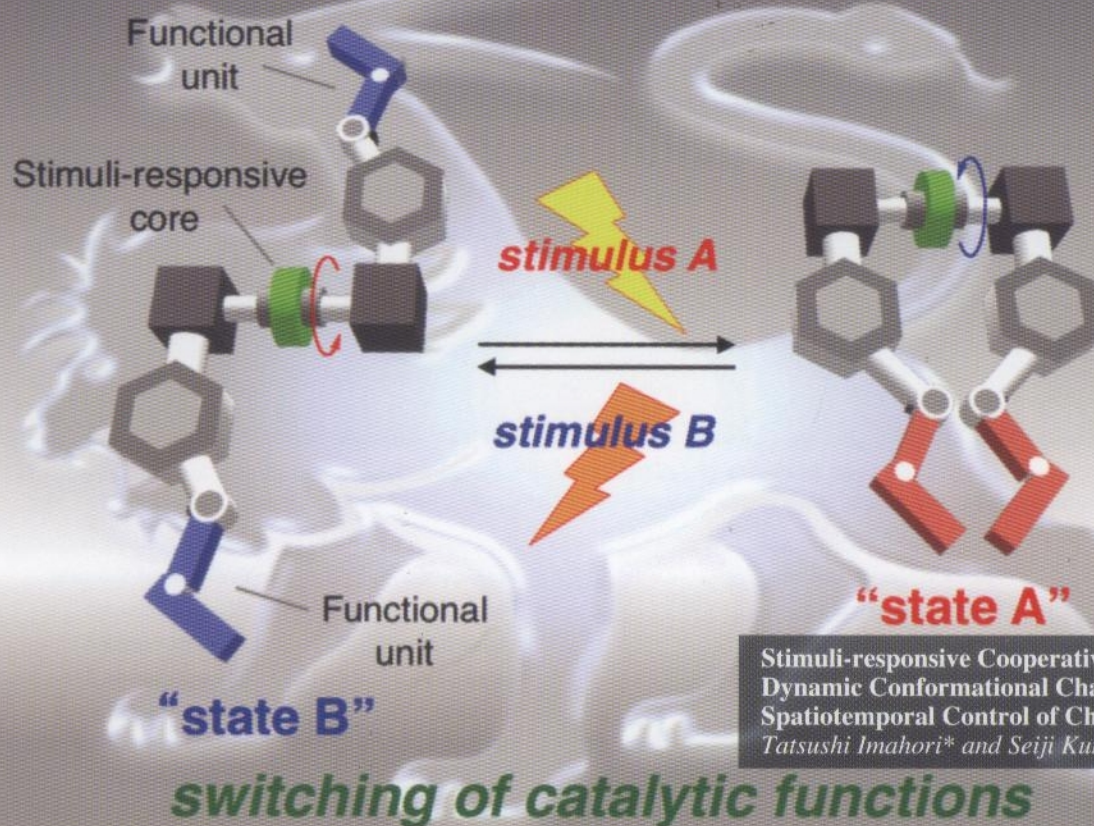


# Chemistry Letters



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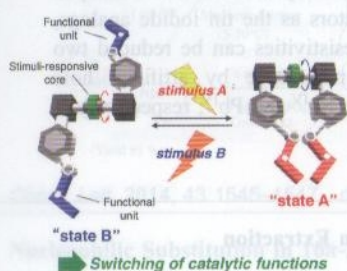
**The Chemical Society of Japan**



## Highlight Review

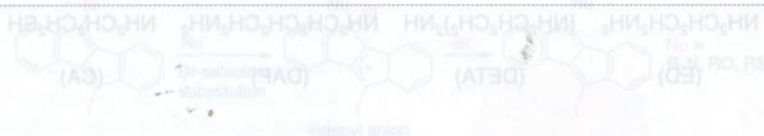
### Stimuli-responsive Cooperative Catalysts Based on Dynamic Conformational Changes toward Spatiotemporal Control of Chemical Reactions

Tatsushi Imahori\* and Seiji Kurihara



Stimuli-responsive cooperative catalysts that reversibly switch the catalytic function on the basis of the dynamic conformational changes induced by external stimuli have been incrementally developed in recent years. Such enzyme-like switchable catalysts realize spatiotemporal controls of chemical reactions, which can operate multiple regulations of chemical reaction(s) to realize anomalous chemical transformations. In this highlight review, recent progresses of the stimuli-responsive dynamic cooperative catalysts toward spatiotemporal control of chemical reactions are summarized.

Chem. Lett. 2014, 43 1524–1531 doi:10.1246/cl.140680



Photoreversible Modulation of Mass Transfer through Polymer-grafted Anodized Aluminum Oxide Membranes  
Young Ho Park, Chan Jin Jeong, Chan Pil Park, Sung Young Park, and Joon Ho Kim

Formation of anodized aluminum oxide membranes which is decorated with photoreactive epoxy groups through surface-initiated chemistry and photoreversible regulation water transfer rate through it.



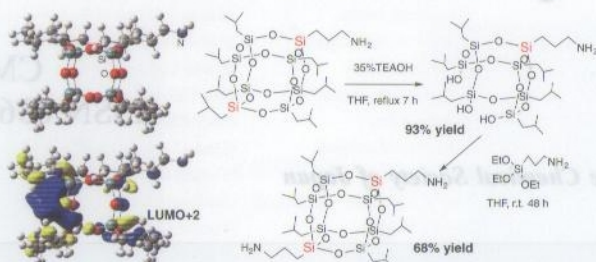
Chem. Lett. 2014, 43 1540–1541 doi:10.1246/cl.140818

Chem. Lett. 2014, 43 1538–1539 doi:10.1246/cl.140803



### Synthesis and Polymerization of a *para*-Disubstituted T8-caged Hexaisobutyl-POSS Monomer

Takayuki Maegawa, Yasuyuki Irie, Hiroyuki Fueno, Kazuyoshi Tanaka, and Kensuke Naka\*

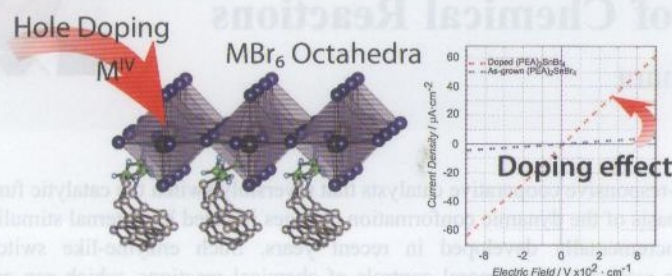


A *para*-substituted bis(3-aminopropyl)hexaisobutyl-polyhedral oligomeric silsesquioxane (POSS) was successfully synthesized via a selective corner-opening reaction of 3-aminopropylheptaisobutyl-POSS and a subsequent corner-capping reaction. The selectivity of the corner-opening reaction was studied by density functional theory calculations. Polymerization of the POSS monomer with pyromellitic dianhydride resulted in a yellow, self-standing film.

Chem. Lett. 2014, 43 1532–1534 doi:10.1246/cl.140515

### Hole Doping of Tin Bromide and Lead Bromide Organic–Inorganic Hybrid Semiconductors

Giancarlo S. Lorena, Hiroyuki Hasegawa, Yukihiro Takahashi, Jun Harada, and Tamotsu Inabe\*

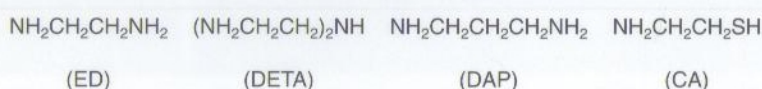


Layered perovskites of  $A_2MBr_4$  ( $A$  = organic ammonium cations;  $M$  = Sn and Pb) are semiconductors with energy gaps of 2.5–3 eV. They are found to be doped semiconductors as the tin iodide analogs, and their resistivities can be reduced two orders of magnitude by artificial hole doping with  $Sn^{IV}$  and  $Pb^{IV}$ , respectively.

Chem. Lett. 2014, 43 1535–1537 doi:10.1246/cl.140536

### Complexing Agents for Oxonium Anions of Mo and Re and Their Masking Effects on Extraction Using N-Donor Extractants

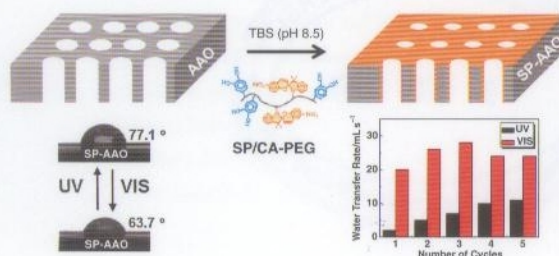
Yuji Sasaki,\* Tomoya Suzuki, Keisuke Morita, and Yasuhiro Tsubata



Chem. Lett. 2014, 43 1538–1539 doi:10.1246/cl.140502

### Photoresponsive Modulation of Mass Transfer through Spiropyran-grafted Anodized Aluminum Oxide Membrane

Young Ho Park, Chan Jin Jeong, Chan Pil Park,\* Sung Young Park,\* and Insik In\*



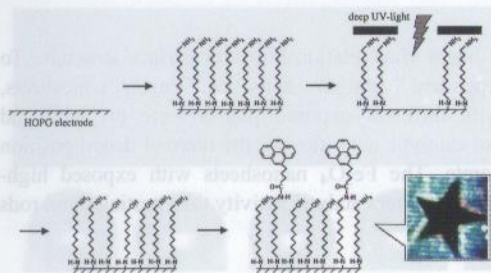
Formulation of anodized aluminum oxide membrane which is decorated with photoactive spiropyran groups through mussel-inspired chemistry and photoresponsively regulated water-transfer rate through it.

Chem. Lett. 2014, 43 1540–1541 doi:10.1246/cl.140518



## Patterning of Alkylamine Molecules on Highly Oriented Pyrolytic Graphite Surfaces via Deep UV Light Irradiation

Yusuke Sato and Toshikazu Kawaguchi\*

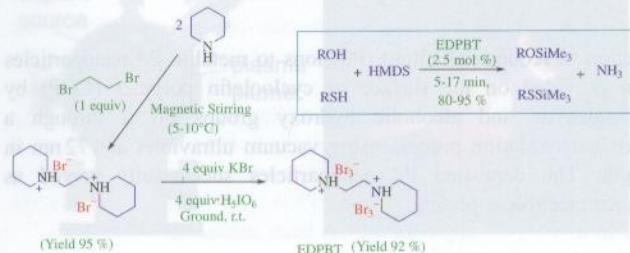


Deep UV light irradiation (172 nm) removed alkylamine molecules covalently immobilized on carbon surfaces. In addition, deep UV-patterned monolayers with  $\text{NH}_2$ - and  $\text{COOH}$ -terminated alkylamine groups were fabricated. Fluorescence and electrochemical redox probe labeling of the respective patterned monolayers was also demonstrated, confirming that deep UV patterning was successfully achieved.

Chem. Lett. 2014, 43 1542–1544 doi:10.1246/cl.140538

## Novel Protocol for the Synthesis of Organic Ammonium Tribromides and Investigation of 1,1'-(Ethane-1,2-diyl)dipiperidinium Bis(tribromide) in the Silylation of Alcohols and Thiols

Rupa R. Dey, Bappi Paul, Siddhartha S. Dhar,\* and Sushmita Bhattacharjee

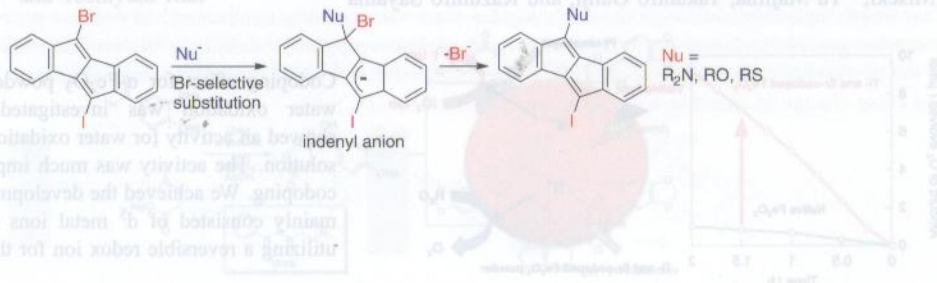


A general procedure representing highly efficient synthesis of organic ammonium tribromides (OATBs) is described. Periodic acid is used for the first time for conversion of  $\text{Br}^-$  to  $\text{Br}_3^-$  and is used to prepare host of OATBs. A novel  $N,N'$ -heterocyclic tribromide, 1,1'-(ethane-1,2-diyl)dipiperidinium bis(tribromide) (EDPBT) is also reported. The investigation of this new tribromide, EDPBT is carried out as catalyst in silylation of alcohols and thiols.

Chem. Lett. 2014, 43 1545–1547 doi:10.1246/cl.140564

Nucleophilic Substitution in 16 $\pi$ -Antiaromatic System: Synthesis of Heteroatom-substituted Dibenzopentalenes

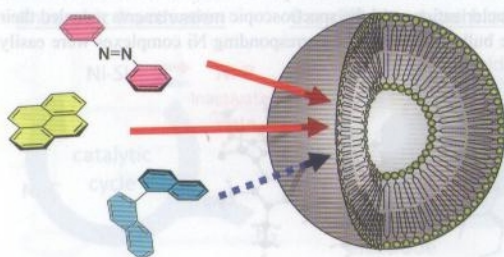
Feng Xu, Lifen Peng, Kan Wakamatsu, Akihiro Orita,\* and Junzo Otera\*



Chem. Lett. 2014, 43 1548–1550 doi:10.1246/cl.140583

## Stability of Lipid-membrane-incorporated Azobenzene and Peryenes in Water

Atsushi Ikeda,\* Tomohiro Hida, Toshiyuki Nakano, Shodai Hino, Kazuyuki Nobusawa, Motofusa Akiyama, and Kouta Sugikawa



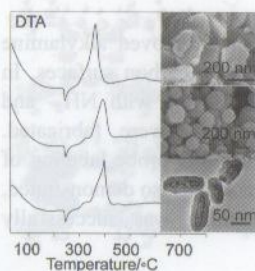
Liposomes can incorporate small hydrophobic planar  $\pi$ -conjugated molecules such as azobenzene or pyrene without chemical modifications to exhibit affinity towards the lipid membranes.

Chem. Lett. 2014, 43 1551–1553 doi:10.1246/cl.140595



### Catalytic Activity of Magnetite with Different Shapes for the Thermal Decomposition of Ammonium Perchlorate

Weiwei Wang\* and Jialiang Yao

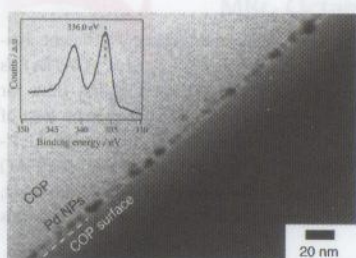


The catalytic property has a vital relationship with surface structure. To attain the surface-dependent catalytic activities,  $\text{Fe}_3\text{O}_4$  nanosheets, particles, and rods with different exposed planes were prepared and exhibited quite different catalytic activities for the thermal decomposition of ammonium perchlorate. The  $\text{Fe}_3\text{O}_4$  nanosheets with exposed high-energy {110} facets showed better catalytic activity than particles and rods with {111} facets.

Chem. Lett. 2014, 43 1554–1556 doi:10.1246/cl.140602

### Reductive Nucleation of Palladium Nanoparticles on a Cycloolefin Polymer Surface Oxidized with Active Oxygen Species Generated by Vacuum Ultraviolet Excitation

Hiroyuki Sugimura,\* Naruhito Miki, Akihiro Nakamura, and Takashi Ichii

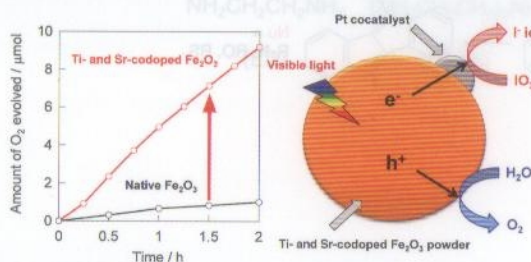


The function to reduce palladium (Pd) ions to metallic Pd nanoparticles has been provided on the surface of cycloolefin polymer (COP) by forming aldehyde and alcoholic hydroxy groups on it through a photochemical oxidation process using vacuum ultraviolet at 172 nm in wavelength. The deposited Pd nanoparticles successfully served as catalysts for electroless plating.

Chem. Lett. 2014, 43 1557–1559 doi:10.1246/cl.140594

### Codoping Effect of Sr and Ti for $\alpha\text{-Fe}_2\text{O}_3$ Photocatalyst on Water Oxidation Utilizing $\text{IO}_3^-$ as a Reversible Redox Ion under Visible Light

Yugo Miseki,\* Yu Majima, Takahiro Gunji, and Kazuhiro Sayama\*



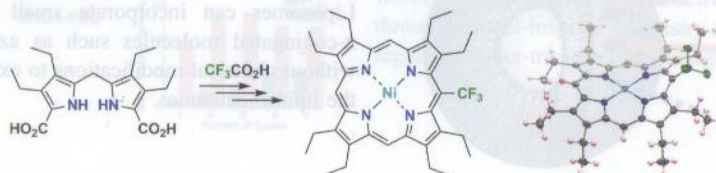
Codoping effect for  $\alpha\text{-Fe}_2\text{O}_3$  powder on photocatalytic water oxidation was investigated. Pt-loaded  $\text{Fe}_2\text{O}_3$  showed an activity for water oxidation in aqueous  $\text{NaIO}_3$  solution. The activity was much improved by Sr and Ti codoping. We achieved the development of photocatalyst mainly consisted of  $d^5$  metal ions for water oxidation utilizing a reversible redox ion for the first time.

Chem. Lett. 2014, 43 1560–1562 doi:10.1246/cl.140554

### Syntheses of Highly Distorted *meso*-Trifluoromethyl-substituted $\beta$ -Octaalkylporphyrins

Masaaki Suzuki,\* Shuto Ishii, Tyuji Hoshino, and Saburo Neya

Treatment of 5,5'-dicarboxy-3,3',4,4'-tetraalkyl-2,2'-dipyrromethanes with trifluoroacetic acid and subsequent oxidation resulted in formation of *meso*-trifluoromethyl-substituted  $\beta$ -octaalkylporphyrins. The structural characterizations and the spectroscopic measurements revealed their distorted conformations and red-shifted absorption bands depending on steric bulk. Moreover, the corresponding Ni complexes were easily afforded and exhibited enhanced nonplanarities.



Chem. Lett. 2014, 43 1563–1565 doi:10.1246/cl.140561