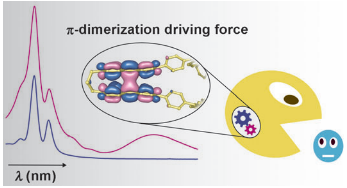
Molecular Tweezers

A. Iordache, M. Retegan, F. Thomas, G. Royal, E. Saint-Aman,*
C. Bucher*

Redox-Responsive Porphyrin-Based Molecular Tweezers

Pinching pacman! Switching between the "open" and "closed" arrangements of pacman-like bisporphyrin architectures can be achieved by redox control of noncovalent interactions (see figure). The open/close molecular motion, triggered by reduction of π-dimerizable bipyridinium units, has been shown to allow the complexation of a bidentate ligand pinched between both metalloporphyrins.



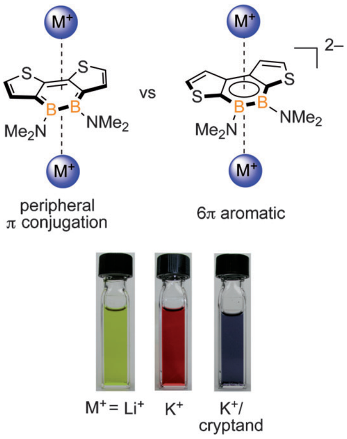
Chem. Eur. J.
DOI: **10.1002/chem.201200842**

Conjugation

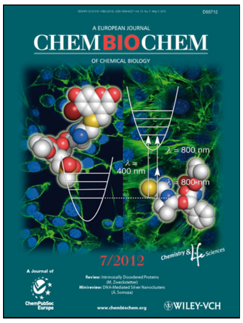
T. Araki, A. Wakamiya,* K. Mori, S. Yamaguchi*

Elucidation of π-Conjugation Modes in Diarene-Fused
1,2-Dihydro-1,2-diborin Dianions

A borin paper: The orientation of the thiophene rings in dithieno-fused 1,2-dihydro-1,2-diborins significantly altered the π-conjugation modes of their dianions. The countercations also influenced the absorption properties with drastic color changes.



Chem. Asian J.
DOI: **10.1002/asia.201200055**

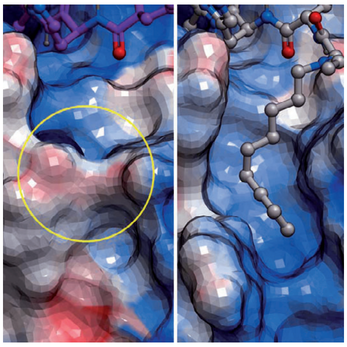


Kinases

F. Liu, J.-E. Park, W.-J. Qian, D. Lim, A. Scharow, T. Berg, M. B. Yaffe, K. S. Lee,* T. R. Burke, Jr.*

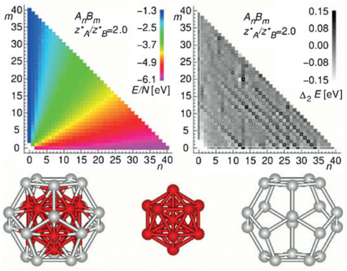
Peptoid–Peptide Hybrid Ligands Targeting the Polo Box Domain of Polo-Like Kinase 1

Putting the hole in the polo: Replacing the amino terminal Pro residue of the Plk1 polo box domain (PBD)-binding pentamer peptide, PLHSpT, with a library of *N*-alkyl-Gly "peptoids" gave low-nanomolar affinity peptide–peptoid hybrids. An X-ray crystal structure of one PBD-bound hybrid showed that a long-chain alkylphenyl group created a hydrophobic channel (right) that was not present in the PLHSpT-bound complex (yellow circle, left).



ChemBioChem
DOI: **10.1002/cbic.201200206**

Metal Clusters

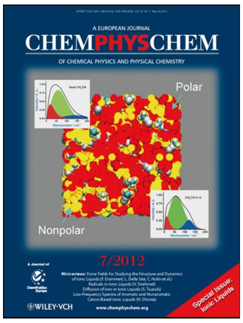


L.-C. Cune*

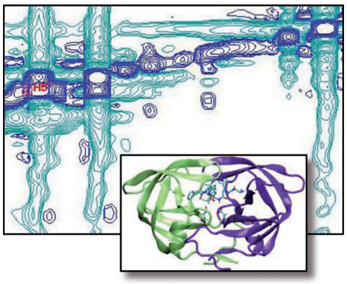
Magic Pairs and Structural Transitions in Binary Metallic Clusters

Magic clusters: Increasing the difference between the two types of atoms in binary metallic clusters leads to a gradual disappearance of the homo-atomic geometric magic numbers and the appearance of magic pairs corresponding to the number of atoms of each atomic species in binary nanostructures with higher stability (see picture). Changes in composition or concentration induce structural transitions and ground-state↔isomer inversions.

ChemPhysChem
DOI: **10.1002/cphc.201200084**



Antiviral Agents

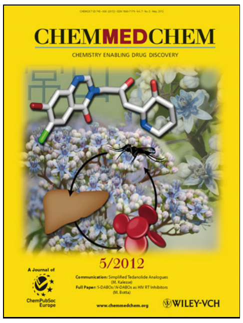


B. Honarparvar, M. M. Makatini, S. A. Pawar, K. Petzold,
M. E. S. Soliman, P. I. Arvidsson, Y. Sayed, T. Govender,
G. E. M. Maguire,* H. G. Kruger*

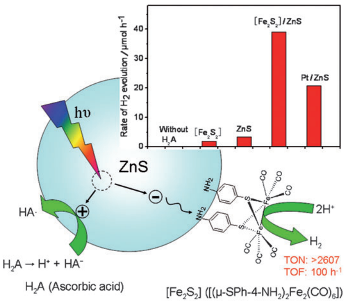
Pentacycloundecane-diol-Based HIV-1 Protease Inhibitors: Biological Screening, 2D NMR, and Molecular Simulation Studies

Cage peptides unleashed: The combination of drug design with in vitro assays, NMR techniques, and molecular modeling has enabled us to rationalize the observed inhibitory activities toward HIV protease by the various cage peptides in this series. EASY-ROESY NMR data show that the entire range of inhibitors exhibit a relatively stable interaction between the cage side chain and the cage protons.

ChemMedChem
DOI: **10.1002/cmdc.201100512**



Photocatalysis

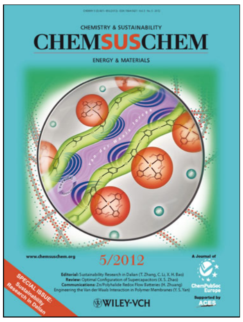


F. Wen, X. Wang, L. Huang, G. Ma, J. Yang, C. Li*

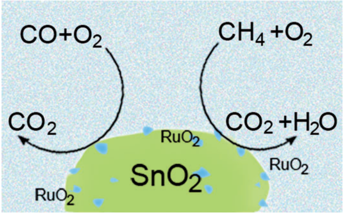
A Hybrid Photocatalytic System Comprising ZnS as Light Harvester and an $[Fe_2S_2]$ Hydrogenase Mimic as Hydrogen Evolution Catalyst

Photo opportunity: A highly efficient and stable hybrid artificial photosynthetic H_2 evolution system is assembled by using a semiconductor (ZnS) as light-harvester and an $[Fe_2S_2]$ hydrogenase mimic ($[(\mu\text{-SPh-4-}NH_2)_2Fe_2(CO)_6]$) as catalyst for H_2 evolution. Photocatalytic H_2 production is achieved with more than 2607 turnovers (based on $[Fe_2S_2]$) and an initial turnover frequency of 100 h^{-1} through the efficient transfer of photogenerated electrons from ZnS to the $[Fe_2S_2]$ complex.

ChemSusChem
DOI: **10.1002/cssc.201200190**



CO and CH_4 Oxidation

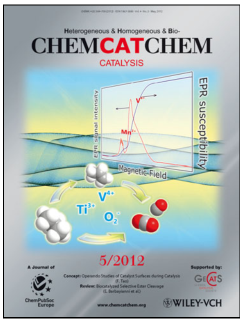


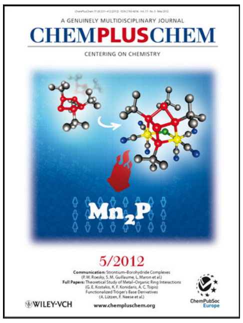
J. Yu, D. Zhao, X. Xu, X. Wang,* N. Zhang*

Study on RuO_2/SnO_2: Novel and Active Catalysts for CO and CH_4 Oxidation

A tale of two metal oxides: SnO_2supported RuO_2 catalysts are found to be very active and stable for CO and CH_4 oxidation, owing to a synergetic effect between RuO_2 and SnO_2. RuO_2 supported on uncalcined SnO_2 is less active than if supported on calcined SnO_2, owing to the possible formation of a new Ru–Sn–O compound, which weakens the synergetic effect.

ChemCatChem
DOI: **10.1002/cctc.201200038**



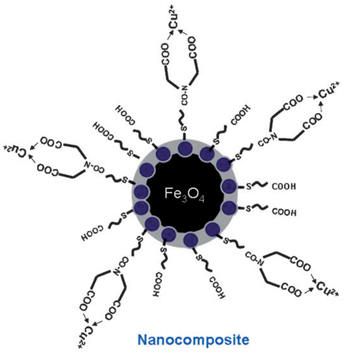


Functionalization of Nanocomposites

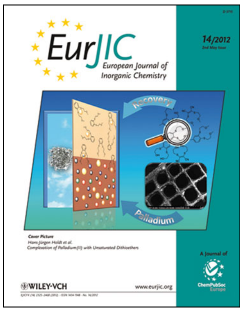
A. N. Reddy, K. Anjaneyulu, P. Basak, N. M. Rao,* S. V. Manorama*

A Simple Approach to the Design and Functionalization of Fe_3O_4–Au Nanoparticles for Biomedical Applications

A simple aqueous synthesis of a superparamagnetic and biofunctional nanocomposite system is described. Chitosan-stabilized Fe_3O_4 nanoparticles were synthesized at room temperature and the surface charge of these nanocomposites was exploited to prepare nanoparticles decorated with gold (see figure). The feasibility of these nanocomposites as contrast agents and use to separate His6-tagged protein from bacterial lysates were investigated.



ChemPlusChem
DOI: **10.1002/cplu.201100032**

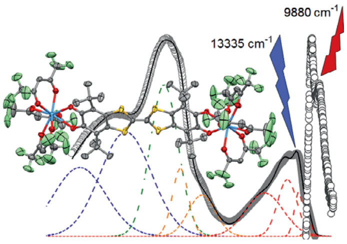


Acceptor–Donor–Acceptor Complexes

F. Pointillart, V. Kuropatov, A. Mitin, O. Maury, Y. Le Gal, S. Golhen, O. Cador, V. Cherkasov, L. Ouahab*

Lanthanide-Based Dinuclear Complexes Involving an *o*-Quinone–Tetrathiafulvalene–*o*-Quinone Bridging Ligand: X-ray Structures, Magnetic and Photophysical Properties

Yb^{III} luminescence of the paramagnetic dinuclear complex [Yb_2-(hfac)$_6$(**L**)] (**L** = 4,4′,7,7′-tetra-*tert*-butyl-2,2′-bi-1,3-benzodithiole-5,5′,6,6′-tetrone) is induced by the lowest-energy irradiation (13335 cm^{-1}) for the sensitisation of near-infrared emissive lanthanides.



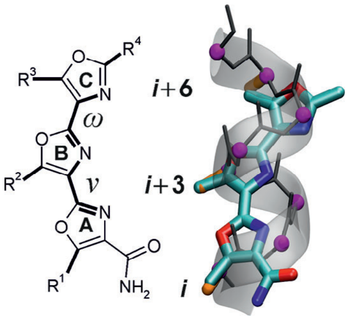
Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.201200121**

Helical Peptide Mimetics

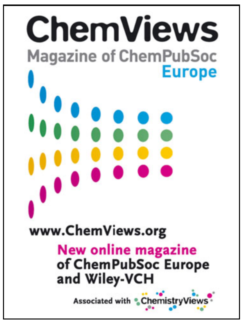
C. Pinto Gomes, A. Metz, J. W. Bats, H. Gohlke, M. W. Göbel*

Modular Solid-Phase Synthesis of Teroxazoles as a Class of α-Helix Mimetics

A teroxazole scaffold, designed to be a helical peptide mimetic, has been prepared by modular solid-phase synthesis. This method for synthesizing diversely substituted oligo-oxazole scaffolds is versatile. The teroxazole scaffold is hydrophilic and mimics side chains i, $i+3$, and $i+6$, which covers a broader region on the α-helix surface than previous α-helix mimetics.



Eur. J. Org. Chem.
DOI: **10.1002/ejoc.201200339**

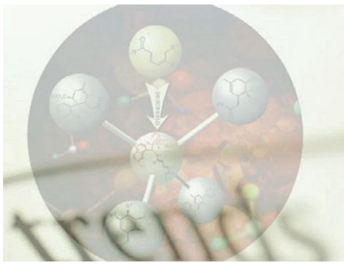


Chemical Literature

Richard Threlfall

The Field of Chemistry

The field of chemistry is becoming ever more diverse. Richard Threlfall, Associate Managing Editor of the new Asian Journal of Organic Chemistry, reveals some surprising statistics from the first 15 issues of Angewandte Chemie International Edition from 2012. These show that browsing journal issues is still a worthwhile investment in a time when use of individual electronic articles is skyrocketing.



ChemViews magazine
DOI: **10.1002/chemv.201200049**