T. E. Beard, J. W. Peters,* J. B. Broderick*
Cyanide and Carbon Monoxide Ligand Formation in Hydrogenase Biosynthesis

Hydrogenase active site (H-cluster) ligands are synthesized by maturation enzymes to generate an active enzyme capable of catalyzing the formation or oxidation of hydrogen. This review discusses the different hydrogenase maturation systems, and it also describes cyanide and carbon monoxide biosynthetic systems. Particular focus is given to [FeFe]-hydrogenase H-cluster biosynthesis.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201001056

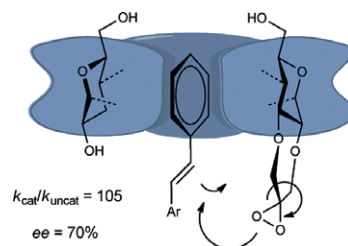


Enzyme Models

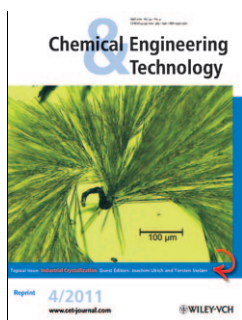
T. H. Fenger, L. G. Marinescu, M. Bols*

Cyclodextrin Ketones with the Catalytic Group at the Secondary Rim and Their Effectiveness in Enzyme-Like Epoxidation of Stilbenes

A cyclodextrin bearing a ketone on the secondary face can catalyze the epoxidation of stilbenes with cavity induced rate increases of 100–200 and stereoselectivity.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201001696

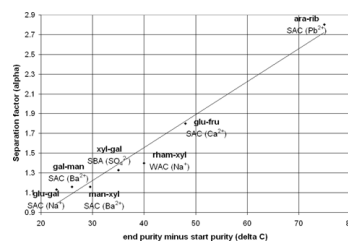


Industrial-Scale Chromatography

P. Saari*, M. Hurme

Process Synthesis Principles in the Chromatographic Separation of Sugars from Biomass Hydrolysates

The processing of sugar solutions is an important activity in sugar platform biorefineries. Industrial-scale chromatography offers an interesting alternative for the recovery of various monosaccharides in biomass hydrolysates. The systematics in the selection of a suitable ion exchange resin for separation are described.



Chem. Eng. Technol.
DOI: 10.1002/ceat.201000201