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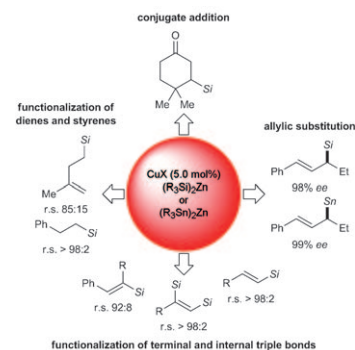


## Main Group Chemistry

A. Weickgenannt, M. Oestreich\*

Silicon- and Tin-Based Cuprates: Now Catalytic in Copper!

**Go catalytic!** Simple transmetalation from lithium to zinc attenuates the basicity and nucleophilicity of silicon and tin main group organometallics, thereby rendering the stoichiometric use of copper superfluous. All common carbon–silicon and selected carbon–tin bond formations are now catalytic in copper.



*Chem. Eur. J.*  
DOI: 10.1002/chem.200902222

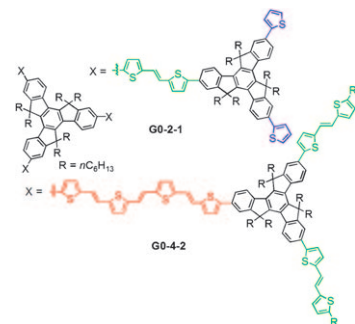


## Photovoltaic Cells

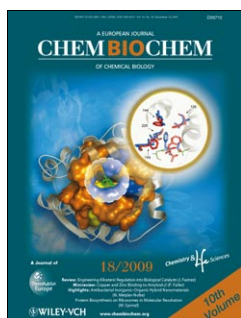
J.-L. Wang, C. Zhong, Z.-M. Tang, H. Wu, Y. Ma,\* Y. Cao,\* J. Pei\*

Solution-Processed Bulk Heterojunction Photovoltaic Cells from Gradient  $\pi$ -Conjugated Thienylene Vinylene Dendrimers

**A series of gradient  $\pi$ -conjugated dendrimers** and their corresponding models based on 5,5,10,10,15,15-hexahexyltruxene moieties as nodes and oligo(thienylene vinylene) (OTVs) units with different lengths as branching arms was developed as active materials for photovoltaic cells. The power conversion efficiency of the devices based on **G0-4-2** (see picture) was 0.40%, which is the highest recorded value for OTV-based materials to date.



*Chem. Asian J.*  
DOI: 10.1002/asia.200900245

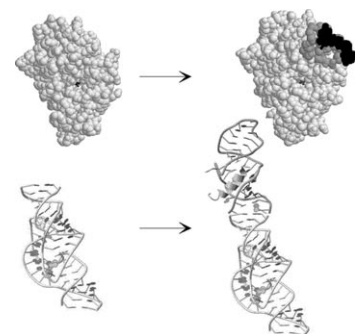


## Biocatalysts

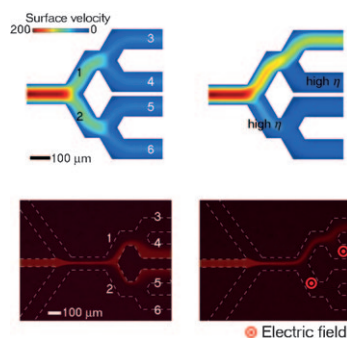
J. Fastrez\*

Engineering Allosteric Regulation into Biological Catalysts

**'Allo 'Allo!** Enzymes or ribozymes have been engineered to incorporate allosteric sites that bind ligands unrelated to their substrates. Random mutagenesis of surface residues followed by selection or appendage of ligand-binding modules to biocatalysts affords enzymes or ribozymes with activity that can be regulated by allosteric ligand binding.



*ChemBioChem*  
DOI: 10.1002/cbic.200900590



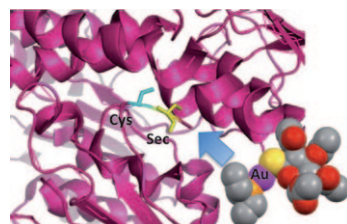
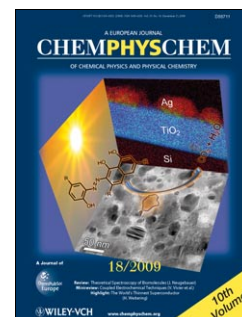
ChemPhysChem  
DOI: 10.1002/cphc.200900778

## Microfluidics

Y.-J. Na, T.-Y. Yoon, S. Park, B. Lee, S.-D. Lee\*

Electrically Programmable Nematofluidics with a High Level of Selectivity in a Hierarchically Branched Architecture

**Go with the flow:** A concept of *nematofluidics* that provides a simple, programmable, and hierarchically branched architecture of microfluidics where a nematic liquid crystal (LC) is used as an anisotropic fluid (see picture) is presented. Based on anisotropic flow resistance this method provides a fast and hierarchical channel selection in microfluidics.



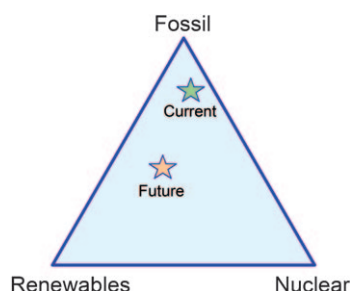
ChemMedChem  
DOI: 10.1002/cmdc.200900370

## Antitumor Agents

E. Vergara, A. Casini, F. Sorrentino, O. Zava, E. Cerrada, M. P. Rigobello, A. Bindoli, M. Laguna,\* P. J. Dyson\*

Anticancer Therapeutics That Target Selenoenzymes: Synthesis, Characterization, in vitro Cytotoxicity, and Thioredoxin Reductase Inhibition of a Series of Gold(I) Complexes Containing Hydrophilic Phosphine Ligands

**Several studies indicate** that thioredoxin reductases represent effective druggable targets for the development of new anticancer drugs. We report herein the inhibitory properties of gold(I) complexes with water-soluble phosphine ligands. Biochemical studies suggest binding of gold atoms to both cysteine and selenocysteine residues that are catalytically essential.



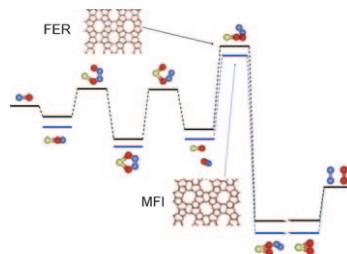
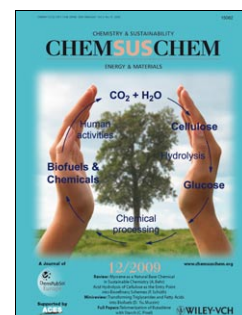
ChemSusChem  
DOI: 10.1002/cssc.200900190

## Energy Materials

V. L. Kuznetsov, P. P. Edwards\*

Functional Materials for Sustainable Energy Technologies: Four Case Studies

**Functional energy materials** are recognized as a top priority in providing many of the key technological solutions for next-generation energy conversion and storage systems. We highlight four areas of activity in which functional materials are already a significant element of world-wide research efforts: transparent conducting oxides, solar energy materials, materials for thermoelectric energy conversion, and hydrogen storage materials.



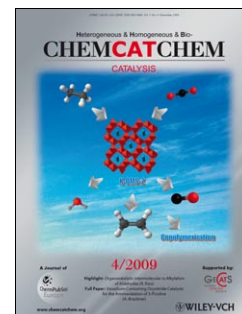
ChemCatChem  
DOI: 10.1002/cctc.200900219

## Heterogeneous Catalysis

A. Pulido, P. Nachtigall\*

Correlation Between Catalytic Activity and Metal Cation Coordination: NO Decomposition Over Cu/Zelolites

**Just say NO:** The catalytic activity of Cu/zeolites for NO removal depends on the metal cation coordination to the framework. The most active catalysts are those with Cu<sup>I</sup> loosely coordinated to the framework. The catalytic cycle is investigated using a periodic DFT model to account for the effect of the zeolite on the stability of reaction intermediates.



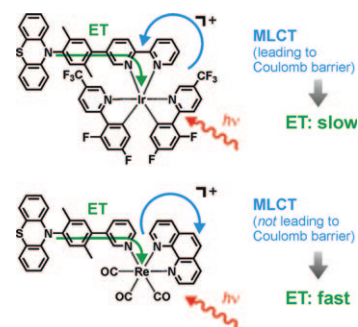


### Electron Transfer

D. Hanss, J. C. Freys, G. Bernardinelli, O. S. Wenger\*

Cyclometalated Iridium(III) Complexes as Photosensitizers for Long-Range Electron Transfer: Occurrence of a Coulomb Barrier

Coulomb barriers imposed by metal-to-ligand charge transfer excited electrons are found to have an important impact on the rates of photoinduced long-range electron transfers.



*Eur. J. Inorg. Chem.*

DOI: 10.1002/ejic.200900673

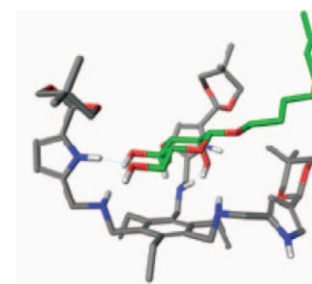


### Carbohydrate Recognition

A. Ardá, C. Venturi, C. Nativi, O. Francesconi, F. J. Cañada, J. Jiménez-Barbero,\* S. Roelens\*

Selective Recognition of  $\beta$ -Mannosides by Synthetic Tripodal Receptors: A 3D View of the Recognition Mode by NMR

A 3D model of the complex of a synthetic tripodal receptor with octyl  $\beta$ -D-mannoside based on molecular mechanics calculations and NMR experimental data is proposed. The structure explains the observed selectivity for  $\beta$ -mannosyl in terms of hydrogen bonding, intermolecular van der Waals interactions and conformational bias



*Eur. J. Org. Chem.*

DOI: 10.1002/ejoc.200901024