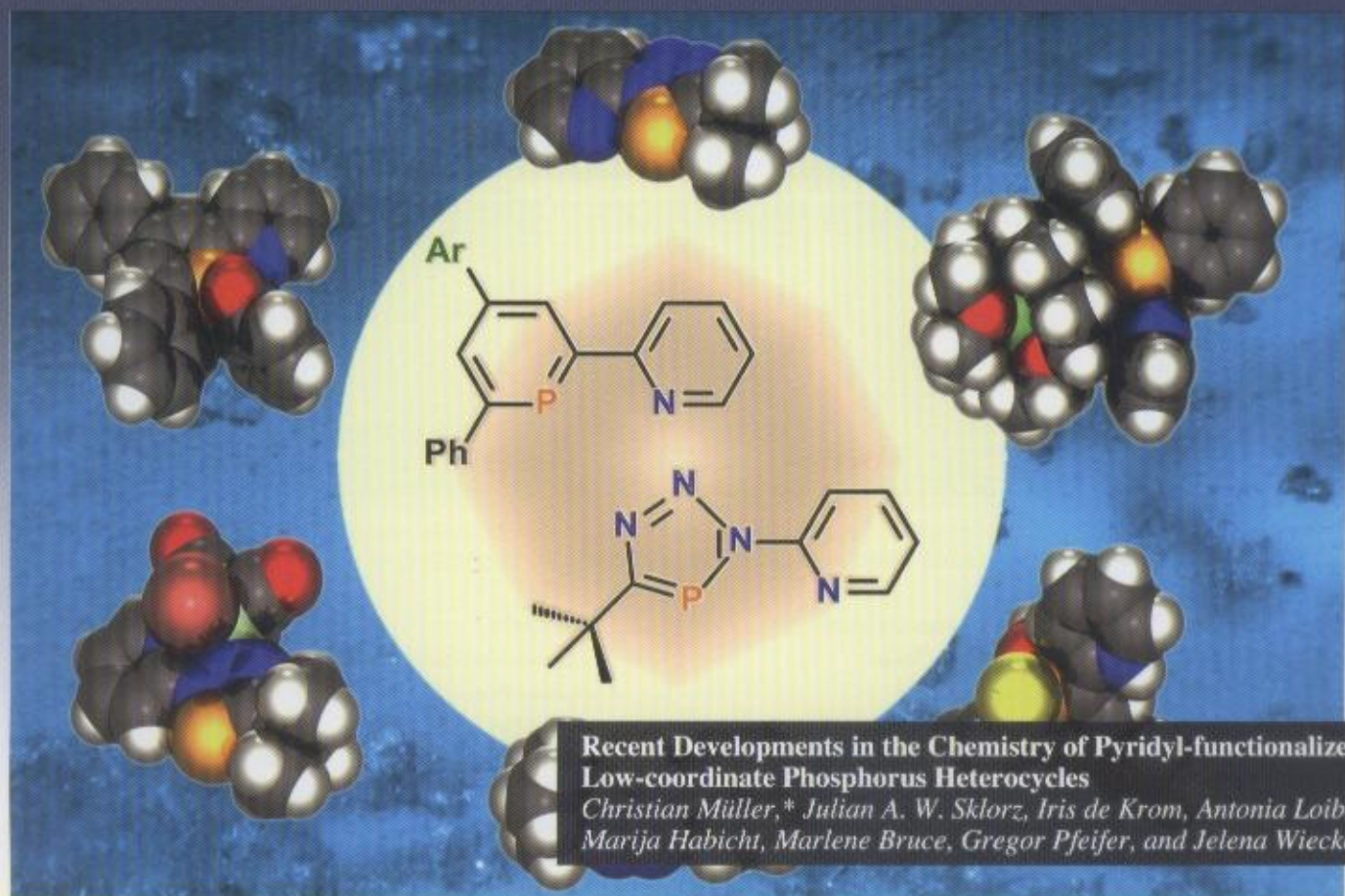


# Chemistry Letters



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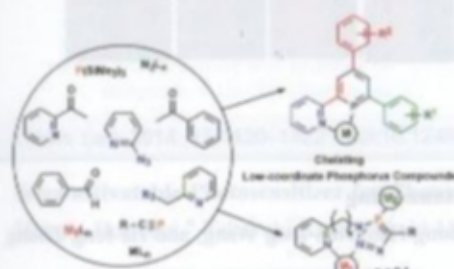


**The Chemical Society of Japan**

## Highlight Review

### Recent Developments in the Chemistry of Pyridyl-functionalized, Low-coordinate Phosphorus Heterocycles

Christian Müller,\* Julian A. W. Sklorz, Iris de Krom, Antonia Loibl, Marija Habicht, Marlene Bruce, Gregor Pfeifer, and Jelena Wiecko



This highlight review provides an overview on recent developments in the chemistry of pyridyl-functionalized  $\lambda^3\sigma^2$ -phosphinines and 3*H*-1,2,3,4-triazaphospholes. The access to novel chelating, low-coordinate phosphorus heterocycles can lead to a much broader scope for potential applications. New developments in areas, such as homogeneous catalysis, molecular materials, and supramolecular chemistry can consequently be foreseen for the near future.

Chem. Lett. 2014, 43 1390–1404 doi:10.1246/cl.140553

Chem. Lett. 2014, 43 1425–1426 doi:10.1246/cl.140554

Chem. Lett. 2014, 43 1417–1419 doi:10.1246/cl.140555

Fabrication of Crystalline Graphene by Electrochemical Exfoliation of Graphite in Aqueous Media: Application in Anode Materials in Lithium Ion Batteries  
Muhammad Mydul Alam, Wenwen Tian, Shou Zhai, Shin-ichi Yusa, Hiroyuki Noguchi, and Kenichi Nakakami

Graphene, a single layer of carbon atoms arranged in a hexagonal lattice, has attracted significant attention due to its exceptional properties. This article describes the electrochemical exfoliation of graphite in aqueous media to produce crystalline graphene. The resulting graphene is used as an anode material in lithium ion batteries, showing improved performance compared to conventional graphite anodes.



Electrochemical Exfoliation of Graphite		Cyclic Voltammetry (CV) of Graphene	
Electrode	Graphite	Electrode	Graphene
Electrolyte	0.1 M NaCl	Electrolyte	0.1 M NaCl
Scan rate	100 mV/s	Scan rate	100 mV/s
Potential range	-0.2 to 0.8 V	Potential range	-0.2 to 0.8 V
Current (mA)	~1.5	Current (mA)	~0.5
Charge (C)	~1.5	Charge (C)	~0.5

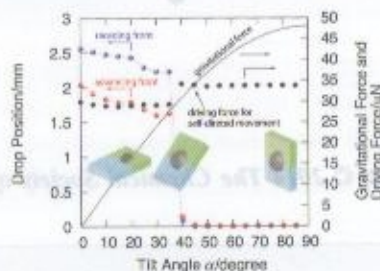
Chem. Lett. 2014, 43 1426–1428 doi:10.1246/cl.140556

Chem. Lett. 2014, 43 1415–1417 doi:10.1246/cl.140557



# Simple Gravity-assisted Evaluation for Self-directed Movement of a Droplet Driven by Heterogeneous Surface Energies

Yasuyuki Kusaka\* and Hirobumi Ushijima

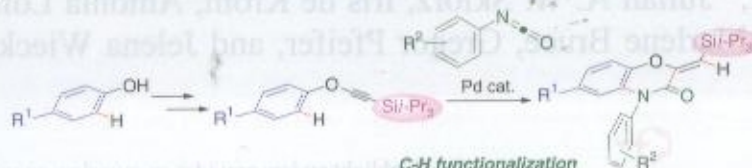


Chem. Lett. 2014, 43 1405–1407 doi:10.1246/cl.140410

# Palladium-catalyzed Cycloaddition of Aryl Silylalkynyl Ethers with Isocyanates via *o*-C–H Cleavage

Yasunori Minami,\* Mayuko Kanda, and Tamejiro Hiyama\*

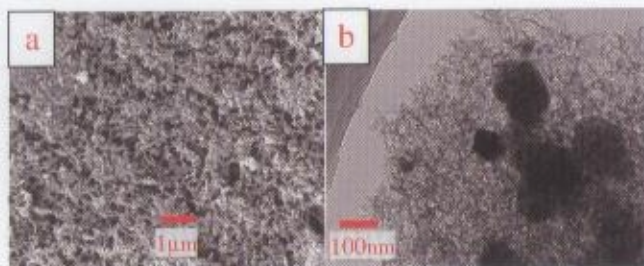
Cycloaddition of alkynyl aryl ethers with isocyanates takes place regioselectively in the presence of  $\text{Pd}(\text{OAc})_2$ ,  $\text{PCy}_3$ , and  $\text{Zn}(\text{OAc})_2$  to give 2*H*-1,4-benzoxazin-3(4*H*)-one derivatives via *ortho*-C–H bond activation.



Chem. Lett. 2014, 43 1408–1410 doi:10.1246/cl.140452

# LiMnBO<sub>3</sub>/Carbon Composite Material Synthesized by Ball-milling and Postannealing

Jun-chao Zheng, Shan-e Qin, Bao Zhang,\* Xing Ou, Lei Ming, Chao Shen, Ya-dong Han, Jian-long Wang, and Jia-feng Zhang

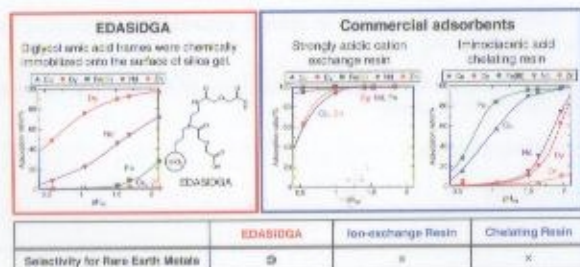


$\text{LiMnBO}_3$  particles are about 100 nm in diameter and are embedded in a porous carbon matrix. Electrochemical measurement results indicate that the  $\text{LiMnBO}_3/\text{C}$  cathode exhibits excellent electrochemical performance.

Chem. Lett. 2014, 43 1411–1413 doi:10.1246/cl.140397

# Immobilization of Diglycol Amic Acid on Silica Gel for Selective Recovery of Rare Earth Elements

Takeshi Ogata,\* Hirokazu Narita, and Mikiya Tanaka



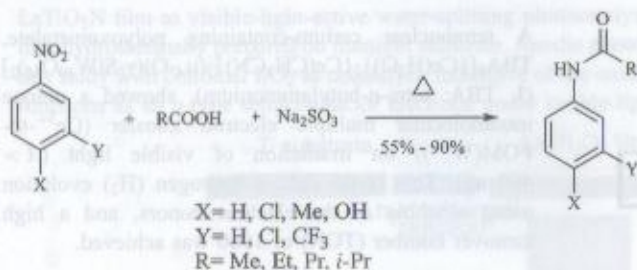
We have synthesized a novel adsorbent, which has a diglycol amic acid frame for the recovery of rare earth elements. The adsorbent has the ability to selectively adsorb rare earth metal ions from solutions containing high concentrations of base metal ions in a low pH region.

Chem. Lett. 2014, 43 1414–1416 doi:10.1246/cl.140446



## Reductive Acylation of Nitroarenes to Anilides by Sodium Sulfite in Carboxylic Acids

Mohammad Ghaffarzadeh\* and Pegah Akhavan



A facile and efficient reductive acylation of aromatic nitro compounds to corresponding anilides using a sodium sulfite-carboxylic acid system for the first time has been reported. The sodium sulfite reagent provides the colorless reductant in combination with stoichiometric amounts of carboxylic acid and enables the formation of anilides from nitroarenes without any additives in good to excellent yields with high purities and simple work-up. Furthermore, this protocol provides a novel and complementary access to some industrially important chemicals in kilogram scale under mild conditions.

Chem. Lett. 2014, 43 1417–1419 doi:10.1246/cl.140454

Synthesis of Tunable  $\text{Fe}_3\text{O}_4$ @Mesoporous-silica-pillared Clay (MSPC) and Its Performance in Lysozyme Loading and Releasing Behavior

Liwen Yue, Baoshan Li,\* Zhiming Ren, and Xuan Li



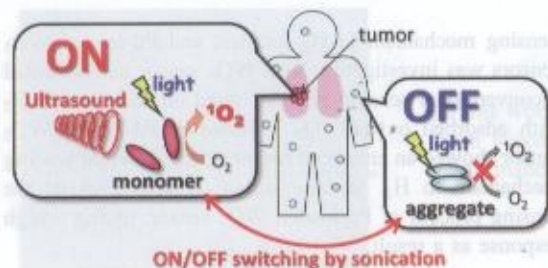
$\text{Fe}_3\text{O}_4$ @mesoporous-silica-pillared clays with different pore size were synthesized using a cationic polymeric surfactant as template. In the materials  $\text{Fe}_3\text{O}_4$  magnetic nanoparticles were generated onto the intergallery silica pillar. The polymeric surfactant plays a key role to tune both the pore size of the materials and the particle size of  $\text{Fe}_3\text{O}_4$ . These materials show better performance of lysozyme loading and releasing.

Chem. Lett. 2014, 43 1420–1422 doi:10.1246/cl.140401

Editor's Choice

## Sono-activatable Photosensitizer for Photodynamic Therapy

Hiroaki Horiuchi,\* Takayuki Kano, Hiroki Uehara, and Tetsuo Okutsu

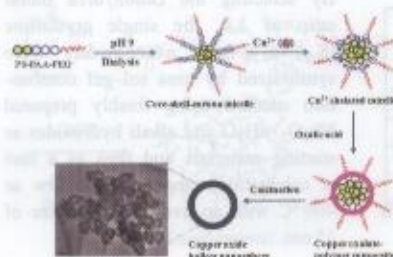


A sono-activatable photosensitizer has been developed to reduce the side effects of photodynamic therapy. This sono-activatable photosensitizer is based on the disaggregation of photosensitizer by sonication. We succeeded in demonstrating that sensitization efficiency of singlet oxygen was switched from an OFF state to an ON state by sonication.

Chem. Lett. 2014, 43 1423–1425 doi:10.1246/cl.140403

## Fabrication of Copper(II) Oxide Hollow Nanosphere Using ABC Block Copolymer Templates and Its Application as Anode Materials in Lithium Ion Batteries

Mohammad Mydul Alam, Wenwen Zhao, Shuo Zhai, Shin-ichi Yusa, Hideyuki Noguchi, and Kenichi Nakashima\*



$\text{CuO}$  hollow nanospheres were synthesized by using polymeric micelle of poly(styrene-*block*-acrylic acid-*block*-ethylene oxide) as a template. The outer diameter of the  $\text{CuO}$  hollow nanospheres is  $40 \pm 1.0$  nm and the shell thickness is  $10 \pm 0.5$  nm. The  $\text{CuO}$  nanosphere electrode delivers high capacity at  $350 \text{ mA h g}^{-1}$  after 30 cycles.

Chem. Lett. 2014, 43 1426–1428 doi:10.1246/cl.140418