

# Chemistry Letters

## Highlight Review

1 **Design Concept for High-LUMO-level Fullerene**  
2 **Donor-acceptors for Organic Solar Cells**  
5 *Yutaka Matsuo*

**Vol. 41 No. 8 2012**

CMLTAG

753-838 (2012)

AUGUST 5, 2012

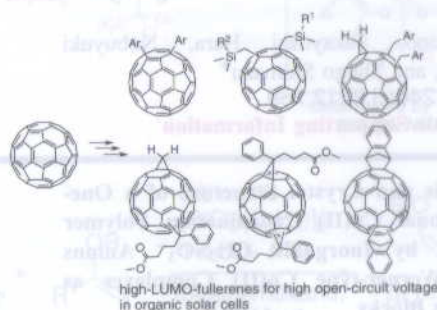


**The Chemical Society of Japan**

## Highlight Review

- 754 Design Concept for High-LUMO-level Fullerene Electron-acceptors for Organic Solar Cells

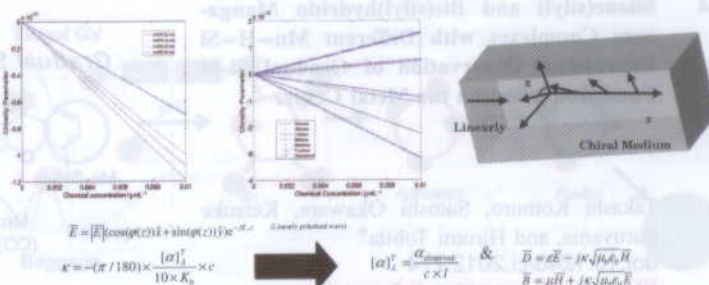
Yutaka Matsuo  
doi:10.1246/cl.2012.754



## Letter

- 760 Calculation of the Chirality in Solutions of Phospholipid Hybrid Vesicles Controlled by Surface Charges of Vesicular

Tayyeb Partovi  
doi:10.1246/cl.2012.760



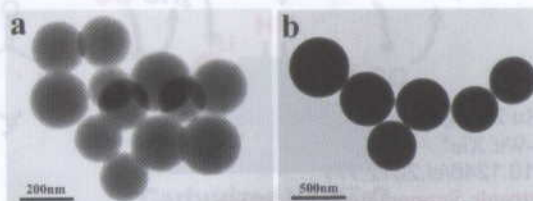
- 763 Monodisperse Activated Carbon Spheres from Colloidal Carbon Spheres by Steam Activation and Their Electrochemical Properties

Yongjian Wu, Quan Jin, Chunlin Xie, Jianghu Cui, and Yingliang Liu\*

doi:10.1246/cl.2012.763

Electronic Supporting Information

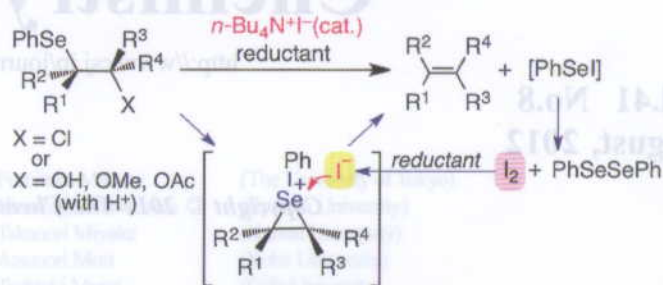
Monodisperse activated carbon spheres (Figure a) with high specific surface area (2870 m<sup>2</sup> g<sup>-1</sup>) and large total pore volume (1.456 cm<sup>3</sup> g<sup>-1</sup>) were successfully prepared from colloidal carbon spheres (Figure b) by steam activation.



- 766 Iodide-promoted Deselenylation of  $\beta$ -Chloro- and  $\beta$ -Oxyselelenides to Form Alkenes and Selenenyl Iodides

Shohei Sase, Kazuaki Ebisawa, and Kei Goto\*  
doi:10.1246/cl.2012.766

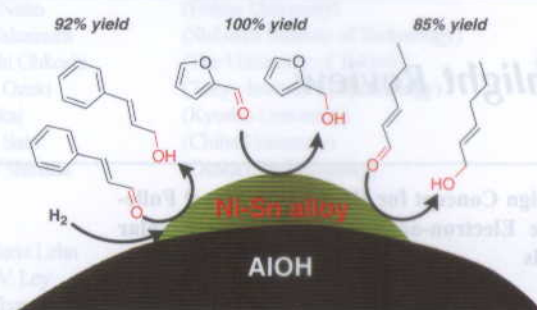
[Electronic Supporting Information](#)



- 769 A Novel Preparation Method of Ni-Sn Alloy Catalysts Supported on Aluminium Hydroxide: Application to Chemoselective Hydrogenation of Unsaturated Carbonyl Compounds

Rodiansono, Takayoshi Hara, Nobuyuki Ichikuni, and Shogo Shimazu\*  
doi:10.1246/cl.2012.769

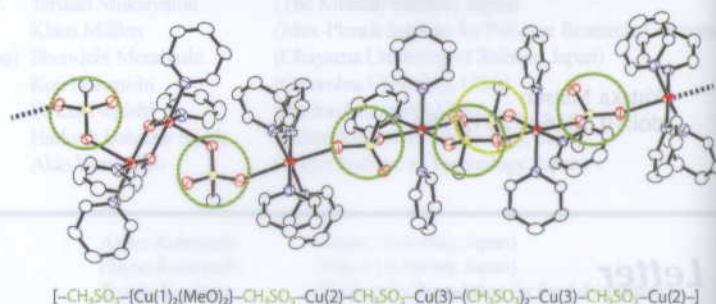
[Electronic Supporting Information](#)



- 772 Synthesis and Crystal Structure of a One-dimensional Cu(II) Coordination Polymer Bridged by Inorganic  $\text{CH}_3\text{SO}_3^-$  Anions Using Werner-type Cu(II) Complexes as Building Blocks

Shin-ichiro Noro,\* Kazuya Kubo, and Takayoshi Nakamura\*  
doi:10.1246/cl.2012.772

[Electronic Supporting Information](#)



- 774 Silane(silyl) and Bis(silyl)hydrido Manganese Complexes with Different Mn...H...Si Interaction: Observation of Gradual Si-H Bond Activation on the Metal Center

Takashi Komuro, Satoshi Okawara, Keisuke Furuyama, and Hiromi Tobita\*  
doi:10.1246/cl.2012.774

[Electronic Supporting Information](#)

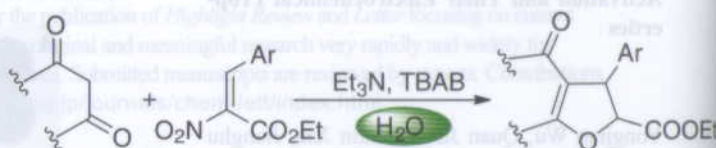
#### Gradual Si-H bond activation



- 777 Water-compatible Cascade Reaction: An Efficient Route to Substituted 2,3-Dihydrofurans

Ya-Ru Zhang, Fang Luo,\* Xu-Jiao Huang, and Jian-Wu Xie\*  
doi:10.1246/cl.2012.777

[Electronic Supporting Information](#)

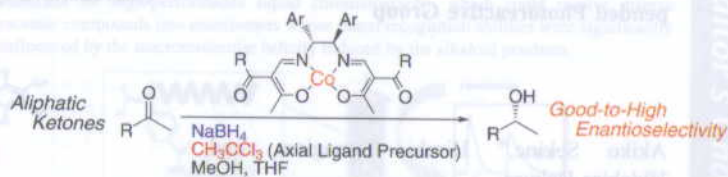


- 780 **Enantioselective Borohydride Reduction of Aliphatic Ketones Catalyzed by Ketoiminato-cobalt(III) Complex with 1-Chlorovinyl Axial Ligand**

Tatsuyuki Tsubo, Hsiu-Hui Chen, Minako Yokomori, Kosuke Fukui, Satoshi Kikuchi, and Tohru Yamada\*

doi:10.1246/cl.2012.780

**Electronic Supporting Information**

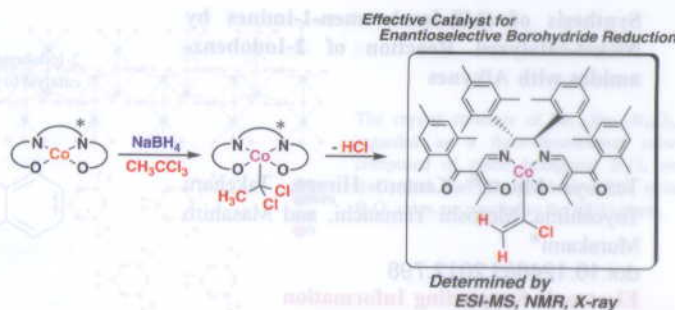


- 783 **Structure Determination of the Cobalt(III) Complex Catalyst for Enantioselective Borohydride Reduction**

Tatsuyuki Tsubo, Minako Yokomori, Hsiu-Hui Chen, Keiko Komori-Orisaku, Satoshi Kikuchi, Yoshihiro Koide, and Tohru Yamada\*

doi:10.1246/cl.2012.783

**Electronic Supporting Information**

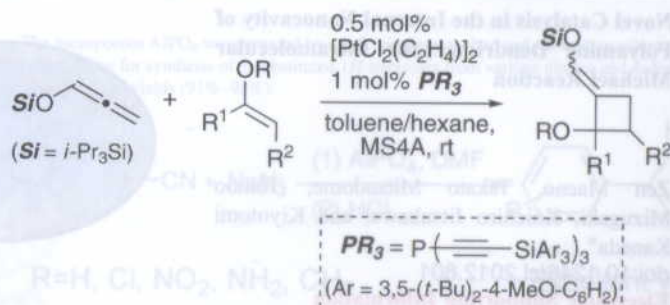


- 786 **Selective Intermolecular [2 + 2] Cycloaddition Reaction Using Platinum(II) Catalyst with Hollow-shaped Triethynylphosphine**

Masaru Ebisawa, Hiroyuki Kusama, and Nobuharu Iwasawa\*

doi:10.1246/cl.2012.786

**Electronic Supporting Information**

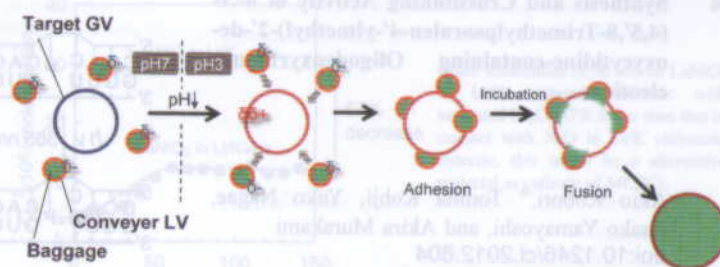


- 789 **Adhesion and Fusion of Two Kinds of Phospholipid Hybrid Vesicles Controlled by Surface Charges of Vesicular Membranes**

Kentaro Suzuki, Ryo Aboshi, Kensuke Kurihara, and Tadashi Sugawara\*

doi:10.1246/cl.2012.789

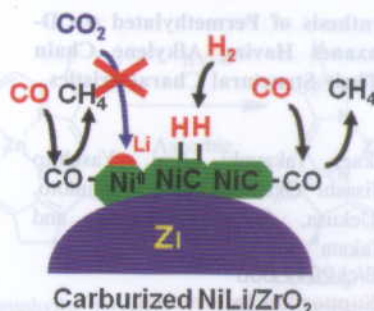
**Electronic Supporting Information**



- 792 **Carburized, Lithium-doped Ni/ZrO<sub>2</sub> for Preventing CO<sub>2</sub> Conversion during CO Methanation**

Masatoshi Nagai\* and Shinpei Yamashita

doi:10.1246/cl.2012.792

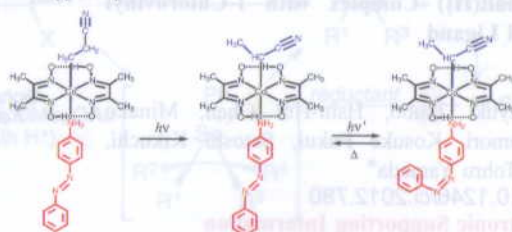


795 **Novel Solid-state Photochromic Reaction of Azobenzene Derivative Controlled by Appended Photoreactive Group**

Akiko Sekine,\* Hiroki Yamagiwa, and Hidehiro Uekusa  
doi:10.1246/cl.2012.795

**Electronic Supporting Information**

4-Aminoazobenzene coordinated to the cobalt atom in a cobaloxime complex revealed photochromism initiated by the  $\beta$ - $\alpha$  photoisomerization of the cyanoethyl group bonded to the cobalt atom in the opposite position.

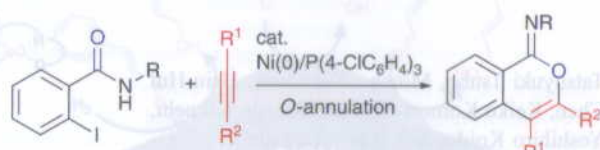


798 **Synthesis of (1*H*)-Isochromen-1-imines by Nickel-catalyzed Reaction of 2-Iodobenzamides with Alkynes**

Tomoya Miura,\* Kentaro Hiraga, Takeharu Toyoshima, Motoshi Yamauchi, and Masahiro Murakami\*  
doi:10.1246/cl.2012.798

**Electronic Supporting Information**

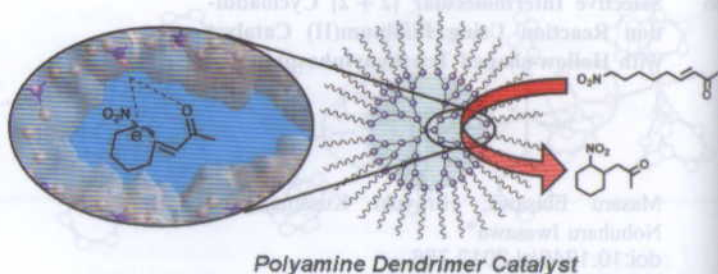
2-Iodobenzamides reacted with alkynes in the presence of a nickel(0)/P(4-ClC<sub>6</sub>H<sub>4</sub>)<sub>3</sub> catalyst to produce substituted (1*H*)-isochromen-1-imines.



801 **Novel Catalysis in the Internal Nanocavity of Polyamine Dendrimer for Intramolecular Michael Reaction**

Zen Maeno, Takato Mitsudome, Tomoo Mizugaki, Koichiro Jitsukawa, and Kiyotomi Kaneda\*  
doi:10.1246/cl.2012.801

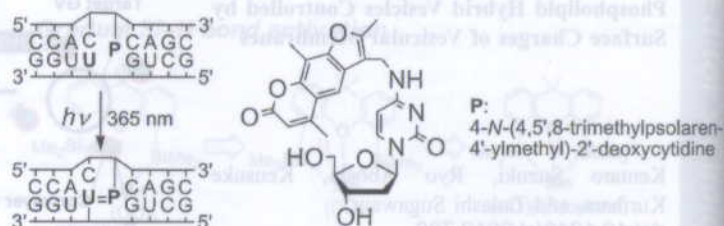
**Electronic Supporting Information**



804 **Synthesis and Crosslinking Activity of 4-*N*-(4,5',8-Trimethylpsoralen-4'-ylmethyl)-2'-deoxycytidine-containing Oligodeoxyribonucleotides**

Akio Kobori,\* Tomita Kohji, Yuko Nagae, Asako Yamayoshi, and Akira Murakami  
doi:10.1246/cl.2012.804

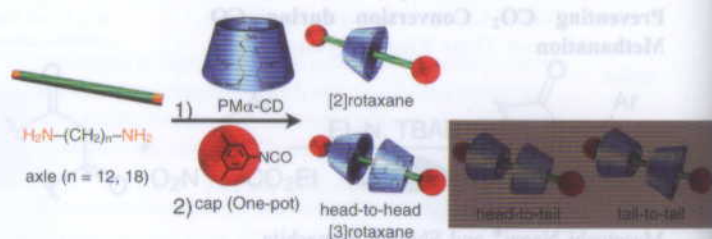
**Electronic Supporting Information**



806 **One-pot Synthesis of Permethylated  $\alpha$ -CD-based Rotaxanes Having Alkylene Chain Axles and Their Structural Characteristics**

Yosuke Akae, Takayuki Arai, Yasuhito Koyama, Hisashi Okamura, Kohei Johmoto, Hidehiro Uekusa, Shigeki Kuwata, and Toshikazu Takata\*  
doi:10.1246/cl.2012.806

**Electronic Supporting Information**



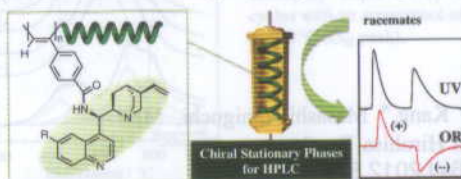
809 **Enantioseparation on Helical Poly(phenylacetylene)s Bearing Cinchona Alkaloid Pendants as Chiral Stationary Phases for HPLC**

Yuki Naito, Zhenglin Tang, Hiroki Iida, Toshitaka Miyabe, and Eiji Yashima\*

doi:10.1246/cl.2012.809

**Electronic Supporting Information**

A series of optically active helical poly(phenylacetylene)s bearing cinchona alkaloid pendant groups was coated on macroporous silica gel to obtain novel chiral packing materials for high-performance liquid chromatography, which could resolve diverse racemic compounds into enantiomers whose chiral recognition abilities were significantly influenced by the macromolecular helicity induced by the alkaloid pendants.



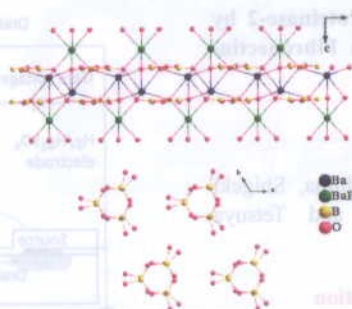
Editor's Choice

812 **Synthesis, Crystal Structure, and Properties of a New Lead Barium Borate,  $\text{Pb}_{1.13}\text{Ba}_{7.87}\text{B}_{18}\text{O}_{36}$**

Hongping Wu, Shilie Pan,\* Dianzeng Jia, Zhaohui Chen, and Hongwei Yu

doi:10.1246/cl.2012.812

**Electronic Supporting Information**



The crystal structure of  $\text{Pb}_{1.13}\text{Ba}_{7.87}\text{B}_{18}\text{O}_{36}$  is regarded as a three-dimensional network composed of plane hexagonal  $\text{B}_3\text{O}_6$  rings,  $\text{BaO}_6$  and  $\text{Ba/PbO}_6$  polyhedra. The isolated  $\text{B}_3\text{O}_6$  rings are parallel to the (001) plane.

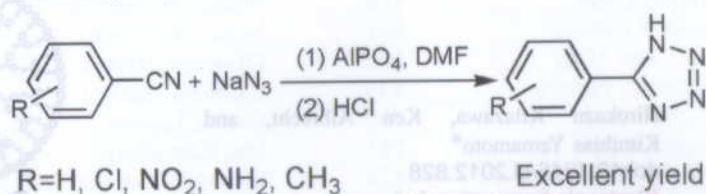
814 **Mesoporous  $\text{AlPO}_4$ : A Highly Efficient Heterogeneous Catalyst for Synthesis of 5-Substituted 1H-Tetrazoles from Nitriles and Sodium Azide via [3 + 2] Cycloaddition**

Man Ai, Leiming Lang, Baojun Li, and Zheng Xu\*

doi:10.1246/cl.2012.814

**Electronic Supporting Information**

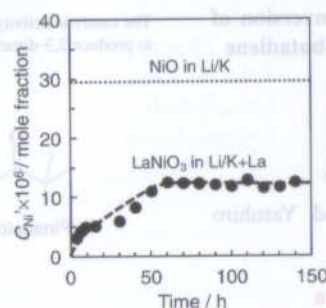
The mesoporous  $\text{AlPO}_4$  was prepared by a soft template method and showed excellent catalytic performance for synthesis of 5-substituted 1H-tetrazoles from various nitriles and sodium azide with excellent yields (91%–98%).



817 **Solubilities of La and Ni on  $\text{LaNiO}_3$  in Li/K Carbonate Eutectic with  $\text{La}_2\text{O}_3$**

Koichi Matsuzawa,\* Shang Zhai, Ken-ichiro Ota, and Shigenori Mitsushima

doi:10.1246/cl.2012.817



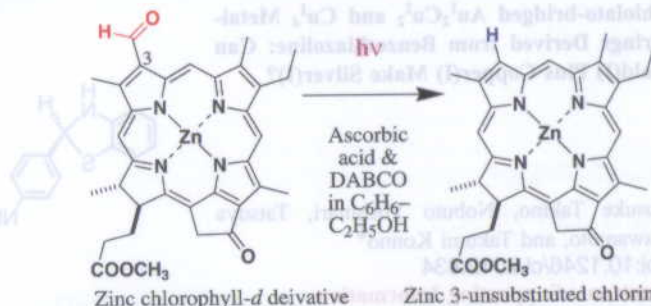
Since solubilities of Ni ion on  $\text{LaNiO}_3$  in Li/K carbonate eutectic with saturated  $\text{La}_2\text{O}_3$  57% lower than that in contact with NiO in Li/K carbonate eutectic, this might be an alternative material as cathode of MCFCs.

820 **Photoreduced Deformylation of Zinc Chlorophyll-*d* Derivative**

Hitoshi Tamiaki,\* Meiyun Xu, and Shinnosuke Machida

doi:10.1246/cl.2012.820

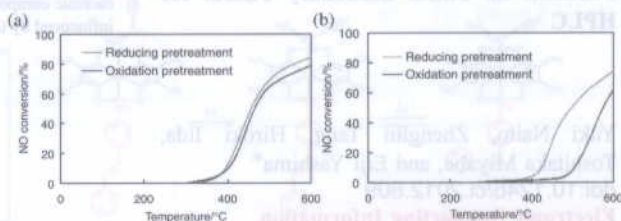
**Electronic Supporting Information**



822 **Synthesis and Properties of Ni-Cu Alloy Supported on Mg-Al Mixed Oxide Catalyst for Automotive Exhaust**

Chun Yong Kang,\* Masashi Taniguchi, Mari Uenishi, and Hirohisa Tanaka  
doi:10.1246/cl.2012.822

The  $\text{Ni}_{0.3}\text{Cu}_{0.7}/2\text{MgO}\cdot 1/2\text{MgAl}_2\text{O}_3$  catalyst (a) showed higher activity than a pure Cu catalyst (b) on the NO-CO reaction after pretreatment in oxidation atmosphere. The alloying of Ni and Cu is effective to suppress the surface oxidation of active metal and a decrease of catalytic activity.

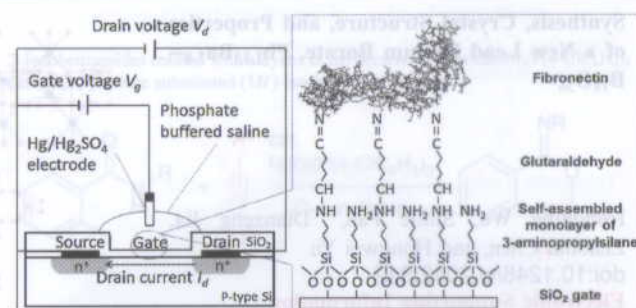


825 **Detection of Matrix Metalloproteinase-2 by Field Effect Transistor with a Fibronectin-immobilized Gate**

Daisuke Yamamoto, Sho Hideshima, Shigeki Kuroiwa, Takuya Nakanishi, and Tetsuya Osaka\*

doi:10.1246/cl.2012.825

**Electronic Supporting Information**

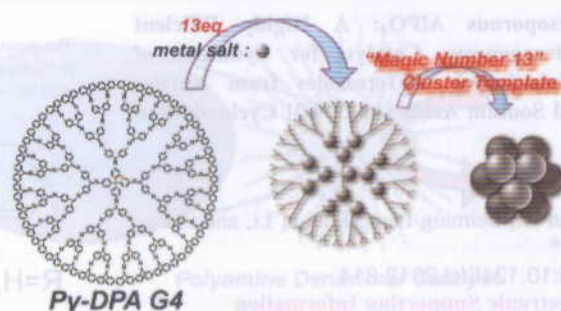


828 **Synthesis of a Dendrimer Reactor for Clusters with a Magic Number**

Hirokazu Kitazawa, Ken Albrecht, and Kimihisa Yamamoto\*

doi:10.1246/cl.2012.828

**Electronic Supporting Information**



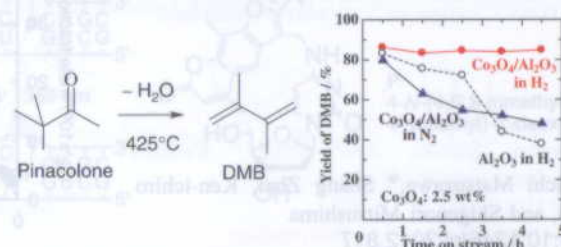
831 **Stable Vapor-phase Catalytic Conversion of Pinacolone into 2,3-Dimethyl-1,3-butadiene**

Satoshi Sato,\* Natsumi Sato, and Yasuhiro Yamada

doi:10.1246/cl.2012.831

**Electronic Supporting Information**

The catalytic activity of alumina modified by Co was stabilized in the conversion of pinacolone to produce 2,3-dimethyl-1,3-butadiene, DMB, under hydrogen flow conditions.

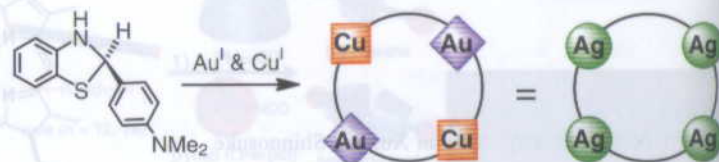


834 **Thiolato-bridged Au<sub>2</sub>Cu<sub>2</sub> and Cu<sub>4</sub> Metalloids Derived from Benzothiazoline: Can Gold(I) Plus Copper(I) Make Silver(I)?**

Yusuke Takino, Nobuto Yoshinari, Tatsuya Kawamoto, and Takumi Konno\*

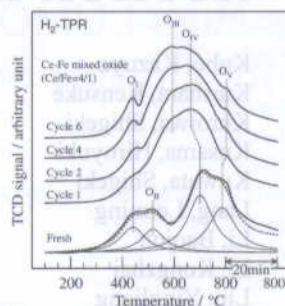
doi:10.1246/cl.2012.834

**Electronic Supporting Information**



# 837 Enhancement of Reducibility and Oxygen Storage Capacity (OSC) of Ce-Fe Mixed Oxides by Repetitive Redox Treatment

Kongzhai Li, Masaaki Haneda, and Masakuni Ozawa\*  
doi:10.1246/cl.2012.837



The reducibility of Ce-Fe mixed oxide was drastically improved by repetitive TPR/OSC cycles with an appearance of new reduction peak at 600 °C ( $O_{II}$  peak).