VIP The following Communications have been judged by at least two referees to be "very important papers" and will be published online at www.angewandte.org soon:

Author Profile

"When I was eighteen I wanted to be a professional tennis player.
When I wake up I wake up my 8-year-old son …"
This and more about Guy Bertrand can be found on page 5248.

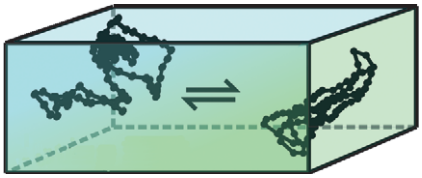
Obituaries

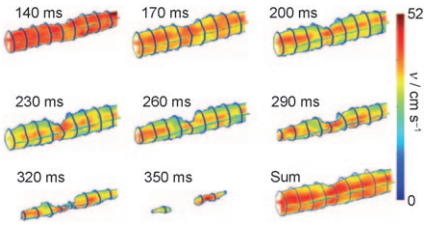
Gernot Boche (1938–2011)

Books

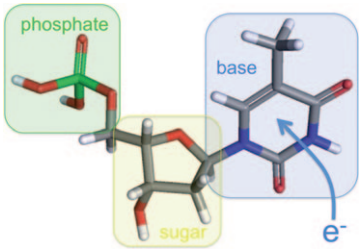
Contents

Highlights





Minireviews



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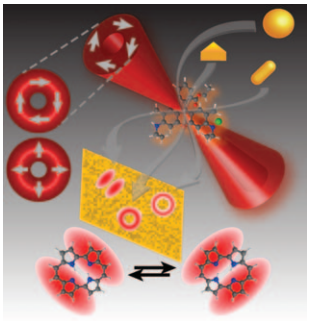
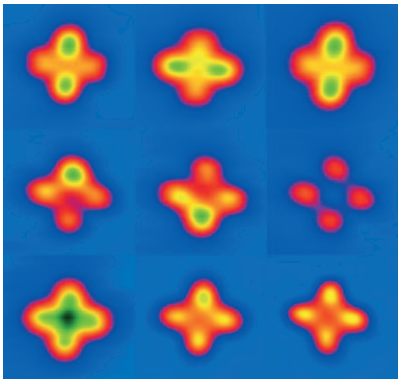
Reviews

Doughnuts for nanotechnology: Higher-order laser modes with a doughnut-shape and a tunable polarization (see picture) have an extraordinary potential for new applications in nanotechnology. They already serve as versatile tools in microscopy and are finding use in many fields of science from pure optics to different branches of applied science including bio- and materials science.



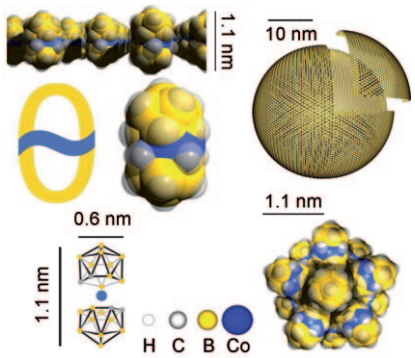
Microscopy Techniques

Communications



Silvered molecules: The controlled metalation of individual phthalocyanine (H_2Pc) molecules to form AgPc was observed by low-temperature scanning tunneling microscopy (STM). Stepwise dehydrogenation was followed by Ag^+ implantation; tautomerization and hydrogen atom hopping within the H_2Pc inner ring were also induced by electron injection from the STM tip.

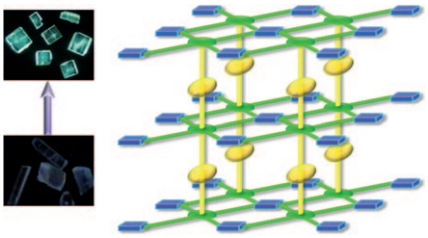
Surface Chemistry



Sandwiched: The cobaltabisdicarbollide (mono-)anion ($[3,3'\text{-}Co(1,2\text{-}C_2B_9H_{11})_2]^-$, $COSAN^-$) forms monolayer vesicles at low concentrations in water (see picture). An increase in concentration leads to a Coulomb explosion of the closely packed vesicles into small micelles, which results in the coexistence of both aggregation states at higher concentrations.

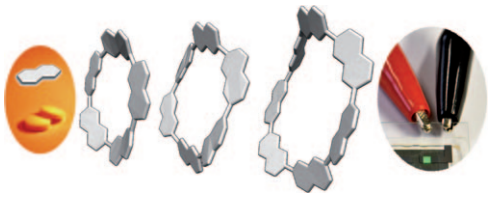
Vesicles

Contents



The same but different: Four samples of an organic zinc phosphate hybrid material prepared at four different temperatures have the same structure but show distinct luminescence (see pictures of two of the samples).

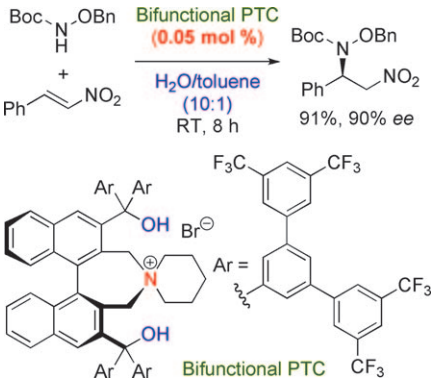
Luminescent Materials



Mothball macrocycles: Naphthalene has been coupled to form macrocylic oligomers composed of five, six, and seven naphthalene units (see picture). Thermally stable macrocycles bearing 50, 60, or 70 π electrons within the hydrocarbon structure form columnar assemblies in crystals and serve as bipolar carrier transport materials in organic light-emitting diode devices.

Organic Materials

It's just a phase: Environmentally benign title reaction was achieved under neutral phase-transfer conditions in the presence of 0.05 mol% of a chiral bifunctional ammonium bromide. The importance of bifunctional design of the chiral phase-transfer catalysts (PTC) was clearly shown in the transition-state model of the reaction based on the single-crystal X-ray structure. Bn = benzyl, Boc = *tert*-butoxycarbonyl.

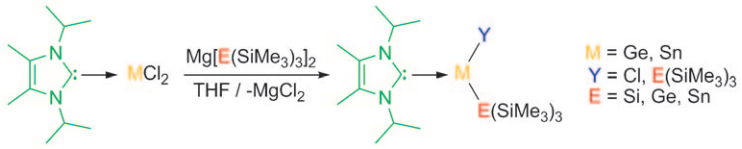


Phase-Transfer Catalysis

It's the iodine: The intra- and intermolecular title reaction is catalyzed by an in situ generated ammonium (hypo)iodite species. Either H_2O_2 or *tert*-butyl hydroperoxide (TBHP) can be used as an environmentally benign oxidant and a wide range of substrates react to give the corresponding α-acyloxycarbonyl compounds in good to excellent yields.

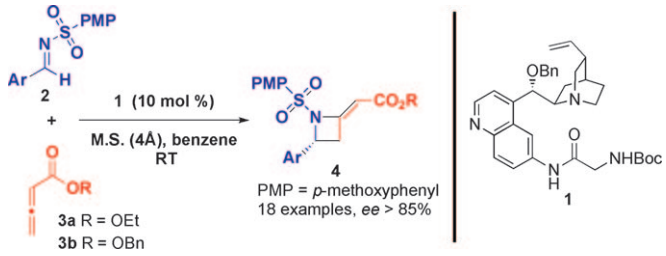
Oxidation

Contents



A selective route: Hypermetallyl germanium(II) and tin(II) compounds (see scheme) were prepared using dimetallyl magnesium reagents and were fully characterized. These derivatives, which contain good leaving substituents, might be suitable candidates for the preparation of nanomaterial alloys.

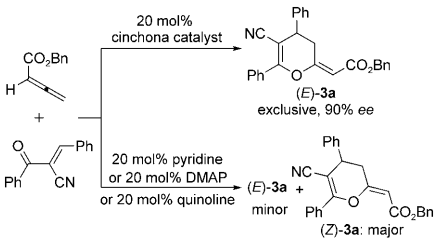
Group 14 Compounds



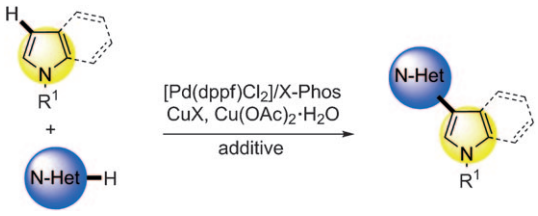
Mix and go: The quinidine amide **1** catalyzed [2+2] cycloaddition between *N*-sulfonylimines **2** and alkyl 2,3-butadienoates **3** afforded the *R*-configured azetidines **4** in excellent yields and enantioselectivities (M.S. = molecular sieve). The *S* enantiomer was obtained when a quinine amide catalyst, the pseudoenantiomer of **1**, was used.

Organocatalysis

Biologically significant polysubstituted dihydropyrans have been prepared in high to excellent yields and enantioselectivities (see scheme). The interaction between functional groups in the zwitterionic intermediate, which is generated by addition of the amine catalyst to the allenoate substrate, is thought to play a crucial role in the stereochemical outcome.
Bn = benzyl, DMAP = 4-dimethylaminopyridine.



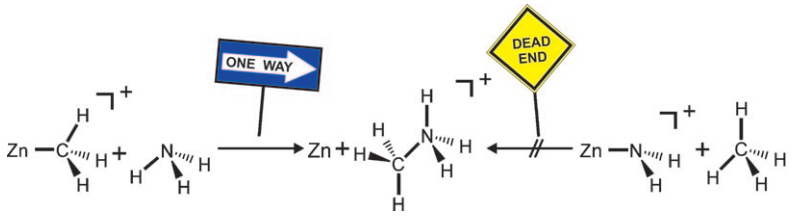
Organocatalysis



Doubling up: The highly regioselective C3 heteroarylation of either an indole or a pyrrole with an array of electron-rich and electron-poor N-heteroarenes has been carried out using a palladium/copper catalytic system. The double C–H activation selectively delivers the unsymmetrical bi-heteroaryl product instead of the homocoupled products.

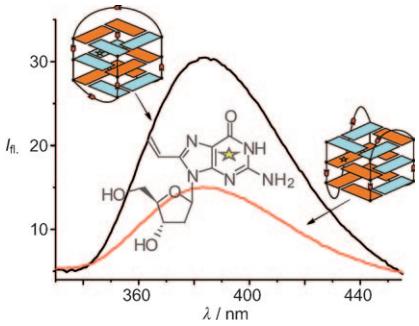
Cross-Coupling

Contents



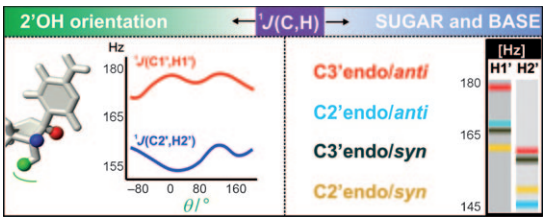
Rally from C to N: The goal of the race concerns connecting carbon and nitrogen. While the S_N2-type mechanism constitutes a one-way road to produce $CH_3NH_3^+$ from $Zn(CH_3)^+$ and NH_3, activation of the C–H bond of methane in the $Zn(NH_2)^+/CH_4$ system is a blind alley (see scheme).

Gas-Phase Chemistry



A one light strand: 2′-Deoxyguanosine was made fluorescent by attaching a vinyl group at the C8 position (see structure). The resulting fluorophore is highly sensitive towards DNA double-strand formation and alterations in the secondary structure of its parent oligonucleotide, such as formation of different quadruplex structures. These differences can be readily detected in the emission spectrum (see picture).

Fluorescent Guanine



Pucker up! The 2′OH group in RNA is responsible for the change in the predominant sugar conformation, which is key to the catalytic activity and involved in critical H-bonding interactions. In a combined NMR spectroscopic and quantum chemical investigation, the conformational dependence of ^1J(C1′,H1′) and ^1J(C2′,H2′) coupling constants is derived. The precise conformation of the sugar, nucleobase, and the 2′OH group can be determined based on these coupling constants.

RNA Conformations

Supporting information is available on www.angewandte.org (see article for access details).

A video clip is available as Supporting Information on www.angewandte.org (see article for access details).

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Service