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Highlight Review

h Redox Relay Catalysts for Synthesis
aheterocycles via C–H Functionalization
uke Chiba

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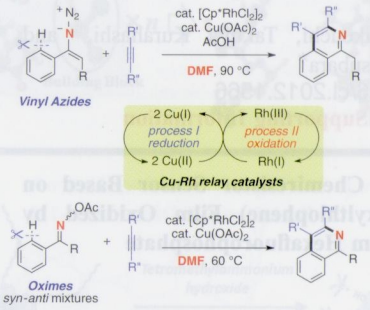
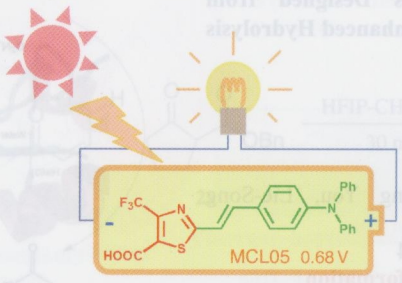
Highlight Review



Shunsuke Chiba
doi:10.1246/cl.2012.1554

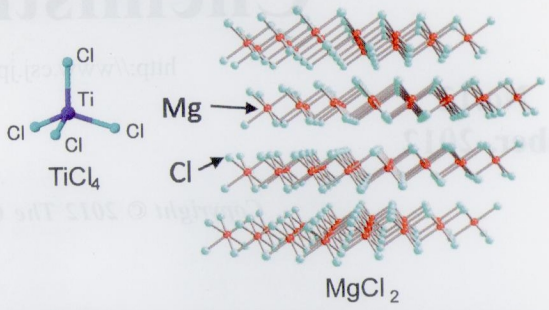
This Highlight Review described the Cu–Rh bimetallic redox relay catalytic system that enables efficient synthesis of highly substituted isoquinolines and their derivatives from readily available aryl ketoximes or α-arylvinyl azides with internal alkynes via C–H bond functionalization. A preliminary mechanistic investigation revealed that both of Cu and Rh catalysts are prerequisites to achieve the present process, and play their particular roles with synergistic cooperation during the multistep sequence.

Letter

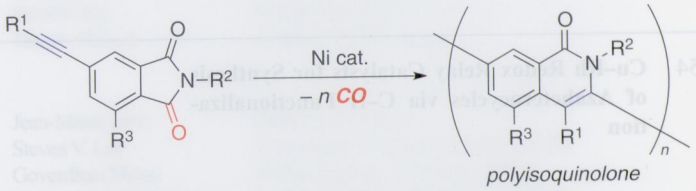


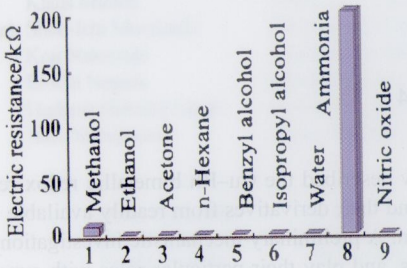
Satoru Iwata,* Misa Aoyama, Satoshi Uchida, and Kiyoshi Tanaka*
doi:10.1246/cl.2012.1560
Electronic Supporting Information

The novel photosensitized dyes having 4-trifluoromethylthiazole-5-carboxylic acid as an acceptor are synthesized. The dyes with this acceptor show high performance as the dye-sensitized solar cells. The trifluoromethyl group is assumed to act as a suppressor of the electron back-donation from the TiO_2 conduction band to the electrolyte and as an accelerator of the charge separation in the photoexcited state.



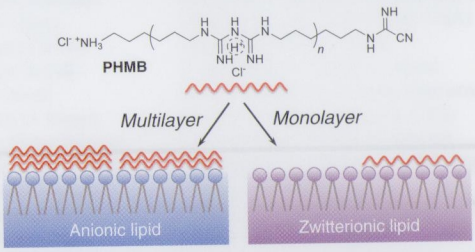
Nickel-catalyzed decarbonylative cycloaddition was developed, where 5-alkynylphthalimides reacted to afford a new type of polyisoquinolones. It was demonstrated for the first time that decarbonylative cycloaddition can be an elementary process of polycondensation for preparation of heterocyclic polymers.

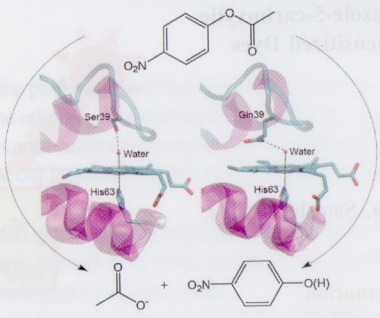




An ammonia chemiresistor sensor is demonstrated on the basis of poly(3-hexylthiophene) film oxidized by nitrosonium hexafluorophosphate. The sensor gave a good response to ammonia, while was insensitive to a variety of organic vapors. The detection limit was estimated to be ca. 0.22 ppm. The redox reaction between ammonia and bipolarons was attributed to the sensor signals.

Antimicrobial poly(hexamethylenebiguanide hydrochloride) (PHMB) showed the mutilayer adsorption onto negatively charged lipid films above a threshold concentration of PHMB.





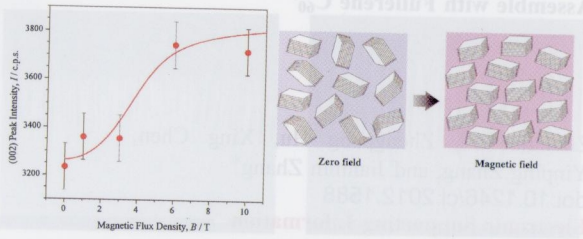
Rationally designed peroxidase-like enzymes, H39Q Cyt b_5 and H39S Cyt b_5, exhibit hydrolysis activity by catalyzing the hydrolysis of 4-nitrophenyl acetate.

1576 **Magnetic Orientation of Hexagonal Carbon Layers at High Temperatures**

Ayumi Sakaguchi, Atom Hamasaki,* Toyonari Sadatou, Yoshitaka Nishihara, Shou Yamamoto, Yuya Sekinuma, and Sumio Ozeki*

doi:10.1246/cl.2012.1576

Magnetic-field dependence of (002) XRD peak intensities of coal tar pitch treated at 773 K, indicating that hexagonal carbon layers should orient cooperatively in parallel to magnetic fields.

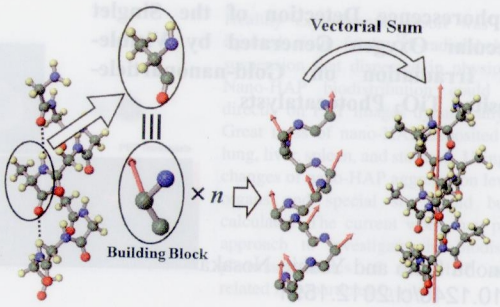


1579 **Dipole Moments of Amino Acid Residues, Gly and Ala, in α-Helix: Quantum Chemical Building Blocks for Macrodipole Moment of α-Helical Polypeptide**

Shunsuke Mieda and Misako Aida*

doi:10.1246/cl.2012.1579

Electronic Supporting Information

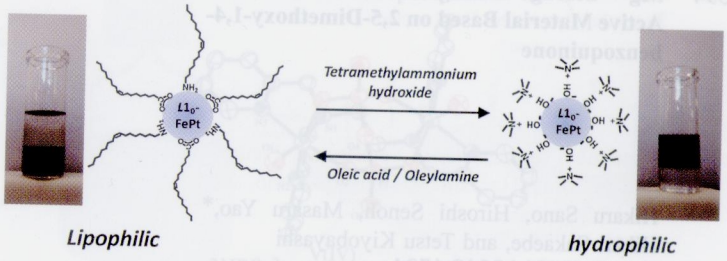


1581 **Reversible Phase Transfer of Ferromagnetic $L1_0$-FePt Nanoparticles**

Shinpei Yamamoto,* Yoshinori Tamada, Teruo Ono, and Mikio Takano

doi:10.1246/cl.2012.1581

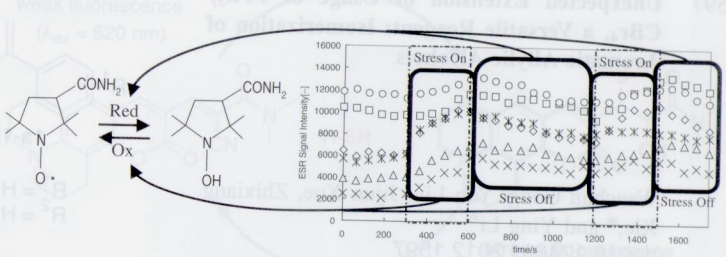
Electronic Supporting Information



1584 **In Vivo Real-time Detection of Plant Response to Physical and Chemical Stresses by Spin Probe ESR**

Mami Endo, Hidehiro Kurosawa, Takahiro Kawai,* Tomohiro Ito, and Tateaki Ogata

doi:10.1246/cl.2012.1584



1586 **Mild Synthesis of Furans with a Quaternary Carbon Substituent at the 2-Position**

Akihisa Iwamoto, Aki Katori, Yoshiaki Sashihara, and Satoshi Kojima*

doi:10.1246/cl.2012.1586