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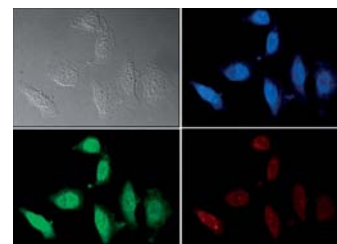


Quantum Dots

J. Ge, W. Liu, W. Zhao, H. Zhang, X. Zhuang, M. Lan, P. Wang,* H. Li, G. Ran, S.-T. Lee*

Preparation of Highly Stable and Water-Dispersible Silicon Quantum Dots by Using an Organic Peroxide

Dot product: A facile method was used to prepare highly stable and water-dispersible silicon quantum dots (Si QDs) through organic peroxide-induced hydrosilylation. This method provides a new way to modify Si QDs with different hydrophilic or hydrophobic groups for cellular imaging applications, as demonstrated in the figure.



Chem. Eur. J.

DOI: 10.1002/chem.201102356

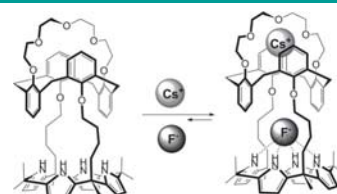


Ion-Pair Receptors

I.-W. Park, S.-K. Kim, M.-J. Lee, V. M. Lynch, J. L. Sessler,* C.-H. Lee*

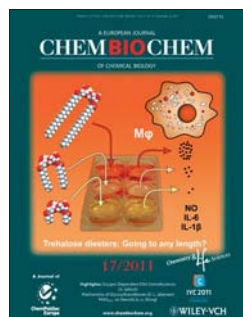
Calix[4]Pyrrole–Calix[4]Arene–Crown-5 Conjugate with Flexible Linkers as a Model for a Selective Ion-Pair Container

Crowning glory: A diametrically linked calix[4]pyrrole–calix[4]arene–crown-5 pseudo dimer tethered by alkyl chains has been synthesized and characterized as a ditopic ion-pair receptor.



Chem. Asian J.

DOI: 10.1002/asia.201100511

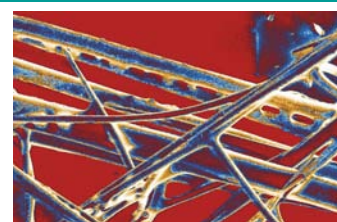


Biosilica

X. Wang, H. C. Schröder, D. Brandt, M. Wiens, I. Lieberwirth, G. Glasser, U. Schloßmacher, S. Wang, W. E. G. Müller*

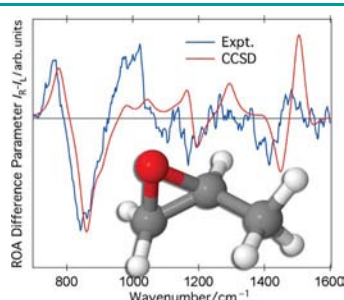
Sponge Biosilica Formation Involves Syneresis Following Polycondensation in vivo

Hardening by extracting water: Siliceous sponges form their skeleton enzymatically, using silicateins. We show that spicules (see image) added to sponge cell primmorphs fuse together if the cells fail to express aquaporin channels. The importance of the removal of the reaction water, released as a result of syneresis from the biosilica matrix, for spicule formation is outlined.



ChemBioChem

DOI: 10.1002/cbic.201100345



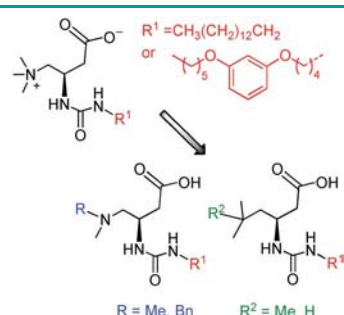
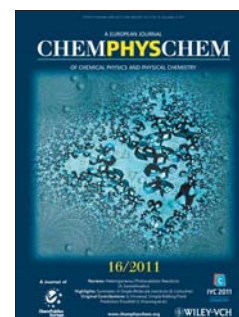
ChemPhysChem
DOI: 10.1002/cphc.201100547

Raman Optical Activity

T. D. Crawford,* K. Ruud*

Coupled-Cluster Calculations of Vibrational Raman Optical Activity Spectra

Been there, done that: The first calculations of Raman optical activity spectra at the coupled-cluster level of theory are presented. Calculations are presented for (*S*)-methyloxirane (see picture) and compared to recent experimental gas-phase measurements. The new coupled-cluster ROA code will allow for critical benchmarking of the accuracy of modern exchange–correlation functionals in the calculation of ROA spectra.



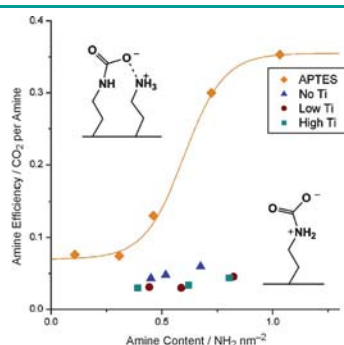
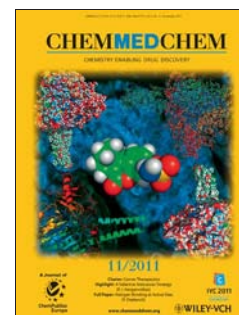
ChemMedChem
DOI: 10.1002/cmdc.201100289

Antidiabetic Agents

E. Tassoni,* R. Conti, G. Gallo, S. Vincenti, L. Mastrofrancesco, T. Brunetti, W. Cabri, F. Giannessi*

Derivatives of *R*-Aminocarnitine without Ammonium Moiety as Liver Carnitine Palmitoyltransferase I (L-CPT I) Inhibitors

Dealing with diabetes: Carnitine palmitoyltransferases (CPT) are promising new targets for the treatment of diabetes. Here, derivatives of *R*-aminocarnitine, with the quaternary ammonium moiety replaced by groups lacking a permanent cationic charge, were designed and evaluated in vitro and in vivo as L-CPT I inhibitors.



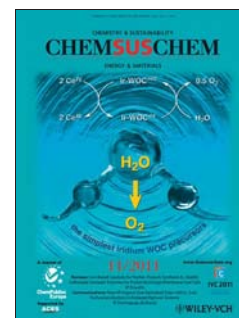
ChemSusChem
DOI: 10.1002/cssc.201100244

Carbon Dioxide Capture

P. D. Young, J. M. Notestine*

The Role of Amine Surface Density in Carbon Dioxide Adsorption on Functionalized Mixed Oxide Surfaces

Lonely Amines: Isolated alkylamines are generated on SiO₂ and Ti–SiO₂ through a two-step process by grafting of a carbamate precursor onto SiO₂ followed by deprotection using a mild thermal treatment to yield the final amine. In contrast to supported amines synthesized from an aminopropyl silane, these isolated amines do not exhibit cooperative uptake of CO₂, but they do remain effective in the presence of Ti Lewis acid sites on the surface, opening possibilities for CO₂ capture and conversion.



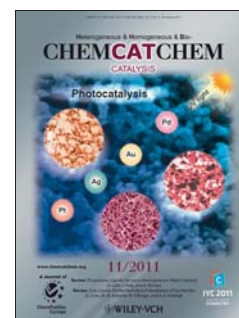
ChemCatChem
DOI: 10.1002/cctc.201100199

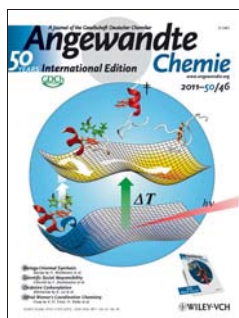
Enoate Reductases

K. Weber, E.-M. Schnöckelborg, R. Wolf*

Catalytic Properties of Low Oxidation State Iron Complexes in Cross-Coupling Reactions: Anthracene Iron(–I) Complexes as Competent Catalysts

Catalyzing cross couplings: The catalytic activity of well-defined low-valent iron complexes in cross-coupling reactions has been investigated. The results show that labile ligands in the catalyst precursor are beneficial for high catalytic activity. Thus, anionic iron(–I) complexes with labile anthracene ligands are competent precatalysts for cross couplings that involve alkyl, aryl, and alkenyl electrophiles.



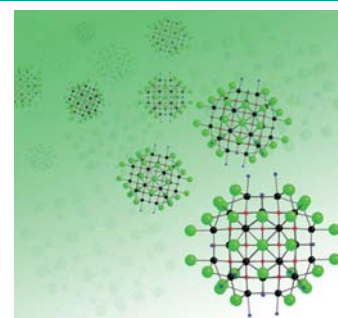


Actinides

R. E. Wilson,* S. Skanthakumar, L. Soderholm

Separation of Plutonium Oxide Nanoparticles and Colloids

Oil and vinegar: Colloidal plutonium is an important component of Pu aqueous speciation. Pu colloids are problematic in nuclear separations and are a potential transport vector in the environment. Using a mixture of *n*-octanol and trichloroacetic acid a selective and reversible separation of these particles can be achieved exploiting their surface reactivity. Picture: $\text{Li}_2[\text{Pu}_{38}\text{O}_{56}\text{Cl}_{42}(\text{H}_2\text{O})_{20}] \cdot 15\text{H}_2\text{O}$.



Angew. Chem. Int. Ed.
DOI: 10.1002/anie.201105624

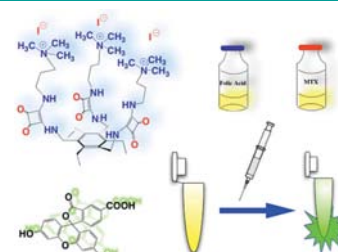


Anion Recognition

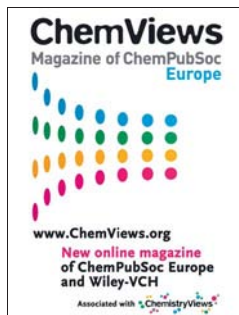
D. Quiñero, K. A. López, P. M. Deyà, M. N. Piña, J. Morey*

Synthetic Tripodal Squaramido-Based Receptors for the Complexation of Antineoplastic Folates in Water

Three suitably oriented squaramido ammonium groups form the basis for the first abiotic antineoplastic folate receptor, which employs the noncovalent ammonium–carboxylate electrostatic interaction and a hydrogen bond to achieve high-affinity molecular recognition in water. These interactions were studied experimentally by isothermal calorimetry, NMR spectroscopy, and DFT calculations.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201100855

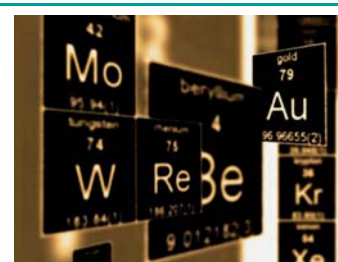


Periodic Debate

David Bradley

Periodic Debate

Mendeleev's Periodic Table is, for many, the symbol of chemistry, but is the current layout the best one? Aside from the recent didacts on atomic masses and isotope ratios wrought on the elements in December 2010 by IUPAC and the official recruitment of elements 114 and 116, there are several issues that have got many chemists in a boiling reflux.



ChemViews magazine
DOI: 10.1002/chemv.201000093