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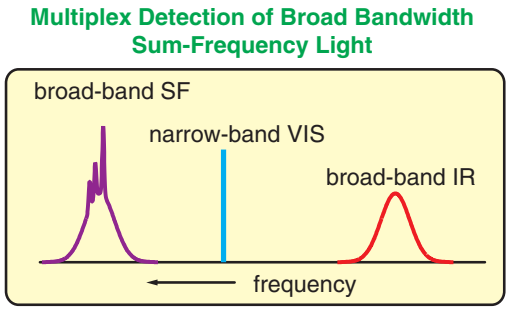
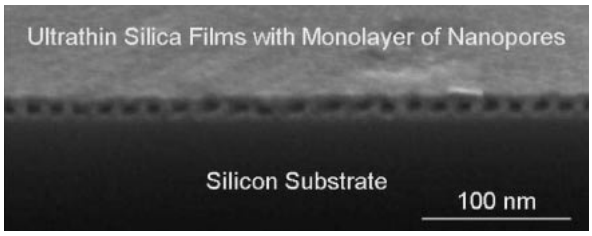
Highlight Review



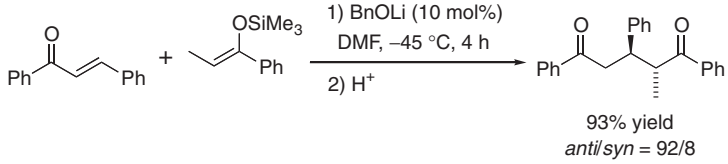
Multiplex detection of broad bandwidth light brings remarkable improvements in the experimental design of sum-frequency spectroscopy. Highly sensitive, interface-specific observations of molecular vibrations are demonstrated with examples of n-alkyl chains covalently anchored on Si(111) and an organic compound chemisorbed on TiO_2(110).

Letter



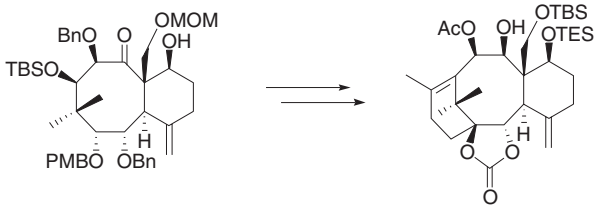
Ultrathin silica films with monolayer of uniform nanopores were fabricated on a silicon substrate by a vapor phase synthesis. 15-nm thick films were formed via triblock copolymer-assisted nanophase transition.

1410 **Lithium Alkoxide-promoted Michael Reaction between Silyl Enolates and α,β-Unsaturated Carbonyl Compounds**



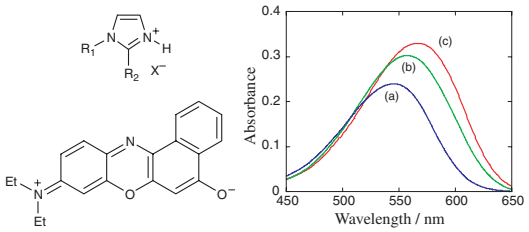
Teruaki Mukaiyama, Takashi Tozawa, and Hidehiko Fujisawa

1412 **Stereoselective Synthesis of 19-Hydroxytaxoid Using Intramolecular Pinacol Coupling Reaction**



Teruaki Mukaiyama, Yasuyuki Ogawa, Kiichi Kuroda, and Jun-ichi Matsuo

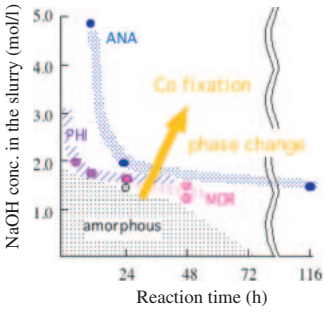
1414 **Polarity Measurement for Ionic Liquids Containing Dissociable Protons**



The λ_{max} of Nile Red in *N*-ethylimidazolium salts shifted reflecting the polarity by changing anion species (a): CF_3CO_2, (b): CF_3SO_3, and (c): bis(trifluoromethylsulfonyl)imide anion.

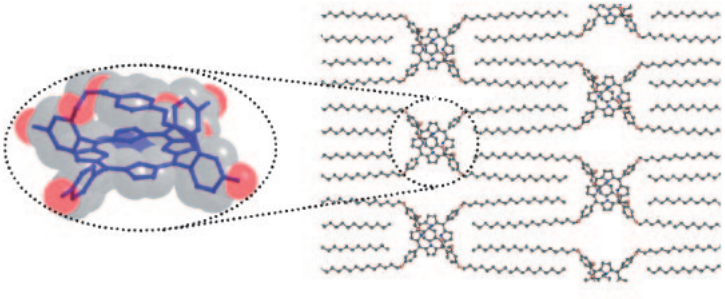
Wataru Ogihara, Takahiro Aoyama, and Hiroyuki Ohno

1416 **Structural Change and Cobalt Fixation in the Hydrothermally Synthesized Zeolite Phases from a Si–Al–Co Hydrous Oxide**



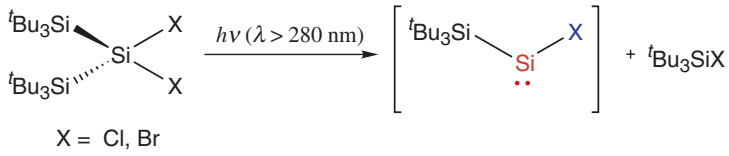
Takako Nagase, Abhijit Chatterjee, Alfred P. Tanaka, Margot L. Tanco, and Kazue Tazaki

1418 **Synthesis of Alkyl-substituted, Strapped Porphyrin to Prepare Stable Alkyl-chain-assisted Self-assembled Monolayers of Porphyrin Conjugates**



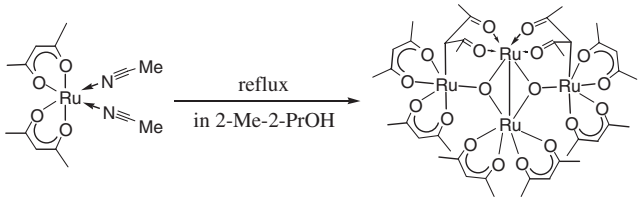
Taichi Ikeda, Masumi Asakawa, Koji Miyake, and Toshimi Shimizu

1420 **Photochemical Generation of Halo(silyl)silylene: Spectroscopic Observation and Reactivity**



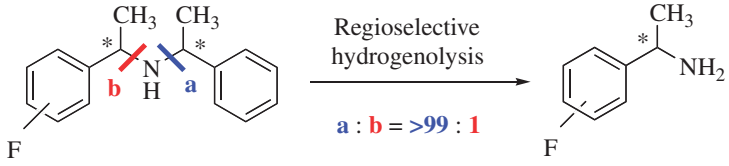
Takashi Tanaka, Masaaki Ichinohe, and Akira Sekiguchi

1422 **A Novel Tetra Nuclear Ruthenium Complex Containing Deltoid Core Topology, $[Ru_4(\mu_3\text{-}O)_2]^{8+}$, Incorporating Simultaneous O,O- and γ-C Bonded Bridging Acetylacetone Units**



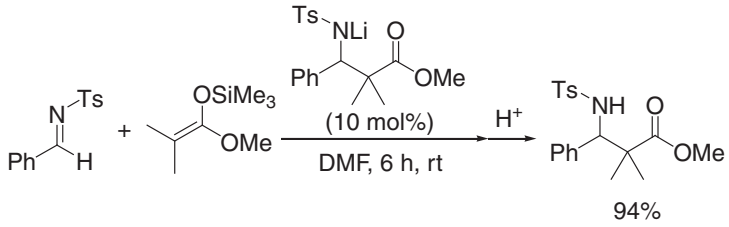
Junpei Shono, Yukie Nimura, Takeshi Hashimoto, and Kunio Shimizu

1424 **Practical Synthesis of Optically Active Fluorine-substituted α-Phenylethylamines by Retardation of Hydrogenolytic Cleavage at Benzylic Position**



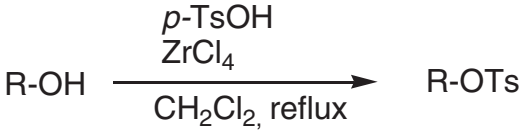
Masatomi Kanai, Manabu Yasumoto, Yokusu Kuriyama, Kenjin Inomiya, Yutaka Katsuhara, Kimio Higashiyama, and Akihiro Ishii

1426 **Product-catalyzed Mannich-type Reaction between Trimethylsilyl Enolates and *N*-Tosylaldimines**



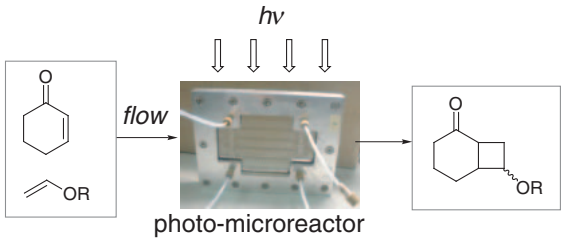
Eiki Takahashi, Hidehiko Fujisawa, and Teruaki Mukaiyama

1428 **$ZrCl_4$ as an Efficient Catalyst for Selective Tosylation of Alcohols with *p*-Toluenesulfonic Acid**



Biswanath Das and Vtukuri Saidi Reddy

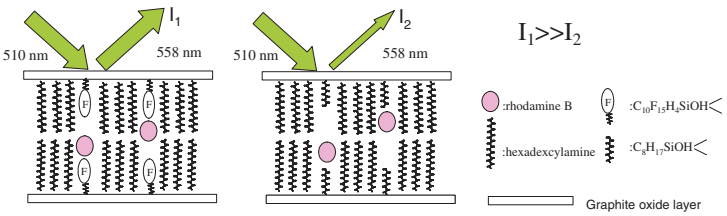
1430 **Quick Execution of [2+2] Type Photochemical Cycloaddition Reaction by Continuous Flow System Using a Glass-made Microreactor**



Takahide Fukuyama, Yoshiko Hino, Naoya Kamata, and Ilhyong Ryu

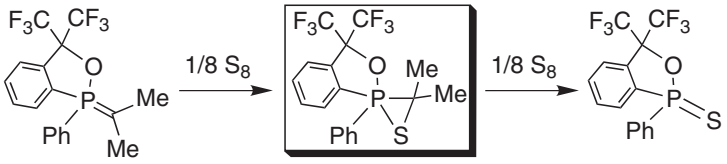
A photochemical [2+2] cycloaddition reaction was successfully conducted in a microflow system using a glass-made microreactor having 500 μm channel depth.

1432 **Enhanced Fluorescence from Rhodamine B Intercalated into Hydrophobized Graphite Oxides Containing Perfluoroalkyl Chains**



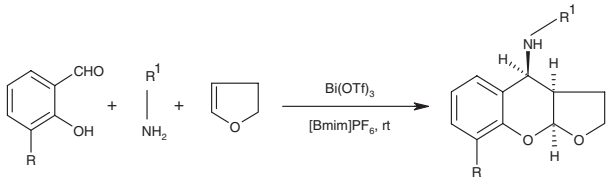
Yoshiaki Matsuo, Takahiro Fukunaga, Tomokazu Fukutsuka, and Yosohiro Sugie

1434 **Isolation of a Cyclic Intermediate in the Reaction of a Phosphorus Ylide with Elemental Sulfur: Synthesis, Structure, and Reactivity of a 1,2σ^5-Thiaphosphirane**



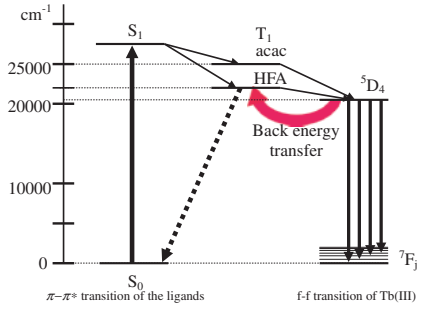
Shohei Sase, Naokazu Kano, and Takayuki Kawashima

1436 **Bi(OTf)$_3$-[Bmim]PF$_6$: A novel and Recyclable Catalytic System for the Diasteroselective Synthesis of Cis-fused Pyrano and Furanobenzopyrans**

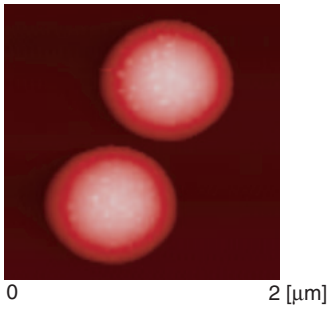


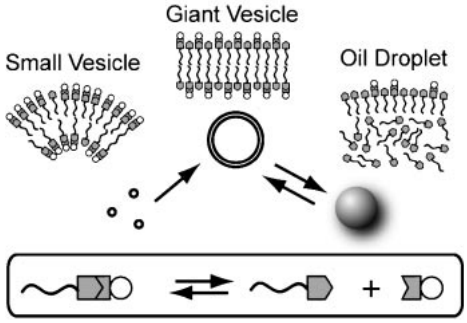
J. S. Yadav, B. V. S. Reddy, and P. Narayana Reddy

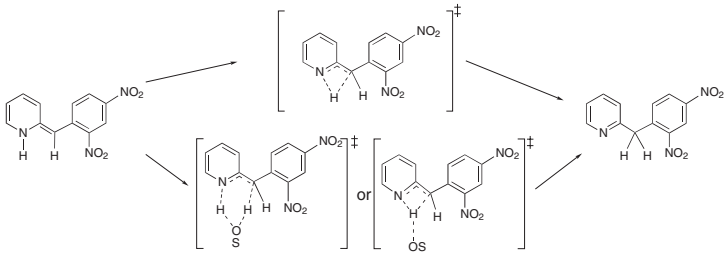
1438 **Thermo-sensitive Luminescence Based on the Back Energy Transfer in Terbium(III) Complexes**

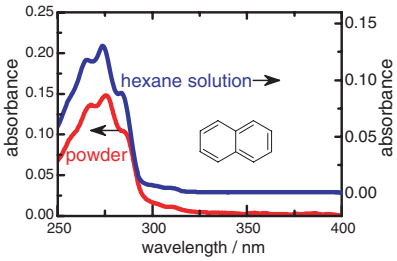


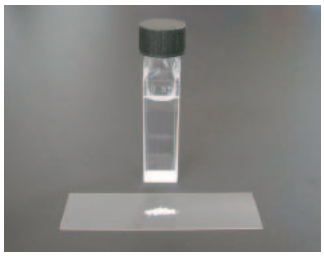
Shinya Katagiri, Yasuchika Hasegawa, Yuji Wada, and Shozo Yanagida

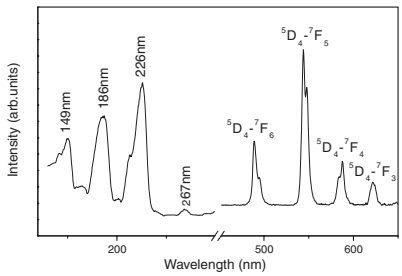










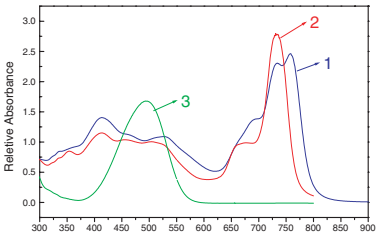


YPO_4:Tb as a green-emitting phosphor for plasma display panel (PDP) applications was synthesized by solution precipitation, which is a simple and efficient way. In acidic reaction condition, YPO_4:Tb phase with high crystallinity was obtained. The precipitates obtained from this method undergo phase transformation during the annealing process. YPO_4:Tb have high vacuum ultraviolet (VUV) absorption near 147 nm.

1450 **Synthesis and Spectral Property of Novel Phthalocyanines Substituted with Four Azo Group Moieties on Periphery of Phthalocyanine Ring**

Ying-Feng Li, Shao-Lu Li, Ke Jian Jiang, and Lian-Ming Yang

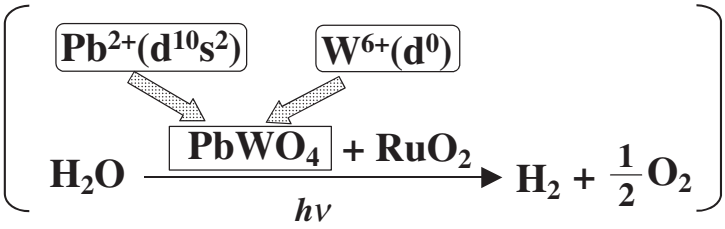
A novel class of phthalocyanines substituted with four azo group moieties on the periphery of phthalocyanine ring was synthesized, and they show obvious, broad uncommon absorption band in the visible region compared to those normal phthalocyanines.



Uv-vis absorption spectra of novel phthalocyanies **1** (metal-free Pc) and **2** (metal Pc), and precursor **3**.

1452 **A New Photocatalyst of RuO_2-loaded $PbWO_4$ for Overall Splitting of Water**

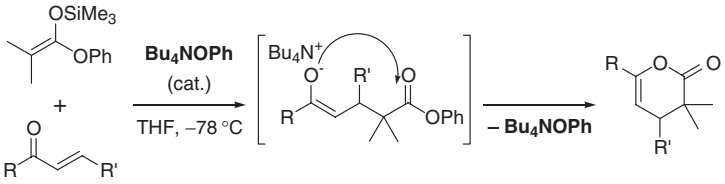
Nobuo Saito, Haruhiko Kadowaki, Hisayoshi Kobayashi, Kouki Ikarashi, Hiroshi Nishiyama, and Yasunobu Inoue



$PbWO_4$ with $d^{10}s^2$–d^0 electronic configuration is the first example of a tungsten oxide that is able to photocatalytically produce H_2 and O_2 from H_2O when combined with RuO_2.

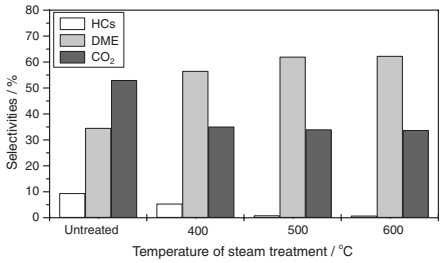
1454 **An Efficient Synthesis of 3,4-Dihydropyran-2-one Derivatives by Lewis Base-catalyzed Tandem Michael Addition and Lactonization**

Takashi Tozawa, Hidehiko Fujisawa, and Teruaki Mukaiyama



1456 **An Effective Catalyst for Syngas-to-Dimethyl Ether Process with Steamed Zeolite HMCM-49 as Dehydration Component**

Jianchao Xia, Dongsen Mao, Ning Xu, Qingling Chen, Yahong Zhang, and Yi Tang

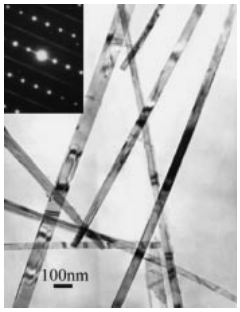


Steam treatment ameliorated the acidity of HMCM-49 zeolite, decreased the formation of hydrocarbons and carbon dioxied, and so increased the selectivity of DME.

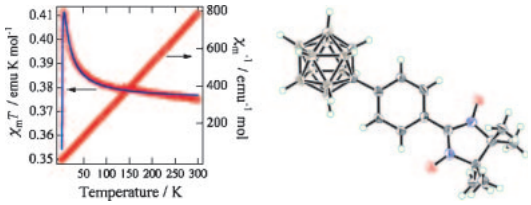
1458 **Synthesis of Wollastonite Single Crystal Nanowires by a Novel Hydrothermal Route**

Xiaoke Li and Jiang Chang

Wollastonite single crystal nanowires for applications in high strength or bioactive nanocomposite were synthesized by a novel hydrothermal route.



1460 **Synthesis, Structure, and Magnetic Property of Organic-radical Labeled Carborane**

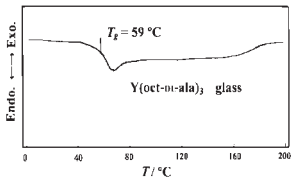


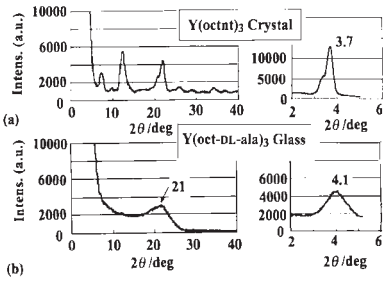
Fumiyasu Iwahori, Kengo Kamibayashi, Yoshikazu Nishikawa, Masahiro Yamashita, and Jiro Abe

A carborane derivative containing nitronyl nitroxide group was synthesized and was crystallographically and magnetically characterized. The X-ray structure analysis revealed that the molecules were crystallized in a head-to-tail dimer fashion. The intradimer ferromagnetic interaction (J/k_B = +4.26(2) K) was observed.

1462 **Formation of Stable Molecular Glasses of Yttrium(III) Acyl-DL-Alaninate Complexes**

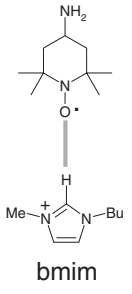
Tris(*N*-octanoyl-DL-alaninato)yttrium(III) (= Y(oct-DL-ala)$_3$) forms a stable glassy state by evaporating solvent from methanol solution in contrast with the corresponding yttrium soap (=Y(octnt)$_3$) which takes a crystalline state.

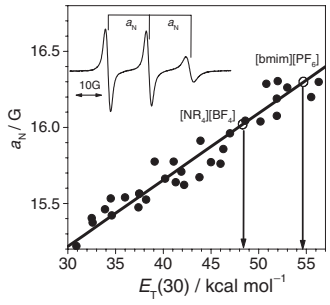




Masayasu Iida, Rie Masuda, Gerile Naren, Yuezhen Bin, and Kazuhito Kajiwara

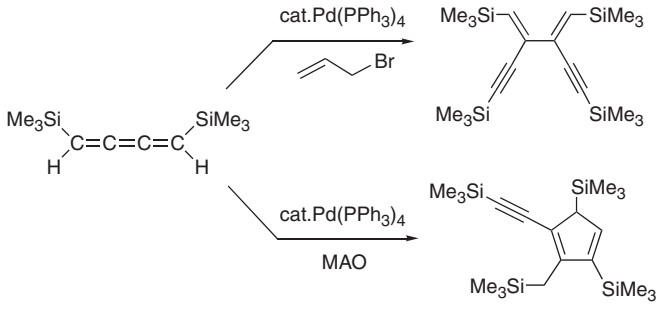
1464 **Polarity of Room-Temperature Ionic Liquid as Examined by EPR Spectroscopy**





Akio Kawai, Takehiro Hidemori, and Kazuhiko Shibuya

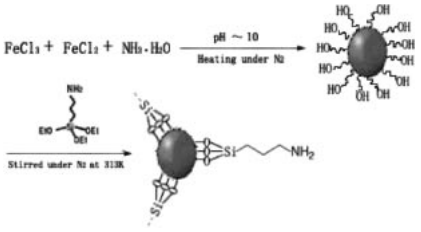
1466 **An Unprecedented Dimerization of 1,2,3-Butatriene Catalyzed by Palladium Complexes**



Noriyuki Suzuki, Hidekazu Tezuka, Yoshiyuki Fukuda, Hajime Yoshida, Masakazu Iwasaki, Masahiko Saburi, Meguru Tezuka, Teiji Chihara, and Yasuo Wakatsuki

1468 **Synthesis and Characterization of 3-Aminopropyltriethoxysilane-Modified Superparamagnetic Magnetite Nanoparticles**

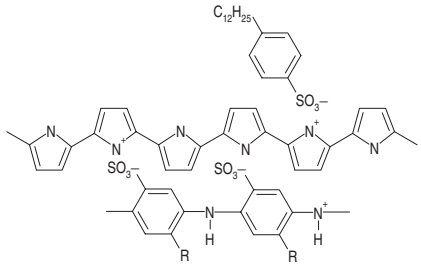
The synthesised superparamagnetic APTTS/Fe_3O_4 NPs were characterized significantly with –NH_2 functional group, well dispersion and stabilization in aqueous fluids, as well as a maximized saturation magnetization.



Xing-Can Shen, Xiu-Zhong Fang, Ying-Hua Zhou, and Hong Liang

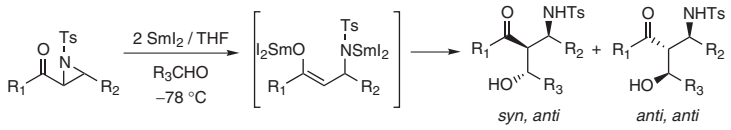
1470 **Enhanced Swelling Behaviors of Polypyrrole Film Doped with Sulfonated Polyaniline**

Polypyrrole doped with sulfonated polyaniline.



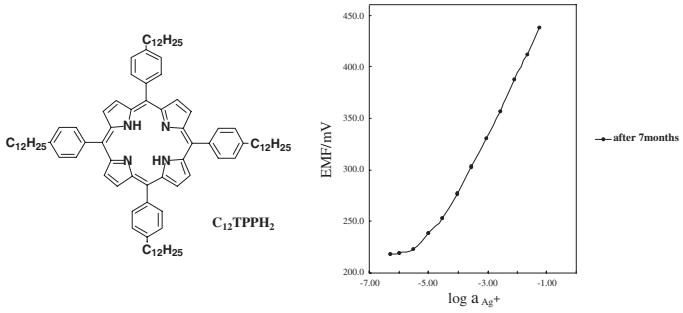
Akihisa Tanaka, Wataru Takashima, and Keiichi Kaneto

1472 **A New Method for the Synthesis of β-Amino–β′-Hydroxy Ketones by the Samarium(II) Iodide-mediated Aldol Reaction of Aldehydes with Aryl or Alkyl Aziridinyl Ketones**



Teruaki Mukaiyama, Yasuyuki Ogawa, and Kiichi Kuroda

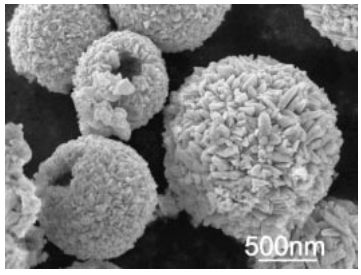
1474 **Ion-sensing Behavior of Ion-selective Electrodes Based on 5,10,15,20-Tetrakis (4-*n*-Dodecylphenyl) porphyrin**



Takayo Moriuchi-Kawakami, Hiroshi Nishimura, Keiichi Fujimori, Yasuhiko Shibutani, Takushi Sugino, and Yo Shimizu

1476 **Large-scale Growth of Hollow Sb Microspheres**

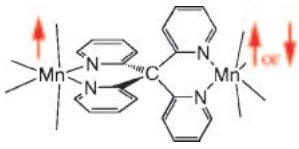
The magnified FE-SEM image of the "open" structrure of the hollow spheres.



Wanqun Zhang, Liqiang Xu, Guangchen Xi, Weichao Yu, and Yitai Qian

1478 **Dinuclear Manganese(II) Complex Containing Tetrakis(2-pyridyl)methane as a Spiro-fused Bridge**

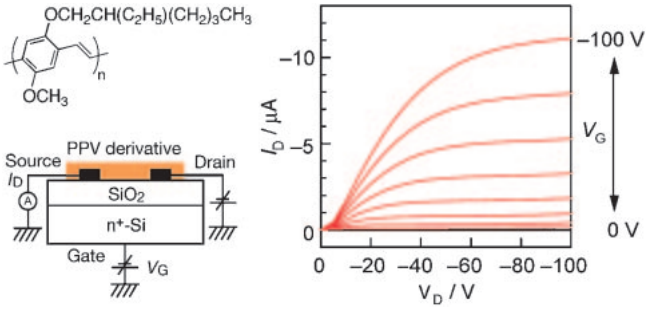
A dinuclear manganese(II) complex [{Mn(hfac)$_2$}$_2$(py$_4$C)] was synthesized, where hfac and py$_4$C denote 1,1,1,5,5,5-hexafluoropentane-2,4-dionate and tetrakis(2-pyridyl)-methane, respectively. X-Ray crystallographic analysis revealed that the dihedral angle between two chelate rings was 87.4(2)°. Very weak antiferromagnetic interaction was operative between manganese(II) spins.



Atsushi Okazawa, Takayuki Ishida, and Takashi Nogami

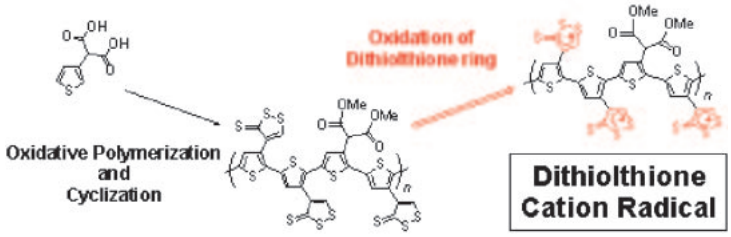
1480 **Field-effect Transistors Based on Poly(*p*-phenylenevinylene) Derivatives**

Masanori Muratsubaki, Yukio Furukawa, Takanobu Noguchi, Toshihiro Ohnishi, Eiichi Fujiwara, and Hirokazu Tada



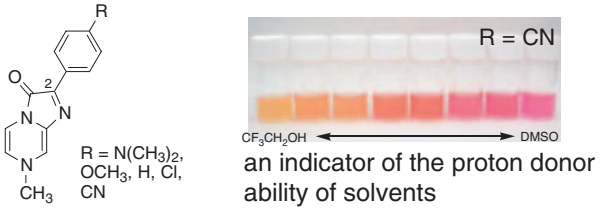
1482 **3-Dithiolthione-substituted Polythiophene and Its Redox Activities**

Ichiro Takemura, Tomokazu Iwasaki, Shinji Takeoka, and Hiroyuki Nishide



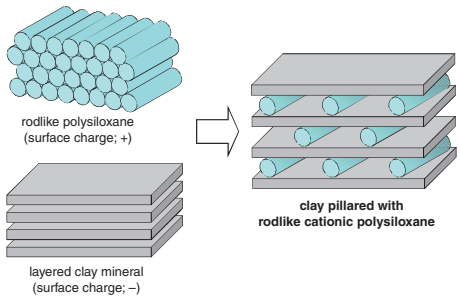
1484 **Substituent Effects on the Solvatochromism of 2-Phenylimidazopyrazinones: Effective Control of the Color Variation Range and Sensitivity toward an Indication of the Proton-donor Ability of Solvents by an Electron-withdrawing Group Substitution**

Yoshiharu Takamuki, Shojiro Maki, Haruki Niwa, Hiroshi Ikeda, and Takashi Hirano



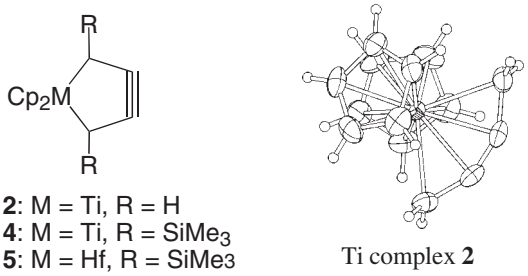
1486 **Preparation of a Clay Pillared with Rodlike Cationic Polysiloxane**

Yoshiro Kaneko, Nobuo Iyi, Taki Matsumoto, and Kenji Kitamura



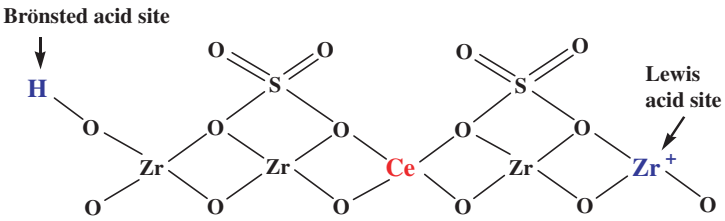
1488 **Synthesis and Structure of 1-Titana- and 1-Hafnacyclopent-3-yne Complexes**

Noriyuki Suzuki, Takaaki Watanabe, Takuji Hirose, and Teiji Chihara



1490 **A New Solid Superacid Catalyst Prepared by Doping ZrO_2 with Ce and Modifying with Sulfate Simultaneously**

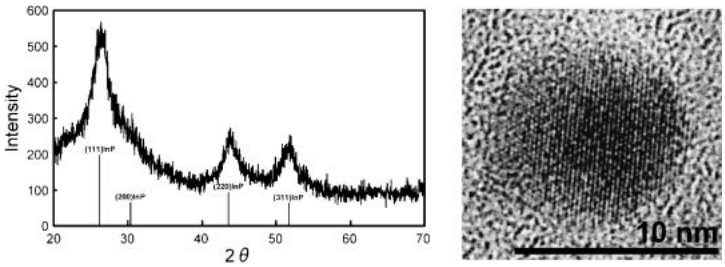
Jong Rack Sohn, Jun Seob Lim, and Si Hoon Lee



A model structure for the acid sites on Ce–ZrO_2/SO_4^{2-}

1492 **Organometallic Synthesis of InP Quantum Dots Using Tris(dimethylamino)phosphine as a Phosphorus Source**

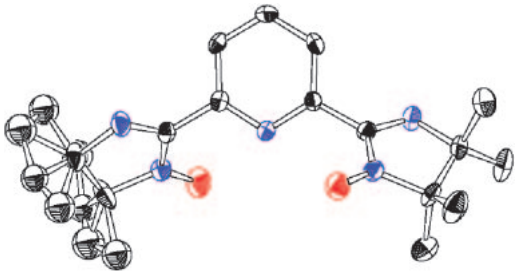
Taichi Matsumoto, Shinya Maenosono, and Yukio Yamaguchi



InP colloidal quantum dots were synthesized via an alternative synthetic route using indium trichloride and tris(dimethylamino)phosphine as precursors.

1494 **Stable Iminonitroxide Biradical in the Triplet Ground State**

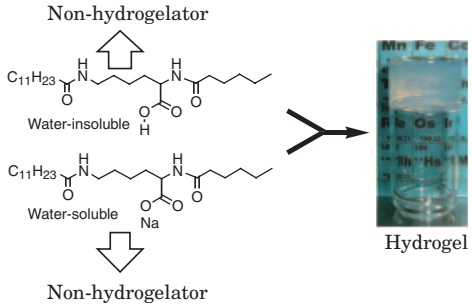
Kenichi Hayakawa, Daisuke Shiomi, Tomoaki Ise, Kazunobu Sato, and Takeji Takui



1496 **Supramolecular Hydrogels Formed by L-Lysine Derivatives**

Masahiro Suzuki, Mariko Yumoto, Mutsumi Kimura, Hirofusa Shirai, and Kenji Hanabusa

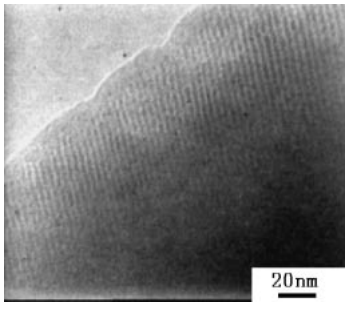
New hydrogelators based on an L-lysine consisting of water-soluble carboxylate and water-insoluble carboxylic acid compounds, which never form a hydrogel, can gel water below 1 wt %, and the hydrogel has a good thermal stability.



1498 **Preparation of Ordered Multilayer Titania/polymer Nanocomposite Thin Films by Evaporation-induced Self-assembly**

Shengmao Zhang, Benfang He, Zhijun Zhang, Hongxin Dang, Weimin Liu, and Qunji Xue

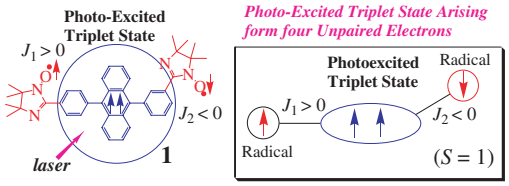
The TEM image of the polymerized film is shown in the figure below. It can be seen that the polymerized film has laminated structure. The average spacing between the organic and inorganic layers of the polymerized films was calculated to be about 6 nm, which is in good agreement with the XRD results.



1500 **Novel Photo-excited Triplet State Arising from Four Unpaired Electrons: π-Topology and Spin Alignment in Excited State of Organic Spin System**

Yoshio Teki and Satoru Nakajima

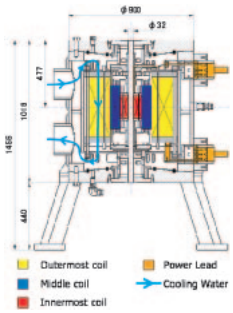
Novel photo-excited triplet state arising from 4 unpaired spins and a nearly degenerate quintet excited state were detected for **1**, which was designed by taking π-topology into account. The unique triplet state has an interesting electronic structure, which *D* value is reduced by the antiferromagnetic spin alignment between two radical spins through the excited spin coupler.



1502 **Trial Measurement of NMR in a Bitter Magnet of NIMS**

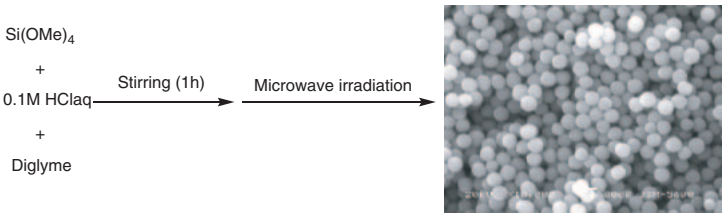
Tadashi Shimizu, Atsushi Goto, Kenjiro Hashi, and Shinobu Ohki

High magnetic fields are required to improve NMR sensitivity and resolution. We have carried out an NMR measurement at a field of 23.5 T (1 GHz for proton) produced by a Bitter type resistive magnet in NIMS. Schematic view of the magnet is shown here. The three coils are made of stacking the Bitter plates.



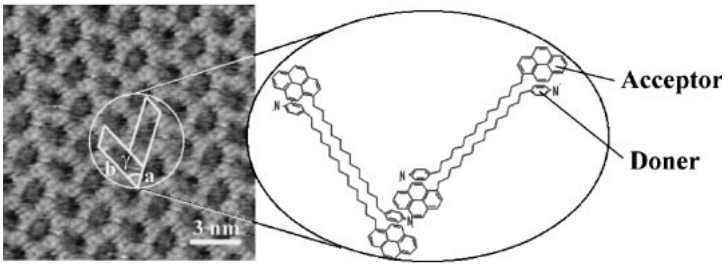
1504 **Novel Synthesis of Submicrometer Silica Spheres in Non-alcoholic Solvent by Microwave-assisted Sol–Gel Method**

Kaoru Adachi, Takeru Iwamura, and Yoshiki Chujo



1506 **Structure of Intermolecular Donor–Acceptor Monolayers of *N*,*N*-Dimethyl-*p*-[15-(1-pyrenyl)pentadecanyl]aniline**

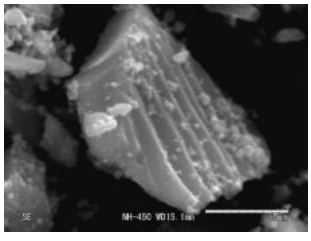
Satoru Nishio, Masahito Yoshidome, Hiroshi Uji-i, Jonathan Hobley, Hiroshi Fukumura, and Klaas A. Zachariasse



1508 **Preparation of Nitrogen-doped Anatase Titania by Treatment of Layered Titania/Isostearate Nanocomposite with Aqueous Ammonia**

Taki Matsumoto, Nobuo Iyi, Yoshiro Kaneko, Kenji Kitamura, Yoshio Takasu, and Yasushi Murakami

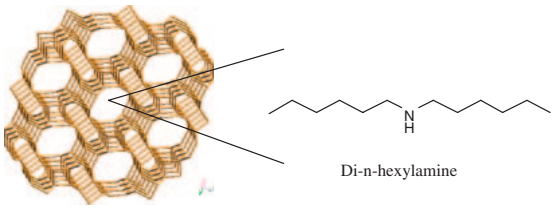
The scanning electron microgram of the nitrogen-doped plate anatase titania obtained from layered titania/isostearate nanocomposite by the treatment of it in aqueous ammonia and firing at 450 °C.



1510 **Synthesis of Pure SAPO-31 with Di-*n*-hexylamine as a Novel Structure Directing Agent**

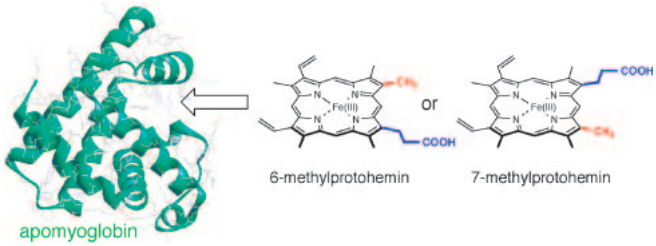
Yunfeng Hu, Xiangsheng Wang, Xinwen Guo, Silue Li, and Haibo Sun

Di-*n*-hexylamine was originally used to synthesize pure SAPO-31 as a structure directing agent (SDA) and the synthesized SAPO-31 crystals have some novel features. After loaded with Pt, it exhibits higher selectivity to isomerization compared with the results of SAPO-31 prepared by the regular method.



1512 **Chemical Properties of Sperm Whale Myoglobins Reconstituted with Monopropionate Hemins**

Takashi Hayashi, Tomoyuki Nakagawa, Katsuyoshi Harada, Takashi Matsuo, Yutaka Hitomi, and Yoshio Hisaeda

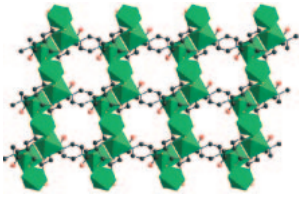


Contribution of heme-propionate side chains in myoglobin was evaluated by myoglobins reconstituted with two aritificially created hemins, monomethylated protohemins.

1514 **$[Ni_3(cit)_2(pyz)(H_2O)_4](H_2O)_4$: A New Three-dimensional Porous Coordination Polymer with a Pillared Layer Structure**

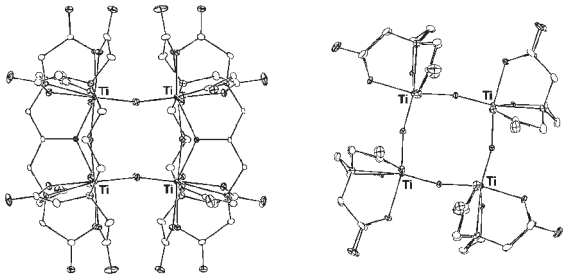
Ting Yu, Yunqi Tian, Zhenxia Chen, Jinxi Chen, Linhong Weng, and Dongyuan Zhao

A new porous coordination polymer, $[Ni_3(cit)_2(pyz)(H_2O)_4](H_2O)_4$ which adopts a pillared layer structure with $(4^26^28^2)(46^48)_2$ topology and contains 3-D intersected channels.



1516 **Selective Formation of Alkoxo-bridged Titanium(IV) Polynuclear Complexes with Polyaminopolycarboxylate: First Titanium(IV) Octanuclear Complex Containing Cubic-type $\{Ti_4(\mu\text{-oxo})_4\}_2(\mu\text{-alkoxo})_4$ Core**

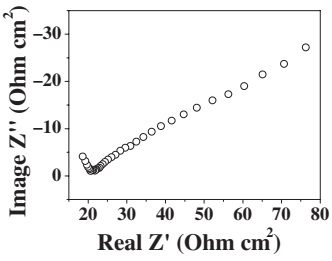
Yoshitaro Miyashita, Md. Monirul Islam, Nagina Amir, Kiyoshi Fujisawa, and Ken-ichi Okamoto

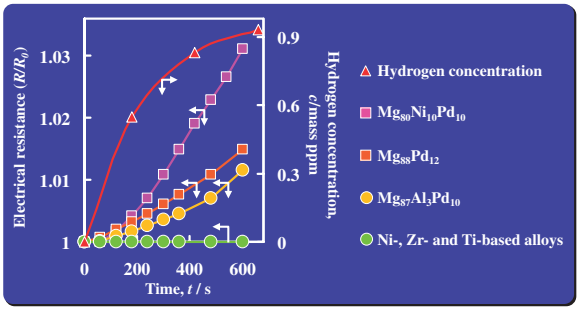


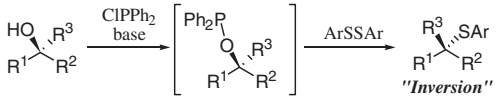
1518 **Synthesis and Conductivity of High Proton Conductor $H_6GeW_{10}V_2O_{40}\cdot 22H_2O$**

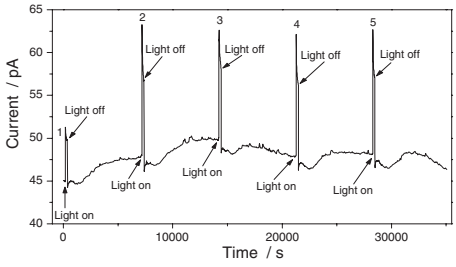
Xiao-Guang Sang and Qing-Yin Wu

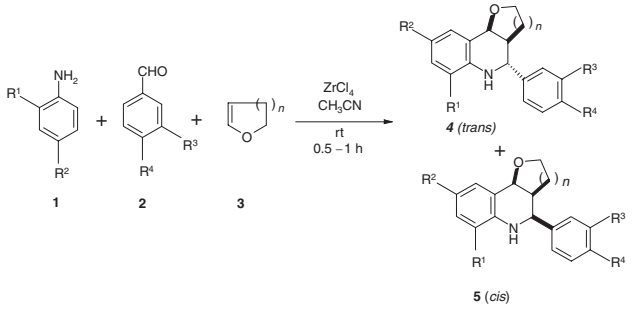
The synthesis and conductivity of a new excellent solid high proton conductor decatungstodivanadogermanic acid $H_6GeW_{10}V_2O_{40}\cdot 22H_2O$ are reported for the first time. Its proton conductivity is 1.20×10^{-2} S·cm^{-1} at room temperature (16 °C).

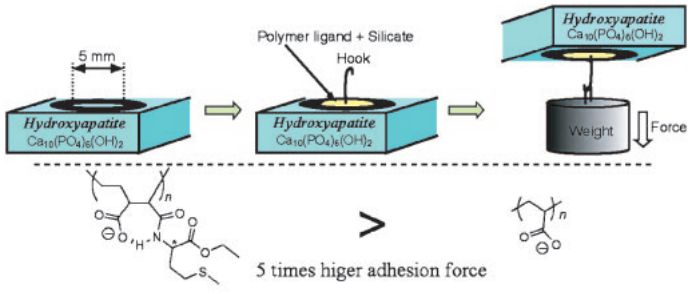












1530 **Thiacrownether-mediated Size-controlled Assembly of Gold Nanoparticles**

Insik In, Young-Wook Jun, Yun Jun Kim, and Sang Youl Kim