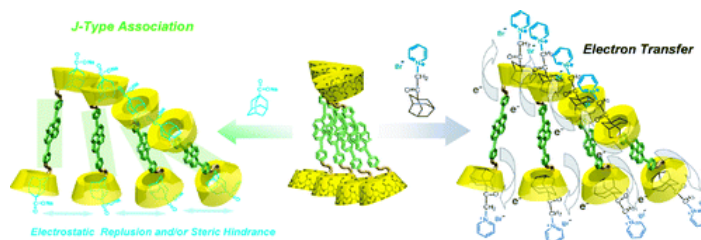


- Chemically Responsive Supramolecular Assemblies of Pyrene- β -Cyclodextrin Dimer
Ogoshi, T.; Hashizume, M.; Yamagishi T.-A.; Nakamoto, Y. *Langmuir* **2010**, *26*, 3169–3173.

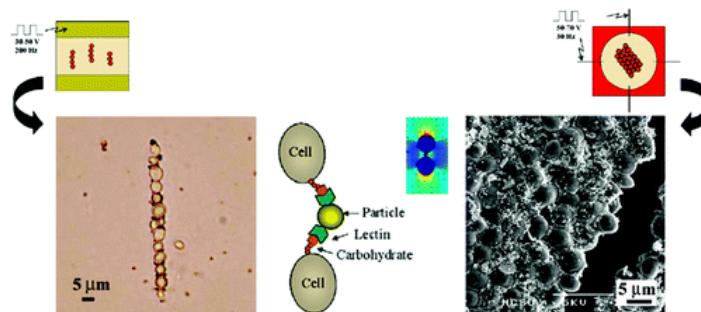
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Abstract:

We report supramolecular assemblies of a β -cyclodextrin dimer linked at both ends of a fluorescent phenylethynylpyrene moiety (Py- β -CD dimer). The Py- β -CD dimer formed supramolecular associations in aqueous media due to the π - π stacking of the hydrophobic phenylethynylpyrene moiety. From tapping mode atomic force microscopy measurements, the Py- β -CD dimer formed wire-shaped assemblies in aqueous media. By adding sodium adamantane carboxylate to the supramolecular assemblies, the structural change to J-type assemblies was observed. In contrast, upon addition of the electron-deficient guest, the electron transfer from the electron rich phenylethynylpyrene moiety of the supramolecular assemblies to the electron-deficient guest took place.

- On-Chip Dielectrophoretic Coassembly of Live Cells and Particles into Responsive Biomaterials

Gupta, S.; Alargova, R. G.; Kilpatrick, P. K.; Velev, O. D. *Langmuir* **2010**, *26*, 3441–3452.

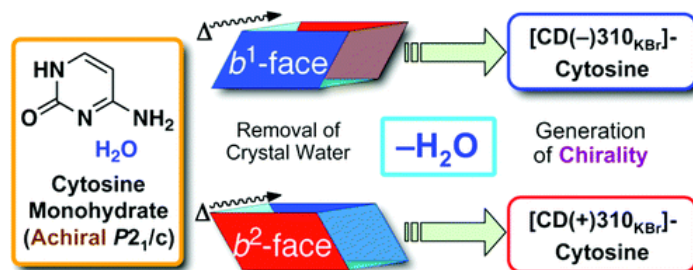
Abstract:

We report how live cells and functionalized colloidal particles can be coassembled into a variety of freely suspended bioactive structures using dielectrophoresis on a chip. Alternating electric fields were applied to dilute suspensions of yeast (*S. cerevisiae*) and NIH/3T3 mouse fibroblast cells to yield 1D chains and 2D arrays. The effects of voltage, frequency, pH, electrolyte concentration, cell concentration, and particle size on the assembly process were investigated in detail. Numerical simulations of the field intensity and energy allow the capture of the dynamics of cell-cell and cell-particle assembly. The simulation results illustrate that the electric field draws the functionalized synthetic particles between the cells and enables the formation of permanent chains and monolayer membranes composed of alternating cells and particles. The cell structures were bound into permanent structures by different types of functionalized synthetic particles and ligands that attached to the cells through biospecific or electrostatic interactions. The technique allowed the fabrication of magnetically responsive biomaterials that could be manipulated and transported into and out of the microchambers where they were formed.

- Generation of Absolute Controlled Crystal Chirality by the Removal of Crystal Water from Achiral Crystal of Nucleobase Cytosine
Kawasaki, T.; Hakoda, Y.; Mineki, H.; Suzuki, K.; Soai, K. *J. Am. Chem. Soc.* **2010**, *132*, 2874–2875.

2

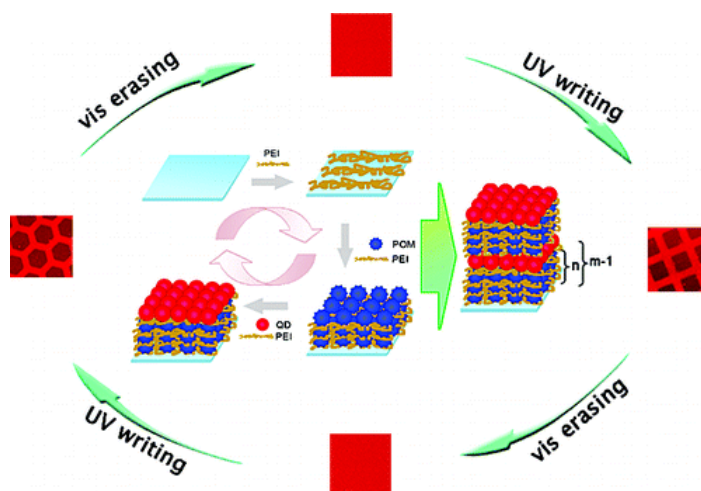
Abstract:



The enantioselective formation of chiral crystal of achiral nucleobase cytosine was achieved mediated by the crystal direction selective dehydration of crystal water in the achiral crystal of cytosine monohydrate (P_{2_1}/c). Heat transfer from the enantiotopic face of the single crystal of cytosine monohydrate afforded the enantiomorphous crystal of anhydrous cytosine.

- Reversible Photoswitchable Fluorescence in Thin Films of Inorganic Nanoparticle and Polyoxometalate Assemblies
Qin, B.; Chen, H.; Liang, H.; Fu, L.; Liu, X.; Qiu, X.; Liu, S.; Song, R.; Tang, Z. *J. Am. Chem. Soc.* **2010**, *132*, 2886–2888.

Abstract:



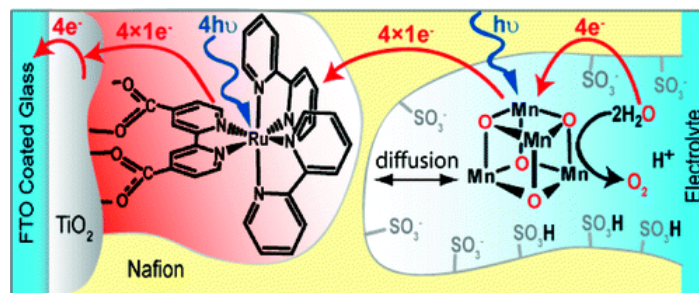
A novel type of inorganic hybridized ultrathin film consisting of Preyssler-type polyoxometalates $K_{14}[Na(H_2O)P_5W_{30}O_{110}]$ (Na-POMs) and CdSe@CdS nanoparticles (NPs) was prepared on the solid substrates by a layer-by-layer assembly technique. The film exhibits reversible fluorescence switching behavior under control of irradiation with either UV light or visible light, which is ascribed to the selective occurrence of fluorescence resonance energy transfer between luminescent NPs and different states of photochromic Na-POMs.

- Solar Driven Water Oxidation by a Bioinspired Manganese Molecular Catalyst

Brimblecombe, R.; Koo, A.; Dismukes, G. C.; Swiegers, G. F.; Spiccia, L. *J. Am. Chem. Soc.* **2010**, *132*, 2892–2894.

3

Abstract:

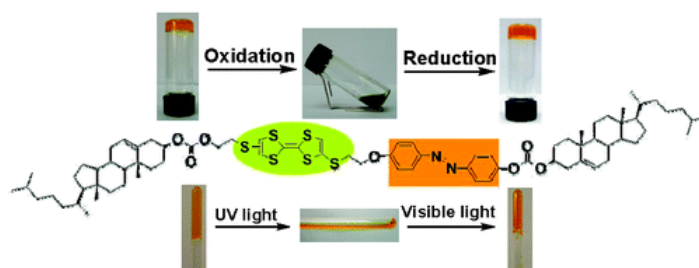


A photoelectrochemical cell was designed that catalyzes the photooxidation of water using visible light as the sole energy source and a molecular catalyst, $[\text{Mn}_4\text{O}_4\text{L}_6]^+$ ($\mathbf{1}^+$, L = bis(methoxyphenyl)phosphinate), synthesized from earth-abundant elements. The essential features include a photochemical charge separation system, $[\text{Ru}^{\text{II}}(\text{bipy})_2(\text{bipy}(\text{COO})_2)]$, adhered to titania-coated FTO conductive glass, and $\mathbf{1}^+$ embedded within a proton-conducting membrane (Nafion). The complete photoanode represents a functional analogue of the water-oxidizing center of natural photosynthesis.

- Multistimuli Responsive Organogels Based on a New Gelator Featuring Tetrathiafulvalene and Azobenzene Groups: Reversible Tuning of the Gel–Sol Transition by Redox Reactions and Light Irradiation

Wang, C.; Chen, Q.; Sun, F.; Zhang, D.; Zhang, G.; Huang, Y.; Zhao, R.; Zhu, D. *J. Am. Chem. Soc.* **2010**, *132*, 3092–3096.

Abstract:

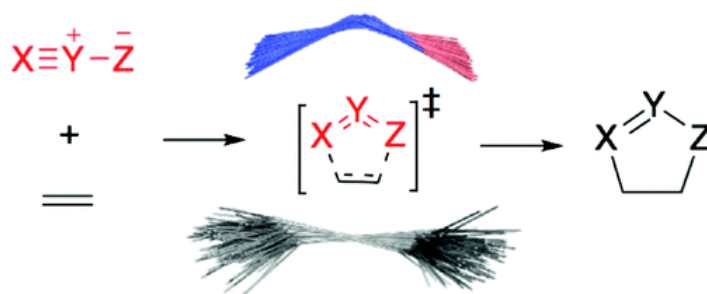


For the development of multistimuli responsive organogels, the new organic gelator LMWG **1**, featuring electroactive TTF and photoresponsive azobenzene groups, was designed and studied. By manipulating the redox state of the TTF group in LMWG **1**, the gel–sol transition for organogels with the LMWG **1** can be reversibly tuned by either chemical or electrochemical oxidation/reduction reactions. Alternatively, the photoisomerization of the azobenzene group in LMWG **1** can also trigger the gel–sol transition. Therefore, organogels with LMWG **1** respond not only to thermal stimuli but also to redox reactions and light irradiation.

- Dynamics of 1,3-Dipolar Cycloadditions: Energy Partitioning of Reactants and Quantitation of Synchronicity

Xu, L.; Doubleday, C. E.; Houk, K. N. *J. Am. Chem. Soc.* **2009**, *131*, 3029–3037.

Abstract:

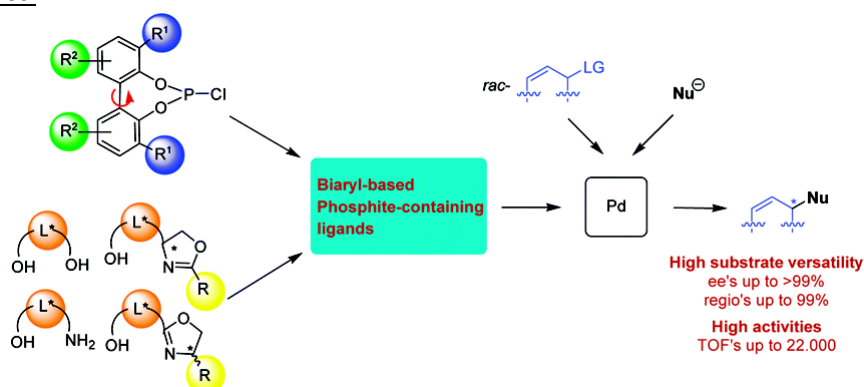


The dynamics of 1,3-dipolar cycloadditions of nine 1,3-dipoles with ethylene and acetylene have been explored by quasiclassical trajectory and single trajectory calculations in the retro-cycloaddition direction to compute energy partitioning of reactants among relative translation, vibration, and rotation. The results are interpreted with an expanded version of Polanyi's Rules for bimolecular reactions, and three trends are evident. (1) Relative translation of reactants is the main contributor to surmounting the barrier, since all transition states (TSs) are early with respect to σ bond formation. (2) Vibrational excitation in the 1,3-dipole bending modes required for reaction is related to the lateness of the TS with respect to dipole bending: diazonium betaines (late TS, dipole bending required) > nitrilium betaines > azomethine betaines (early TS, dipole bending least important). This is also the order of the activation barriers (high \rightarrow low). (3) The previously reported linear correlation between activation barriers and the energy required to distort reactants to their TS geometries are understandable in terms of the requirements for vibrational excitation computed here. For the 1,3-dipolar cycloadditions, single trajectory calculations, which contain no zero point vibrational energy, give reasonable estimates of the mean energy partitioning of reactants derived from potential energy barrier release. The timing of bond formation and relative reactivities of different 1,3-dipoles are discussed.

- Biaryl Phosphites: New Efficient Adaptive Ligands for Pd-Catalyzed Asymmetric Allylic Substitution Reactions

Diéguez, M.; Pàmies, O. *Acc. Chem. Res.* **2010**, *43*, 312–322.

Abstract:



Pharmaceuticals, agrochemicals, fragrances, fine chemicals, and natural product chemistry all rely on the preparation of enantiomerically enriched compounds. The palladium-catalyzed asymmetric allylic substitution, which allows for the enantioselective formation of carbon–carbon and carbon–heteroatom bonds, is a potential synthetic tool for preparing these compounds. To date, most of the successful ligands reported for the Pd-catalyzed allylic substitution reactions have used

three main design strategies. The first, developed by Hayashi and co-workers, used a secondary interaction of the nucleophile with a side chain of the ligand to direct the approach of the nucleophile to one of the allylic terminal carbon atoms. The second increased the ligand's bite angle in order to create a chiral cavity in which the allyl system is perfectly embedded. To discriminate electronically between the two allylic terminal carbon atoms, the third strategy employed heterodonor ligands. Although many chiral ligands have been successfully applied in the substitution of several disubstituted substrates, problems generally remain with both substrate specificity and reaction rates using these methods. Other substrates, such as those that are monosubstituted, will require more active and more regio- and enantioselective Pd-catalysts. Overcoming these limitations requires research toward the development of new ligands.

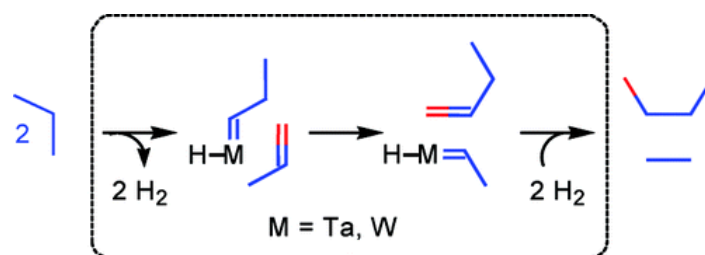
This Account discusses the application of homo- and heterodonor biaryl-containing phosphites as new, versatile, and highly effective ligands in the Pd-catalyzed asymmetric allylic substitution of several substrate types. We and others recently demonstrated that the inclusion of biarylphosphite moieties in ligand design is highly advantageous. In these systems, the catalyst's substrate specificity decreases because the chiral pocket created (the chiral cavity with the embedded allyl ligand) is flexible enough to allow the perfect coordination of hindered and unhindered substrates. Reaction rates with these ligands increase because of the larger π -acceptor ability of these moieties. The ability of the phosphite moiety to accept π -electrons and enhance the S_N1 character of the nucleophilic attack increases the regioselectivity of the reactions toward the desired branched isomer in monosubstituted linear substrates. Finally, the easy synthesis of biaryl phosphites from readily available alcohols allows for simple ligand tuning as well as systematic modifications of several important ligand parameters.

Taking advantage of these features, we and others have designed highly adaptive biaryl-phosphite-containing ligands for asymmetric Pd-allylic substitution reactions. In this context, several diphosphites, phosphite-oxazolines, and phosphite-phosphoroamidites have recently emerged as extremely effective ligands for this process. Using a broad range of mono- and disubstituted hindered and unhindered linear and cyclic substrates, we have obtained high activities (turnover frequencies up to 22000 mol substrate \times (mol Pd \times h) $^{-1}$) unprecedented in the literature along with excellent regio- (up to 99%) and enantioselectivities (up to >99%) at low catalyst loadings (turnover numbers up to 10000 mol substrate \times (mol Pd \times h) $^{-1}$). Appropriate ligand tuning allows access to both enantiomers of the substitution products.

- Metathesis of Alkanes and Related Reactions

Basset, J.-M.; Copéret, C.; Soulivong, D.; Taoufik, M.; Thivolle Cazat, J. *Acc. Chem. Res.* **2010**, *43*, 323–334.

Abstract:



Alkane Metathesis on Single Site Catalyst

The transformation of alkanes remains a difficult challenge because of the relative inertness of the C–H and C–C bonds. The rewards for asserting synthetic control over unfunctionalized, saturated

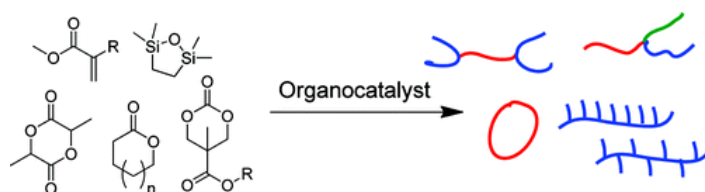
hydrocarbons are considerable, however, because converting short alkanes into longer chain analogues is usually a value-adding process. Alkane metathesis is a novel catalytic and direct transformation of two molecules of a given alkane into its lower and higher homologues; moreover, the process proceeds at relatively low temperature (ambient conditions or higher). It was discovered through the use of a silica-supported tantalum hydride, $(\equiv\text{SiO})_2\text{TaH}$, a multifunctional catalyst with a single site of action. This reaction completes the story of the metathesis reactions discovered over the past 40 years: olefin metathesis, alkyne metathesis, and ene-yne cyclizations. In this Account, we examine the fundamental mechanistic aspects of alkane metathesis as well as the novel reactions that have been derived from its study.

The silica-supported tantalum hydride catalyst was developed as the result of systematic and meticulous studies of the interaction between oxide supports and organometallic complexes, a field of study denoted surface organometallic chemistry (SOMC). A careful examination of this surface-supported tantalum hydride led to the later discovery of alumina-supported tungsten hydride, $\text{W}(\text{H})_3/\text{Al}_2\text{O}_3$, which proved to be an even better catalyst for alkane metathesis. Supported tantalum and tungsten hydrides are highly unsaturated, electron-deficient species that are very reactive toward the C-H and C-C bonds of alkanes. They show a great versatility in various other reactions, such as cross-metathesis between methane and alkanes, cross-metathesis between toluene and ethane, or even methane nonoxidative coupling. Moreover, tungsten hydride exhibits a specific ability in the transformation of isobutane into 2,3-dimethylbutane as well as in the metathesis of olefins or the selective transformation of ethylene into propylene.

Alkane metathesis represents a powerful tool for making progress in a variety of areas, perhaps most notably in the petroleum and petrochemical fields. Modern civilization is currently confronting a host of problems that relate to energy production and its effects on the environment, and judicious application of alkane metathesis to the processing of fuels such as crude oil and natural gas may well afford solutions to these difficulties.

- Organocatalysis: Opportunities and Challenges for Polymer Synthesis
Kiesewetter, M. K.; Shin, E. J.; Hedrick, J. L.; Waymouth, R. M. *Macromolecules* **2010**, *43*, 2093–2107.

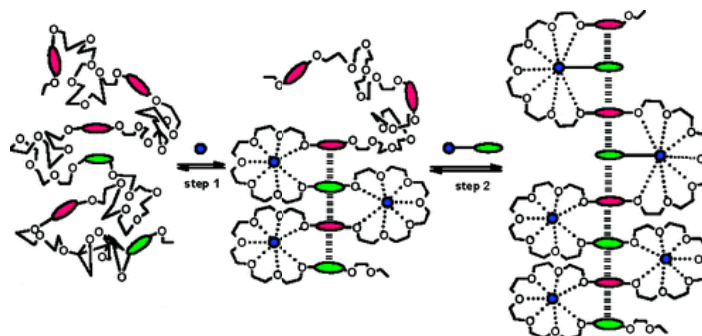
Abstract:



Organocatalysis offers a number of opportunities in polymer synthesis and was among the earliest methods of catalyzing the synthesis of polyesters. In the following Perspective we attempt to highlight the opportunities and challenges in the use of organic molecules as catalysts or initiators for polymerization reactions. The ring-opening polymerization of cyclic monomers is used as a representative polymerization process to illustrate some of the features of organic catalysts and initiators and to compare them to metal-based approaches. The convergence of convenience, functional group tolerance, fast rates, and selectivities will continue to drive innovations in polymerization catalysis, and it is our perspective that organocatalysis will continue to play an important role in these developments.

- Two-Step Folding of Donor–Acceptor Foldamers
Ramkumar, S. G.; Ramakrishnan, S. *Macromolecules* **2010**, *43*, 2307–2312.

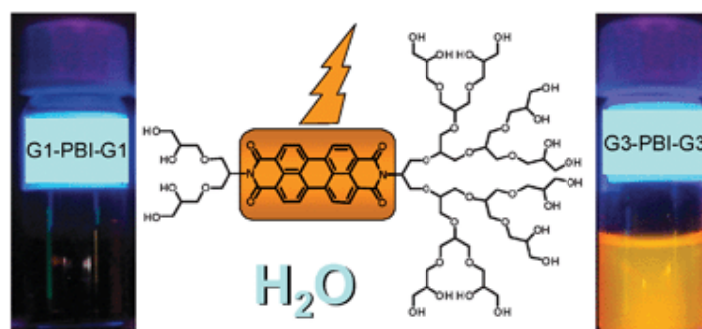
Abstract:



In a series of polymers containing alternately placed electron-rich dialkoxynaphthalene (DAN) donors and electron-deficient pyromellitic diimide (PDI) acceptors linked by hexa(oxyethylene) (OE-6) segments, the ability to form a folded D-A stack was intentionally disrupted by random inclusion of varying amounts of a comonomer that is devoid of DAN donor units. NMR spectroscopic studies of folding in these copolymers, induced by NH₄SCN that coordinates with the OE-6 segments and facilitates the charge-transfer (C-T) induced D-A stacking, clearly reveals the presence of PDI units that are isolated and those that are located at the ends of (D-A)_n stacks. Similar conclusions regarding the presence of stacked and unstacked regions along the polymer chain were also inferred from UV-vis spectroscopic studies that probe the evolution of charge-transfer band. One fascinating aspect of these copolymers was their ability to undergo a two-step folding: first, short (D-A)_n stacks are formed by the interaction of the NH₄⁺ ion with some specific regions of the polymer chain, and subsequently these stacks are further stacked via a two-point interaction with a suitably designed external folding agent that carries a DAN unit and an ammonium group. In the second step, the interaction first occurs by the coordination of the ammonium group of the folding agent with the OE-6 segment, which in turn facilitates the C-T interaction of the DAN unit with the adjacent uncomplexed PDI units along the polymer chain, leading to an increase in the stacking. Variations of several spectral features, during both UV-vis and NMR spectroscopic titrations, clearly reveal this novel two-step folding process.

- Highly fluorescent water-soluble polyglycerol-dendronized perylene bisimide dyes
Heek, T.; Fasting, C.; Rest, C.; Zhang, X.; Würthner, F.; Haag, R. *Chem. Commun.* **2010**, *46*, 1884 – 1886.

Abstract:



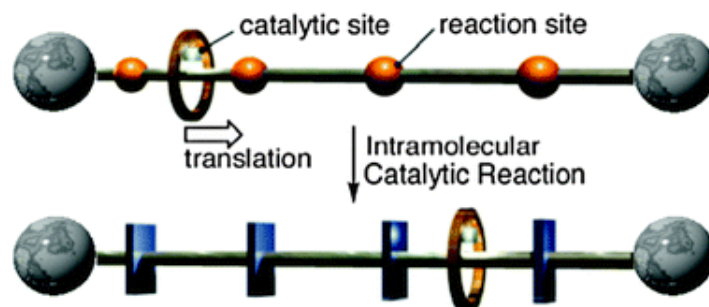
Water-soluble perylene tetracarboxylic acid bisimides (PBIs) with terminally linked polyglycerol dendrons of four different generations have been synthesized. These PBI dyes reveal a strong

dendritic effect, enabling outstanding fluorescence quantum yields in water up to almost 100% for the highest dendron generation.

- Successive catalytic reactions specific to Pd-based rotaxane complexes as a result of wheel translation along the axle

Miyagawa, N.; Watanabe, M.; Matsuyama, T.; Koyama, Y.; Moriuchi, T.; Hirao, T.; Furusho, Y.; Takata, T. *Chem. Commun.* **2010**, 46, 1920 – 1922.

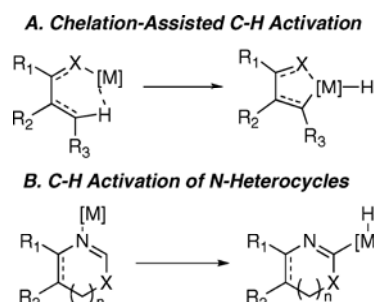
Abstract :



Rotaxane-structure-specific Pd-catalyzed rearrangement of propargyl or allyl urethane groups to oxazolidinone moieties proceeded efficiently. The conversion took place successively by the translation of the wheel along the axle, thus providing a novel macrocyclic catalytic system.

- Rhodium-Catalyzed C–C Bond Formation via Heteroatom-Directed C–H Bond Activation
Colby, D. A.; Bergman, R. G.; Ellman, J. A. *Chem. Rev.* **2010**, 110, 624–655.

Abstract:

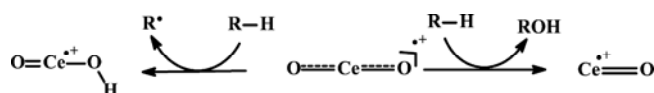


Once considered the “holy grail” of organometallic chemistry, synthetically useful reactions employing C-H bond activation have increasingly been developed and applied to natural product and drug synthesis over the past decade.¹ The ubiquity and relatively low cost of hydrocarbons makes C-H bond functionalization an attractive alternative to classical C-C bond forming reactions such as crosscoupling, which require organohalides and organometallic reagents.² In addition to providing an atom economical alternative to standard cross-coupling strategies, C-H bond functionalization also reduces the production of toxic byproducts, thereby contributing to the growing field of reactions with decreased environmental impact. In the area of C-C bond forming reactions that proceed via a C-H activation mechanism, rhodium catalysts stand out for their functional group tolerance and wide range of synthetic utility. Over the course of the past decade, many Rh-catalyzed methods for heteroatom-directed C-H bond functionalization have been reported and will be the focus of this review. Material appearing in the literature prior to 2001 has been reviewed previously and will only be introduced as background when necessary.

- C–H Bond Activations by Metal Oxo Compounds

Gunay, A.; Theopold, K. H. *Chem. Rev.* **2010**, *110*, 1060–1081.

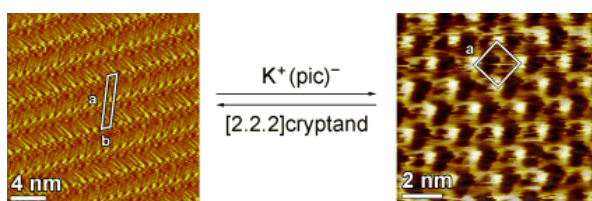
Abstract:



In an era dominated by the utilization of hydrocarbon mixtures (i.e., oil and natural gas) as feedstocks for the chemical industry, the functionalization of C-H bonds, particularly in a selective manner, remains one of the most fundamental problems of chemistry. This challenge is obviously not thermodynamic in nature because many transformations of alkanes are highly exergonic. Rather, the problem is a combination of attenuated reactivity and lack of selectivity of those processes able to overcome the kinetic restraints associated with breaking the strong and nonpolar covalent bond between carbon and hydrogen. While an “exhaustive” functionalization of hydrocarbons, producing, for example, CO₂ and H₂O, is performed so readily and on such a scale as to threaten climate change, selective transformations ranging from the chemoselective direct synthesis of methanol from methane to the enantioselective hydroxylation of camphor are beyond our current capabilities.

- Dynamers at the Solid–Liquid Interface: Controlling the Reversible Assembly/Reassembly Process between Two Highly Ordered Supramolecular Guanine Motifs
Ciesielski, A.; Lena, S.; Masiero, S.; Spada, G. P.; Samori, P. *Angew. Chem. Int. Ed.* **2010**, *49*, 1963–1966.

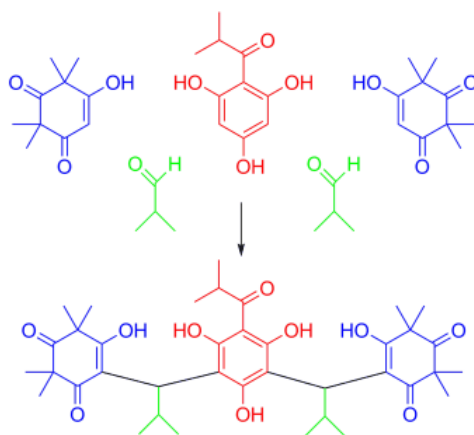
Abstract:



String quartet: A dynamic assembly/reassembly process in octadecyl guanine (G) monolayers was triggered by addition of [2.2.2]cryptand, potassium picrate (K⁺(pic)⁻), and trifluoromethanesulfonic acid. The resulting structures, which alternate between a hydrogen-bonded G ribbon and a G quartet, were monitored by STM at the solid-liquid interface on graphite (see picture).

- Total Synthesis of Myrtucommulone A
Müller, H.; Paul, M.; Hartmann, D.; Huch, V.; Blaesius, D.; Koeberle, A.; Werz, O.; Jauch, J. *Angew. Chem. Int. Ed.* **2010**, *49*, 2045–2049.

Abstract:

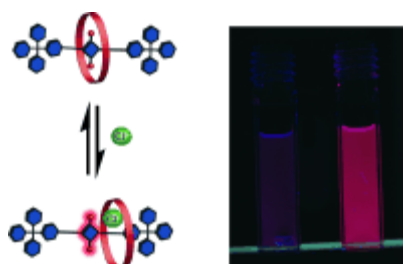


In a one-step conversion, commercially available or known compounds are connected to form myrtucommulone A, an anti-inflammatory and apoptosis-inducing substance from the common myrtle *Myrtus communis* (see scheme). This strategy can be used, as well to prepare myrtucommulone libraries.

- Squaraine Rotaxane as a Reversible Optical Chloride Sensor

Gassensmith, J. J.; Matthys, S.; Lee, J.-J.; Wojcik, A.; Kamat, P.V.; Smith, B. D. *Chem. Eur. J.* **2010**, *16*, 2916-2921.

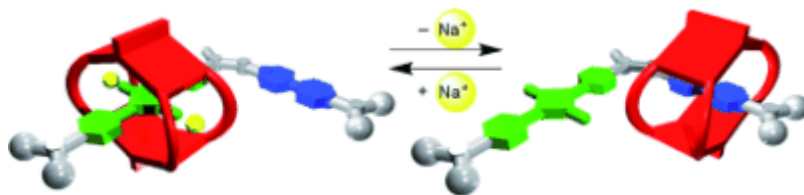
Abstract:



A mechanically interlocked squaraine rotaxane is comprised of a deep-red fluorescent squaraine dye inside a tetralactam macrocycle. NMR studies show that Cl^- binding to the rotaxane induces macrocycle translocation away from the central squaraine station, a process that is completely reversed when the Cl^- is removed from the solution. Steady-state fluorescence and excited-state lifetime measurements show that this reversible machine-like motion modulates several technically useful optical properties, including a three-fold increase in deep-red fluorescence emission that is observable to the naked eye. The excited states were characterized quantitatively by time-correlated single photon counting, femtosecond transient absorption spectroscopy, and nanosecond laser flash photolysis. Cl^- binding to the rotaxane increases the squaraine excited singlet state lifetime from 1.5 to 3.1 ns, and decreases the excited triplet state lifetime from >200 to 44 μs . Apparently, the surrounding macrocycle quenches the excited singlet state of the encapsulated squaraine dye and stabilizes the excited triplet state. Prototype dipsticks were prepared by adsorbing the lipophilic rotaxane onto the ends of narrow, C18-coated, reverse-phase silica gel plates. The fluorescence intensity of a dipstick increased eighteen-fold upon dipping in an aqueous solution of tetrabutylammonium chloride (300 mM) and was subsequently reversed by washing with pure water. It is possible to develop the dipsticks for colorimetric determination of Cl^- levels by the naked eye. After dipping into aqueous tetrabutylammonium chloride, a dipstick's color slowly fades at a rate that depends on the amount of Cl^- in the aqueous solution. The fading process is due primarily to hydrolytic bleaching of the squaraine chromophore within the rotaxane. That is, association of Cl^- to immobilized rotaxane induces macrocycle translocation and exposure of the electrophilic C_4O_2 core of the squaraine station, which is in turn attacked by the ambient moisture to produce a bleached product.

- Squaraine-Based [2]Rotaxanes that Function as Visibly Active Molecular Switches
Hsueh, S.-Y.; Lai, C.-C.; Chiu, S.-H. *Chem. Eur. J.* **2010**, *16*, 2997-3000.

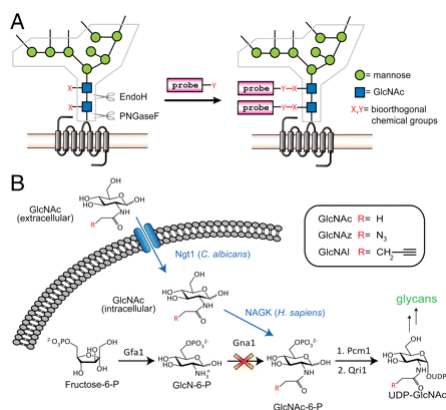
Abstract:



In a flash! A squaraine-based optical molecular switch functions with striking fluorescence signal changes that are visible to the naked eye (see figure).

- Targeted metabolic labeling of yeast N-glycans with unnatural sugars
Breidenbach, M. A.; Gallagher, J. E. G.; King, D. S.; Smart, B. P.; Wu, P.; Bertozzi, C. R. *Proc. Nat. Acad. Sci.* **2010**, *107*, 3988-3993.

Abstract:



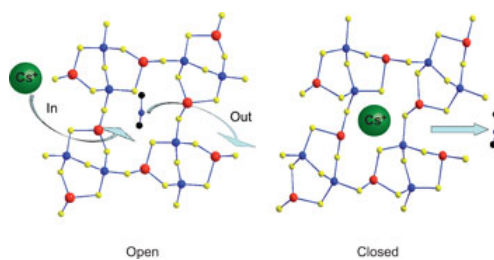
Metabolic labeling of glycans with synthetic sugar analogs has emerged as an attractive means for introducing nonnatural chemical functionality into glycoproteins. However, the complexities of glycan biosynthesis prevent the installation of nonnatural moieties at defined, predictable locations within glycoproteins at high levels of incorporation. Here, we demonstrate that the conserved *N*-acetylglucosamine (GlcNAc) residues within chitobiose cores of N-glycans in the model organism *Saccharomyces cerevisiae* can be specifically targeted for metabolic replacement by unnatural sugars. We introduced an exogenous GlcNAc salvage pathway into yeast, allowing cells to metabolize GlcNAc provided as a supplement to the culture medium. We then rendered the yeast auxotrophic for production of the donor nucleotide-sugar uridine-diphosphate-GlcNAc (UDP-GlcNAc) by deletion of the essential gene *GNA1*. We demonstrate that *gna1Δ* strains require a GlcNAc supplement and that expression plasmids containing both exogenous components of the salvage pathway, GlcNAc transporter *NGT1* from *Candida albicans* and GlcNAc kinase *NAGK* from *Homo sapiens*, are required for rescue in this context. Further, we show that cells successfully incorporate synthetic GlcNAc analogs *N*-azidoacetylglucosamine (GlcNAz) and *N*-(4-pentynoyl)-glucosamine (GlcNAI) into cell-surface glycans and secreted glycoproteins. To verify incorporation of the nonnatural sugars at N-glycan core positions, endoglycosidase H (endoH)-digested peptides from a purified secretory glycoprotein, Ygp1, were analyzed by mass spectrometry. Multiple Ygp1 N-glycosylation sites bearing GlcNAc, isotopically labeled GlcNAc, or GlcNAz were identified; these modifications were dependent on the supplement added to the culture medium. This system enables the production of glycoproteins that are functionalized for specific chemical modifications at their glycosylation sites.

- Selective incarceration of caesium ions by Venus flytrap action of a flexible framework sulfide

Ding, N.; Kanatzidis, M. G. *Nature Chemistry* **2010**, 2, 187 – 191.

Abstract:

12



A perforated framework material of gallium antimony sulfide is able to selectively extract caesium ions from solution. After this capture, the holes close and prevent the ions leaching back out. This dynamic response could be used to remove caesium from nuclear waste.