Highlight Review

142 Heterolytic Dissociation of C–H Bond of Methane over Ag⁺-exchanged Zeolites and Conversion of Methane into Higher Hydrocarbons in the Presence of Ethene or Benzene

Toshihide Baba and Koji Inazu

Formation of highly polarized methoxy groups (ZO⁻/CH₃⁺) and silver hydride species (Ag⁺–H) over Ag⁺-exchanged zeolites and reaction of the CH₃⁺ with ethene and benzene form propene and toluene, respectively.

148 Chiral Symmetry Breaking in Chiral Crystallization and Soai Autocatalytic Reaction

Ilya D. Gridnev

Complete chiral crystallization and absolute chiral synthesis are both fascinating phenomena shedding light on the possible origins of homochirality in Nature and opening perspectives for efficient preparations of optically pure materials.Originally, these two phenomena have been considered mechanistically quite different belonging to the hetero- and homogeneous systems, respectively. However, the results of the active research in both fields undertaken in the last few years suggest that there may be a much closer likeness of the most important mechanistic features of these two phenomena. The present review brings together the latest data on the complete chiral crystallization and absolute chiral synthesis including our own data on the mechanism and spontaneous break of chirality in the Soai asymmetric autocatalysis.
Letter

154 Syntheses and Characterization of Palladium(II) Complexes with Tridentate N-Heterocyclic Carbene Ligands Containing Aryloxy Groups and Their Application to Heck Reaction

Takeyoshi Yagyu, Shoko Oya, Masunobu Maeda, and Koichiro Jitsukawa

156 Anomalous $^{13}$C NMR Chemical Shifts of High-spin Saddle Shaped Manganese(III) Octaethyltetraphenylporphyrin Complexes

Akira Ikezaki, Mikio Nakamura, and Ru-Jen Cheng

An Efficient Energy Transfer Found in Triphenylene/Hexaazatriphenylene System with Electronic Complementarity and Structural Similarity

Tsutomu Ishi-i, Hiroshi Tashiro, Rempei Kuwahara, Shuntaro Mataka, Toshitada Yoshihara, and Seiji Tobita

Electronic Supporting Information

Effect of Fluorine Substituent on the Chitinase-catalyzed Polymerization of Sugar Oxazoline Derivatives

Akira Makino, Junji Sakamoto, Masashi Ohmae, and Shiro Kobayashi

Synthesis of Single-crystal BaMo$_2$O$_7$ Nanowire Bundles: A General, Low-temperature Hydrothermal Approach to 1D Molybdenum Oxide-based Nanostructures

Peng Gao, Yi Xie, Lina Ye, Ying Chen, and Zhen Li

Electronic Supporting Information
Repetitive Two-step Method for Oligoarene Synthesis through Rapid Cross-coupling of Hydroxyphenylboronic Acids and Anhydrides

Shunpei Ishikawa and Kei Manabe

Practical One-step Synthesis of Symmetrical Liquid Crystalline Dialkyloligothiophenes for Molecular Electronic Applications

Julie Leroy, Jeremy Levin, Sergey Sergeyev, and Yves Geerts

Electronic Supporting Information


Tsumoru Morimoto, Shuji Nagano, Daishi Yokoyama, Masataka Shinmen, Kiyoichi Kakiuchi, Takashi Yoshimura, Motohiro Sonoda, and Yoshito Tobe

Ordered CoSb3 Nanowire Arrays Synthesized by Electrodeposition

Lijie Chen, Haining Hu, Yangxian Li, Guifeng Chen, Shuyun Yu, and Guangheng Wu

The XRD exhibits that only (420) and (840) peaks are discernible corresponding to a bcc structure with the lattice constant of a = 9.024 Å. In the experiment, we found that the simultaneity of the nucleation, for CoSb3 nanowire, may not affect filling ratio of pores seriously and only influence the wire length.

Design of Chiral Macrocyclic Complexes Based on trans-Chelation of n+n Metal–Bidentate P,N- or N,N-Ligands

Manabu Hatano, Takaumi Asai, and Kazuaki Ishihara

Electronic Supporting Information
Platelike Crystal Growth of Zn–Al Layered Double Hydroxide by Hot Water Treatment of Sol–Gel Derived Al₂O₃–ZnO Films on Glass Substrate

Naoko Yamaguchi, Tomohiko Nakamura, Kiyoharu Tadanaga, Atsunori Matsuda, Tsutomu Minami, and Masahiro Tatsumisago

We have successfully immobilized Zn–Al layered double hydroxide (LDH) films directly on glass substrates through the sol–gel method with hot water treatment. Porous Al₂O₃–ZnO thin films were originally prepared on glass substrates by the sol–gel method with a heat treatment at 400 °C for 30 min, and then the films were immersed in distilled water at 100 °C for 15 min to form nanocrystalline Zn–Al LDH with hexagonal structure.

Asymmetric Addition of Alkynylzinc Reagents to Nitrones Utilizing Tartaric Acid Ester as a Chiral Auxiliary

Weilin Wei, Masato Kobayashi, Yutaka Ukaji, and Katsuhiko Inomata

Hollow SnO₂ nanospheres with diameters ranging from 100–120 nm have been synthesized via template-directed approach at room temperature. A possible formation mechanism of the hollow SnO₂ nanospheres is briefly discussed.

Electronic Supporting Information
184 Cation–π-driven Fluorescence Signalling of Ammonium Cations by Naphthyl-substituted Zn_{10}S_{16} and Cd_{10}S_{16} Clusters

Zn_{10}S_{16} and Cd_{10}S_{16} clusters bearing twelve naphthalene units on the surface showed characteristic blue emission in response to the cation–π-mediated intercalative binding of quaternary ammonium cations that allows the formation of ground-state naphthalene aggregates.

Katsuaki Konishi and Takayuki Hiratani

186 Linear Relationship between Activity of a New Ru-catalyst and Acidity of Substituted Benzoic Acids in the Dimerization of Acrylonitrile

A linear relationship between the activity of a ruthenium-catalyst and the acidity of m- and p-substituted benzoic acids in the dimerization of acrylonitrile was observed.

Kohichi Kashiwagi, Ryoji Sugise, Toshihiro Shimakawa, Tunao Matuura, and Masashi Shirai

188 Stereoselective Hydrogenation of Tetralin to cis-Decalin over a Carbon-supported Rhodium Catalyst in Supercritical Carbon Dioxide Solvent

cis-Decalin was selectively obtained with high cis/trans ratio (83%) over a carbon-supported rhodium catalyst at 333 K under 6 MPa of hydrogen and 15 MPa of carbon dioxide.

Norihito Hiyoshi, Eiichi Mine, Chandrashekar V. Rode, Osamu Sato, and Masayuki Shirai

190 An Efficient Synthesis of Helical Mesoporous Silica Nanorods

Helical mesoporous silica nanorods have been synthesized with high efficiency by simply using primary alcohol or amine as a cosurfactant during the synthesis of MCM-41.

Qinghong Zhang, Fei Lü, Changli Li, Ye Wang, and Huilin Wan

192 Fabrication of Ordered Nanostructures in Ta Films Using 2D Array of Ferritin Molecules as Template

Hideki Masuda, Yoshitaka Matsui, Tetsuya Miwa, Mitsutaka Nagae, Miyuki Tanji, and Kazuyuki Nishio
194  (Inorganic Nanofiber/Enzyme) Hybrid Hydrogel: Preparation, Characterization, and Enzymatic Activity of Imogolite/Pepsin Conjugate

Nozomi Inoue, Hideyuki Otsuka, Shin-Ichiro Wada, and Atsushi Takahara

196  Prediction of the Octanol/Water Partition Coefficients of Petroporphyrin Model Compounds

Satsuki Asami and Koichi Saitoh

198  Palladium Catalyzed Conjugate 1,4-Addition of Organoboronic Acids to α,β-Unsaturated Ketones

Tetsuya Yamamoto, Michiko Iizuka, Tetsuo Ohta, and Yoshihiko Ito

200  Kabob-like Carbon Nanotube Hybrids

Yuyang Liu, Ronghua Wang, Wei Chen, Xianqiong Chen, Zhigang Hu, Xiaoyin Cheng, and Haozhong John Xin

202  Solid Synthesis of Cs₆H₃₋ₓPW₁₂O₄₀ Salts and Their Catalytic Activity for the Isomerization of n-Butane

Yan Zou, Bin Yue, Bin Zhang, and Heyong He

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204 Development of Ordered Calcium Carbonate Microarrays from Polymorph Specific Planar Films

Akiko Kotachi and Hiroaki Imai

Electronic Supporting Information

206 Liposomal Sorting onto Substrate through Ion Recognition by Gemini Peptide Lipids

Masashi Otsuki, Yoshihiro Sasaki, Shintaro Iwamoto, and Jun-ichi Kikuchi

Electronic Supporting Information

208 Two-parameter Analysis of Solvent Effects on Selectivity in Chemical Reactions: Information of Polarity and Activation Volume at the Transition State in Organic and Enzymatic Reactions

Chunlei Lin, Yoshikazu Hiraga, and Katsuo Ohkata

Σ = [major-isomer]/[minor-isomer]

ln Σ = a[(ε − 1)/(2ε + 1)] + bδ² + c

210 Protic, Imidazolium Ionic Liquids as Media for (Z)- to (E)-Alkene Isomerization

Ewa Janus, Marek Łożyński, and Juliusz Pernak

212 Rotaxane Synthesized by End-capping via Hydoruthenation of Axle Terminal Acetylene and Its Derivation to η³-Allylruthenium Complex-containing Rotaxane

Hisahiro Sasabe, Nobuhiro Kihara, Kazuhiko Mizuno, Akiya Ogawa, and Toshikazu Takata
214 Fabrication of Gold Nanosheet and Nanowire by Oxygen Plasma Induced Fusion of Densely Arrayed Nanoparticles

Shin-ya Onoue, Junhui He, and Toyoki Kunitake

Electronic Supporting Information

One- and two-dimensional fusion of densely packed gold nanoparticles was achieved by oxygen plasma treatment at room temperature.

216 Production of CO₂-free Hydrogen by Alkali Enhanced Hydrothermal Catalytic Reforming of Biomass-derived Alcohols

Yunpeng Xu, Zhijian Tian, Guodong Wen, Zhusheng Xu, Wei Qu, and Liwu Lin

CO₂-free hydrogen could be produced by hydrothermal catalytic reforming process when Ca(OH)₂ was added into the reaction, and biomass-derived alcohols were used as the reactants.

218 Fabrication of a Novel Microfluidic Device Incorporating 2-D Array of Microbeads

Thomas Gumpenberger, Tadatake Sato, Ryozo Kurosaki, Aiko Narazaki, Yoshizo Kawaguchi, and Hiroyuki Niino

220 Syntheses, Structures, and Properties of the First Stable 1,1'-Bis(diphosphenyI)ferrocenes

Noriyoshi Nagahora, Takahiro Sasamori, and Norihiro Tokitoh

Electronic Supporting Information

222 Bulk Synthesis of Poly(tert-butyl methacrylate) Long Macromonomer with Narrow Distribution by Atom Transfer Radical Polymerization and Nucleophilic Substitution

Wei Yang, Tatsuo Kaneko, Xiao-Ya Liu, Ming-Qing Chen, and Mitsuru Akashi

Electronic Supporting Information

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224 **EXAFS Studies about the Sorption of Cadmium Ions on Montmorillonite**

Rieko Takamatsu, Kiyotaka Asakura, Wang-Jae Chun, Tsuyoshi Miyazaki, and Masashi Nakano

226 **Ultrasound-promoted Highly Chemoselective Reduction of Aromatic Nitro Compounds to the Corresponding N-Arylhydroxylamines Using Zinc and HCOONH₄ in CH₃CN**

Qi Xun Shi, Rong Wen Lu, Kun Jin, Zhu Xia Zhang, and De Feng Zhao

**Electronic Supporting Information**

228 **Amorphous Carbon-promoted Low-temperature Crystallization of Silica**

Akihiro Okabe, Makiko Niki, Takanori Fukushima, and Takuzo Aida

**Electronic Supporting Information**

230 **Photocatalytic Decomposition of Environmentally Persistent Perfluorooctanoic Acid**

Jing Chen, Pengyi Zhang, and Li Zhang

**Photocatalytic Decomposition of Environmentally Persistent Perfluorooctanoic Acid**

PFOA was photocatalytically decomposed by using TiO₂/Ni–Cu, and a small bias potential (~0.1 V) applied on TiO₂/Ni–Cu electrode greatly enhanced its decomposition.

232 **Importance of 3'-Hydroxyl Group of the Nucleosides for the Reactivity of Thymidine Phosphorylase from Escherichia coli**

Akihiko Hatano, Aiko Harano, and Masayuki Kirihara

Thymidine phosphorylase replaced the base moiety of thymidine. We assume that this enzyme recognizes not only the base moiety but also the ribosyl hydroxyl group to fix the substrate.
Oxygen Permeability of Surface-modified Poly(dimethylsiloxane) Characterized by Scanning Electrochemical Microscopy

Hitoshi Shiku, Takeshi Saito, Ching-Chou Wu, Tomoyuki Yasukawa, Masaki Yokoo, Hiroyuki Abe, Tomokazu Matsue, and Hiroshi Yamada

Separation of Americium(III) from Europium(III) by Dioctylammonium Dioctylidithiocarbamate/Nitrobenzene Extraction

Sunao Miyasita, Makoto Yanaga, Isamu Satoh, and Hideo Suganuma

Dehydrative Glycosylation in Water Using a Brønsted Acid–Surfactant-Combined Catalyst

Naohiro Aoyama and Shū Kobayashi