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Award Accounts

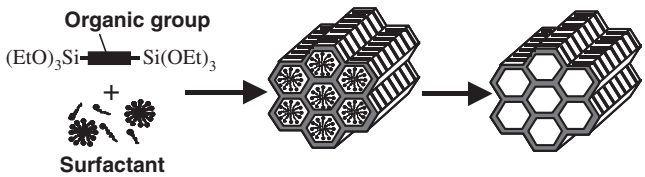
The Chemical Society of Japan Award for Creative Work for 2004

Highly Ordered Mesoporous Organosilica Hybrid Materials

M. P. Kapoor and S. Inagaki*

Bull. Chem. Soc. Jpn. **2006**, *79*, 1463–1475

The latest developments in periodic mesoporous organosilicas are summarized with an emphasis on the synthesis, extension of bridged organic groups, crystallization of pore walls, further chemical modification, and possible functions.



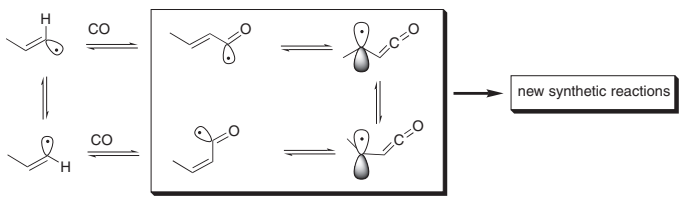
The Chemical Society of Japan Award for Creative Work for 2004

Carbonylative Approaches to α,β-Unsaturated Acyl Radicals and α-Ketenyl Radicals. Their Structure and Applications in Synthesis

I. Ryu,* Y. Uenoyama, and H. Matsubara

Bull. Chem. Soc. Jpn. **2006**, *79*, 1476–1488

The carbonylation of vinyl radicals gives α,β-unsaturated acyl radicals. MO calculations predict that α,β-unsaturated acyl radicals and the isomeric α-ketenyl radicals are isomeric species that undergo interconversion. This represents a powerful resource for developing synthetic reactions using the reaction system.



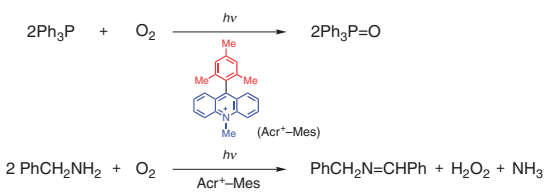
BCSJ Award Article

Photocatalytic Electron-Transfer Oxidation of Triphenylphosphine and Benzylamine with Molecular Oxygen via Formation of Radical Cations and Superoxide Ion

K. Ohkubo, T. Nanjo, and S. Fukuzumi*

Bull. Chem. Soc. Jpn. **2006**, *79*, 1489–1500

9-Mesityl-10-methylacridinium ion (Acr^+–Mes) acts as a photocatalyst for the oxygenation of triphenylphosphine with O_2 via radical coupling of triphenylphosphine radical cation and $O_2^{\bullet-}$ to produce triphenylphosphine oxide. Photooxidation of benzylamine with O_2 also occurs to yield $PhCH_2N{=}CHPh$ and hydrogen peroxide.

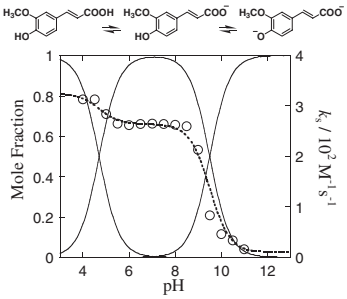


Articles

Kinetic Study on the Free Radical-Scavenging and Vitamin E-Regenerating Actions of Caffeic Acid and Its Related Compounds

K. Ohara,* Y. Ichimura, K. Tsukamoto, M. Ogata, S. Nagaoka, and K. Mukai

Bull. Chem. Soc. Jpn. **2006**, *79*, 1501–1508



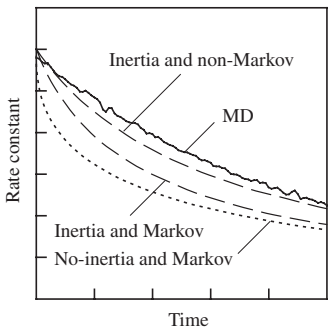
Second-order rate constants for free radical-scavenging and vitamin E-regenerating reactions of caffeic acid and its related compounds were correlated to their oxidation potential. pH Dependence suggests that proton-dissociation equilibrium affects the radical-scavenging reaction.

Selected Paper

Analysis of Short-Time Transient Dynamics of a Diffusion-Controlled Reaction in a Hard-Sphere Fluid Based on Fokker–Planck–Kramers Equation

K. Ibuki* and M. Ueno

Bull. Chem. Soc. Jpn. **2006**, *79*, 1509–1518



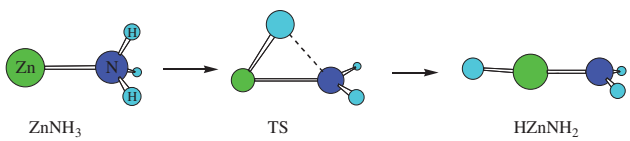
A theory based on the Fokker–Planck–Kramers equation reproduces the rate constants obtained from MD simulations over a wide density range. A small disagreement at very high densities is explained by non-Markovian effects.

Infrared Spectroscopic and Density Functional Theory Studies on the Reactions of Zinc and Cadmium Atoms with Ammonia

L. Jiang and Q. Xu*

Bull. Chem. Soc. Jpn. **2006**, *79*, 1519–1524

Reactions of zinc and cadmium atoms with ammonia in solid argon have been studied. $ZnNH_3$ and $CdNH_3$ were mainly produced from the reactions of ammonia with excited metal atoms. Absorptions of $HZnNH_2$ sharply increased upon UV irradiation.

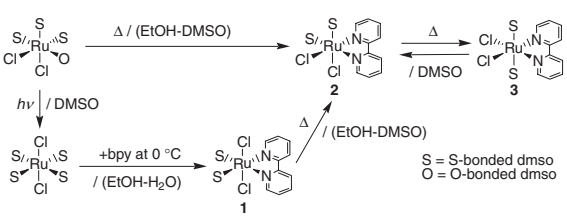


Syntheses and Crystal Structures of Mono(2,2′-bipyridine)dichlorobis-(dimethyl sulfoxide-*S*)ruthenium(II) Complexes, [$RuCl_2$(bpy)(dmso-*S*)$_2$]

M. Toyama,* K. Inoue, S. Iwamatsu, and N. Nagao*

Bull. Chem. Soc. Jpn. **2006**, *79*, 1525–1534

Two isomers of mono(2,2′-bipyridine)ruthenium complexes, *trans*(Cl),*cis*(S)- and *cis*(Cl),*cis*(S)-[$RuCl_2$(bpy)(dmso-*S*)$_2$] (**1** and **2**, respectively) were selectively synthesized and characterized by X-ray crystallography. The crystal structure of the remaining isomer *cis*(Cl),*trans*(S)-[$RuCl_2$(bpy)(dmso-*S*)$_2$] (**3**) was also determined.

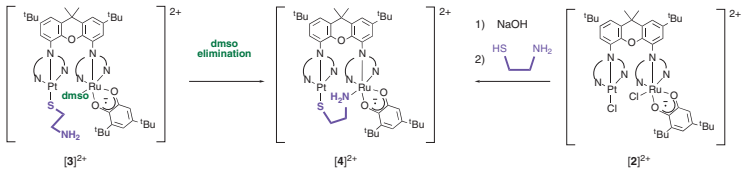


Novel Platinum–Ruthenium Dinuclear Complex Bridged by 2-Aminoethanethiol

R. Okamura, T. Wada, and K. Tanaka*

Bull. Chem. Soc. Jpn. **2006**, *79*, 1535–1540

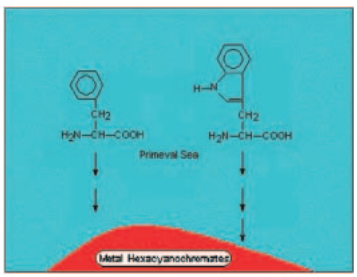
A novel platinum–ruthenium complex ($[\mathbf{2}]^{2+}$) reacted with 2-aminoethanethiol to afford complex $[\mathbf{4}]^{2+}$, in which 2-aminoethanethiol bridges the Ru and Pt ions. Intramolecular substitution of dmso coordinated to Ru with the 2-aminoethanethiolato ligand coordinated to the Pt ion in complex $[\mathbf{3}]^{2+}$ also afforded complex $[\mathbf{4}]^{2+}$.



Interaction of Aromatic Amino Acids with Metal Hexacyanochromate(III) Complexes: A Possible Role in Chemical Evolution

S. R. Ali and Kamaluddin*

Bull. Chem. Soc. Jpn. **2006**, *79*, 1541–1546



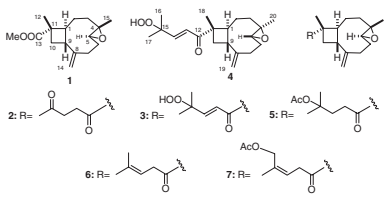
Cobalt(II), copper(II), and cadmium(II) hexacyanochromate(III) were found to show high adsorption affinity towards aromatic amino acids, supporting the hypothesis that insoluble metal cyanogen complexes played an active role in the concentration of biomonomers from dilute prebiotic soup in the primeval sea during the course of chemical evolution.

New β-Caryophyllene-Derived Terpenoids from the Formosan Soft Coral *Sinularia gibberosa*

S.-P. Chen, C.-H. Chao, H.-C. Huang, Y.-C. Wu, C.-K. Lu, C.-F. Dai, and J.-H. Sheu*

Bull. Chem. Soc. Jpn. **2006**, *79*, 1547–1551

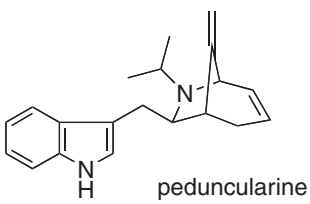
Seven new β-caryophyllene-derived terpenoids (**1**–**7**) were isolated from EtOAc extracts of the Formosan soft coral *Sinularia gibberosa*. The structures of compounds **1**–**7** were elucidated on the basis of extensive spectroscopic analyses and by comparison with the spectral data of related metabolites. Cytotoxicity evaluation of the above metabolites towards a limited panel of cancer cell lines also will be described.



Synthesis of Peduncularine

M. Kitamura,* Y. Ihara, K. Uera, and K. Narasaka

Bull. Chem. Soc. Jpn. **2006**, *79*, 1552–1560



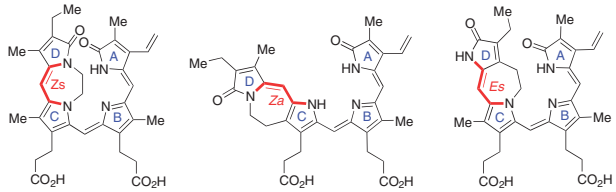
Peduncularine was synthesized by using radical cyclization of an oxime induced by one-electron reduction as a key step.

Syntheses of Biliverdin Derivatives Sterically Locked at the CD-Ring Components

M. A. S. Hammam, H. Nakamura, Y. Hirata, H. Khawn, Y. Murata, H. Kinoshita, and K. Inomata*

Bull. Chem. Soc. Jpn. **2006**, *79*, 1561–1572

Biliverdin derivatives with a *Z-syn*, *Z-anti*, or *E-syn* CD-ring components were synthesized by developing new and efficient methods for the construction of sterically locked CD-ring components towards the elucidation of the stereochemistry of the chromophore in phytochromes.

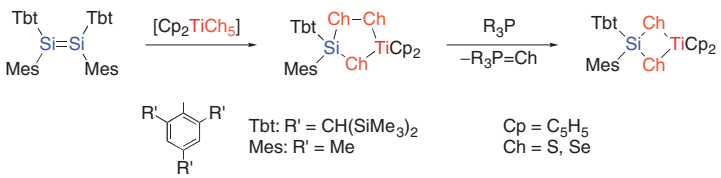


Synthesis and Spectroscopic Properties of Novel Silacyclic Compounds Containing a Titanium and Some Chalcogen Atoms

N. Takeda, T. Tanabe, and N. Tokitoh*

Bull. Chem. Soc. Jpn. **2006**, *79*, 1573–1579

Novel silacyclic compounds containing a titanium and some chalcogen atoms, [Tbt(Mes)Si(μ-Ch)$_2$TiCp$_2$] and [Tbt(Mes)Si(μ-Ch)(μ-Ch$_2$)TiCp$_2$] (Ch = S and Se; Tbt = 2,4,6-tris[bis(trimethylsilyl)methyl]phenyl; Mes = mesityl; Cp = cyclopentadienyl), were synthesized by the reactions of the disilene Tbt(Mes)Si=Si(Mes)Tbt with [Cp$_2$TiCh$_5$].

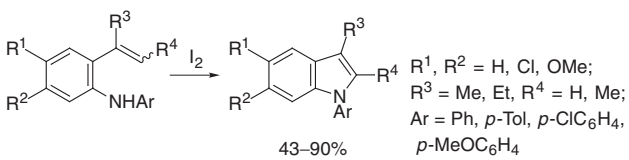


Synthesis of 1-Aryl-1*H*-indole Derivatives by Iodine-Mediated Cyclization of 2-(Arylamino)styrene Derivatives

K. Kobayashi,* K. Miyamoto, T. Yamase, D. Nakamura, O. Morikawa, and H. Konishi

Bull. Chem. Soc. Jpn. **2006**, *79*, 1580–1584

1-Aryl-1*H*-indole derivatives were prepared by treatment of 2-(arylamino)-styrene derivatives with iodine in the presence of sodium hydrogencarbonate in acetonitrile at 0 °C in satisfactory yields.

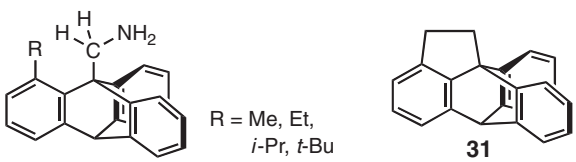


Deamination of 1-Alkyl-9-amino-methyltriptycenes. Participation of a Neighboring 1-Alkyl Substituent

G. Yamamoto,* A. Koseki, J. Sugita, H. Mochida, and M. Minoura

Bull. Chem. Soc. Jpn. **2006**, *79*, 1585–1600

Deamination of the title compounds gave products resulting from the participation of a neighboring 1-alkyl group, e.g., **31** in the case of R = Me.



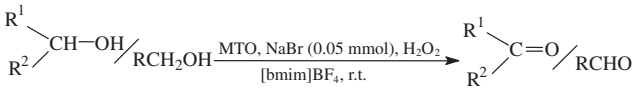
■ **Short Article**

Methyltrioxorhenium and Sodium Bromide-Catalyzed Oxidation of Alcohols to Carbonyl Compounds with H_2O_2 Using 1-Butyl-3-methylimidazolium Tetrafluoroborate Ionic Liquid as a Novel Recyclable Green Solvent

S. L. Jain, V. B. Sharma, and B. Sain*

Bull. Chem. Soc. Jpn. **2006**, *79*, 1601–1603

The ionic liquid 1-butyl-3-methylimidazolium tetrafluoroborate ([bmim]BF_4) was found to be a recyclable, reusable, and green solvent for the oxidation of various alcohols to the corresponding carbonyl compounds using a MTO/NaBr catalytic system and hydrogen peroxide as an oxidant.

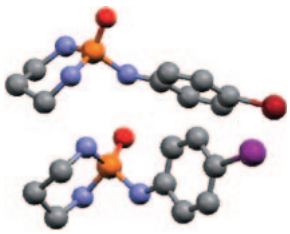


■ **Short Article**

Substituent Effects on the Spectroscopic and Structural Parameters of Several New 1,3,2-Diazaphosphorinanes. Syntheses, Spectroscopic Characterization, and X-ray Crystallography

K. Gholivand,* Z. Shariatinia, F. Yaghmaian, and H. Faramarzpour

Bull. Chem. Soc. Jpn. **2006**, *79*, 1604–1606



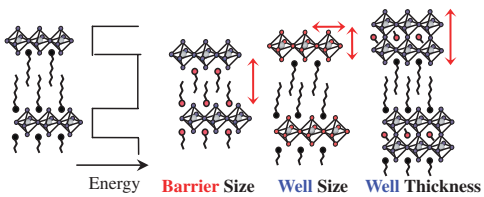
New 1,3,2-diazaphosphorinanes were synthesized and characterized by NMR and IR spectroscopy and elemental analysis. X-ray crystallography showed that the six-membered rings have chair conformations and the P=O bond is placed in an equatorial position.

Systematic Studies on Chain Lengths, Halide Species, and Well Thicknesses for Lead Halide Layered Perovskite Thin Films

Y. Takeoka,* K. Asai, M. Rikukawa, and K. Sanui

Bull. Chem. Soc. Jpn. **2006**, *79*, 1607–1613

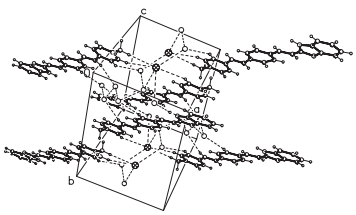
Two-dimensional layered perovskite compounds were systematically prepared. The influences of the barrier-size, halide species, and well thickness for the perovskite thin films on the quantum confinement structures were investigated.



Synthesis, Structures, and Two-Photon Absorption Properties of Two New Heterocycle-Based Organic Chromophores

Y.-X. Yan,* H.-H. Fan, C.-K. Lam, H. Huang, J. Wang, S. Hu, H.-Z. Wang,* and X.-M. Chen

Bull. Chem. Soc. Jpn. **2006**, *79*, 1614–1619



There are two crystallographically independent organic cations in the asymmetric unit of compound **4**. Lattice water molecules co-crystallized forming various kinds of hydrogen bonds. Hydrogen-boned hexagons are formed by O1w, O2w, I^-, and their centrosymmetrically related partners.