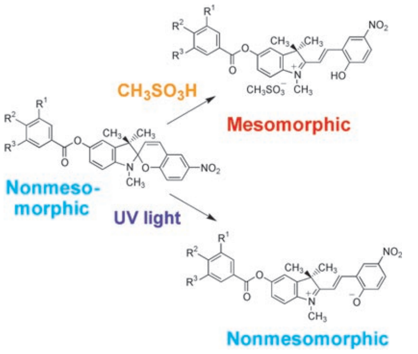
Liquid Crystals

*B.-H. Tan, M. Yoshio, T. Kato**

Induction of Columnar and Smectic Phases for Spiropyran Derivatives: Effects of Acidichromism and Photochromism

Chem. Asian J.
DOI: **10.1002/asia.200700225**



By means of chemical or light? Liquid-crystalline phases of spiropyran derivatives are formed by acid-induced spiro–protonated-merocyanine isomerization. On the contrary, photoirradiation of the spiropyran compounds does not lead to the formation of a mesophase.

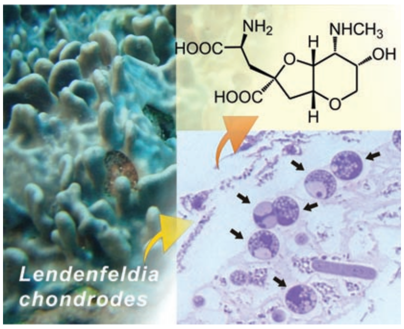
Natural Products

R. Sakai, K. Yoshida, A. Kimura, K. Koike, M. Jimbo, K. Koike, A. Kobiyama, H. Kamiya*

Cellular Origin of Dysiherbaine, an Excitatory Amino Acid Derived from a Marine Sponge

ChemBioChem
DOI: **10.1002/cbic.200700498**

Pinpointing responsibility: The marine-sponge toxin dysiherbaine was shown by immunohistochemical methods to be localized in the cells of the endosymbiotic cyanobacteria *Synechosystis* harbored in the host sponge *Lendenfeldia chondrodes* (see light micrograph of cells). Chemical analysis indicated the presence of two chemotypes of the cyanobacterium, only one of which appears to produce the toxin.



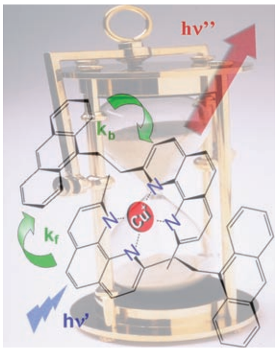
Electronic Engineering

*N. Armaroli**

Electronic Excited-State Engineering

ChemPhysChem
DOI: **10.1002/cphc.200700794**

Long-living complexes: A Cu^I- bisphenanthroline complex exhibits a 15-fold prolongation of its excited state lifetime due to the planned intervention of an appended anthracene fragment (see picture). This elegant example of electronic excited-state engineering extends the range of possibilities for improving the photophysical properties of Cu^I complexes.



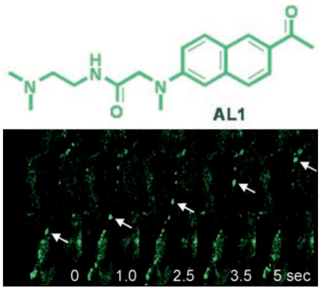
Fluorescent Probes

*H. M. Kim, M. J. An, J. H. Hong, B. H. Jeong, O. Kwon, J.-Y. Hyon, S.-C. Hong, K. J. Lee, B. R. Cho**

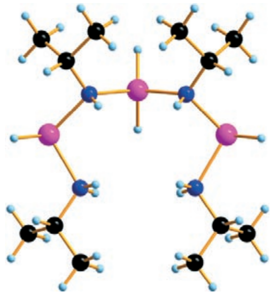
Two-Photon Fluorescent Probes for Acidic Vesicles in Live Cells and Tissue

Angew. Chem. Int. Ed.
DOI: **10.1002/anie.200704586**

Move with the groove: Two-photon fluorescent pH probes and a two-photon lysotracker (AL1) can visualize acidic vesicles in live cells and living tissue for a long period of time without mistargeting and photobleaching problems. Using AL1, vesicles can be tracked in real time (see picture).



Cationic Gallane Derivatives



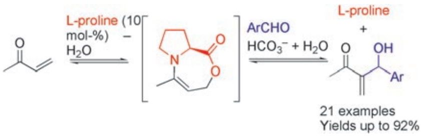
$LiGaH_4$ can be made to react with a 50 % molar excess of the amine hydrochloride $[RNH_3]Cl$ to afford the cationic gallane derivative $[(RH_2N)_2GaH_2]^+Cl^-$, with R = Me or *i*Pr, in 45–65 % yield. A significant secondary product for R = *i*Pr is the trigallium compound $[\{(iPrH_2N)GaH_2NHiPr\}_2GaH_2]^+Cl^-$. The structures and other properties of such compounds give evidence of their mediating the formation of neutral amidogallanes, as well as having wider possible implications.

C. Y. Tang, A. R. Cowley, A. J. Downs, S. Marchant, S. Parsons*

Formation and Characterization of the Cationic Gallane Derivatives $[(RH_2N)_2GaH_2]Cl$ (R = Me or *i*Pr) and $[\{(iPrH_2N)GaH_2NHiPr\}_2GaH_2]Cl$

Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.200701120**

Organocatalysis



Does the mechanistic pathway of the title reaction pass through an enaminolactone intermediate? Both the experimental and theoretical data have allowed us to suggest a plausible bifunctional catalytic role for proline in the Baylis–Hillman reaction between MVK or EVK and aryl aldehydes using hydrogen carbonate as a co-catalyst.

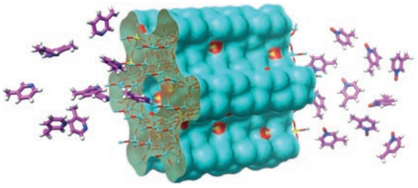
M. Gruttadauria, F. Giacalone, P. Lo Meo, A. Mossuto Marculescu, S. Riela, R. Noto*

First Evidence of Proline Acting as a Bifunctional Catalyst in the Baylis–Hillman Reaction Between Alkyl Vinyl Ketones and Aryl Aldehydes

Eur. J. Org. Chem.
DOI: **10.1002/ejoc.200701112**

Heterogeneous Catalysis

Its green and selective! Single-site heterogeneous catalysts (shown here) can be judiciously combined with a solid source of active oxygen for the single-step, solvent-free, and environmentally benign production of Niacin (used in the preparation of Vitamin B_3) and other fine-chemical, pharmaceutical, and agrochemical intermediates.

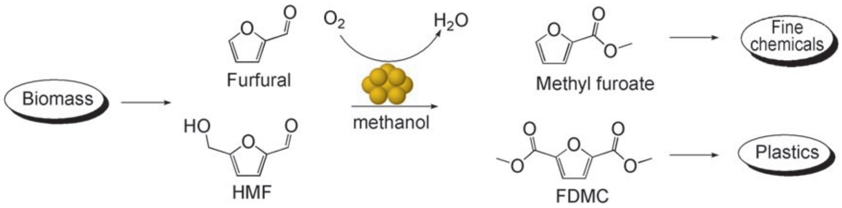


R. Raja, J. M. Thomas,* M. Greenhill-Hooper, S. V. Ley, F. A. Almeida Paz*

Facile, One-Step Production of Niacin (Vitamin B_3) and Other Nitrogen-Containing Pharmaceutical Chemicals with a Single-Site Heterogeneous Catalyst

Chem. Eur. J.
DOI: **10.1002/chem.200701679**

Heterogeneous Catalysis



Aerobic exercise: The biomass-derived platform chemicals furfural and hydroxymethylfurfural (HMF) are readily oxidized in methanol in the presence of oxygen and a supported gold nanoparticle catalyst to afford the corresponding methyl esters (see scheme). Thus, furfural was oxidized to methyl furoate under very mild conditions, and HMF was converted into furan-2,5-dimethylcarboxylate (FDMC), a potential polymer building block, with high yields.

*E. Taarning, I. S. Nielsen, K. Egeblad, R. Madsen, C. H. Christensen**

Chemicals from Renewables: Aerobic Oxidation of Furfural and Hydroxymethylfurfural over Gold Catalysts

ChemSusChem
DOI: **10.1002/cssc.200700033**