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See Bo Wang, Ying-Wei Yang *et al.*, pp. 1640–1644.
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Inside cover
See Stuart L. James *et al.*, pp. 1645–1649.
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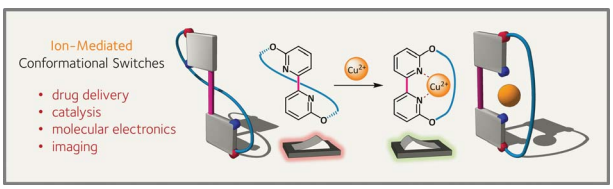
PERSPECTIVES



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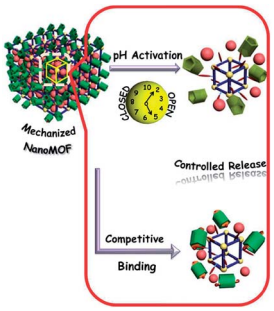

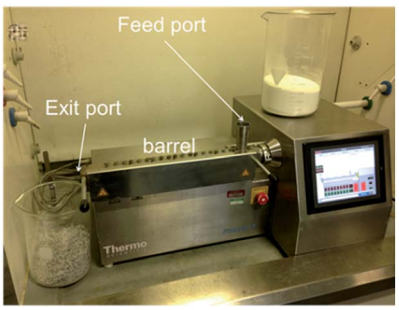

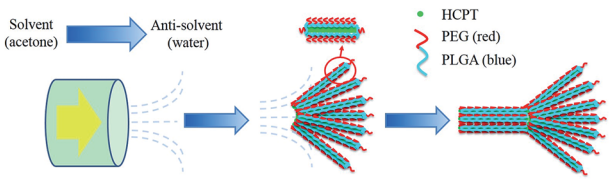

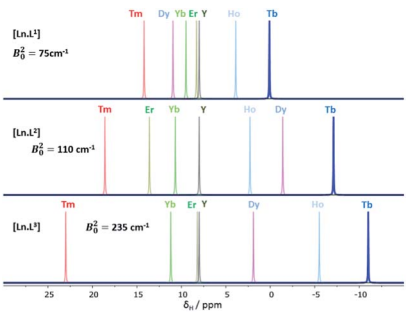

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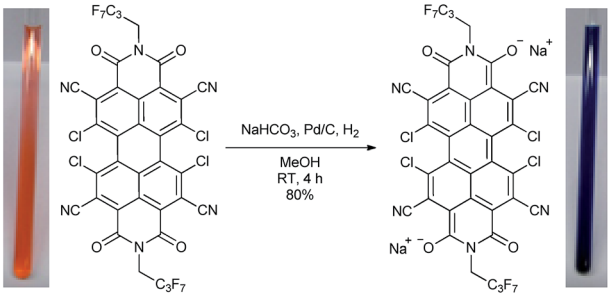
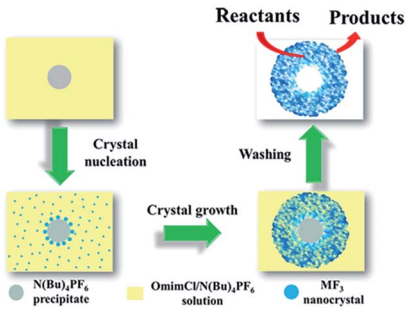


An ambient stable core-substituted perylene bisimide dianion: isolation and single crystal structure analysis

Sabine Seifert, David Schmidt and Frank Würthner*

The reduction of a highly electron deficient PBI afforded the corresponding dianion disodium salt that was characterized by single crystal structure analysis.

1668

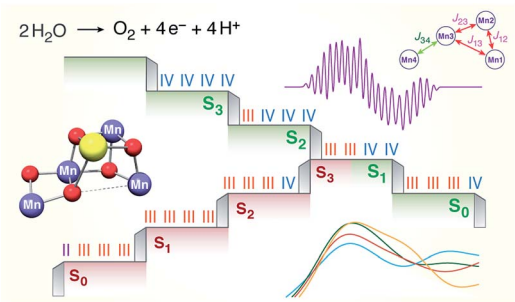


Mesoporous inorganic salts with crystal defects: unusual catalysts and catalyst supports

Xinchen Kang, Wenting Shang, Qinggong Zhu, Jianling Zhang, Tao Jiang,* Buxing Han,* Zhonghua Wu, Zhihong Li and Xueqing Xing

Mesoporous LaF_3, NdF_3, and YF_3 particles with crystal defects, which are excellent catalysts and catalyst supports, have been synthesized successfully.

1676

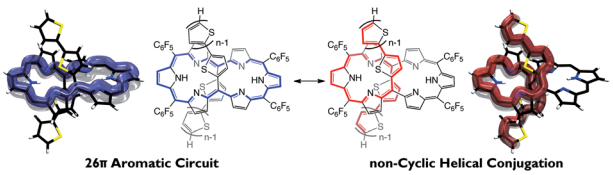


Metal oxidation states in biological water splitting

Vera Krewald, Marius Retegan, Nicholas Cox, Johannes Messinger, Wolfgang Lubitz, Serena DeBeer, Frank Neese and Dimitrios A. Pantazis*

A central question in biological water splitting concerns the oxidation states of the manganese ions that comprise the oxygen-evolving complex of photosystem II.

1696

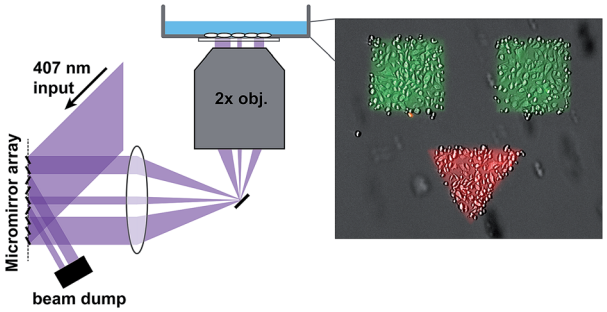


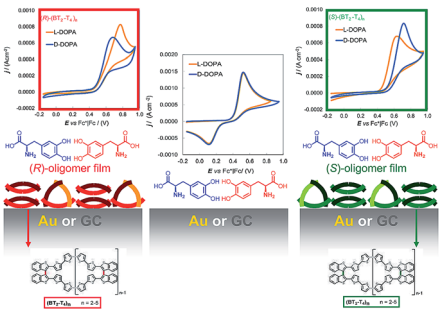
5,20-Bis(α-oligothienyl)-substituted [26]hexaphyrins possessing electronic circuits strongly perturbed by *meso*-oligothienyl substituents

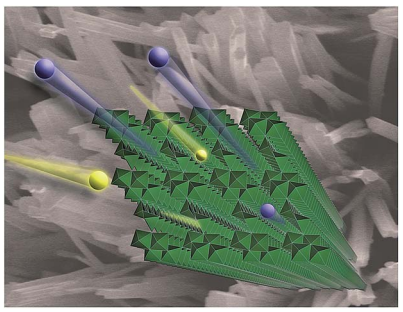
Hirotaka Mori, Masaaki Suzuki, Woojae Kim, Jong Min Lim, Dongho Kim* and Atsuhiro Osuka*

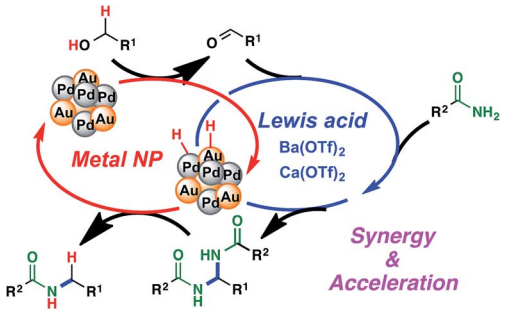
A series of [26]hexaphyrins(1.1.1.1.1.1) bearing two α-oligothienyl substituents at 5,20-positions have been synthesised and are shown to have a dumbbell hexaphyrin conformation, to which the α-oligothienyl groups are linked to form an acyclic helix-like conjugated network.

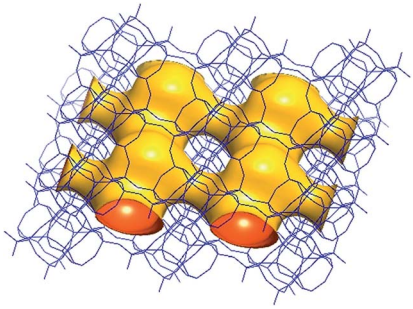
EDGE ARTICLES







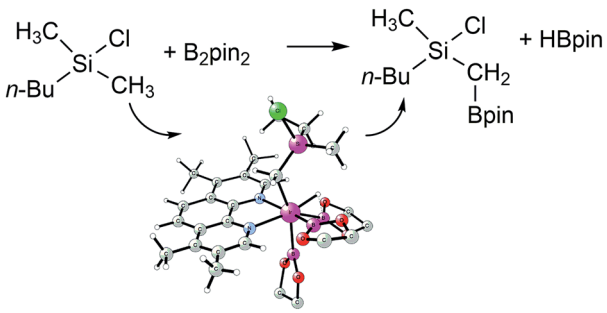




CIT-7, a crystalline, molecular sieve with pores bounded by 8 and 10-membered rings

Joel E. Schmidt, Dan Xie, Thomas Rea and Mark E. Davis*

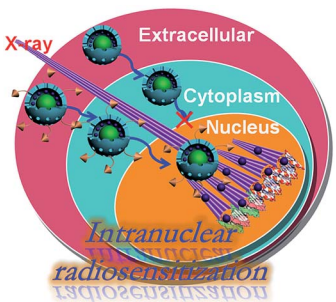
CIT-7, a new microporous material that contains 8 and 10-membered rings prepared as a silicate, an aluminosilicate or titanosilicate.



Mechanism, reactivity, and selectivity of the iridium-catalyzed C(sp^3)–H borylation of chlorosilanes

Genping Huang, Marcin Kalek, Rong-Zhen Liao and Fahmi Himo*

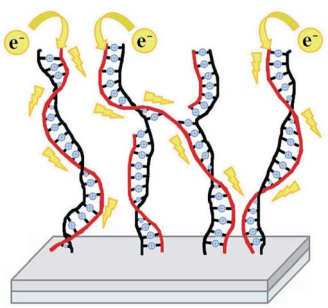
DFT calculations are used to elucidate the reaction mechanism, the role of the chlorosilyl group, and primary *vs.* secondary and C(sp^3)–H *vs.* C(sp^2)–H selectivity of the iridium-catalyzed borylation of chlorosilanes.



Design of an intelligent sub-50 nm nuclear-targeting nanotheranostic system for imaging guided intranuclear radiosensitization

Wenpei Fan, Bo Shen, Wenbo Bu,* Xiangpeng Zheng, Qianjun He, Zhaowen Cui, Kuaile Zhao, Shengjian Zhang and Jianlin Shi*

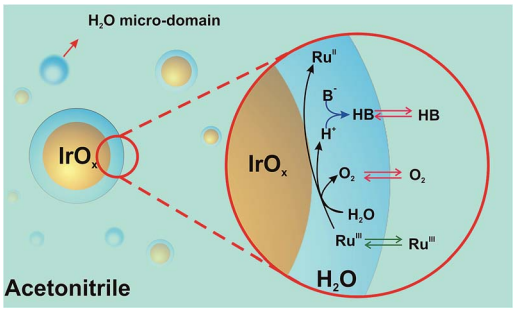
MR/UCL bimodal imaging guided intranuclear radiosensitization was firstly achieved by an intelligent nuclear-targeting nanotheranostic system.

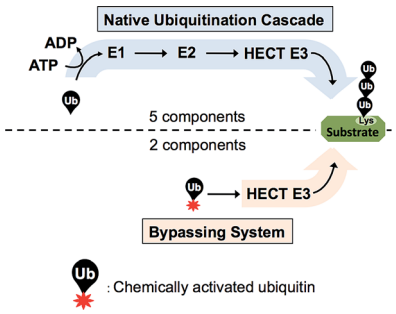


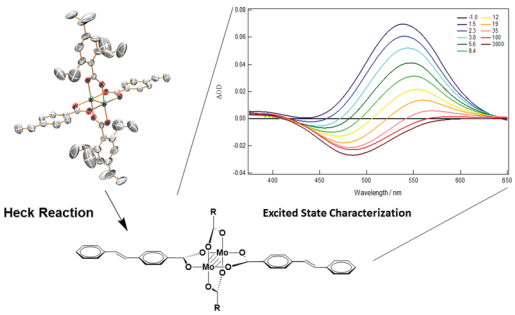
A facile route to electronically conductive polyelectrolyte brushes as platforms of molecular wires

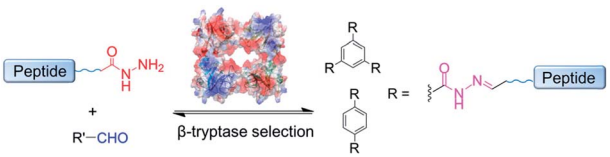
Karol Wolski, Michał Szuwarzyński and Szczepan Zapotoczny*

Conjugated polyelectrolyte brushes grafted from a conductive surface and forming a 1D macromolecular pathway for charge transport are synthesized.









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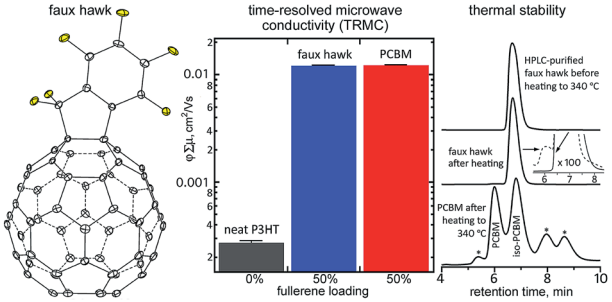
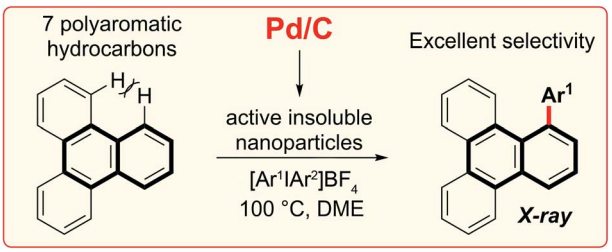


A faux hawk fullerene with PCBM-like properties

Long K. San, Eric V. Bukovsky, Bryon W. Larson, James B. Whitaker, S. H. M. Deng, Nikos Kopidakis,* Garry Rumbles,* Alexey A. Popov,* Yu-Sheng Chen,* Xue-Bin Wang,* Olga V. Boltalina* and Steven H. Strauss*

A fluorinated faux hawk fullerene with comparable OPV-relevant TRMC performance and far greater thermal stability than PCBM is reported.

1816

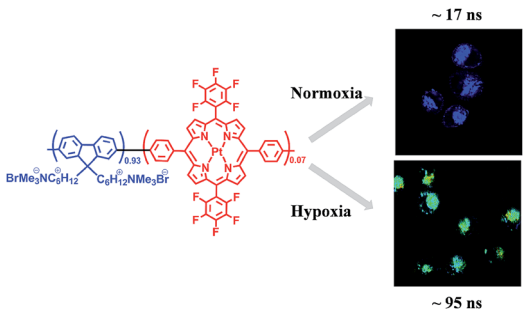


C–H arylation of triphenylene, naphthalene and related arenes using Pd/C

Karl D. Collins, Roman Honeker, Suhelen Vásquez-Céspedes, Dan-Tam D. Tang and Frank Glorius*

A highly selective arylation of a number of polyaromatic hydrocarbons (PAHs) with aryliodonium salts and Pd/C as the only reagent is reported.

1825

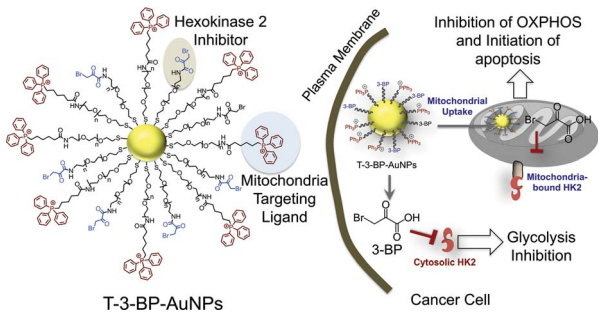


Fluorescent/phosphorescent dual-emissive conjugated polymer dots for hypoxia bioimaging

Qiang Zhao,* Xiaobo Zhou, Tianye Cao, Kenneth Yin Zhang, Lijuan Yang, Shujuan Liu, Hua Liang, Huiran Yang, Fuyou Li* and Wei Huang*

Fluorescent/phosphorescent dual-emissive conjugated polymer dots were designed and synthesized, which were used for tumor hypoxia sensing *via* ratiometric imaging and photoluminescence lifetime imaging.

1832

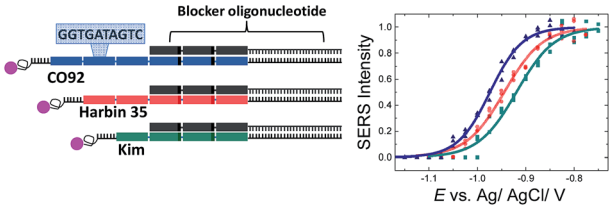


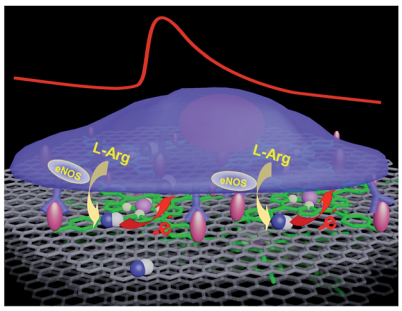
The energy blocker inside the power house: mitochondria targeted delivery of 3-bromopyruvate

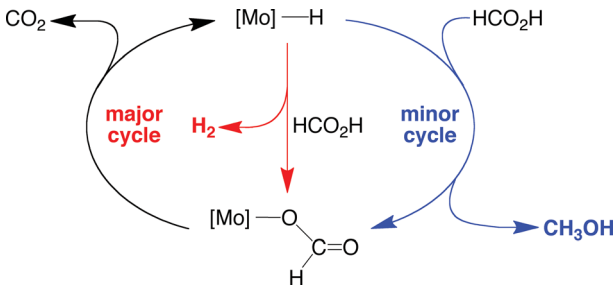
Sean Marrache and Shanta Dhar*

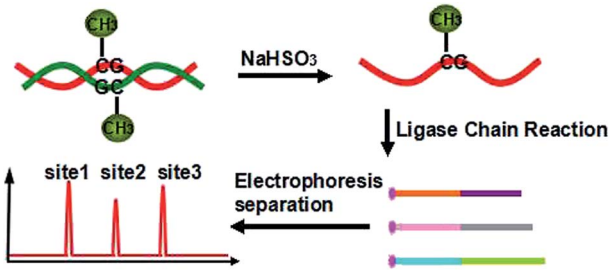
Mitochondrial delivery of 3-bromopyruvate for metabolic reprogramming of cancer cells.

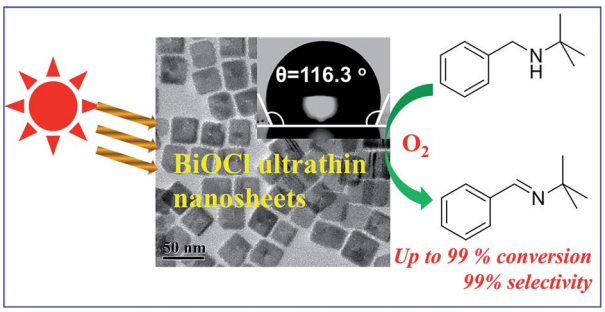
EDGE ARTICLES







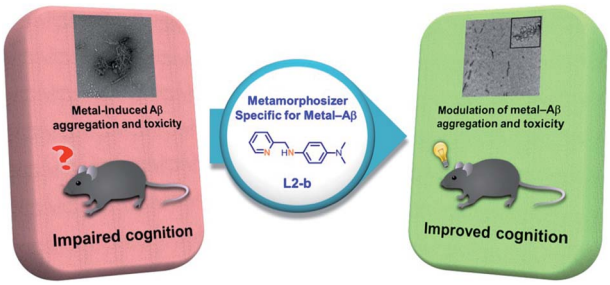




Well-defined BiOCl colloidal ultrathin nanosheets: synthesis, characterization, and application in photocatalytic aerobic oxidation of secondary amines

Yihui Wu, Bo Yuan, Mingrun Li, Wen-Hua Zhang,* Yan Liu* and Can Li*

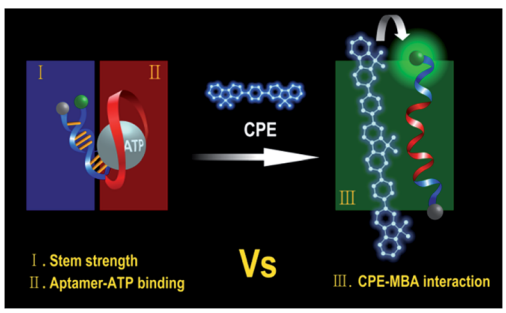
Well-defined BiOCl ultrathin nanosheets were prepared by a facile colloidal route, and exhibit high photocatalytic performance toward the oxidation of secondary amines to corresponding imines under visible irradiation.



A rationally designed small molecule for identifying an *in vivo* link between metal–amyloid-β complexes and the pathogenesis of Alzheimer's disease

Michael W. Beck, Shin Bi Oh, Richard A. Kerr, Hyuck Jin Lee, So Hee Kim, Sujeong Kim, Milim Jang, Brandon T. Ruotolo,* Joo-Yong Lee* and Mi Hee Lim*

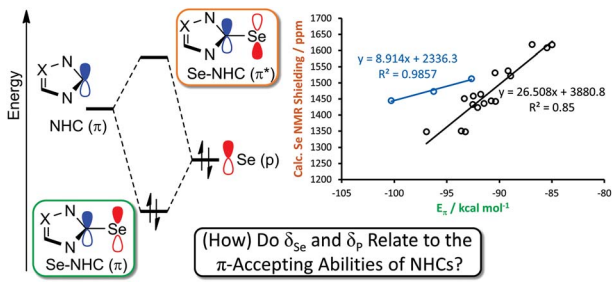
An *in vivo* chemical tool designed to target metal–Aβ complexes and modulate their activity was applied to the 5XFAD mouse model of Alzheimer's disease (AD) demonstrating the involvement of metal–Aβ in AD pathology.



Principal factors that determine the extension of detection range in molecular beacon aptamer/conjugated polyelectrolyte bioassays

Ji-Eun Jeong, Boram Kim, Shinjae Woo, Sungu Hwang, Guillermo C. Bazan* and Han Young Woo*

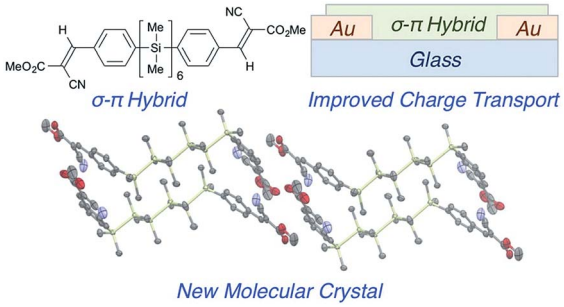
A new bioassay strategy based on the molecular beacon aptamer/conjugated polyelectrolyte demonstrates a fine-tuning of the detection range and limit of detection for weakly-binding targets.

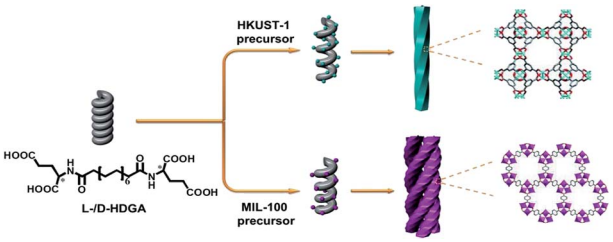


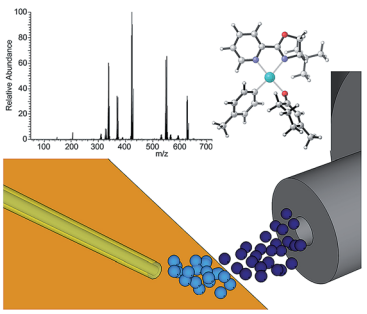
What can NMR spectroscopy of selenoureas and phosphinidenes teach us about the π-accepting abilities of *N*-heterocyclic carbenes?

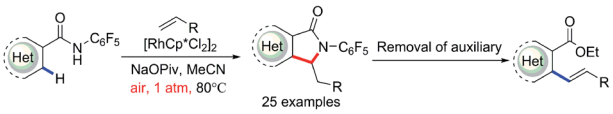
Sai V. C. Vummaleti, David J. Nelson, Albert Poater, Adrián Gómez-Suárez, David B. Cordes, Alexandra M. Z. Slawin, Steven P. Nolan* and Luigi Cavallo*

The relationship between the NMR chemical shifts of phosphinidene and selenourea compounds and the π-accepting ability of the related carbene ligands has been investigated.









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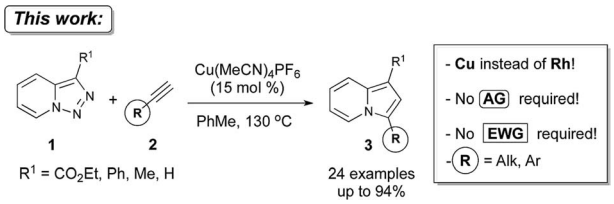
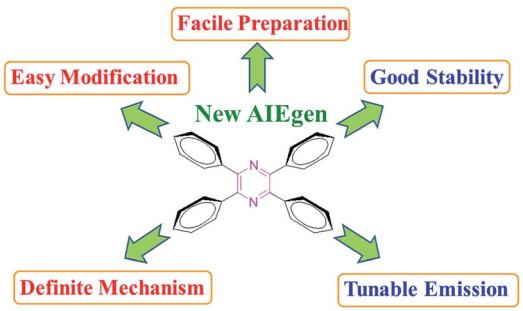


Cu-catalyzed transannulation reaction of pyridotriazoles with terminal alkynes under aerobic conditions: efficient synthesis of indolizines

V. Helan, A. V. Gulevich and V. Gevorgyan*

A Cu(I)-catalyzed denitrogenative transannulation reaction of pyridotriazoles with terminal alkynes en route to indolizines was developed.

1932

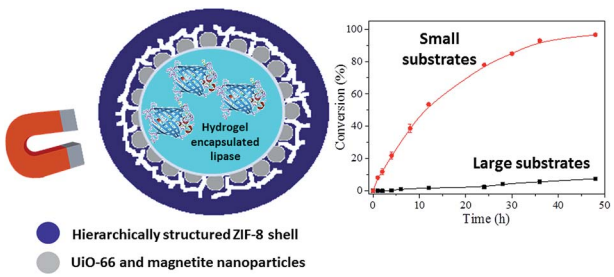


Tetraphenylpyrazine-based AIEgens: facile preparation and tunable light emission

Ming Chen, Lingzhi Li, Han Nie, Jiaqi Tong, Lulin Yan, Bin Xu, Jing Zhi Sun, Wenjing Tian, Zujin Zhao, Anjun Qin* and Ben Zhong Tang*

Structurally new AIEgens with tunable emission based on tetraphenylpyrazine were rationally designed and readily prepared.

1938

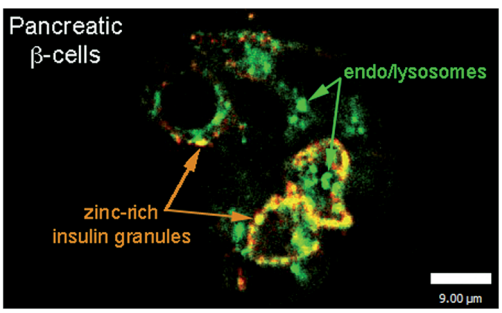


Magnetic MOF microreactors for recyclable size-selective biocatalysis

Jia Huo, Jordi Aguilera-Sigalat, Samir El-Hankari and Darren Bradshaw*

Highly porous magnetic MOF microreactors can be prepared around a Pickering-stabilized hydrogel core, providing a facile means for the encapsulation of enzymes for size-selective biocatalysis.

1944



A far-red emitting probe for unambiguous detection of mobile zinc in acidic vesicles and deep tissue

Pablo Rivera-Fuentes, Alexandra T. Wrobel, Melissa L. Zastrow, Mustafa Khan, John Georgiou, Thomas T. Luyben, John C. Roder, Kenichi Okamoto and Stephen J. Lippard*

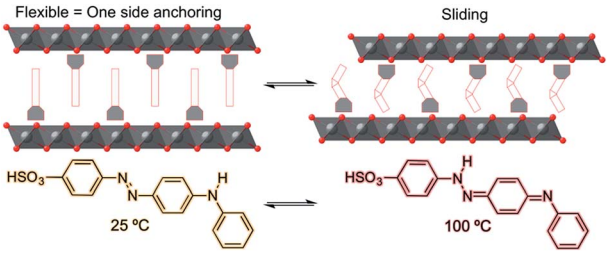
A fluorescent sensor that is pH-insensitive and compatible with two-photon microscopy was developed and applied to live cell and deep tissue imaging.

1949

Stimuli-responsive hybrid materials: breathing in magnetic layered double hydroxides induced by a thermoresponsive molecule

Gonzalo Abellán, Jose Luis Jordá, Pedro Atienzar, María Varela, Miriam Jaafar, Julio Gómez-Herrero, Félix Zamora, Antonio Ribera, Hermenegildo García* and Eugenio Coronado*

A hybrid magnetic multilayer material consisting of CoAl–LDH ferromagnetic layers intercalated with thermoresponsive molecules diluted with a flexible surfactant has been obtained.

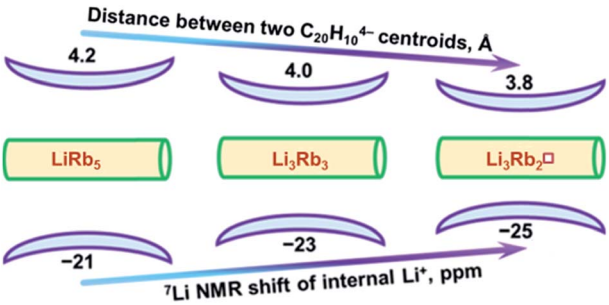


1959

Self-assembly of tetrareduced corannulene with mixed Li–Rb clusters: dynamic transformations, unique structures and record ^{7}Li NMR shifts

Alexander S. Filatov, Sarah N. Spisak, Alexander V. Zabula, James McNeely, Andrey Yu. Rogachev and Marina A. Petrukhina*

The record NMR shifts for the centrally encapsulated lithium ions are correlated with molecular and electronic structures of novel mixed alkali metal sandwiches.

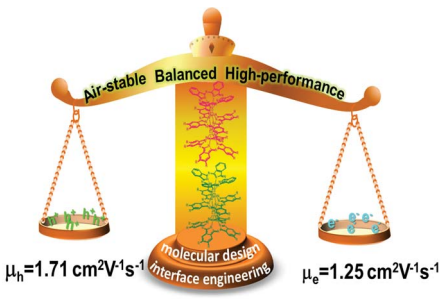


1967

Air-stable ambipolar field-effect transistor based on a solution-processed octanaphthoxy-substituted tris(phthalocyaninato) europium semiconductor with high and balanced carrier mobilities

Xia Kong, Xia Zhang, Dameng Gao, Dongdong Qi, Yanli Chen* and Jianzhuang Jiang*

Simple solvent vapor annealing over QLS film-based OFET devices fabricated from (Pc)Eu[Pc(ONh)$_8$]Eu[Pc(ONh)$_8$] led to a high and balanced ambipolar performance.

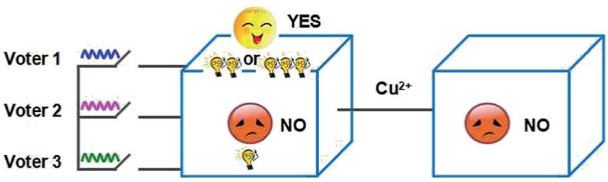


1973

DNA-based visual majority logic gate with one-vote veto function

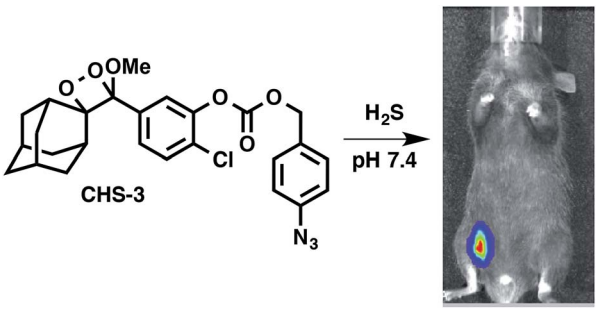
Daoqing Fan, Kun Wang, Jinbo Zhu, Yong Xia, Yanchao Han, Yaqing Liu* and Erkang Wang*

A label-free and enzyme-free three-input majority logic gate with one-vote veto function was developed for the first time.



EDGE ARTICLES

1979

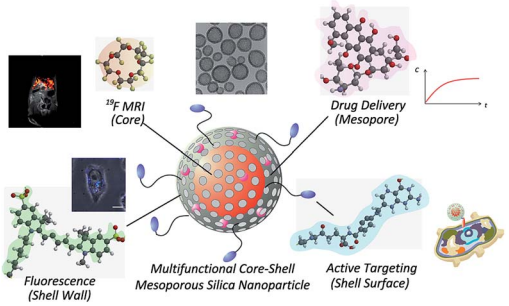


Chemiluminescent probes for imaging H_2S in living animals

J. Cao, R. Lopez, J. M. Thacker, J. Y. Moon, C. Jiang, S. N. S. Morris, J. H. Bauer, P. Tao, R. P. Mason and A. R. Lippert*

Responsive 1,2-dioxetane chemiluminescent probes have been developed that display instantaneous, sensitive, and selective responses to H_2S and are capable of imaging H_2S in living mice.

1986

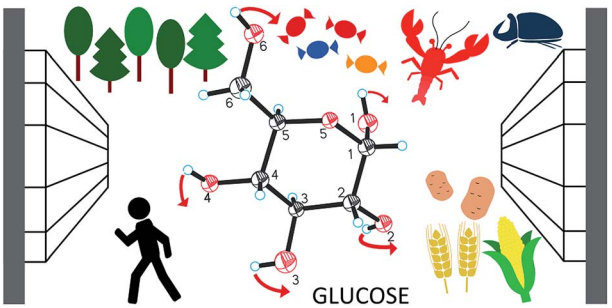


Mesoporous silica nanoparticles for ^{19}F magnetic resonance imaging, fluorescence imaging, and drug delivery

Tatsuya Nakamura, Fuminori Sugihara, Hisashi Matsushita, Yoshichika Yoshioka, Shin Mizukami and Kazuya Kikuchi*

We described perfluorocarbon encapsulated in mesoporous silica nanoparticles which enabled dual modal imaging (NIR/^{19}F MRI) and drug delivery.

1991

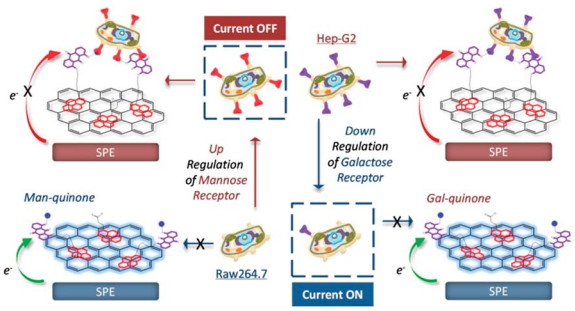


Transformable H-bonds and conformation in compressed glucose

Ewa Patyk and Andrzej Katrusiak*

Upon pressurisation above 5.4 GPa, α-D-glucose transforms into a new polymorph, with an altered molecular conformation and with intermolecular hydrogen bonds reshuffled.

1996



Dynamic tracking of pathogenic receptor expression of live cells using pyrenyl glycoanthraquinone-decorated graphene electrodes

Xiao-Peng He,* Bi-Wen Zhu, Yi Zang, Jia Li,* Guo-Rong Chen, He Tian and Yi-Tao Long*

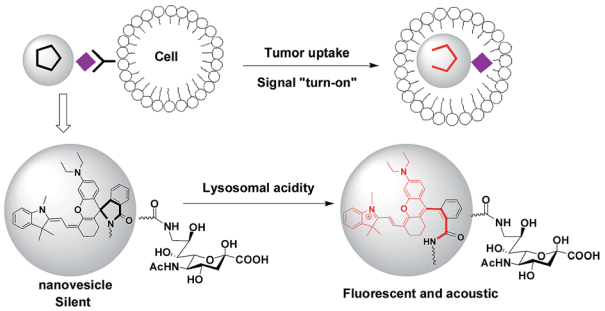
Dynamic tracking of pathogenic receptor expression with live cells is made possible by pyrenyl glycoanthraquinones decorated on graphene electrodes.

2002

A carbohydrate-grafted nanovesicle with activatable optical and acoustic contrasts for dual modality high performance tumor imaging

Xuanjun Wu, Bijuan Lin, Mingzhu Yu, Liu Yang, Jiahuai Han and Shoufa Han*

High-performance illumination of subcutaneous tumor and liver tumor foci was achieved with sialic acid-targeted acid-responsive nanovesicles which become fluorescent and photoacoustic upon internalization into tumor lysosomes.

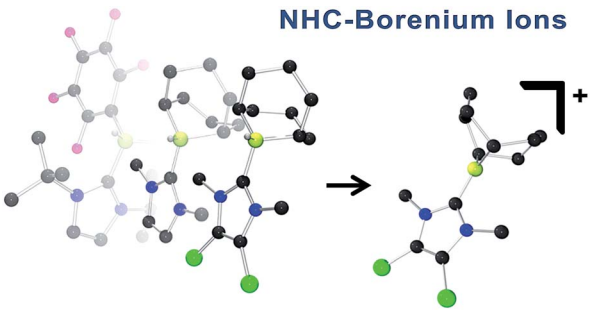


2010

A family of N-heterocyclic carbene-stabilized borenium ions for metal-free imine hydrogenation catalysis

Jeffrey M. Farrell, Roy T. Posaratnanathan and Douglas W. Stephan*

Room-temperature metal-free hydrogenation catalysis.

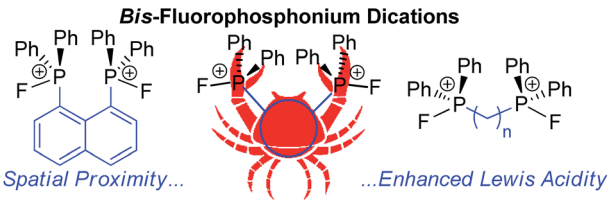


2016

Electrophilic bis-fluorophosphonium dications: Lewis acid catalysts from diphosphines

Michael H. Holthausen, Rashi R. Hiranandani and Douglas W. Stephan*

A series of electrophilic bis-fluorophosphonium dications dervied from diphosphines with naphthalene- and (oligo)-methylene-linkers is presented. The resulting Lewis acidity is demonstrated to depend on the spatial proximity between the P moieties as evidenced in several Lewis acid catalyzed transformations.

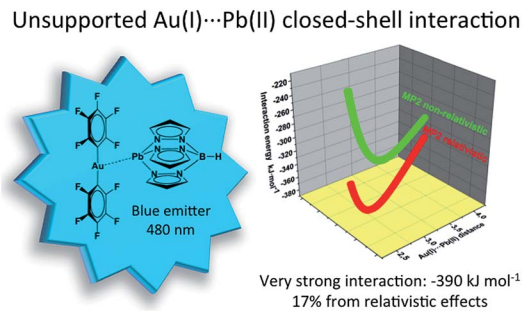


2022

The gold(I)···lead(II) interaction: a relativistic connection

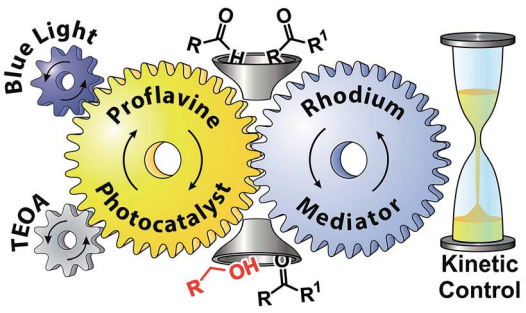
Raquel Echeverría, José M. López-de-Luzuriaga,* Miguel Monge and M. Elena Olmos

The heteronuclear complex $[Pb\{HB(pz)_3\}Au(C_6Cl_5)_2]$ is a blue emitter in the solid state and displays an unprecedented and unsupported Au(I)···Pb(II) contact. *Ab initio* calculations show a very strong metallophilic interaction that is greatly influenced by relativistic effects.



EDGE ARTICLES

2027

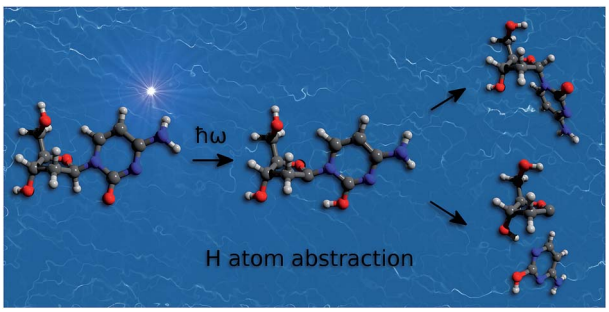


Visible light photocatalytic reduction of aldehydes by Rh(III)–H: a detailed mechanistic study

T. Ghosh, T. Slanina and B. König*

The slow visible light mediated generation of a rhodium hydride allows the chemoselective reduction of aldehydes in the presence of ketones. Electron transfer from the chromophore to the metal complex proceeds *via* a radical anion intermediate or a solvated electron as two competing reaction pathways.

2035

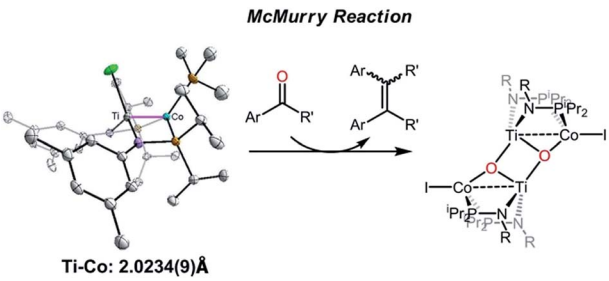


Excited-state hydrogen atom abstraction initiates the photochemistry of β-2′-deoxycytidine

Rafał Szabla,* Jesús Campos, Judit E. Šponer, Jiří Šponer, Robert W. Góra* and John D. Sutherland*

H–D exchange experiments and quantum-chemical calculations elucidate the mechanism of photoinduced anomerisation and nucleobase loss reactions observed in β-2′-deoxycytidine.

2044

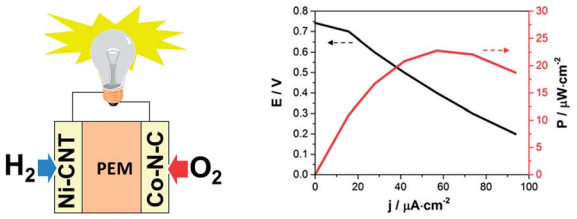


A heterobimetallic complex featuring a Ti–Co multiple bond and its application to the reductive coupling of ketones to alkenes

Bing Wu, Mark W. Bezpalko, Bruce M. Foxman and Christine M. Thomas*

A Ti/Co heterobimetallic complex featuring a very short metal–metal triple bond has been synthesized. This complex promotes the reductive coupling reaction of aryl ketones into alkenes.

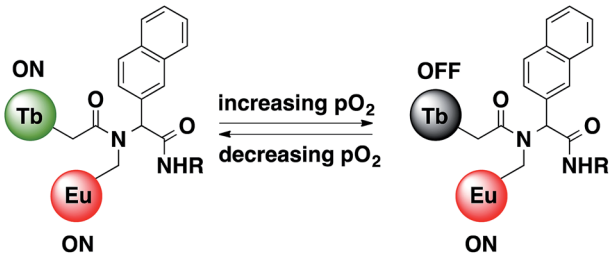
2050

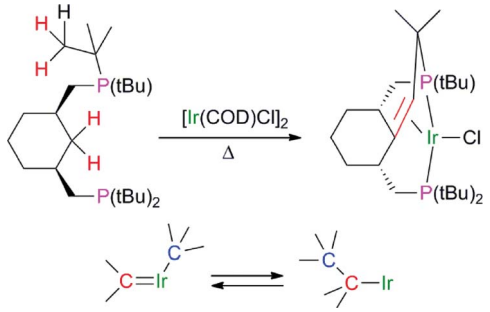


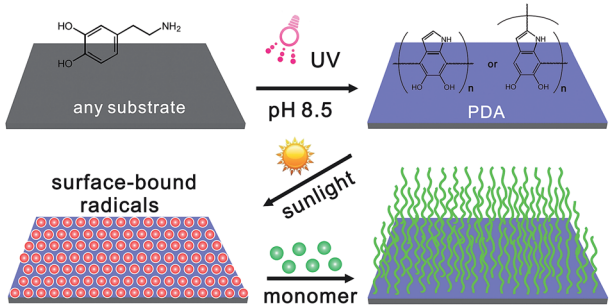
A noble metal-free proton-exchange membrane fuel cell based on bio-inspired molecular catalysts

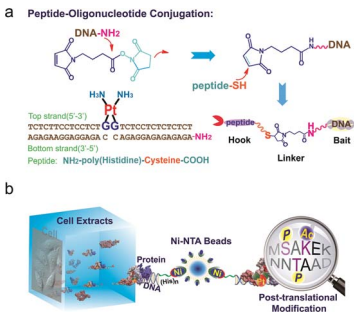
P. D. Tran, A. Morozan, S. Archambault, J. Heidkamp, P. Chenevier, H. Dau, M. Fontecave, A. Martinent,* B. Jousselme* and V. Artero*

Bio-inspired chemistry allowed for the development of the first noble metal-free polymer electrolyte membrane hydrogen fuel cell (PEMFC). The device proved operational under technologically relevant conditions.









EDGE ARTICLES

CORRECTION

2122

Correction: Utilizing the bioorthogonal base-pairing system of L-DNA to design ideal DNA nanocarriers for enhanced delivery of nucleic acid cargos

Kyoung-Ran Kim, Taemin Lee, Byeong-Su Kim and Dae-Ro Ahn*