

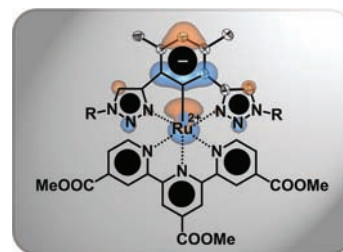


Ruthenium(II) Photosensitizers

B. Schulze, D. Escudero, C. Friebe, R. Siebert, H. Görls, S. Sinn, M. Thomas, S. Mai, J. Popp, B. Dietzek,* L. González,* U. S. Schubert*

Ruthenium(II) Photosensitizers of Tridentate Click-Derived Cyclometalating Ligands: A Joint Experimental and Computational Study

Making sense of sensitization: A systematic series of heteroleptic bis(tridentate) ruthenium(II) complexes of 1,3-bis(1,2,3-triazol-4-yl)benzene N \wedge C \wedge N-coordinating ligands and 2,2':6',2''-terpyridine was synthesized, analyzed by single-crystal X-ray diffraction, investigated photophysically and electrochemically, and studied by computational methods (see figure) revealing great potential for application in dye-sensitized solar cells.



Chem. Eur. J.
DOI: 10.1002/chem.201103451

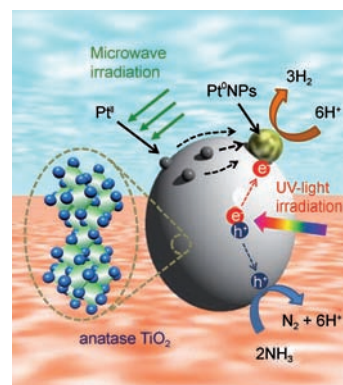


Photocatalysis

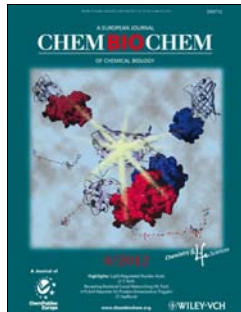
K. Fuku, T. Kamegawa, K. Mori, H. Yamashita*

Highly Dispersed Platinum Nanoparticles on TiO₂ Prepared by Using the Microwave-Assisted Deposition Method: An Efficient Photocatalyst for the Formation of H₂ and N₂ from Aqueous NH₃

Naked catalysts! Nanosized platinum particles loaded on TiO₂ (Pt-TiO₂) were synthesized by using a microwave-assisted deposition method with the aim of developing a highly efficient photocatalyst for the decomposition of aqueous NH₃ into H₂ and N₂ in a stoichiometric molar ratio under inert conditions (see picture).



Chem. Asian J.
DOI: 10.1002/asia.201100984

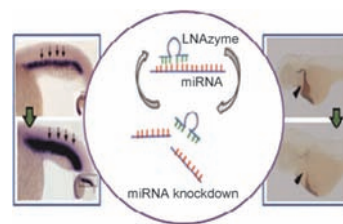


MicroRNA

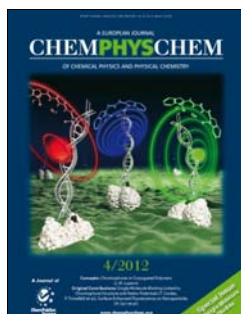
H. Suryawanshi, M. K. Lalwani, S. Ramasamy, R. Rana, V. Scaria, S. Sivasubbu,* S. Maiti*

Antagonism of microRNA Function in Zebrafish Embryos by Using Locked Nucleic Acid Enzymes (LNAzymes)

In vivo miRNA assassination: We designed and employed a strategy with locked nucleic acid enzyme (LNAzyme) for in vivo knockdown of microRNA (miRNA) in zebrafish embryos. We demonstrate that LNAzyme can efficiently knockdown miRNAs with minimal toxicity to the zebrafish embryos.



ChemBioChem
DOI: 10.1002/cbic.201100789

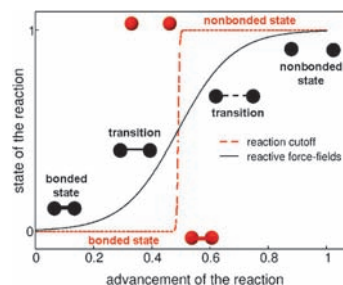


Molecular Dynamics

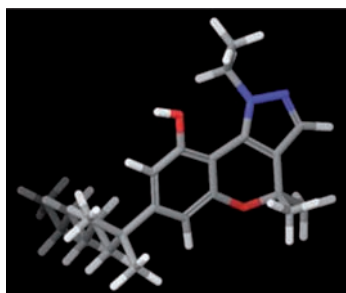
K. Farah,* F. Müller-Plathe, M. C. Böhm

Classical Reactive Molecular Dynamics Implementations: State of the Art

Reactive molecular dynamics (RMD) simulations are used to investigate the time evolution, governed by empirical potential energy functions, of reactive systems (see graphic). RMD approaches are the only methods that allow the study of chemical reactions in large condensed-phase systems. Exciting microscopic insights into chemical reactions in condensed phases are discussed in this review.



ChemPhysChem
DOI: 10.1002/cphc.201100681

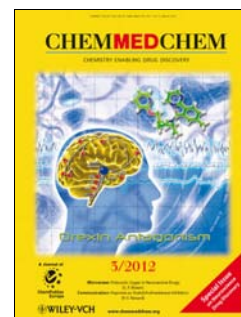


Drug Design

J. Cumella, L. Hernández-Folgado, R. Girón, E. Sánchez, P. Morales, D. P. Hurst, M. Gómez-Cañas, M. Gómez-Ruiz, D. C. G. A. Pinto, P. Goya, P. H. Reggio, M. I. Martín, J. Fernández-Ruiz, A. M. S. Silva, N. Jagerovic*

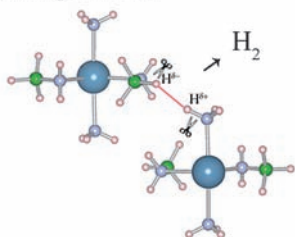
Chromenopyrazoles: Non-psychoactive and Selective CB₁ Cannabinoid Agonists with Peripheral Antinociceptive Properties

Peripheral cannabinoid: Chromenopyrazoles were identified as cannabinoid receptor ligands, and some compounds in the series were found to be selective agonists of the CB₁ receptor. Results of molecular modeling studies support this finding. Behavioral tests and peripheral pain assays carried out with the most effective agonist show peripheral analgesia without CNS-mediated effects.



ChemMedChem
DOI: 10.1002/cmdc.201100568

Dehydrogenation:



Hydrogen Generation

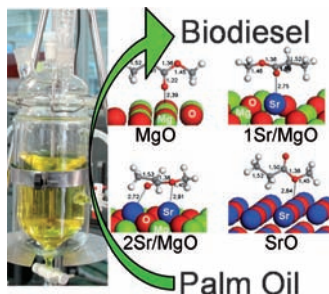
Y. S. Chua, W. Li, W. J. Shaw, G. Wu,* T. Autrey, Z. Xiong,* M. W. Wong, P. Chen

Mechanistic Investigation on the Formation and Dehydrogenation of Calcium Amidoborane Ammoniate

Amidoborane ammoniate formation is investigated by using isotopic labeling techniques. The formation of $\text{Ca}(\text{NH}_2\text{BH}_3)_2 \cdot 2\text{NH}_3$ is initiated by proton transfer from NH_3BH_3 to NH_2^- (amide), forming $\text{Ca}(\text{NH}_3)^{2+}$ and anionic $[\text{NH}_2\text{BH}_3]^-$ groups. The dehydrogenation of the ammoniate, which occurs at lower temperatures, is a result of the participation of NH_3 in the dehydrogenation process via the combination of $(\text{NH}_3)\text{H}^{\delta+} \cdots \text{H}^{\delta-}(\text{NH}_2\text{BH}_3^-)$.



ChemSusChem
DOI: 10.1002/cssc.201100523

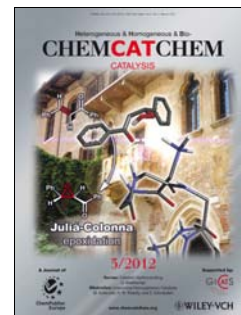


Biodiesel Production

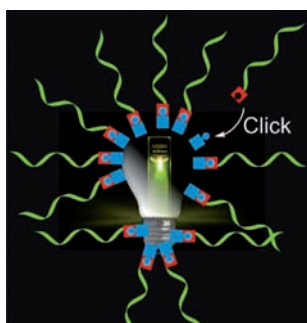
K. Faungnawakij,* B. Yoosuk, S. Namuangruk, P. Krasae, N. Viriya-empikul, B. Puttasawat

Sr–Mg Mixed Oxides as Biodiesel Production Catalysts

Build a base in your base: The synergistic effect of Sr and Mg species acting as heterogeneous catalysts is observed in biodiesel production as it enhances the activity, which is attributable to new strong basic sites as evidenced by using CO_2 -TPD measurements and DFT calculations.



ChemCatChem
DOI: 10.1002/cctc.201100346



Luminescent Biomaterials

M. M. Rubner, D. E. Achatz, H. S. Mader, J. A. Stolwijk, J. Wegener, G. S. Harms, O. S. Wolfbeis,* H.-A. Wagenknecht*

DNA "Nanolamps": "Clicked" DNA Conjugates with Photon Upconverting Nanoparticles as Highly Emissive Biomaterial

Upconverting DNA: Upconversion nanoparticles are ligated to oligonucleotides by using "click"-type cycloaddition (see figure). Excitation in the near-infrared region yields bright luminescence of the DNA conjugates in the visible range.



ChemPlusChem
DOI: 10.1002/cplu.201100055

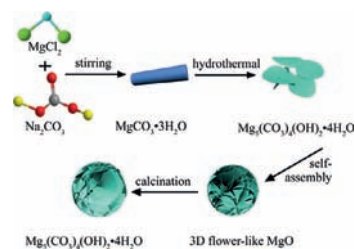


Magnesium Oxide Microspheres

Y. Qu, W. Zhou, Z. Ren, K. Pan, C. Tian, Y. Liu, S. Feng, Y. Dong, H. Fu*

Fabrication of a 3D Hierarchical Flower-Like MgO Microsphere and Its Application as Heterogeneous Catalyst

A 3D hierarchical flower-like MgO microsphere was formed by a new assembly process from 1D to 3D. The highly crystalline product has cubic symmetry and is assembled from close-packed nanoflakes. Its large surface area makes it highly favourable for heterogeneous catalysis, particularly in the Claisen–Schmidt condensation reactions for preparing chalcones with benzaldehyde and acetophenone.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201100936

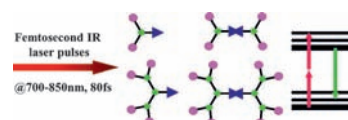


Two-Photon Dendritic Chromophores

T.-C. Lin,* Y.-H. Lee, C.-L. Hu, Y.-K. Li, Y.-J. Huang

Synthesis and Two-Photon Properties of Small Dendritic Chromophores with Symmetrical and Unsymmetrical Substituted Skeletons

A model chromophore set consisting of four fluorene/oxadiazole-based analogues was synthesized, and its members were shown to display ascending two-photon absorptivities with increasing size of their π systems. The observed nanosecond excited-state lifetimes suggested that these model compounds could be potential candidates as broad-band optical power limiters for laser pulses of long duration.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201101485



Energy Poverty

Javier Garcia Martinez

Ending Energy Poverty: Chemistry's Contribution

Providing sustainable energy to the seven billion people on the planet is not a small task. Chemistry can make smarter use of today's main energy sources and help develop new ones. To do this green energy discussions need to include education, basic research, R&D investment, safety regulations, public-private partnerships, scalability. Simply improving what we have now will not do the job.



ChemViews magazine
DOI: 10.1002/chemv.201200017

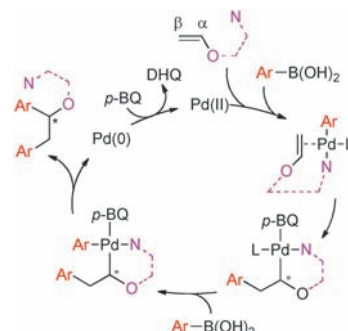


Stereoselective Catalysis

A. Trejos, L. R. Odell, M. Larhed*

Development of Stereocontrolled Palladium(II)-Catalyzed Domino Heck/Suzuki β,α -Diarylation Reactions with Chelating Vinyl Ethers and Arylboronic Acids

Watch out for water! The stereoselective diarylation of three different metal-coordinating, cyclic methylamino vinyl ethers is described. The reaction proceeds via a chelation-controlled Heck/Suzuki diarylation pathway, and represents the first example of a stereoselective, oxidative Heck/Suzuki domino reaction.



ChemistryOpen
DOI: 10.1002/open.201100010