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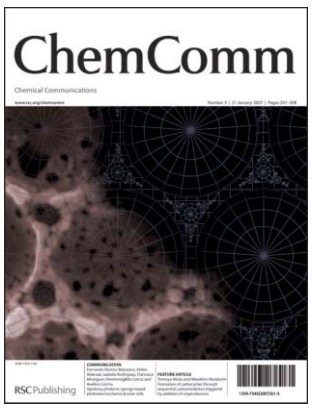
ISSN 1359-7345 CODEN CHCOFS (3) 201–308 (2007)



Cover
See Francisco Meseguer *et al.*, page 242.
Apollony photonic sponges are effective to harvest photons in a broad frequency region. They can have applications to photovoltaic solar cells.
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Inside cover
See Mikio Miyake *et al.*, page 245.
The growth of tiny single-crystalline platinum nanowires.
Image reproduced by permission of Zhongrong Shen, Mami Yamada and Mikio Miyake, *Chem. Commun.*, 2007, 245.

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Chemical Science

January 2007/Volume 4/Issue 1

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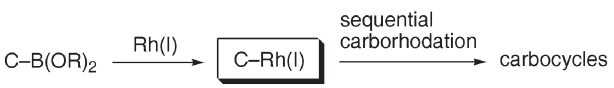
FEATURE ARTICLE



Chemical Communications (print: ISSN 1359-7345; electronic: ISSN 1364-548X) is published 48 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF. All orders, with cheques made payable to the Royal Society of Chemistry, should be sent to RSC Distribution Services, c/o Portland Customer Services, Commerce Way, Colchester, Essex, UK CO2 8HP. Tel +44 (0)1206 226050; E-mail sales@rscdistribution.org

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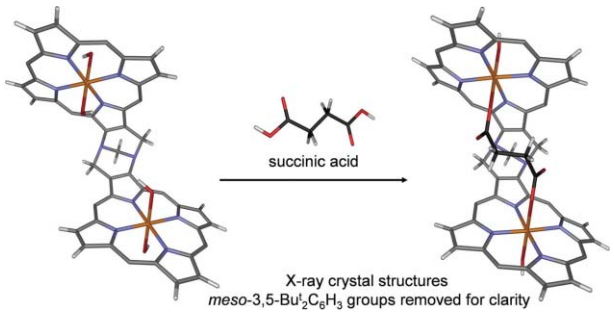
Cavity effect amplification in the recognition of dicarboxylic acids by initial ditopic H-bond formation followed by kinetic trapping

Peter R. Brotherhood, Richard A.-S. Wu, Peter Turner and Maxwell J. Crossley*

Di[dihydroxotin(IV)] Tröger's base bis-porphyrin, a host molecule with two internal and two external guest interaction sites, binds $\leqslant 1$ equivalent of dicarboxylic acid quantitatively within the chiral cavity, a regioselectivity amplified by initial ditopic H-bond formation, followed by kinetic trapping.



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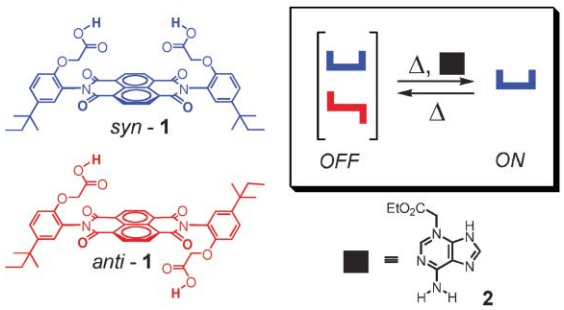
A supramolecular switch with molecular memory

Judith M. Lavin and Ken D. Shimizu*

A room temperature stable supramolecular switch that can maintain an ON or OFF state in the presence or absence of guest.



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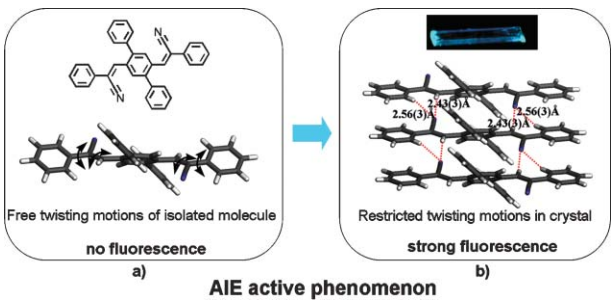
Tight intermolecular packing through supramolecular interactions in crystals of cyano substituted oligo(*para*-phenylene vinylene): a key factor for aggregation-induced emission

Yupeng Li, Feng Li, Houyu Zhang, Zengqi Xie, Weijie Xie, Hai Xu, Bao Li, Fangzhong Shen, Ling Ye, Muddasir Hanif, Dongge Ma and Yuguang Ma*

Tight intermolecular packing through strong supramolecular interactions leads to high luminescence efficiency in crystals of an AIE active molecule CN-DPDSB.



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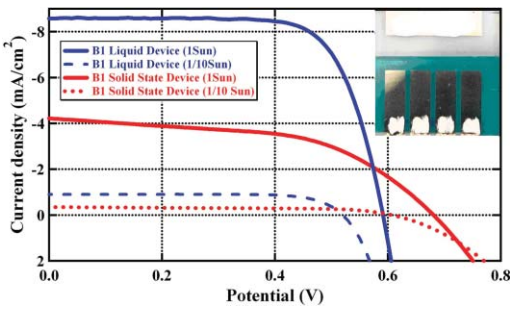
A novel blue dye for near-IR 'dye-sensitised' solar cell applications

Anthony Burke, Lukas Schmidt-Mende, Seigo Ito and Michael Grätzel*

A squaraine dye incorporating two carboxylic acid attaching groups has been synthesised and used successfully in both liquid and solid-state solar cells.



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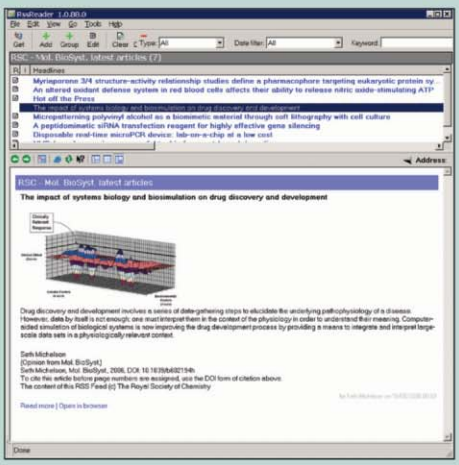

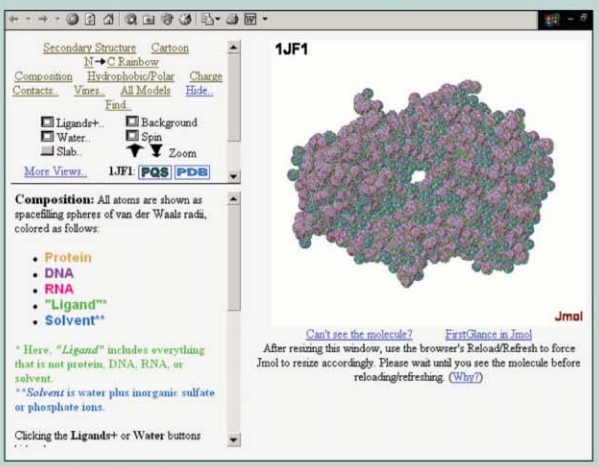

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Solvent-modulated reversible conversion of a [2 × 2]-grid into a pincer-like complex

Juan Ramírez, Adrian-Mihail Stadler, Nathalie Kyritsakas and Jean-Marie Lehn*

A triazine-derived ligand reacts with one equivalent of Co(II) salts to give paramagnetic complexes, a [2 × 2]-grid like tetranuclear complex and a pincer-like mononuclear complex, which can be reversibly interconverted, depending on the medium and additives.

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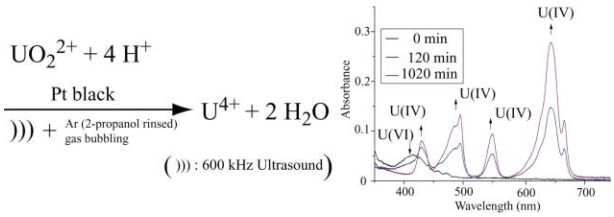
A remote valency control technique: catalytic reduction of uranium(VI) to uranium(IV) by external ultrasound irradiation

Takashi Toraishi,* Takaumi Kimura and Makoto Arisaka

We report that the reducibility which is induced by ultrasound irradiation is notably enhanced by a Pt black catalyst; the highly stable uranium (VI) in acidic solution was reduced to uranium (IV) by an external ultrasound irradiation in the presence of a Pt black catalyst.



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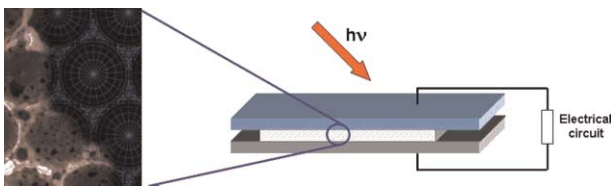
Apollony photonic sponge based photoelectrochemical solar cells

Fernando Ramiro-Manzano, Pedro Atienzar, Isabelle Rodriguez, Francisco Meseguer,* Hermenegildo Garcia and Avelino Corma*

Photoelectrochemical solar cell with a quasi-fractal topology.



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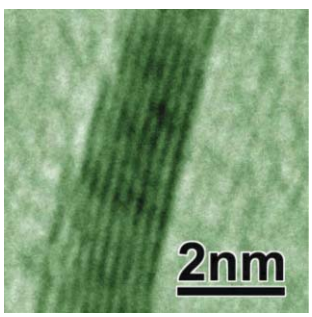
Preparation of single-crystalline platinum nanowires with small diameters under mild conditions

Zhongrong Shen, Mami Yamada and Mikio Miyake*

We report a convenient method to synthesize single-crystalline platinum nanowires with high aspect ratio of *ca.* 2.0 nm diameter by sophisticated and precise control of Pt(0) nuclei and their growth.



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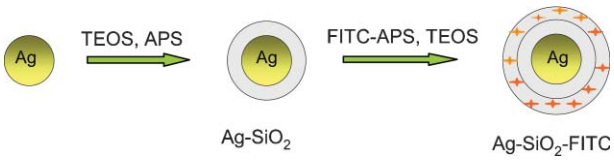
Separation distance dependent fluorescence enhancement of fluorescein isothiocyanate by silver nanoparticles

Daming Cheng and Qing-Hua Xu*

Nanocomposites consisting of a metal core, a silica-spacer shell with controlled thickness and a dye-labelled shell were synthesized and separation distance dependent fluorescence enhancement of fluorescein isothiocyanate by silver nanoparticles was studied.



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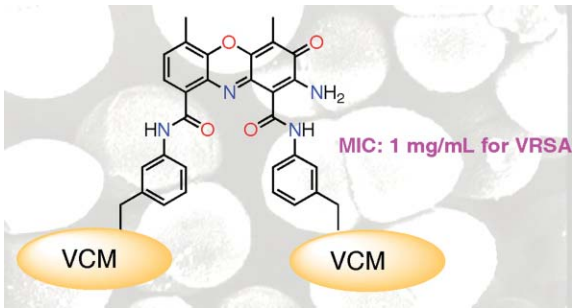
Synthesis of rigidly-linked vancomycin dimers and their *in vivo* efficacy against resistant bacteria

Jun Lu, Osamu Yoshida, Sayaka Hayashi and Hirokazu Arimoto*

A novel avenue for the preparation of highly potent dimeric vancomycins using actinocin, a natural privileged template found in actinomycin, as a linker unit is described. The dimers exhibited excellent antibacterial activities.



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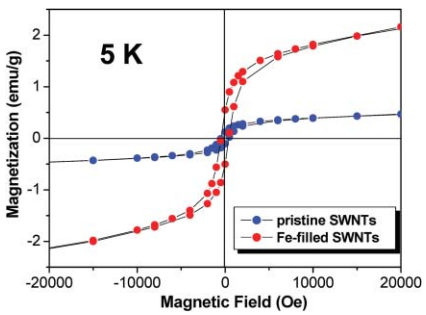
Magnetic characterization of Fe-nanoparticles encapsulated single-walled carbonnanotubes

Yongfeng Li,* Toshiro Kaneko, Tomoyuki Ogawa, Migaku Takahashi and Rikizo Hatakeyama

Magnetic properties of Fe-filled single-walled carbon nanotubes are investigated from 5 K to room temperature, and our results indicate that these encapsulated Fe nanoparticles exhibit superparamagnetic behavior.



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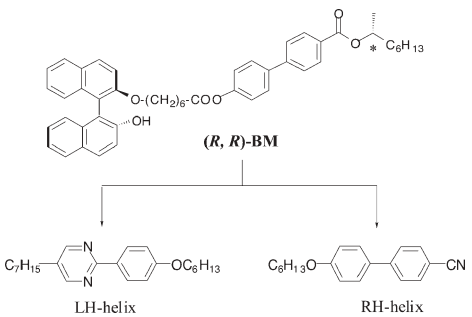
Host–guest effect on chirality transfer from a binaphthyl derivative to a host nematic liquid crystal

Atsushi Yoshizawa,* Keiko Kobayashi and Masatada Sato

A novel dichiral compound possessing both an asymmetric axis and a chiral centre was found to induce different helical structures in two host compounds, phenylpyrimidine host and cyanobiphenyl host.



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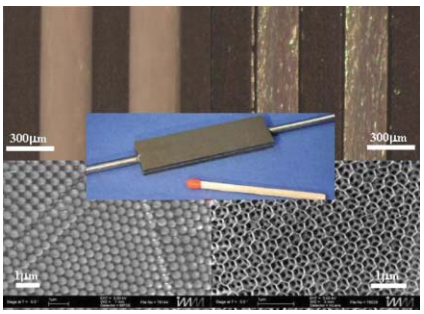

Low temperature catalytic combustion of propane over Pt-based catalyst with inverse opal microstructure in a microchannel reactor

Guoqing Guan,* Ralf Zapf, Gunther Kolb, Yong Men, Volker Hessel, Holger Loewe, Jianhui Ye and Rudolf Zentel

A novel Pt-based catalyst with well-defined inverse opal microstructure was fabricated in a microchannel reactor, and catalytic tests revealed excellent reactivity and stable activity for propane combustion at low temperature.

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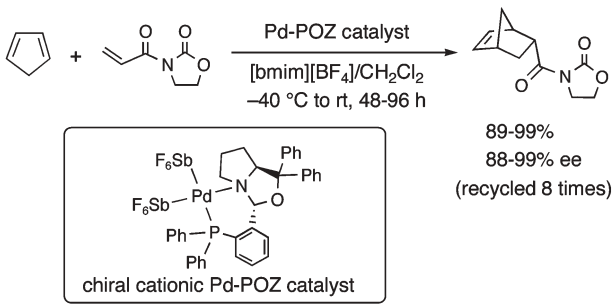

Reuse of chiral cationic Pd–phosphinooxazolidine catalysts in ionic liquids: highly efficient catalytic asymmetric Diels–Alder reactions

Kouichi Takahashi, Hiroto Nakano* and Reiko Fujita

Chiral Pd–phosphinooxazolidine (POZ) catalysts in ionic liquid afforded excellent enantioselectivity in Diels–Alder reactions. The catalyst was easily recycled 8 times without significant decrease of chemical yields and enantioselectivity (89–99%, 88–99% ee).

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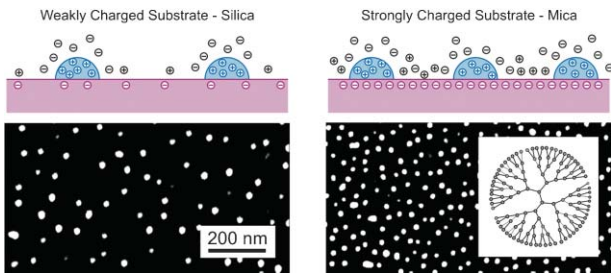

Nano-patterning of solid substrates by adsorbed dendrimers

Ramon Pericet-Camara, Brian P. Cahill, Georg Papastavrou and Michal Borkovec*

Adsorbed dendrimers self-organize on weakly charged solid substrates in liquid-like order at surprisingly low surface coverage; the surface coverage remains high for highly charged substrates due to attractive three-body forces acting between two dendrimers and the substrate.

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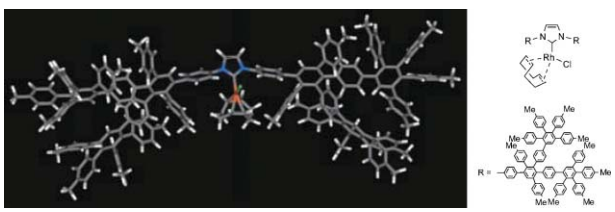

Rhodium(I) complexes with *N*-heterocyclic carbenes bearing a 2,3,4,5-tetraphenylphenyl and its higher dendritic frameworks

Hiromichi Sato, Tetsuaki Fujihara, Yasushi Obora, Makoto Tokunaga, Junya Kiyosu and Yasushi Tsuji*

The Rh(I)–NHC complexes bearing a 2,3,4,5-tetraphenylphenyl (TPPh) and its higher dendritic frameworks were synthesized and fully characterized. These complexes are efficient catalysts in the hydrosilylation of α,β-unsaturated ketones with Ph_2SiH_2.

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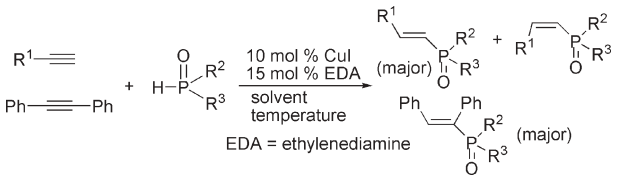
Copper-catalyzed addition of H-phosphine oxides to alkynes forming alkenylphosphine oxides

Mingyu Niu, Hua Fu,* Yuyang Jiang and Yufen Zhao

Copper-catalyzed additions of P(O)H compounds to alkynes provided the regio- and stereoselective E-alkenylphosphine oxides under catalysis of the commercially available and inexpensive copper catalyst system CuI/ethylenediamine.



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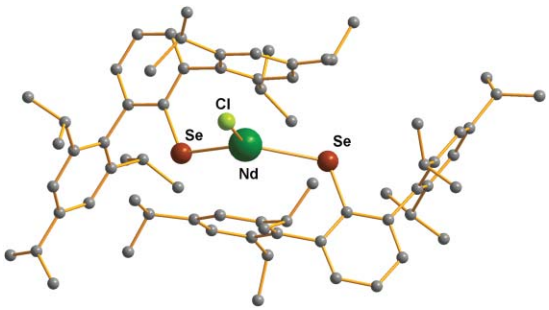
π-Bonding encapsulation in aryl-substituted lanthanide selenolates: monomeric compounds with apparent low-coordinate metal atoms

Sven-Oliver Hauber and Mark Niemeyer*

Monomeric chloro-functionalized lanthanide bis(arylselenolates) substituted by bulky terphenyl ligands are the first Ln(III) compounds that show two additional metal–η^6-π-arene interactions in their solid-state structures.



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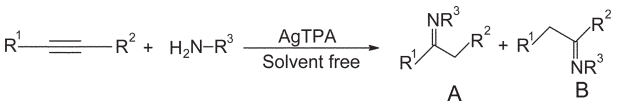
An efficient reusable silver-exchanged tungstophosphoric acid heterogeneous catalyst for solvent-free intermolecular hydroamination of alkynes

N. Lingaiah,* N. Seshu Babu, K. Mohan Reddy, P. S. Sai Prasad and I. Suryanarayana

Hydroamination of internal and terminal alkynes with amines over heterogeneous silver-exchanged tungstophosphoric acid (AgTPA) catalyst under solvent-free conditions affords ketimines in excellent yields.



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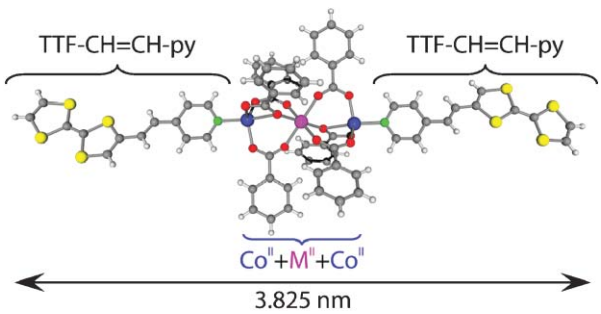
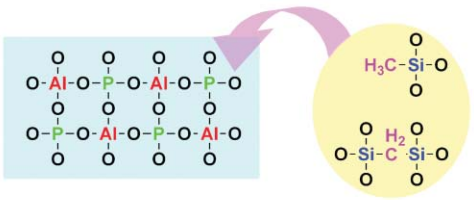
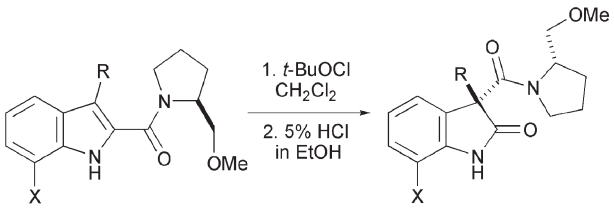
First trinuclear paramagnetic transition metal complexes with redox active ligands derived from TTF: $Co_2M(PhCOO)_6(TTF\text{-}CH{=}CH\text{-}py)_2{\cdot}2CH_3CN$, $M = Co^{II}, Mn^{II}$

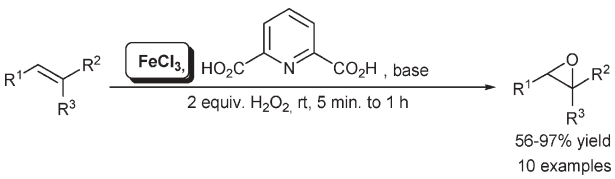
Konstantin S. Gavrilenko, Yann Le Gal, Olivier Cador, Stéphane Golhen and Lahcène Ouahab*

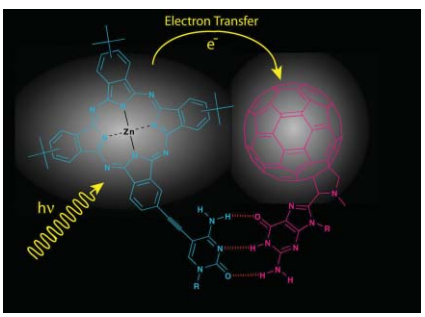
The synthesis and characterizations of the first paramagnetic homo- and hetero-metallic trinuclear complexes with redox active ligands derived from TTF are reported.











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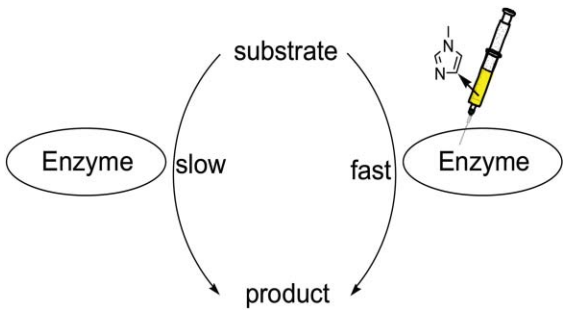

N-Methylimidazole significantly improves lipase-catalysed acylation of ribavirin

Bo-Kai Liu, Qi Wu, Jian-Ming Xu and Xian-Fu Lin*

N-Methylimidazole, a molecular solvent but also familiar as a component of $[C_nMIM]^+$ ionic liquids, showed promise as an additive in accelerating remarkably transesterification catalyzed by CAL-B.

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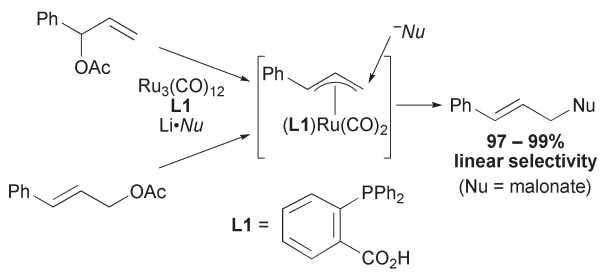

Ruthenium-catalysed linear-selective allylic alkylation of allyl acetates

Motoi Kawatsura,* Fumio Ata, Shohei Wada, Shuichi Hayase, Hidemitsu Uno and Toshiyuki Itoh*

The regioselectivity in the ruthenium-catalysed allylic alkylation of mono substituted allyl acetates with the malonate anion was highly controlled by $Ru_3(CO)_{12}$ with 2-(diphenylphosphino)benzoic acid, and the linear-type alkylated product was obtained.

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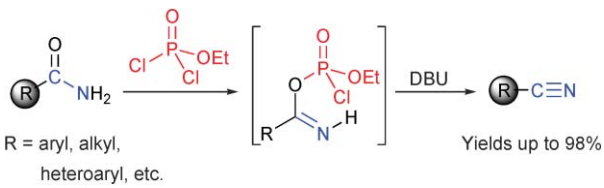

A convenient new procedure for converting primary amides into nitriles

Chun-Wei Kuo, Jia-Liang Zhu, Jen-Dar Wu, Cheng-Ming Chu, Ching-Fa Yao* and Kak-Shan Shia*

An operationally simple and high-yielding procedure has been developed for the conversion of primary amides to the corresponding nitriles, using ethyl dichlorophosphate/DBU as the mild dehydrating agent.

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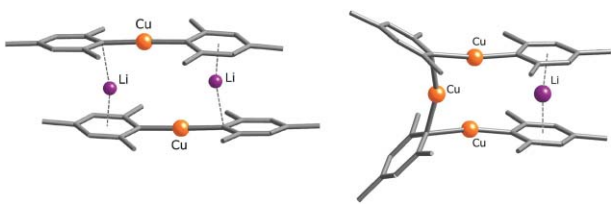

Models for the reactive states of homocuprates: syntheses, structures and reactivities of $[Cu_2Li_2Mes_4]$ and $[Cu_3LiMes_4]$

Robert P. Davies,* Stefan Hornauer and Andrew J. P. White

Two new thermally-stable lithium homocuprates containing Cu to Li ratios of 1 : 1 and 3 : 1 are reported and shown to possess very different activities when used as promoters for the addition reaction of organolithiums to enones.

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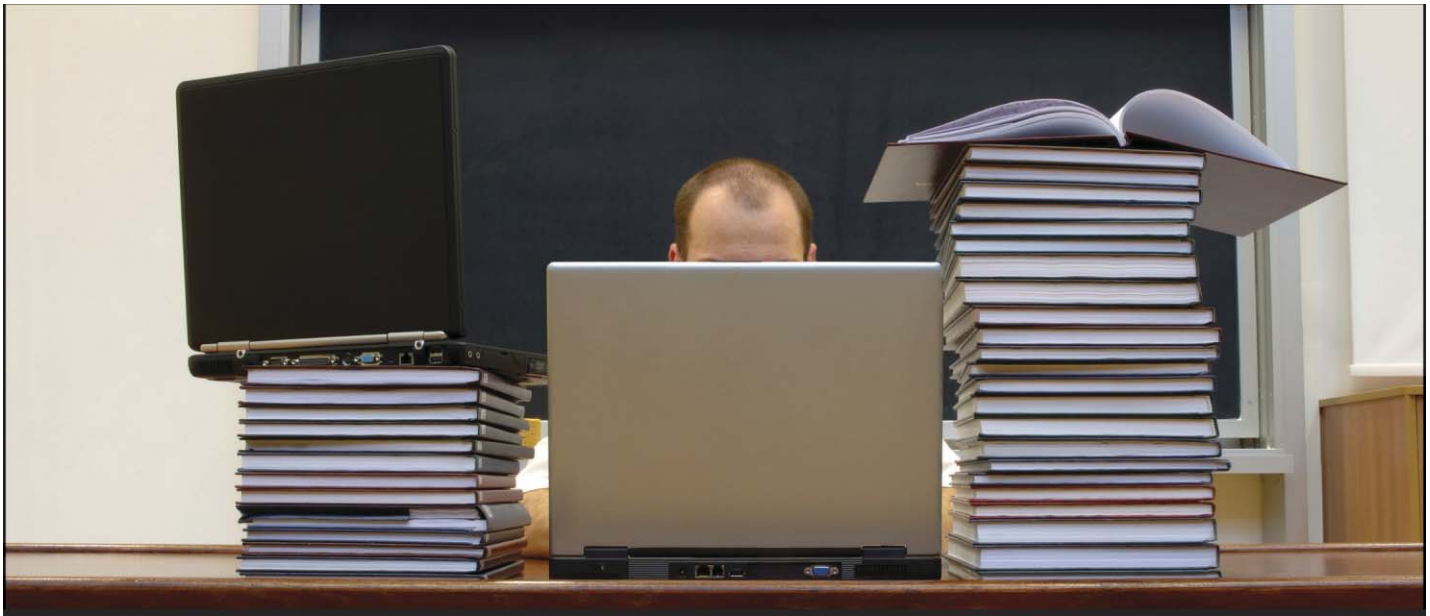

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