

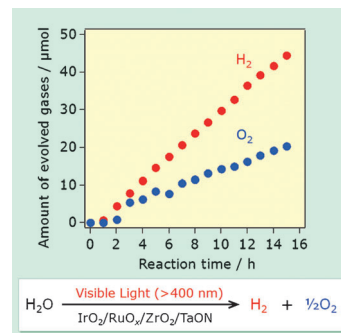


## Photocatalysis

K. Maeda,\* D. Lu, K. Domen\*

Direct Water Splitting into Hydrogen and Oxygen under Visible Light by using Modified TaON Photocatalysts with  $d^0$  Electronic Configuration

**Parting water!** Direct splitting of pure water into  $H_2$  and  $O_2$  under visible light ( $\lambda > 400$  nm) was achieved by using a modified TaON photocatalyst with  $d^0$ -electronic configuration. Modification of a less-defective TaON ( $ZrO_2/TaON$ ) with core/shell-structured  $RuO_x/Cr_2O_3$  nanoparticles and colloidal  $IrO_2$  was found to be indispensable to achieving the reaction (see figure).



*Chem. Eur. J.*  
DOI: 10.1002/chem.201300158

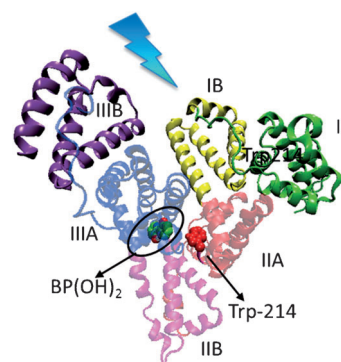


## Fluorescence

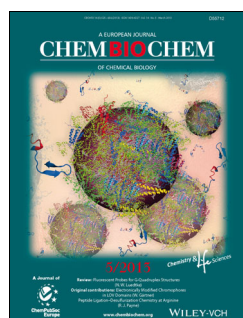
D. De, H. Kaur, A. Datta\*

Unusual Binding of a Potential Biomarker with Human Serum Albumin

**Ties that bind:** Typically, a fluorophore binds to one of the Sudlow's sites on albumin. Surprisingly,  $BP(OH)_2$  did not exhibit such behavior, but rather appeared to bind to a cleft at the interface of subdomains IIIA and IIB.



*Chem. Asian J.*  
DOI: 10.1002/asia.201201060

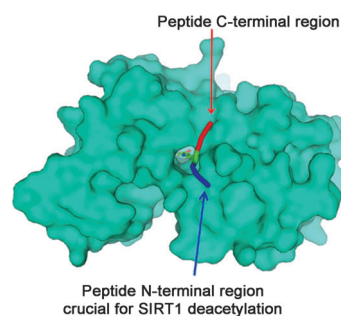


## Deacetylation

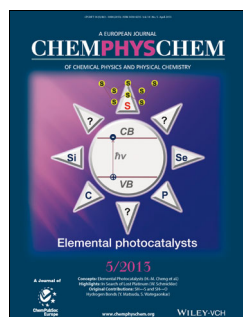
R. Meledin, A. Brik,\* A. Aharoni\*

Dissecting the Roles of the N- and C-Flanking Residues of Acetyllysine Substrates for SIRT1 Activity

**SIRT1 specificity:** The multispecific SIRT1 enzyme catalyzes the deacetylation of acetyllysine residues within protein targets. However, little is known regarding the molecular basis for SIRT1 substrate recognition. Kinetic analysis of SIRT1 with a panel of peptide substrates shows the high importance of the region N-flanking the target acetyllysine and its high conservation through evolution.



*ChemBioChem*  
DOI: 10.1002/cbic.201200727

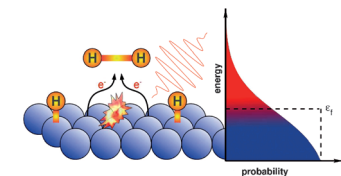


## Surface Science

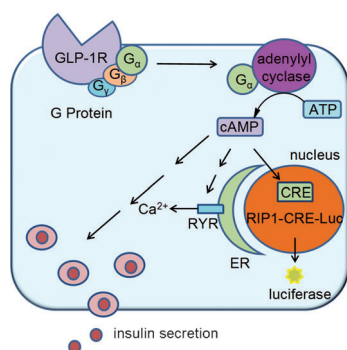
G. Fuchs,\* J. C. Tremblay, T. Klamroth, P. Saalfank

Quantum Dynamical Simulations of the Femtosecond-Laser-Induced Ultrafast Desorption of  $H_2$  and  $D_2$  from  $Ru(0001)$

**Las-ing around:** Quantum mechanical desorption induced by electronic transition simulations in 3D is reported to describe the recombinative desorption of  $H_2$  and  $D_2$  from  $Ru(0001)$  produced by low-intensity laser fields. The experimental trends at low laser fluences are well reproduced for the isotopic ratio and the translational and rotational energies. A single temperature is sufficient to characterize the energy distributions for all degrees of freedom.



*ChemPhysChem*  
DOI: 10.1002/cphc.201200940



ChemMedChem

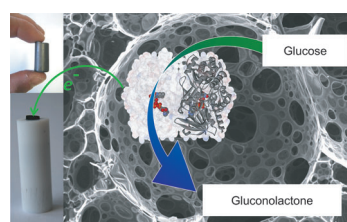
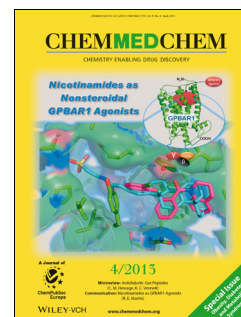
DOI: 10.1002/cmdc.201200461

## Diabetes Therapeutics

S. Clardy-James, O. G. Chepurny, C. A. Leech, G. G. Holz,\*  
R. P. Doyle\*

Synthesis, Characterization and Pharmacodynamics of  
Vitamin-B<sub>12</sub>-Conjugated Glucagon-Like Peptide-1

**Clearing the way:** Glucagon-like peptide-1 (GLP-1) receptor agonists are proving a potent weapon in the treatment of type II diabetes. A new vitamin B<sub>12</sub>–GLP-1 conjugate is investigated and shown to have insulinotropic properties similar to the unmodified peptide. These results are critical to the exploitation of the vitamin B<sub>12</sub> oral uptake pathway for peptide delivery.



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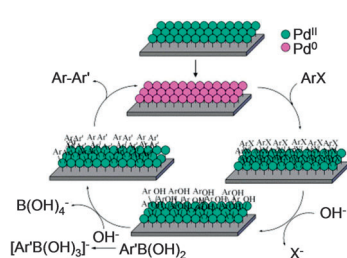
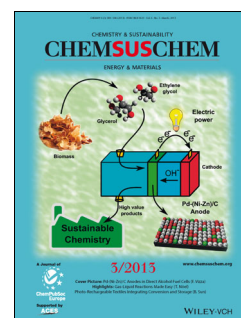
DOI: 10.1002/cssc.201200692

## Porous Carbons

N. Brun,\* L. Edembe, S. Gounel, N. Mano, M. M. Titirici

Emulsion-Templated Macroporous Carbons Synthesized By  
Hydrothermal Carbonization and their Application for the Enzymatic  
Oxidation of Glucose

**Baking biomass!** Highly porous carbonaceous monoliths are designed and synthesized from a sustainable saccharide derivative. With furfural as the carbon precursor and using a carbonization method that is based on using a concentrated direct emulsion as a soft-template, a graphitized carbon framework was produced. As a proof of principle, these new carbons are successfully used as electrodes for enzymatic biofuel cells.



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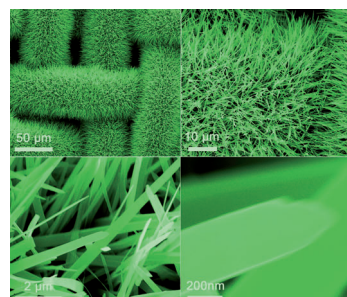
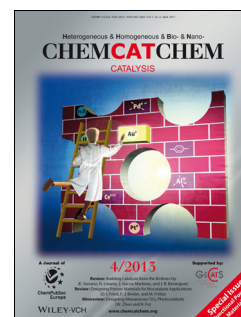
DOI: 10.1002/cctc.201200730

## Suzuki Reaction

N. Zhao, T. Li,\* Z. Zhai, J. Qiu, W. Xu, H. Liu, Y. Wu\*

Cyclopalladated Arylimine Self-Assembly Films for Suzuki Reaction

**Cyclos and cycles:** Cyclopalladated arylimine complexes are immobilized on solid slides and characterized. The heterogeneous catalyst obtained exhibits 10 times the catalytic performance of its homogeneous counterpart. None of the reactions require the use of ligands, air isolation, or assistant solvents. The catalysts are run for 8 cycles without deactivation. A Suzuki reaction mechanism is proposed.



ChemPlusChem

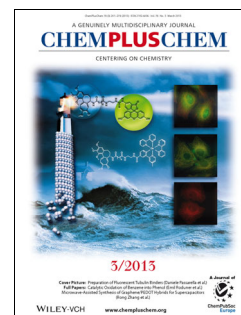
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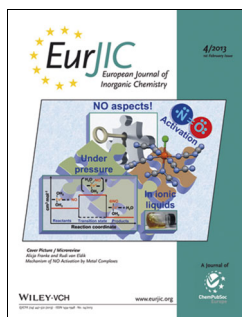
## Direct Growth of Nanoribbons

P. Li, Y. Zhou,\* W. Tu, Q. Liu, S. Yan, Z. Zou\*

Direct Growth of Fe<sub>2</sub>V<sub>4</sub>O<sub>13</sub> Nanoribbons on a Stainless-Steel Mesh for  
Visible-Light Photoreduction of CO<sub>2</sub> into Renewable Hydrocarbon Fuel  
and Degradation of Gaseous Isopropyl Alcohol

**Recyclable ribbons:** Fe<sub>2</sub>V<sub>4</sub>O<sub>13</sub> nanoribbons (see figure) growing on a stainless-steel mesh were fabricated by a simple and facile hydrothermal reaction. The nanoribbons can be easily recycled and used in the photocatalytic conversion of CO<sub>2</sub> into renewable hydrocarbon fuel (CH<sub>4</sub>) and in the degradation of gaseous isopropyl alcohol.



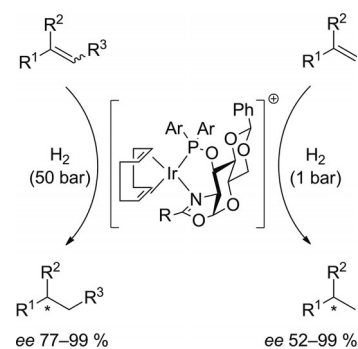


### Ir-P,N Catalytic Systems

J. Mazuela, O. Pàmies,\* M. Diéguez\*

Enantioselective Ir-Catalyzed Hydrogenation of Minimally Functionalized Olefins Using Pyranoside Phosphinite-Oxazoline Ligands

Pyranoside phosphinite-oxazoline ligands were successfully applied in the asymmetric Ir-catalyzed hydrogenation of a wide range of minimally functionalized olefins (ee up to 99%). The introduction of a bulky *ortho*-tolyl phosphinite moiety was crucial to achieving the highest enantioselectivities with some of the most challenging substrate types.



*Eur. J. Inorg. Chem.*

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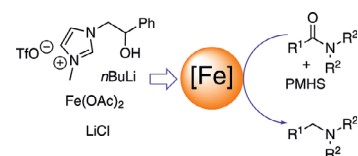


### Hydrosilylation

A. Volkov, E. Buitrago,\* H. Adolfsson\*

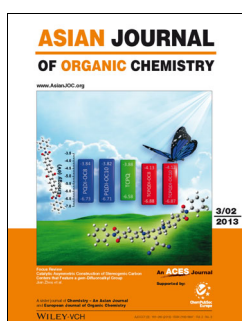
Direct Hydrosilylation of Tertiary Amides to Amines by an In Situ Formed Iron/N-Heterocyclic Carbene Catalyst

Tertiary amides are reduced to their corresponding tertiary amines in high isolated yields by using the polymeric silane polymethylhydrosiloxane (PMHS) in the presence of an in situ generated iron/N-heterocyclic carbene complex (1 mol-%), generated from iron(II) acetate and 1-(2-hydroxy-2-phenylethyl)-3-methylimidazolium triflate ([PhHEMIM][OTf]), and a catalytic amount of lithium chloride (1 mol-%).



*Eur. J. Org. Chem.*

DOI: 10.1002/ejoc.201300010

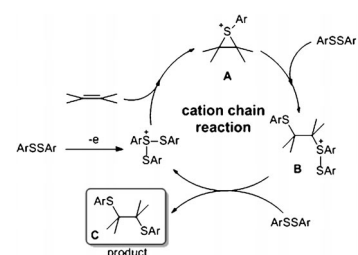


### Synthetic Methods

K. Matsumoto,\* T. Sanada, H. Shimazaki, K. Shimada, S. Hagiwara, S. Fujie, Y. Ashikari, S. Suga,\* S. Kashimura, J.-i. Yoshida\*

The Addition of ArSSAr to Alkenes: The Implications of a Cationic Chain Mechanism Initiated by Electrogenerated ArS(ArSSAr)<sup>+</sup>

**She's electric:** The addition reactions of diaryl disulfides (ArSSAr) to alkenes and alkynes were achieved with a catalytic amount of an electrochemically generated arylbis(arylthio)sulfonium ion (ArS(ArSSAr)<sup>+</sup>) to give the corresponding diarylthiolated products. A cation chain mechanism mediated by ArS(ArSSAr)<sup>+</sup> as a chain carrier is suggested.



*Asian J. Org. Chem.*

DOI: 10.1002/ajoc.201300017



### Metal-Organic Frameworks

David Bradley

Easing the Pressure on Gas Storage

Omar Farha and colleagues, Northwestern University, Illinois, USA, have developed a metal-organic framework (MOF) that can hold almost as much methane as a pressurized gas cylinder, but at significantly lower pressures. Requiring just 58 atm to adsorb methane, could this material represent a potentially viable storage medium for "gas" powered cars?



*ChemViews magazine*

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