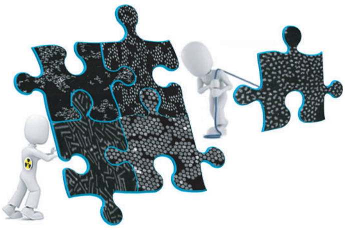
Nanostructures

D. Hudry,* C. Apostolidis, O. Walter, T. Gouder, E. Courtois, C. Kübel, D. Meyer

Controlled Synthesis of Thorium and Uranium Oxide Nanocrystals

New pieces to the puzzle! Thorium and uranium oxide nanocrystals with various sizes and shapes were synthesised by a non-aqueous colloidal method (see figure). We report the role of various experimental parameters (e.g., composition of the organic system, nature of the actinide precursor and nature of the actinide element) to control the final characteristics of actinide oxide nanocrystals.



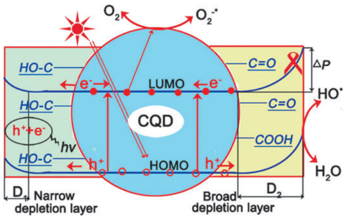
Chem. Eur. J.
DOI: **10.1002/chem.201203888**

Quantum Dots

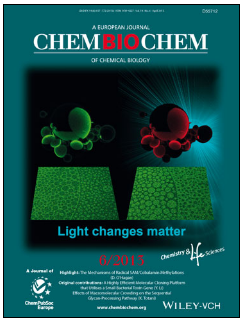
S. Hu,* R. Tian, L. Wu, Q. Zhao, J. Yang, J. Liu, S. Cao

Chemical Regulation of Carbon Quantum Dots from Synthesis to Photocatalytic Activity

Outer beauty: The sizes and surface states of carbon quantum dots (CQDs) were tuned by chemical methods. The photoluminescent behavior is related to both the sizes and surface states of the CQDs, but the photocatalytic activities are determined by the surface states alone. The separation and recombination of electron–hole pairs are determined by the degree of upward band bending induced by oxygen-containing groups on the surface of CQDs.



Chem. Asian J.
DOI: **10.1002/asia.201300076**

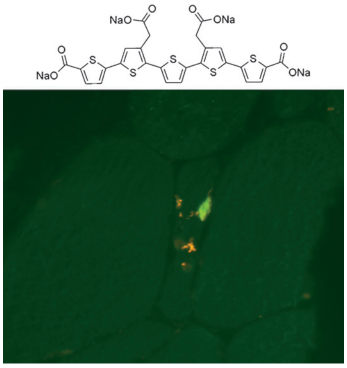


Fluorescent Probes

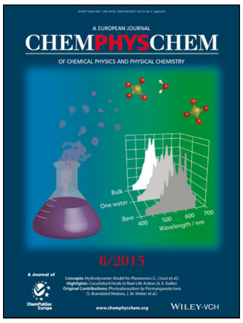
T. Klingstedt, C. Blechschmidt, A. Nogalska, S. Prokop, B. Häggqvist, O. Danielsson, W. K. Engel, V. Askanas, F. L. Heppner, K. P. R. Nilsson*

Luminescent Conjugated Oligothiophenes for Sensitive Fluorescent Assignment of Protein Inclusion Bodies

Bright bodies! The unique optical properties of luminescent conjugated oligothiophenes have been utilized in fluorescent probes for rapid and accurate detection and spectral assignment of protein inclusion bodies in sporadic
inclusion-body myositis.



ChemBioChem
DOI: **10.1002/cbic.201200731**

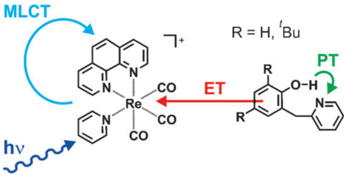


Electron Transfer

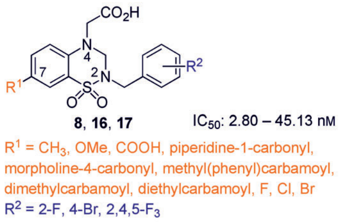
W. Herzog, C. Bronner, S. Löffler, B. He, D. Kratzert, D. Stalke, A. Hauser, O. S. Wenger*

Electron Transfer between Hydrogen-Bonded Pyridylphenols and a Photoexcited Rhenium(I) Complex

A concerted effort: Two pyridylphenols with intramolecular hydrogen bonds react with a metal complex through concerted proton transfer (PT)–electron transfer (ET). Upon photoexcitation of the complex, ET occurs from the phenol to the metal, and the phenolic proton is transferred to the pyridine moiety (see picture; MLCT = metal-to-ligand charge transfer).



ChemPhysChem
DOI: **10.1002/cphc.201201069**



Structure–Activity Relationships

S. Zhang, X. Chen, S. Parveen, S. Hussain, Y. Yang, C. Jing, C. Zhu*

Effect of C7 Modifications on Benzothiadiazine-1,1-dioxide Derivatives on Their Inhibitory Activity and Selectivity toward Aldose Reductase

Reducing reductase: Modification of the C7 position of benzothiadiazine-1,1-dioxide with hydrophobic or bulky substituents led to a group of new aldose reductase (ALR2) inhibitors. These compounds were screened against ALR2 as well as aldehyde reductase (ALR1), leading to the discovery of compounds with enhanced ALR2 inhibitory activity and selectivity.

ChemMedChem
DOI: **10.1002/cmdc.201200386**

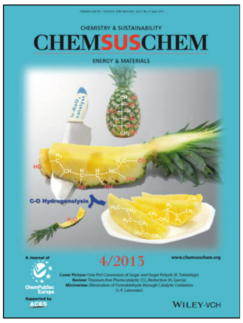
Solar Fuels

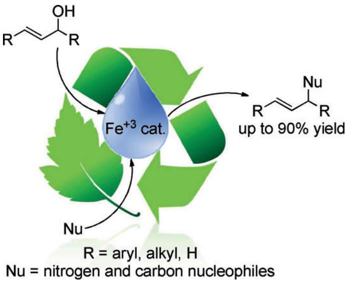
S. Navalón, A. Dhakshinamoorthy, M. Álvaro, H. Garcia*

Photocatalytic CO_2 Reduction using Non-Titanium Metal Oxides and Sulfides

No need for TiO_2: By far the most widely used photocatalyst both for the degradation of pollutants and in the field of renewable energies for the production of solar fuels is TiO_2. However, TiO_2 has strong limitations when applied to photocatalytic CO_2 reduction, particularly under visible light irradiation, and therefore, development of alternative materials seems appropriate. Here, we focus on alternatives with photocatalytic activity to describe the state of the art.

ChemSusChem
DOI: **10.1002/cssc.201200670**





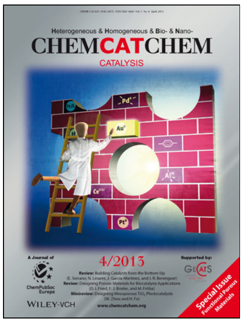
Iron Catalysis

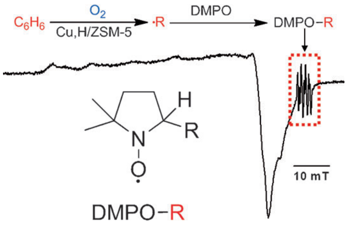
P. Trillo, A. Baeza,* C. Nájera*

Direct Nucleophilic Substitution of Free Allylic Alcohols in Water Catalyzed by $FeCl_3{\cdot}6\,H_2O$: Which is the Real Catalyst?

Taking a leaf out of the green book: The use of $FeCl_3{\cdot}6\,H_2O$ as an efficient water-compatible catalyst for the allylic substitution of free alcohols is disclosed. This inexpensive, low-toxic, and easily accessible Fe^{III} salt used as the catalyst in a process conducted in pure water as the solvent represents an environmentally friendly alternative to previously reported methods and allows the introduction of a broad range of nitrogenated and carbon nucleophiles.

ChemCatChem
DOI: **10.1002/cctc.201200650**





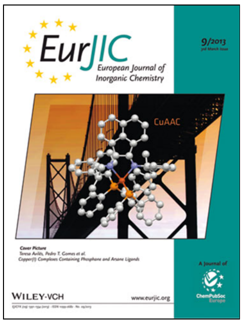
Spin Trapping of Radicals

A. Kromer, E. Roduner*

Catalytic Oxidation of Benzene on Liquid Ion-Exchanged Cu,H(Na)/ZSM-5 and Cu,H(Na)/Y Zeolites: Spin Trapping of Transient Radical Intermediates

The zeolites ZSM-5 and Y were exchanged with copper ions, with the aim to oxidize benzene with molecular oxygen at ambient temperature in cyclohexane solution. Transient radical intermediates were detected in high yield using the spin trap technique. The Cu,H/ZSM-5 acts as a redox/Brønsted acid bifunctional catalyst and shows high activity for radical formation. Remarkably over 30% of the benzene was converted into radicals (DMPO = 5,5-dimethyl-1-pyrroline-*N*-oxide).

ChemPlusChem
DOI: **10.1002/cplu.201200285**

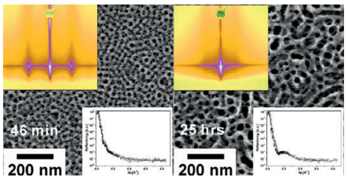


Titania Composite Films

Y.-J. Cheng,* S. Zhou, M. Wolkenhauer, G.-G. Bumbu, S. Lenz, M. Memesa, S. Nett, S. Emmerling, W. Steffen, J. S. Gutmann*

Morphology Evolution in Mesoporous Titania Block Copolymer Composite Films with Increasing Sol–Gel Reaction Time

Evolution of the morphology of TiO_2 thin films from spherical mesopores to worm-shaped mesopores has been achieved by simply varying the sol–gel reaction time of titanium tetraisopropoxide (TTIP) in the quadruple templating system copolymer PS–*b*-PEO, 1,4-dioxane, conc. HCl, and TTIP. Effective horizontal and vertical structure control is demonstrated at both the local and macroscopic scale.



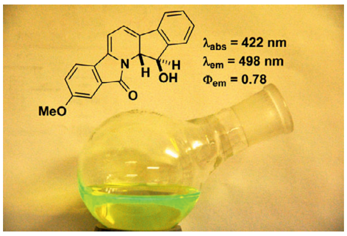
Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.201201366**

Organic Fluorophores

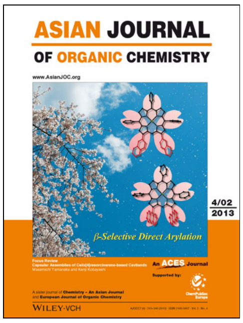
Z. el abidine Chamas, E. Marchi, A. Modelli, Y. Fort, P. Ceroni,* V. Mamane*

Highly Fluorescent, π-Extended Indenopyrido[2,1-*a*]isoindolone Derivatives Prepared by a Palladium-Catalysed Cascade Reaction

Highly fluorescent pentacyclic compounds have been synthesized by a palladium-catalysed cascade reaction. The fluorescence quantum yields and lifetimes of the luminescent excited states of these compounds are strongly influenced by the electronic nature and position of the substituents. These effects have been rationalized on the basis of photophysical, electrochemical and computational studies.



Eur. J. Org. Chem.
DOI: **10.1002/ejoc.201201575**

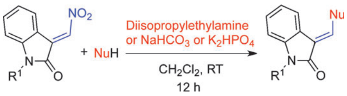


Metal-free Coupling

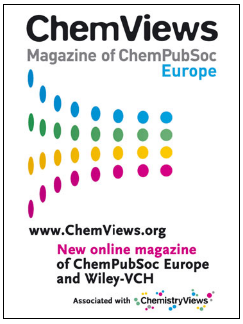
H. Zhang, Y. Liu, R. Chen, J. Xue,* Y. Li, Y. Tang*

Metal-Free Coupling of 3-Alkenyl Oxoindoles by Nucleophilic Vinylic Substitution of Nitroolefins

The fuge-es: A metal-free coupling reaction for the synthesis of oxindoles by nucleophilic vinylic substitution (S_NV) of nitroolefins is described. By using the nitro group as a nucleofuge, the reaction proceeds through a Michael addition/1,2-*cis*-elimination process. Alcohols, phenols, amines, thiols, and even a β-ketoester worked as nucleophiles to form C–O, C–N, C–S, and C–C bonds and afford the corresponding oxindoles.



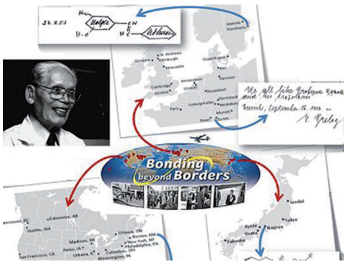
Asian J. Org. Chem.
DOI: **10.1002/ajoc.201300032**



Global Chemistry

Traveling the World with Chemistry: A Chemist's Journey

Starting with a four-month tour in 1953, Tetsuo Nozoe—eminent organic chemist and pioneer in nonbenzenoid chemistry—visited numerous chemistry laboratories in Asia, Europe, and the US during his life. He asked the chemists he met to sign his autograph book. Track his journey through the signatures, chemical structures, drawings, humorous statements, and poetry he collected.



ChemViews magazine
DOI: **10.1002/chemv.201300036**