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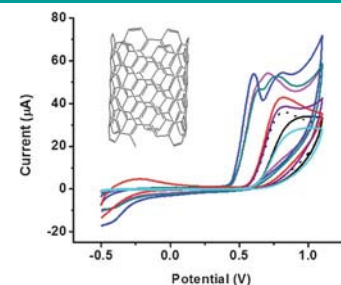


Carbon Nanotubes

E. J. E. Stuart, M. Pumera*

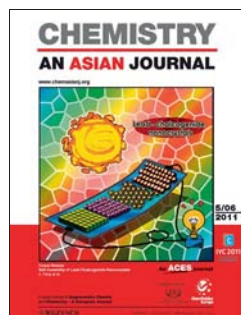
Signal Transducers and Enzyme Cofactors are Susceptible to Oxidation by Nanographite Impurities in Carbon Nanotube Materials

(Im)pure and simple! The influence of nanographite impurities contained within CNTs upon the redox properties of signal transducers and enzyme cofactors that are vital for the functioning of biofuel cells, artificial leaves and bioelectronics as well as for the survival of living organisms are reported. It has been found that nanographite impurities within CNTs are responsible for the “electrocatalytic” oxidation of NADH and two amino acids involved in signal transduction.



Chem. Eur. J.

DOI: 10.1002/chem.201003639

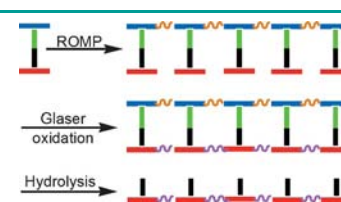


Template Synthesis

Y.-Z. Ke, S.-L. Lee, C.-h. Chen,* T.-Y. Luh*

Unsymmetrical Polymeric Ladderphanes by Sequential Polymerization: A New Approach for the Template Synthesis of Polymers with Well-Defined Chain Length and Narrow Polydispersity

Nothing ROMP with that: Unsymmetrical double-stranded ladderphanes are obtained by sequential ring-opening metathesis polymerization and Glaser oxidation of norbornene appended with bisalkyne moieties. Hydrolysis of these ladderphanes gives substituted poly(*m*-phenylene butadiynylene)s with narrow polymer dispersity index (PDI) and well-controlled degree of polymerization.



Chem. Asian J.

DOI: 10.1002/asia.201000877



Quorum Sensing

M. E. Mattmann, P. M. Shipway, N. J. Heth, H. E. Blackwell*

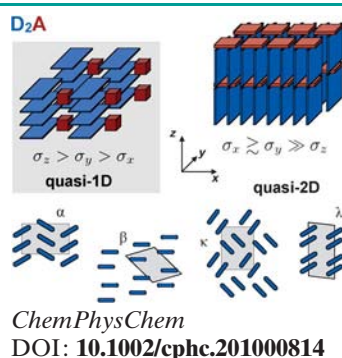
Potent and Selective Synthetic Modulators of a Quorum Sensing Repressor in *Pseudomonas aeruginosa* Identified from Second-Generation Libraries of N-Acylated L-Homoserine Lactones

A little de-quorum: Non-native molecules that can intercept bacterial quorum sensing signals represent useful tools to study the mechanism of this complex cell–cell signaling process. The iterative design, synthesis, and screening of focused libraries of N-acylated homoserine lactones has revealed highly potent and selective modulators of the novel *Pseudomonas aeruginosa* quorum sensing repressor, QscR (see figure).



ChemBioChem

DOI: 10.1002/cbic.201000708

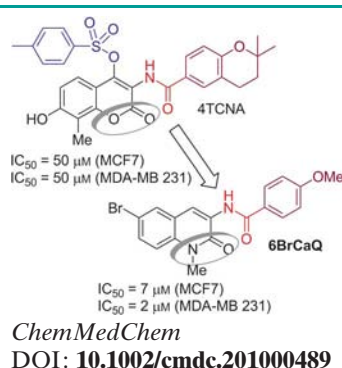
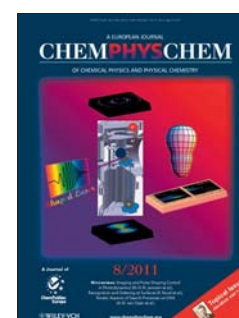


J. Müller*

Fluctuation Spectroscopy: A New Approach for Studying Low-Dimensional Molecular Metals

Come on feel the noise: Fluctuation spectroscopy is described as a new tool to study the dynamics of charge carriers in organic conductors. In these materials the interplay of low dimensionality (see picture), strong electronic correlations and electron–lattice interactions give rise to a rich phenomenology of ground states. Intramolecular modes of lattice vibrations and the inhomogeneous coexistence region of antiferromagnetic (Mott) insulating and superconducting phases are discussed.

Spectroscopy

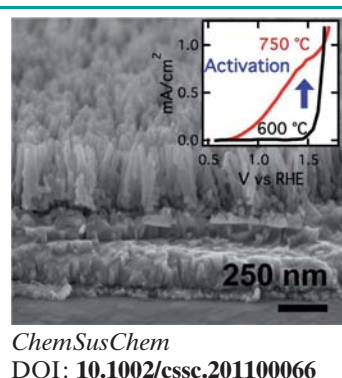
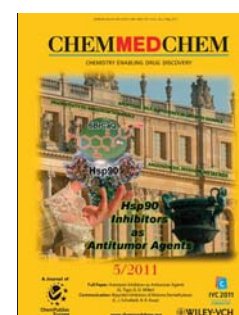


Antiproliferative Agents

D. Audisio, S. Messaoudi, L. Cegielkowski, J.-F. Peyrat, J.-D. Brion, D. Methy-Gonnot, C. Radanyi, J.-M. Renoir, M. Alami*

Discovery and Biological Activity of 6BrCaQ as an Inhibitor of the Hsp90 Protein Folding Machinery

Hot stuff! A novel series of Hsp90 inhibitors containing a quinoline-2-one scaffold was synthesized and screened in cell proliferation assays. The most potent inhibitor, 6BrCaQ, exhibited strong antiproliferative activity against a panel of cancer cell lines and resulted in downregulation of Hsp90 client proteins. Moreover, 6BrCaQ induced a high level of apoptosis in MCF-7 breast cancer cells, and was found to mediate cell death in a p23-independent manner.

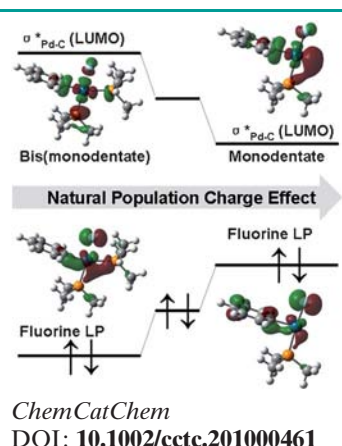
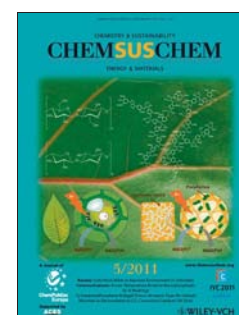


Water Splitting

R. Morrish, M. Rahman, J. M. D. MacElroy, C. A. Wolden*

Activation of Hematite Nanorod Arrays for Photoelectrochemical Water Splitting

Hematite nanorod arrays are activated by proper control of annealing conditions. The 100-fold improvement in photocurrent is correlated to increased absorption and tin doping from the tin oxide-coated glass substrate. The low onset potential is attributed to a reduction in surface defects, while the morphology promotes tin diffusion and facilitates electron transport.



L. Cui, M. Saeys*

Aryl Fluoride Reductive Elimination from PdII Complexes: a Descriptor to Guide Ligand Selection

Charge is the essence: Aryl fluoride reductive elimination from PdII complexes was analyzed by using DFT calculations. The reactivity of Ar–F reductive elimination is determined by the sum of the NPA charges on the Pd center and aryl α-carbon atom. Ar–F reductive elimination can be described as the nucleophilic attack of one of the fluorine lone pairs on the antibonding σ^* Pd–C orbital.

Ligand Selection





Chemical Biology

S. E. Hulme, G. M. Whitesides*

Chemistry and the Worm: *Caenorhabditis elegans* as a Platform for Integrating Chemical and Biological Research

What makes a living thing alive? *Caenorhabditis elegans* is a popular model organism for genetic research. Although the worm (see picture) is a simple organism, it still exhibits many of the complex phenomena found in higher organisms, including aging, behavior, cognition, and susceptibility to disease. This review provides an introduction to worm biology and argues that *C. elegans* is a useful system for the examination of complex biological phenomena from a chemical perspective.



Angew. Chem. Int. Ed.
DOI: 10.1002/anie.201005461

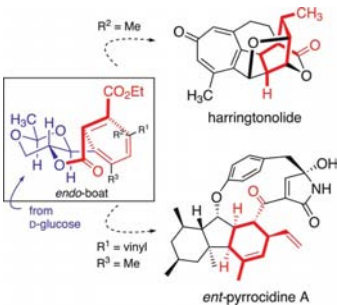


Synthetic Methodology

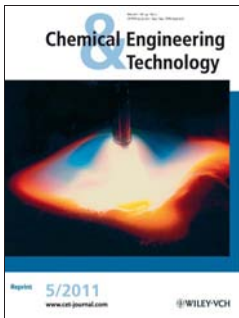
H. Abdelkafi, L. Evanno, A. Deville, L. Dubost, A. Chiaroni, B. Nay*

Synthesis of Naturally Occurring Cyclohexene Rings Using Stereodirected Intramolecular Diels–Alder Reactions Through Asymmetric 1,3-Dioxane Tethering

The utility of the readily available asymmetric 1,3-dioxane template (in blue) in stereocontrolled intramolecular Diels–Alder reactions was studied. The 1,3,9-decatrienoate substrates gave high diastereofacial selectivities and yields, and the method was also applicable to *Z*-diene substrates. This approach provided an efficient asymmetric route to harringtonolide and *ent*-pyrrocidine.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201001678

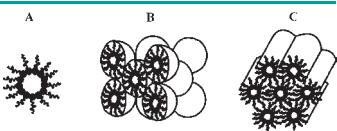


A New Fractionation Technology

K. Chaleepa, J. Ulrich*

Emulsion Fractionation of Coconut Oil: A New Fractionation Technology

Based on crystallization of low-viscous emulsions, the so-called emulsion fractionation, has been developed to overcome the problems in liquid-solid separation of conventional dry fractionation processes. The experimental results indicate a superior performance and quality of the products in comparison to dry fractionation techniques.



Chem. Eng. Technol.
DOI: 10.1002/ceat.201000485