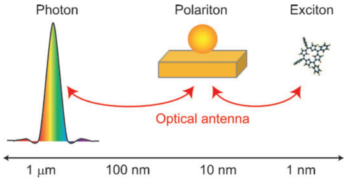
Energy Transfer

K. Ikeda,* K. Uosaki

Optical Antenna for Photofunctional Molecular Systems

Photon manipulation: The interaction efficiency between photons and molecules can be enhanced by a transformation between free-propagating massless photons and “heavy” photons. Although such photon manipulation is realized by metallic optical antennas, chemical interactions at metal–molecule interfaces have to be controlled to increase the overall photochemical reaction efficiency.



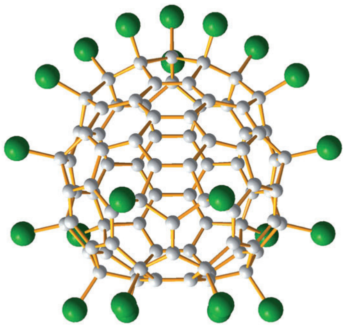
Chem. Eur. J.
DOI: **10.1002/chem.201102013**

Fullerenes

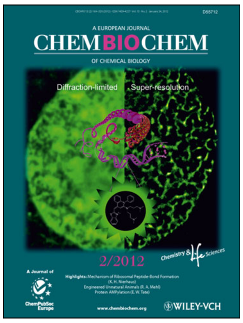
S. Yang,* T. Wei, E. Kemnitz, S. I. Troyanov*

The Most Stable IPR Isomer of C_{88} Fullerene, C_s-C_{88} (17), Revealed by X-ray Structures of $C_{88}Cl_{16}$ and $C_{88}Cl_{22}$

The most stable IPR isomer of C_{88} fullerene, C_{88} (17), has been captured by chlorination as $C_{88}(17)Cl_{16}$ and $C_{88}(17)Cl_{22}$. X-ray crystallography revealed C_s-symmetrical molecular structures of both compounds, with the former being a substructure of the latter (see picture; C grey, Cl green). The chlorination patterns are characterized by the formation of isolated double C–C bonds, benzenoid rings, and, in $C_{88}(17)Cl_{22}$, a long chain of Cl additions in adjacent positions on the C_{88} fullerene cage.



Chem. Asian J.
DOI: **10.1002/asia.201100759**

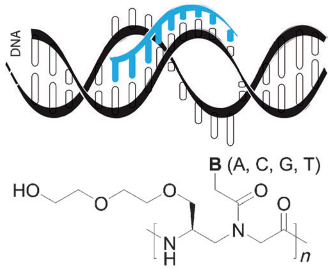


DNA Recognition

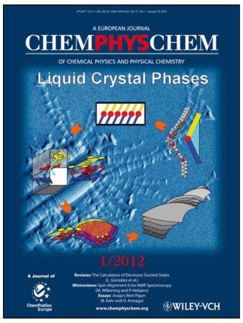
R. Bahal, B. Sahu, S. Rapireddy, C.-M. Lee, D. H. Ly*

Sequence-Unrestricted, Watson–Crick Recognition of Double Helical B-DNA by (*R*)-MiniPEG-γPNAs

Invasion of the strand snatchers: We have synthesized chiral γ-peptide nucleic acids containing miniPEG side chains. Using gel shift assays we show that this particular type of nucleic acid mimic can invade any sequence of double helical B-form DNA (see figure), and this recognition occurs through direct Watson–Crick base pairing.



ChemBioChem
DOI: **10.1002/cbic.201100646**

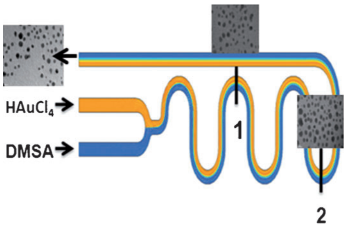


Gold Nanoparticles

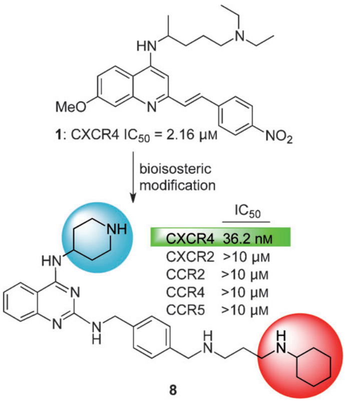
Y. Li, A. Sanampudi, V. Raji Reddy, S. Biswas, K. Nandakumar, D. Yemane, J. Goettert, C. S. S. R. Kumar*

Size Evolution of Gold Nanoparticles in a Millifluidic Reactor

Select your size: The size evolution of gold nanoparticles in a millifluidic reactor (see picture) is investigated through spatially resolved transmission electron microscopy. The experimental data supported by numerical simulations suggests that size and size distributions of the particles formed within the channels are influenced by the mixing zone as well as the residence-time distribution.



ChemPhysChem
DOI: **10.1002/cphc.201100726**



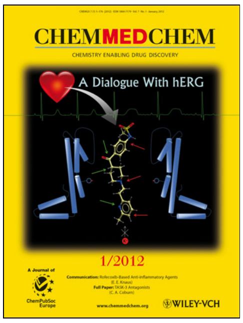
Stem Cell Research

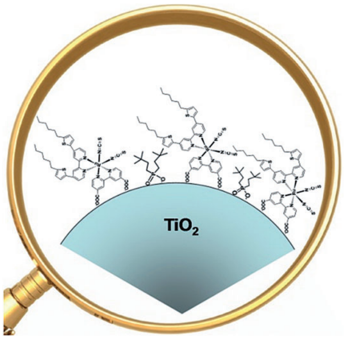
C.-H. Wu, C.-P. Chang, J.-S. Song, J.-J. Jan, M.-C. Chou, S.-H. Wu, K.-C. Yeh, Y.-C. Wong, C.-J. Hsieh, C.-T. Chen, T.-T. Kao, S.-Y. Wu, C.-F. Yeh, C.-T. Tseng, Y.-S. Chao, K.-S. Shia*

Discovery of Novel Stem Cell Mobilizers That Target the CXCR4 Receptor

Going mobile: Based on screening hit **1**, a novel class of polyamine compounds, as represented by compound **8**, were identified as potent and selective CXCR4 antagonists. CXCR4-targeted molecules, as demonstrated by the marketed AMD3100 and **8**, are able to mobilize stem cells from bone marrow effectively and are expected to have broad utility in cell therapy and regenerative medicine.

ChemMedChem
DOI: **10.1002/cmdc.201100525**





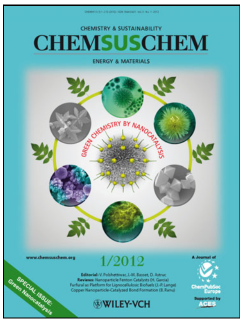
Solar Cells

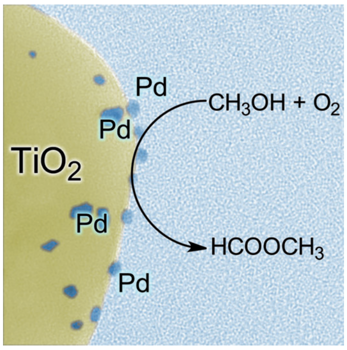
M. Wang, S. Plogmaker, R. Humphry-Baker, P. Pechy, H. Rensmo,* S. M. Zakeeruddin,* M. Grätzel*

Molecular-Scale Interface Engineering of Nanocrystalline Titania by Co-adsorbents for Solar Energy Conversion

Occupy TiO_2: Co-grafting dyes with amphiphilic molecules containing phosphinic or phosphonic acid end groups can form a more compact monolayer than the adsorption of dye alone. This insulating molecular layer can effectively shield the back electron transfer from the conduction band of TiO_2 to redox electrolytes. Herein coadsorbents are found to not only influence the dye loading, but also the geometry and electronic properties of the system.

ChemSusChem
DOI: **10.1002/cssc.201100549**





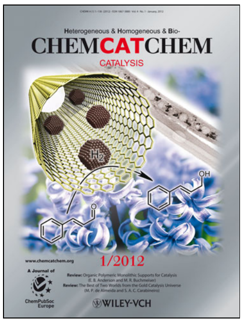
Partial Oxidation

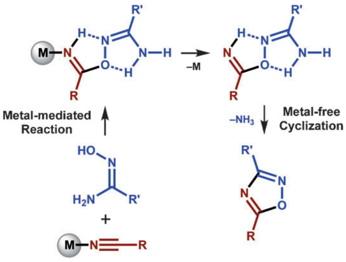
R. Wojcieszak,* E. M. Gaigneaux, P. Ruiz

Low Temperature-High Selectivity Process over Supported Pd Nanoparticles in Partial Oxidation of Methanol

Getting friendly with methanol: The most important challenge in gas phase heterogeneous catalysis is to reach high selectivity in a desired process. Probably the only way to get high selectivity in gas phase heterogeneous catalysis is to work under “friendly temperature conditions”. Methyl formate could be produced directly from methanol with a very high selectivity, over supported palladium nanoparticles at low temperature and under atmospheric pressure.

ChemCatChem
DOI: **10.1002/cctc.201100215**





Coordination Chemistry

D. S. Bolotin, N. A. Bokach,* M. Haukka, V. Y. Kukushkin*

Platinum(IV)-Mediated Nitrile–Amidoxime Coupling Reactions: Insights into the Mechanism for the Generation of 1,2,4-Oxadiazoles

Step by step: The stepwise nucleophilic addition of amidoximes to nitrile ligands in platinum(IV) complexes leads to coordinated O-imidoylamidoximes. These newly formed species after decoordination undergo cyclization (see scheme) to furnish 1,2,4-oxadiazoles. The cyclization is promoted by strong acceptor substituents R′ and is not affected by a metal center.

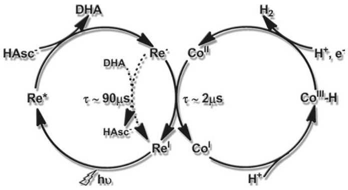
ChemPlusChem
DOI: **10.1002/cplu.201100047**

Photocatalytic Hydrogen Evolution

M. Guttentag, A. Rodenberg, R. Kopelent, B. Probst, C. Buchwalder, M. Brandstätter, P. Hamm,* R. Alberto*

Photocatalytic H_2 Production with a Rhenium/Cobalt System in Water under Acidic Conditions

Ascorbic acid was used as electron donor in a homogeneous rhenium/cobalt-based system for photocatalytic hydrogen evolution to lower the pH of the reaction solution. The system showed higher stability in terms of turnover numbers and reaction times than similar systems that work under basic conditions with triethanolamine as electron donor.



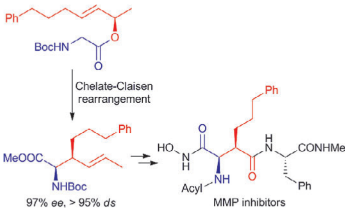
Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.201100883**

Matrix Metalloprotease Inhibitors

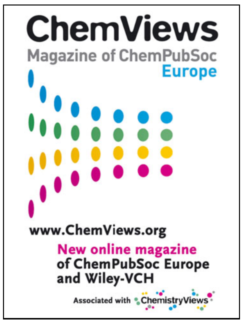
J. L. Burkhart, B. Diehl, M. J. Schmitt, U. Kazmaier*

A Straightforward Approach to MMP-2 and MMP-9 Inhibitors Based on Chelate Claisen Rearrangements

The chelate Claisen rearrangement allows the stereoselective synthesis of β-substituted γ,δ-unsaturated amino acids, which can be converted into β-substituted aspartates by oxidative cleavage. These are ideal precursors for the synthesis of hydroxamate-type MMP inhibitors.



Eur. J. Org. Chem.
DOI: **10.1002/ejoc.201101318**


ChemViews
Magazine of ChemPubSoc Europe
www.ChemViews.org
New online magazine of ChemPubSoc Europe and Wiley-VCH
Associated with ChemistryViews

Controlling Drug Impurities

Vera Köster

A. Teasdale on Genotoxic Impurities in Drugs

Dr. Andrew Teasdale is the chair of AstraZeneca's internal expert group focused on control of genotoxic impurities. He talks about genotoxic impurities in drugs, what constitutes an acceptable drug risk, and the future of drug development.

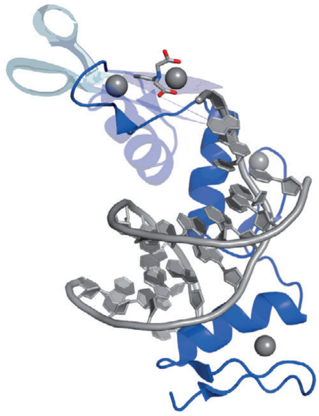
ChemViews magazine
DOI: **10.1002/chemv.201200004**

Peptide Chemistry

F. Fehr, A. Nadler, F. Brodhun, I. Feussner, U. Diederichsen*

Semi-Synthesis and Analysis of Chemically Modified Zif268 Zinc-Finger Domains

The entire zinc-finger domain of Zif268 was synthesized by a semi-synthetic pathway using the expressed protein ligation approach. Despite several modifications, for example, attachment of a fluorophore and introduction of a metal-chelating amino acid within the sequence of the third zinc finger, circular dichroism spectroscopic measurements confirmed zinc-induced folding and intact DNA binding ability.



ChemistryOPEN
DOI: **10.1002/open.201100002**