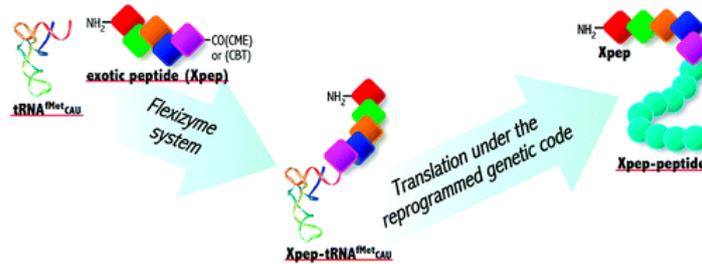


- Translation Initiation with Initiator tRNA Charged with Exotic Peptides
Goto, Y.; Suga, H. *J. Am. Chem. Soc.* **2009**, *131*, 5040–5041.

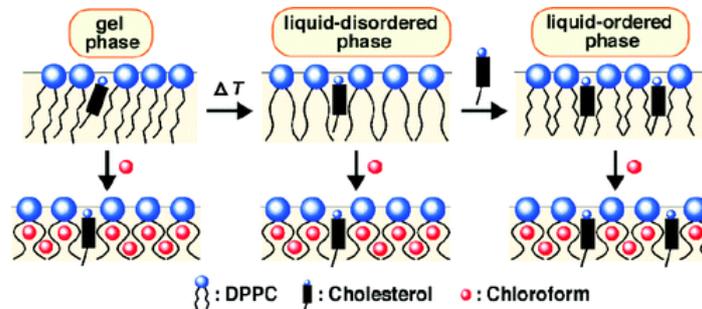
Abstract:



In the prokaryotic translation system formylmethionyl-tRNA^{fMet}CAU acts as an exclusive initiator to yield peptides bearing formylmethionine at the N-terminus. We herein report a new methodology to initiate the translation reaction with peptidyl-tRNA^{fMet}CAU in which the peptidyl group consists of unusual building blocks, such as d-amino acids, β -amino acids, and N-methyl amino acids, and express peptides containing a stretch of exotic peptides at the N-terminus. Synthesis of the initiator peptidyl-tRNAs was facilitated by flexizyme, a flexible tRNA aminoacylation ribozyme, and the start codon was reprogrammed by withdrawing methionine from a reconstituted *E. coli* cell-free translation system to reassign the initiator from formylmethionine to exotic peptides. This represents the first demonstration for initiating the ribosomal peptide synthesis with peptides, which offers us a new tool for the synthesis of a wide variety of unusual peptides and also the mechanistic studies on the initiation and/or elongation events in translation.

- Loosening and Reorganization of Fluid Phospholipid Bilayers by Chloroform
Turkylmaz, S.; Chen, W. H.; Mitomo, H.; Regen, S. L. *J. Am. Chem. Soc.* **2009**, *131*, 5068–5069.

Abstract:



The mixing behavior of an exchangeable phospholipid (A) with an exchangeable sterol (B) in host bilayers made from 1,2-dipalmitoyl-*sn*-glycero-3-phosphocholine (DPPC) containing varying concentrations of cholesterol has been examined via the nearest-neighbor recognition method. At low sterol concentrations (i.e., 2.5 mol %), the mixing between A and B is close to ideal. Incremental increases in the sterol concentration to 40 mol % led to net increases in the affinity between A and B. Similar mixing experiments that were carried out in the presence of chloroform showed a leveling effect, where moderate sterol-phospholipid affinity was observed in all cases. These results, together with the fact that the number of chloroform molecules that are absorbed per phospholipid is essentially constant and independent of the sterol content, support a model in which chloroform favors solvation of the phospholipids and a common membrane state is produced. Fluorescence measurements and Raman spectra have also shown that chloroform significantly loosens both cholesterol-poor and cholesterol-rich membranes made from DPPC. In a broader context, these

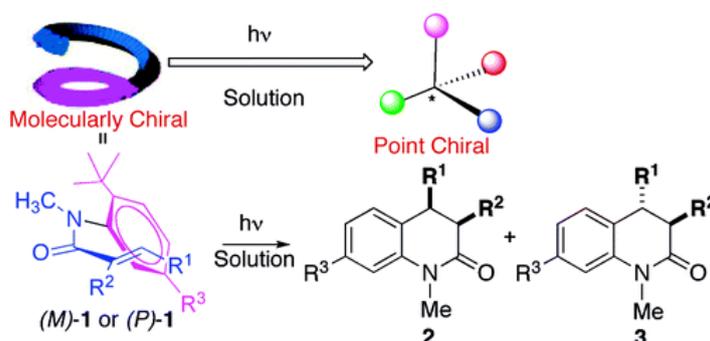
results suggest a fundamentally new mechanism of anesthesia, where the anesthetic, by solvating the lipid components, profoundly changes the lateral organization of the lipid framework.

2

- Light-Induced Transfer of Molecular Chirality in Solution: Enantiospecific Photocyclization of Molecularly Chiral Acrylanilides

Ayitou, A. J.-L.; Sivaguru, J. *J. Am. Chem. Soc.* **2009**, *131*, 5036–5037.

Abstract:

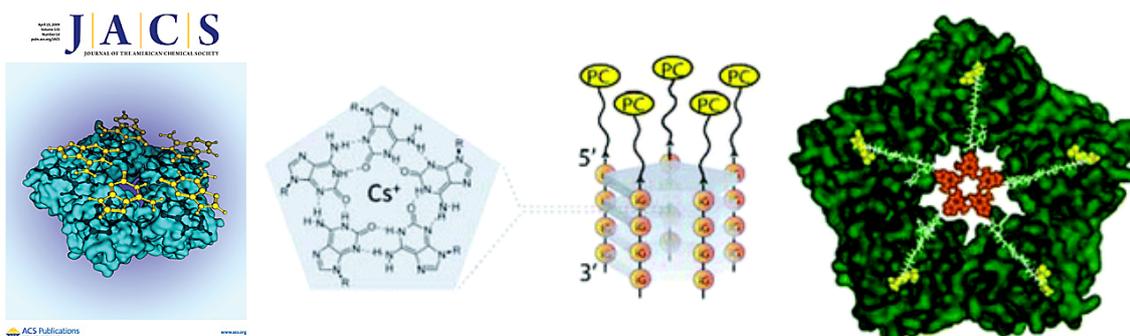


Molecularly chiral *o*-*tert*-butylacrylanilides undergo enantiospecific 6π -photocyclization to yield 3,4-dihydroquinolin-2-ones with very high enantioselectivity (>90%) in solution. The photocyclization results in the removal of the ortho *tert*-butyl substituent, presumably via a zwitterionic intermediate. β -Substitution in the alkene is found to be critical for the transfer of molecular chirality (axial chirality) in the reactant to point chirality in the photoproduct(s).

- Multivalent Protein Binding and Precipitation by Self-Assembling Molecules on a DNA Pentaplex Scaffold

Rosenzweig, B. A.; Ross, N. T.; Tagore, D. M.; Jayawickramarajah, J.; Saraogi, I.; Hamilton, A. *J. Am. Chem. Soc.* **2009**, *131*, 5020–5021.

Abstract:

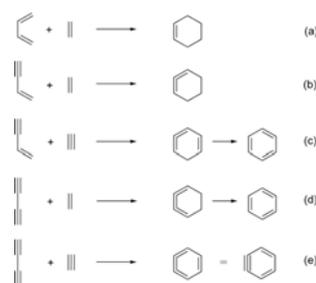


A supramolecular assembly containing an isoguanosine pentaplex with both a “protein-binding” face and a “reporter” face has been generated. When phosphocholine is appended to the protein-binding face this supramolecular assembly binds multivalently to the pentameric human C-reactive protein, a biomolecule implicated in inflammation and heart disease.

- The Dehydro-Diels–Alder Reaction

Wessig, P.; Müller, G. *Chem. Rev.* **2008**, *108*, 2051-2063.

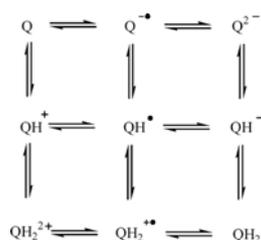
Abstract:



Cycloaddition reactions occupy an outstanding place among organic reactions, and they have been used in innumerable syntheses for more than a century. One of the most prominent and best-examined cycloaddition reactions is the Diels–Alder (DA) reaction, that is the [4 + 2] cycloaddition between a diene and a dienophile (which can be an alkene as well as an alkyne) giving cyclohexene derivatives. Furthermore, numerous heteroanalogous variants have been developed permitting the synthesis of heterocyclic compounds. Two characteristic features are connected with the mechanism of the DA reaction: First, two C–C- σ bonds are formed in the course of the reaction, whereas at the same time two C–C- π -bonds vanish and therefore the reaction is highly exothermic. Second, in most cases the DA reaction is according to the Woodward–Hoffmann rules a thermally allowed, one-step process, although a two-step mechanism via diradical intermediates was discussed in some special cases. If one or both double bonds in the diene component are replaced by a triple bond, these two statements must be qualified. Due to the neighborhood of the triple bond to the central C–C-single bond of the 4-atom component, the primary products must consequently contain two cumulated double bonds or, with other words, they are cyclic allenes. In section we will summarize the present state of knowledge of the mechanism both of the thermal and photochemical variant of the DDA reaction. Because DDA reactions initiated by bases or catalyzed by transition metals proceed according to a clearly different mechanism, we will discuss these reactions separately in sections and, respectively.

- Electrochemical Approach to the Mechanistic Study of Proton-Coupled Electron Transfer
Costentin, C. *Chem. Rev.* **2008**, *108*, 2145-2179.

Abstract:

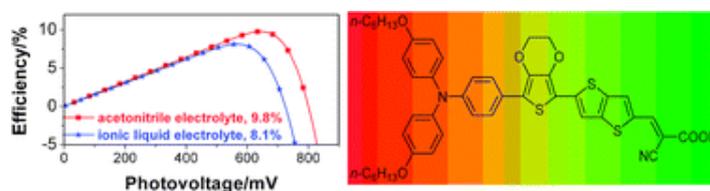


The coupling between electron and proton transfers has a long experimental and theoretical history in chemistry and biochemistry. To take just one example, the fact that acceptance of an electron triggers the addition of an acid or the removal of a base and vice versa for oxidations towers over all understanding of organic electrochemistry. Proton-coupled electron transfer (PCET) reactions also play a critical role in a wide range of biological processes, including enzyme reactions, photosynthesis, and respiration. A recent impressive review describes PCET reactions and phenomena. Proton transfer and its coupling to electron transfer in most biological systems is fundamental. Electrochemistry, through protein film voltammetry (PFV), has contributed widely to the establishment of how individual proton transfers occur at the molecular level and how they are coupled to electron transfer. This issue is reviewed in section 4.

- High efficiency and stable dye-sensitized solar cells with an organic chromophore featuring a binary -conjugated spacer.

Zhang, G.; Bala, H.; Cheng, Y.; Shi, D.; Lv, X.; Yu, K.; Wang, P. *Chem. Commun.* **2009**, 2198 – 2200.

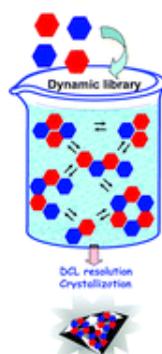
Abstract :



We employed a binary spacer of orderly conjugated 3,4-ethyldioxythiophene and thienothiophene to construct a wide-spectral response organic chromophore for dye-sensitized solar cells, exhibiting a high power conversion efficiency of 9.8% measured under irradiation of 100 mW cm⁻² air mass 1.5 global (AM1.5G) sunlight and an excellent stability.

- Self-sorting of equilibrating metallocupramolecular DCLs via constitutional crystallization.
- Barboiu, M.; Dumitru, F.; Legrand, Y. M.; Petit, E.; Van der Lee, A. *Chem. Commun.* **2009**, 2192 – 2194.

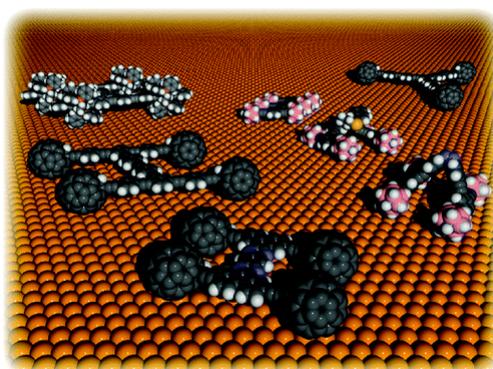
Abstract :



Zn²⁺ and Pb²⁺ and ligands 1 and 2 self-assemble in solution to generate DCLs of interexchanging metallocupramolecular subcomponents, which convert into robust species of unique stoichiometry via constitutional crystallization.

- Synthesis of Single-Molecule Nanocars
- Vives, G.; Tour, J. M. *Acc. Chem. Res.* **2009**, 42, 473-487.

Abstract:

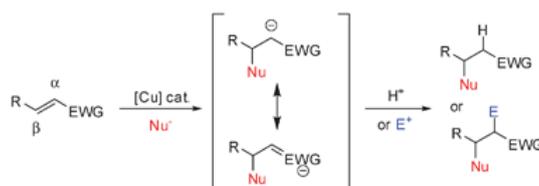


The drive to miniaturize devices has led to a variety of molecular machines inspired by macroscopic counterparts such as molecular motors, switches, shuttles, turnstiles, barrows, elevators, and nanovehicles. Such nanomachines are designed for controlled mechanical motion and the transport of nanocargo. As researchers miniaturize devices, they can consider two complementary approaches: (1) the “top-down” approach, which reduces the size of macroscopic objects to reach an equivalent microscopic entity using photolithography and related techniques and (2) the “bottom-up” approach, which builds functional microscopic or nanoscopic entities from molecular building blocks. The top-down approach, extensively used by the semiconductor industry, is nearing its scaling limits. On the other hand, the bottom-up approach takes advantage of the self-assembly of smaller molecules into larger networks by exploiting typically weak molecular interactions. But self-assembly alone will not permit complex assembly. Using nanomachines, we hope to eventually consider complex, enzyme-like directed assembly. With that ultimate goal, we are currently exploring the control of nanomachines that would provide a basis for the future bottom-up construction of complex systems. This Account describes the synthesis of a class of molecular machines that resemble macroscopic vehicles. We designed these so-called nanocars for study at the single-molecule level by scanning probe microscopy (SPM). The vehicles have a chassis connected to wheel-terminated axles and convert energy inputs such as heat, electric fields, or light into controlled motion on a surface, ultimately leading to transport of nanocargo. At first, we used C₆₀ fullerenes as wheels, which allowed the demonstration of a directional rolling mechanism of a nanocar on a gold surface by STM. However, because of the low solubility of the fullerene nanocars and the incompatibility of fullerenes with photochemical processes, we developed new *p*-carborane- and ruthenium-based wheels with greater solubility in organic solvents. Although fullerene wheels must be attached in the final synthetic step, *p*-carborane- and ruthenium-based wheels do not inhibit organometallic coupling reactions, which allows a more convergent synthesis of molecular machines. We also prepared functional nanotrucks for the transport of atoms and molecules, as well as self-assembling nanocars and nanotrains.

Although engineering challenges such as movement over long distance and non-atomically flat surfaces remain, the greatest current research challenge is imaging. The detailed study of nanocars requires complementary single molecule imaging techniques such as STM, AFM, TEM, or single-molecule fluorescence microscopy. Further developments in engineering and synthesis could lead to enzyme-like manipulation and assembly of atoms and small molecules in nonbiological environments.

- Recent advances in enantioselective copper-catalyzed 1,4-addition
Jerphagnon, T.; Pizzuti, M. G.; Minnaard, A. J.; Feringa, B. L. *Chem. Soc. Rev.* **2009**, *38*, 1039 – 1075.

Abstract:



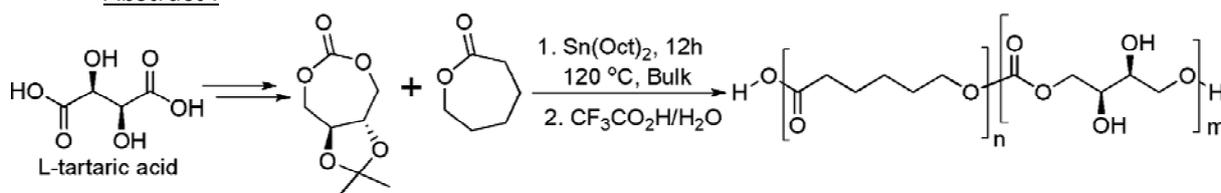
A comprehensive overview of recent literature from 2003 concerning advances in enantioselective copper catalysed 1,4-addition of organometallic reagents to α, β -unsaturated compounds is given in this *critical review*. About 200 ligands and catalysts are presented, with a focus on stereoselectivities,

catalyst loading, ligand structure and substrate scope. A major part is devoted to trapping and tandem reactions and a variety of recent synthetic applications are used to illustrate the practicality and current state of the art of 1,4-addition of organometallic reagents. Finally several mechanistic studies are discussed (162 references).

- One-Shot Block Copolymerization of a Functional Seven-Membered Cyclic Carbonate Derived from L-Tartaric Acid with ϵ -Caprolactone.

Wu, R.; AL-Azemi, T. F.; Bisht, K. S. *Macromolecules* **2009**, *42*, 2401-2410.

Abstract :

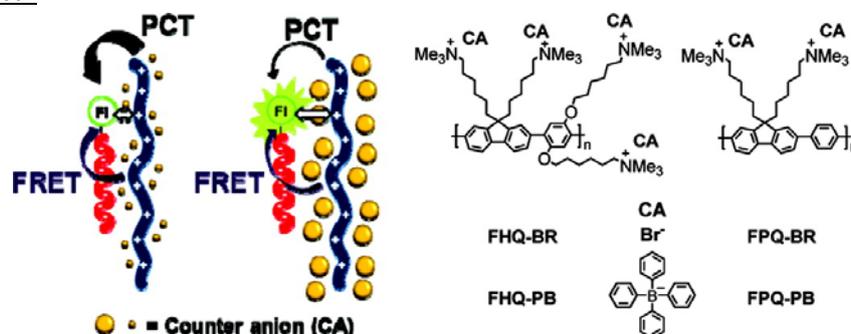


Block copolymerization of a seven-membered cyclic carbonate (5S,6S)-dimethyl-5,6-isopropylidene-1,3-dioxepin-2-one (ITC) with ϵ -caprolactone in “one-shot feeding” is reported. The cyclic carbonate monomer ITC was synthesized from naturally occurring L-tartaric acid in three steps. Three catalysts stannous octanoate, $\text{Sn}(\text{Oct})_2$, triisopropoxide aluminum, $\text{Al}(\text{O}^i\text{Pr})_3$, and diethylzinc monohydrate, $\text{ZnEt}_2\text{-H}_2\text{O}$ were tested for the homopolymerization of ITC monomer at 120°C for 12 h in bulk. The results show that $\text{Sn}(\text{Oct})_2$ was the most effective catalyst to carry out the polymerization ($M_n = 24\ 000$ g/mol; PDI = 1.6; $[\alpha]_D^{20} = +77.8$). The copolymerization of ITC with ϵ -caprolactone (CL) in various feed ratios was also investigated. The detailed spectral and thermal analysis of the copolymers catalyzed by $\text{Sn}(\text{Oct})_2$ revealed formation of the block copolymer (poly[44%ITC-*block*-56%CL], $M_n = 24\ 000$ g/mol; PDI = 1.6; $[\alpha]_D^{20} = +33.8$). Two glass transition temperatures (T_g) were observed for poly(44%ITC)-*block*-poly(56% ϵ -CL) at -59.1 and -37.2°C for the poly(CL) and the poly(ITC) block, respectively, confirming the diblock nature of the copolymer. It is the first report of “one-shot” block copolymerization of ϵ -caprolactone with a cyclic carbonate monomer. The deprotection of the ketal groups resulted in copolymers containing free hydroxy groups in the polymer backbone.

- Signal Amplification by Changing Counterions in Conjugated Polyelectrolyte-Based FRET DNA Detection.

Kang, M.; Nag, O. K.; Nayak, R. R.; Hwang, S.; Suh, H.; Woo, H. Y. *Macromolecules* **2009**, *42*, 2708-2714.

Abstract :

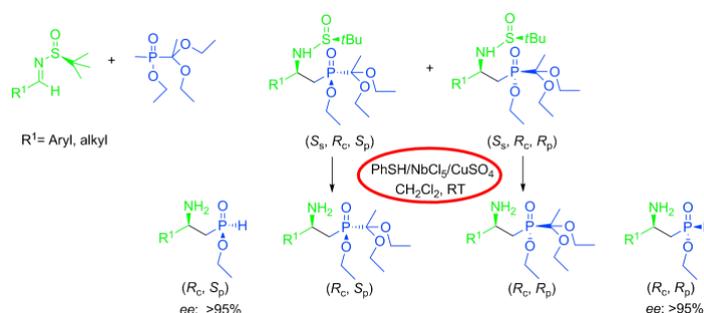


Two types of cationic polyfluorene copolymers (FHQ, FPQ) with a same π -conjugated structure but different counterions (bromide (BR), tetraphenylborate (PB)) were synthesized and studied as a fluorescence resonance energy transfer (FRET) donor to fluorescein-labeled DNA (ssDNA-FI). The

counterions accompanying the polymer chain for charge compensation are expected to perturb complexation with DNA and modify the fine-structure of D/A complex on molecular scale, which may influence the competition between the desirable FRET and energy-wasting charge transfer quenching. The PL quenching constant of ssDNA-FI by Stern-Volmer plot was significantly reduced in the presence of the polymers with tetraphenylborate ($4.3 \times 10^6 \text{ M}^{-1}$ for **FHQ-BR** vs $2.2 \times 10^6 \text{ M}^{-1}$ for **FHQ-PB**, $2.8 \times 10^6 \text{ M}^{-1}$ for **FPQ-BR** vs $1.3 \times 10^6 \text{ M}^{-1}$ for **FPQ-PB**). The resulting FRET-induced signal was amplified 2 to 8.6 times by exchanging bromide with tetraphenylborate as a counterion, suggesting a simple way for kinetic control of energy transfer to maximize signal amplification in conjugated polymer-based FRET biosensors.

- Highly Enantioselective Synthesis of β -Aminophosphinates with Two Stereogenic Atoms and Their Conversion into Optically Pure Ethyl β -Amino-*H*-phosphinates
Zhang, D.; Yuan, C. *Chem. Eur. J.* **2009**, *15*, 4088-4101.

Abstract:

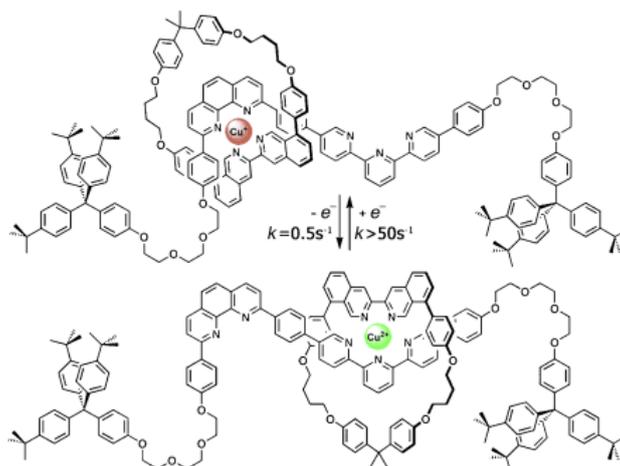


β -Amino acid analogues: The nucleophilic addition of ethyl (diethoxyethyl)methylphosphinate to a variety of (*S*)-(*tert*-butanesulfinyl)imines leads to the isolation of two enantioenriched β -aminophosphinates (>95% ee; see scheme). Subsequent removal of the protecting groups through pivotal metal-catalyzed thiophenolysis leads to optically pure ethyl β -amino-*H*-phosphinates.

The first highly stereoselective synthesis of β -aminophosphinates has been realized by the nucleophilic attack of an anion generated from ethyl (1,1-diethoxyethyl)methylphosphinate and *n*BuLi on (*S*)-*N*-(*tert*-butanesulfinyl)imines at -78°C . Subsequent removal of the protecting groups through pivotal metal-catalyzed thiophenolysis leads to optically pure ethyl β -amino-*H*-phosphinates. During this process, a pair of diastereoisomers with different configurations on the phosphorus atom can be obtained. Until now, Ellman *N*-(*tert*-butanesulfinyl)imines have demonstrated excellent chirality-induced activity in the syntheses of both α -aminophosphinates and β -aminophosphinates. On the other hand, the Cram rules have been successfully applied to rationalize the highly enantioselective formation of (*R*_C)- α -aminophosphinates and (*R*_C)- β -aminophosphinates, whereas the phenomenon that the two pairs of diastereoisomers could both be efficiently isolated is tentatively discussed based on X-ray crystallographic and ^1H NMR spectroscopic analysis.

- A Fast-Moving Copper-Based Molecular Shuttle: Synthesis and Dynamic Properties
Durola, F.; Lux, J.; Sauvage, J.-P. *Chem. Eur. J.* **2009**, *15*, 4124-4134.

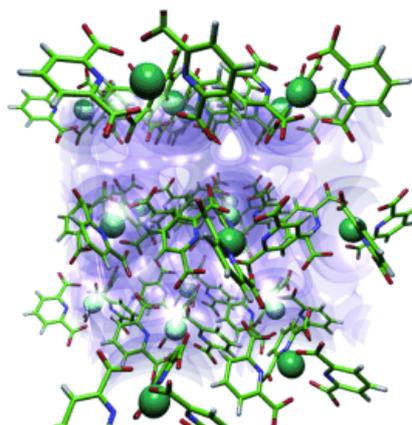
Abstract:



Fast-track changes: The synthesis of a new copper-based molecular shuttle is described, with a coordinating macrocycle based on a nonhindering but endocyclic ligand (see scheme), which makes the ligand exchange easier, and thus the motions of the ring along the thread faster.

The present report deals with the synthesis of a two-station [2]rotaxane consisting of a dpbiiq-incorporating macrocycle (dpbiiq: 8,8'-diphenyl-3,3'-biisoquinoline) threaded by a coordinating fragment whose complexing units are a dpp and a terpy ligand (dpp: 2,9-diphenyl-1,10-phenanthroline; terpy: 2,2',6',2''-terpyridine). The [2]rotaxane was prepared in 11 steps from commercially available or easy-to-make molecules, without taking into account the preparation of the dpbiiq-containing 39-membered ring, which was available in our group. The ring-incorporated bidentate chelate is at the same time endocyclic and sterically nonhindering, which is a specific property of the dpbiiq-coordinating unit. This unique feature has a profound influence on the rate of the ring-and-copper translation motion between the two stations of the axle. Based on an analogous multistep strategy, a related molecular shuttle has also been prepared that contains exactly the same axle and stoppers as the first compound but whose threaded ring incorporates the sterically hindering dpp chelate. The translation motions of this other system are several orders of magnitude slower than the corresponding movements of the dpbiiq-based compound. The motion corresponding to the rearrangement of the unstable five-coordinate copper(I) form of the compounds is relatively fast for both shuttles; the half lifetime of the five-coordinate Cu^{I} species being below 20 ms for the dpbiiq-containing system and below 1 s for the dpp-based molecule. The reverse motion corresponding to the rearrangement of the four-coordinate copper(II) complexes is much slower, especially for the dpp-based system. It is of the order of several hours for the dpp-based shuttle and only one second or less for the dpbiiq system, under exactly the same conditions. The remarkable difference between the motion rates for the two two-station shuttles demonstrates that the use of a very open chelate such as dpbiiq is extremely beneficial in the context of fast-moving molecular machines.

- Crystal-Structure Determination of Powdered Paramagnetic Lanthanide Complexes by Proton NMR Spectroscopy
Kervern, G.; D'Aléo, A.; Toupet, L.; Maury, O.; Emsley, L.; Pintacuda, G. *Angew. Chem. Int. Ed.* **2009**, 48, 3082–3086.
Abstract:

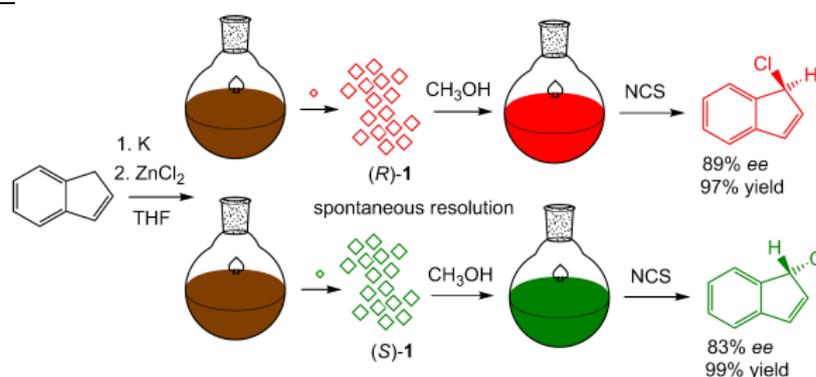


Shifts for crystals: Solid-state NMR spectroscopy can be used for structure determination of microcrystalline paramagnetic solids at natural isotopic abundance. The protocol makes use of paramagnetic effects, measured on suitably recorded ^1H NMR spectra, to define the conformation of a molecule in the lattice and the intermolecular packing in the solid phase. The method is illustrated with a family of lanthanide compounds (see picture).

- A Different Approach to Enantioselective Organic Synthesis: Absolute Asymmetric Synthesis of Organometallic Reagents

Lennartson, A.; Olsson, S.; Sundberg, J.; Hakansson, M. *Angew. Chem. Int. Ed.* **2009**, 48, 3137–3140.

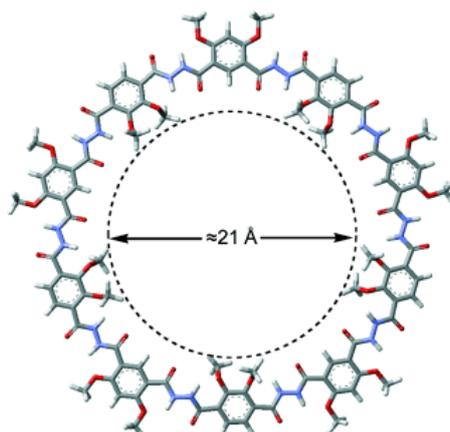
Abstract:



Voilà, optical activity: Both enantiomers of 1-chloroindene have been synthesized in high selectivity from solely achiral starting materials, and without using optically active catalysts (see scheme). These symmetry-breaking syntheses provide a proof-of-concept for a new approach to asymmetric synthesis. NCS=*N*-chlorosuccinimide.

- One-Pot Formation of Large Macrocycles with Modifiable Peripheries and Internal Cavities
Ferguson, J. S.; Yamato, K.; Liu, R.; He, L.; Zeng, X. C.; Gong, B. *Angew. Chem. Int. Ed.* **2009**, 48, 3150–3154.

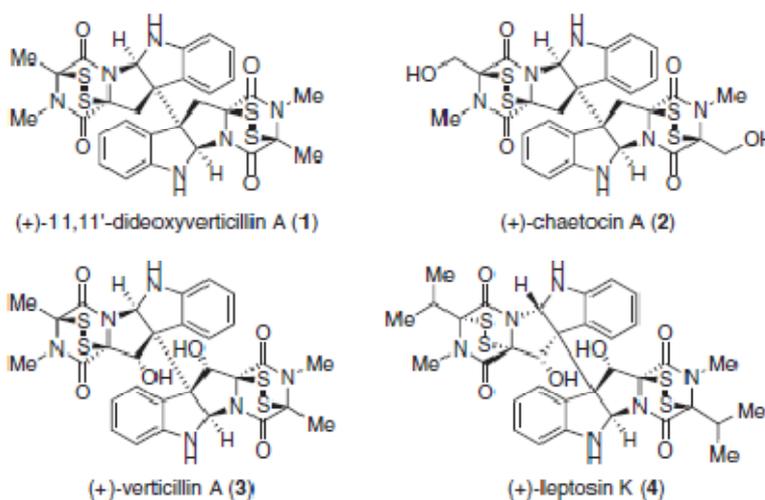
Abstract:



The shape of things to come: Aromatic oligohydrazide macrocycles with planar backbones enforced by three-center hydrogen bonds are formed in high yield from monomeric diacid chlorides and dihydrazides. Macrocycles consisting of six *meta*-linked pyridine and benzene residues have an internal cavity of about 10 Å diameter, while those with alternating *meta*- and *para*-linked benzene residues are larger and contain multiple convergent sites (see picture).

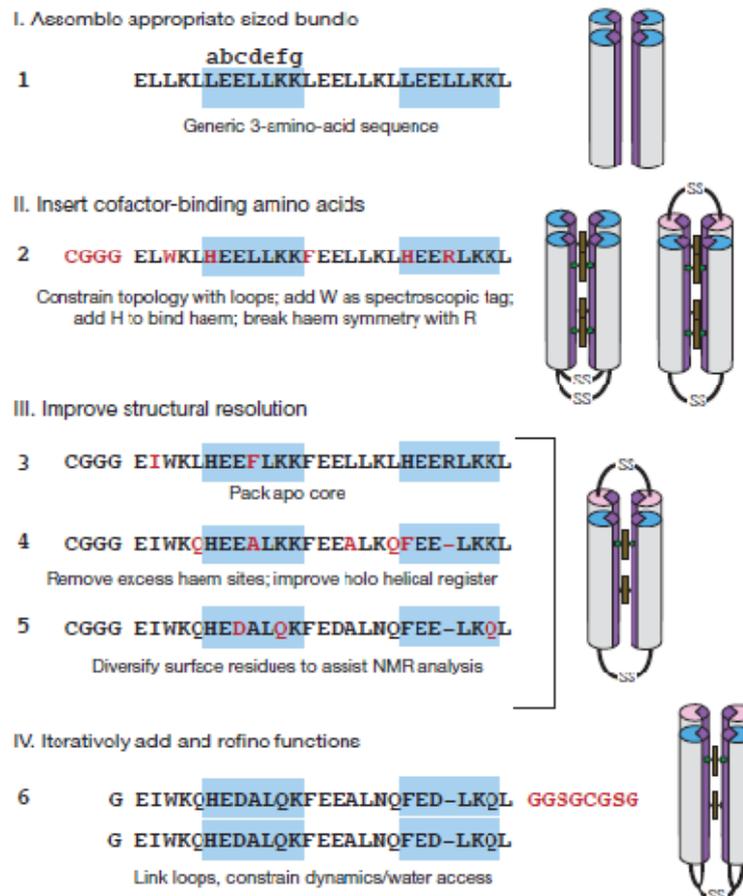
- Total Synthesis of (+)-11,11'-Dideoxyverticillin A
Kim, J.; Ashenhurst, J. A.; Movassaghi, M. *Science* **2009**, *324*, 238-241.

Abstract:



The fungal metabolite (+)-11,11'-dideoxyverticillin A, a cytotoxic alkaloid isolated from a marine *Penicillium* sp., belongs to a fascinating family of densely functionalized, stereochemically complex, and intricate dimeric epidithiodiketopiperazine natural products. Although the dimeric epidithiodiketopiperazines have been known for nearly 4 decades, none has succumbed to total synthesis. We report a concise enantioselective total synthesis of (+)-11,11'-dideoxyverticillin A via a strategy inspired by our biosynthetic hypothesis for this alkaloid. Highly stereo- and chemoselective advanced-stage tetrahydroxylation and tetrathiolation reactions, as well as a mild strategy for the introduction of the epidithiodiketopiperazine core in the final step, were developed to address this highly sensitive substructure. Our rapid functionalization of the advanced molecular framework aims to mimic plausible biosynthetic steps and offers an effective strategy for the chemical synthesis of other members of this family of alkaloids.

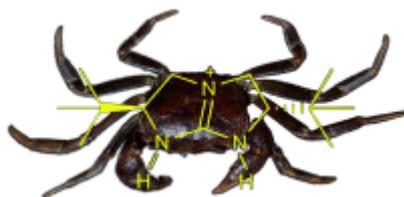
- Design and engineering of an O₂ transport Protein
Koder, R. L.; Anderson, J. L. R.; Solomon, L. A.; Reddy, K. S.; Moser, C. C.; Dutton, P. L. *Nature* **2009**, *458*, 305-309.

Abstract:

The principles of natural protein engineering are obscured by overlapping functions and complexity accumulated through natural selection and evolution. Completely artificial proteins offer a clean slate on which to define and test these protein engineering principles, while recreating and extending natural functions. Here we introduce this method with the design of an oxygen transport protein, akin to human neuroglobin. Beginning with a simple and unnatural helix-forming sequence with just three different amino acids, we assembled a four-helix bundle, positioned histidines to bis-histidine ligate haems, and exploited helical rotation and glutamate burial on haem binding to introduce distal histidine strain and facilitate O₂ binding. For stable oxygen binding without haem oxidation, water is excluded by simple packing of the protein interior and loops that reduce helical-interface mobility. O₂ affinities and exchange timescales match natural globins with distal histidines, with the remarkable exception that O₂ binds tighter than CO.

- Chiral Guanidine Catalyzed Enantioselective Reactions
Leow D.; Tan, C. H. *Chem. Asian J.* **2009**, *4*, 488 – 507.

Abstract:

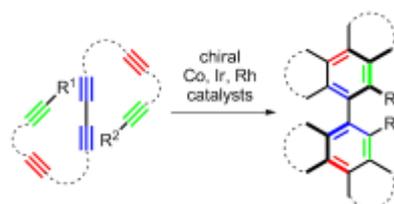


Chiral guanidine catalysts share common characteristics such as high pKa values and dual hydrogenbonding modes of activation, and high catalytic activities and enantioselectivities can often be achieved. The utilization of guanidines as catalysts has been growing at a steady pace. In the past few years, it has attracted tremendous attention through several landmark achievements. This article highlights the development of chiral guanidine catalysis in asymmetric synthesis.

- Transition-Metal-Catalyzed Enantioselective [2+2+2] Cycloadditions for the Synthesis of Axially Chiral Biaryls

Tanaka, K. *Chem. Asian J.* **2009**, *4*, 508 – 518.

Abstract:

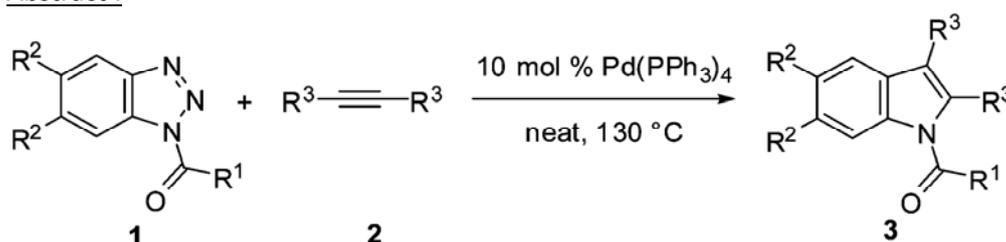


Recent advances towards a development of novel transition-metal-catalyzed enantioselective [2+2+2] cycloadditions for the synthesis of biaryls are summarized in this Focus Review. Additionally, the enantioselective synthesis of axially chiral biaryls possessing non-biaryl axial chirality is also presented. These novel asymmetric aromatization reactions allow the production of various axially chiral biaryl compounds with high enantioselectivity.

- Palladium-Catalyzed Indolization of N-Aroylbenzotriazoles with Disubstituted Alkynes

Nakamura, I.; Nemoto, T.; Shiraiwa, N.; Terada, M. *Org. Lett.* **2009**, *11*, 1055-1058

Abstract :

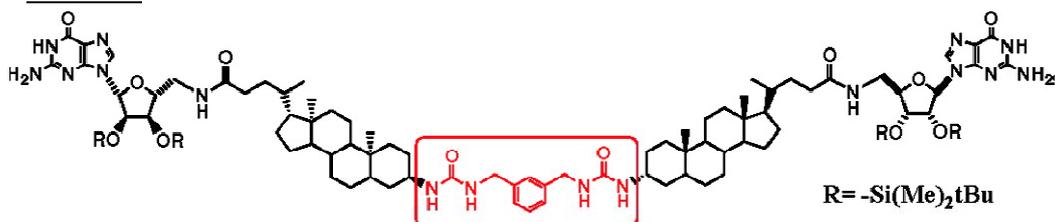


The palladium-catalyzed denitrogenative indolization of N-arylbzotriazoles **1** and internal alkynes **2** produced the corresponding polysubstituted indoles **3** in good to high yields. For example, the reaction of 5,6-dimethyl-1-[4-(trifluoromethyl)benzoyl]benzotriazole (**1j**) with 6-dodecyne (**2a**), 4-octyne (**2b**), and diphenylacetylene (**2f**) in the presence of 10 mol % of Pd(PPh₃)₄ without solvent at 130 °C gave the corresponding indoles **3i**, **3l**, and **3p** in 74, 71, and 41% yields, respectively. In the present reaction, the aroylbzotriazole acts as a synthetic equivalent of a 2-haloanilide in Larock's indole synthesis.

- Stabilizing Guanosine-Sterol Ion Channels with a Carbamate to Urea Modification in the Linker

Ma, L.; Harrell, W. A. Jr.; Davis, J. T. *Org. Lett.* **2009**, *11*, 1599-1602.

Abstract :



The use of a bis-urea lithocholamide linker within a guanosine-sterol dimer resulted in formation of large and stable ion channels. The channels were longer-lived than those formed by the corresponding bis-carbamate.