Elastic Cycles as Flexible Hosts: How Tubes Built by Cyclic Chalcogenaalkynes Individually Host Their Guests

Rolf Gleiter and Daniel B. Werz

Tubular structures arise in the solid state through close chalcogen–chalcogen contacts. Different approaches to include guest molecules into the hollow core are discussed. In some cases an enormous flexibility dependent on the size of the included guest molecule is observed.

Nanocrystals of Coordination Polymers

Takashi Uemura and Susumu Kitagawa

Development of synthetic method with controllable size and shape in nanometer regime as well as understanding of the size and surface effects of coordination polymer (CP) nanocrystals is urgently requisite on behalf of future application of them to new organic–inorganic hybrid nanomaterials.
Synthesis of Hollow Titania Using Nanosized Calcium Carbonate as a Template

Spherical hollow titania materials with a diameter of 60–100 nm and wall thickness of approximately 10 nm were synthesized via core/shell structure of CaCO₃/TiO₂ by using nanosized CaCO₃ particles as inorganic templates instead of organic templates.

Li-dong Gao, Lai-long Luo, Jian-feng Chen, and Lei Shao

Metal Chelates to Prevent or Clear the Deposits of Amyloid β-peptide(1-40) induced by Zinc(II) Chloride

Yuichi Sutoh, Satoshi Nishino, and Yuzo Nishida

N-Alkylation of Phthalimide, Carboxamide, and Sulfonamides By Oxidation–Reduction Condensation Using Di-tert-butyl-1,4-benzoquinone and Alkyl Diphenylphosphinite

Teruaki Mukaiyama and Hidenori Aoki

Synthesis, Characterization, and Boron Uptake of Organic–Inorganic Hybrid Mesoporous Materials

Lina Wang, Tao Qi, and Yi Zhang

Electronic Supporting Information

Hydrothermal Synthesis of Single-crystal β-AgVO₃ Nanowires and Ribbon-like Nanowires

Yi Liu, Yuanguang Zhang, Yonghua Hu, and Yitai Qian

This paper describes for the first time a routine hydrothermal approach to the large-scale synthesis of one-dimensional monoclinic β-AgVO₃ nanowires and ribbon-like nanowires. The whole process was actualized without the aid of any templates or surfactants. Some factors that affect the shape of 1-D β-AgVO₃ nanomaterials were briefly discussed.
Designing a New Kind of Capsule Catalyst and Its Application for Direct Synthesis of Middle Isoparaffins from Synthesis Gas

Jingjiang He, Bolian Xu, Yoshiharu Yoneyama, Norikazu Nishiyama, and Noritatsu Tsubaki

Fabrication of a Novel Nanodevice That Functions on Demand

The supramolecular system that had a well-defined nanostructure functioned only in the assembled form. The device can easily be decomposed into the component functional blocks on demand (loss of function), and the components can readily reconstitute on demand (gain of function).

Toru Oba, Mitsuru Hanasaki, Masahiro Minabe, and Hitoshi Tamiaki

A Novel Approach to Synthesize Hollow Calcium Carbonate Particles

Hollow calcium carbonate particle were synthesized by a novel and facile approach using bubbles as templates.

Yong Sheng Han, Gunawan Hadiko, Masayoshi Fuji, and Minoru Takahashi

Facile Synthesis of Uniform Tungsten Oxide Nanorods in Large Scale

The uniform tungsten oxide nanorods have been synthesized in large scale by simply heating a treated tungsten foil.

Bing Zhang, Chuanbao Cao, Hailin Qiu, Yajie Xu, Yingchun Wang, and Hesun Zhu

Polymer Network Fabricated by Topochemical Polymerization of Self-assembly Films Composed of a Diacetylene Derivative

Kaori Sasada, Yuko Nishiwaki, Yuko Takeoka, Masahiro Rikukawa, and Kohei Sanui
158 Threonine Transformation under Hydrothermal Conditions

Dai Shiota and Satoru Nakashima

160 Cationic Palladium Complex-catalyzed Cyclization–Hydrosilylation of Alkadiynes and Enynes

Shigeru Wakayanagi, Takamitsu Shimamoto, Motoharu Chimori, and Keiji Yamamoto

162 Oxidation of Cyclohexane over Bi-incorporated MCM-41 Mesoporous Molecular Sieve Catalyst with Oxygen as Oxidant

Guang Qian, Gaomeng Lu, Dong Ji, Rui Zhao, Yanxing Qi, and Jishuan Suo

164 Facile Preparation of Helical Ladder-type Polymers with Fused Phenoxathiine Rings

Tomokazu Iwasaki, Yoshiaki Tsukahara, and Hiroyuki Nishide

166 Systematic Studies on Redox Behavior of Homonuclear Double-bond Compounds of Heavier Group 15 Elements

Takahiro Sasamori, Eiko Mieda, Noriyoshi Nagahora, Nobuhiro Takeda, Nozomi Takagi, Shigeru Nagase, and Norihiro Tokitoh
A Core-shell Nanostructure of Carbon

Core-shell structured carbon nanospheres with 300–500 nm in diameter have been synthesized at 600 °C by reducing ethyl ether with metallic magnesium.

Tao Luo, Xiaogang Yang, Jianwei Liu, Weichao Yu, and Yitai Qian

Morphology-controllable Solution Route to PbSe Micrometer-scaled Crystals

Lead selenide micrometer-scaled crystals were synthesized via a simple morphology-controllable solution route with the reactions of lead nitrate and sodium selenosulfate in sodium hydroxide or ethylenediamine aqueous solution.

Jianhua Cui, Fan Guo, and Xinzheng Liu

Synthesis of [2Fe–2S] and [4Fe–4S] Clusters Having Terminal Amide Ligands from an Iron(II) Amide Complex

The reaction of iron(II) bis-amide Fe[N(SiMe3)2]2 with elemental sulfur afforded a direct entry to new [Fe2S2] and [Fe4S4] clusters with terminal amide groups, Fe2S2[N(SiMe3)2]2 (1) and Fe4S4[N(SiMe3)2]2(tmtu)2 (2), whose structures have been determined by X-ray crystallography. Tetrameric cubane cluster 1 exhibits one reversible and one quasireversible processes in the cyclic voltammetry, whereas dimeric rhombus complex 2 reveals one irreversible reduction process.

Yasuhiro Ohki, Yusuke Sunada, and Kazuyuki Tatsumi

Platinum-catalyzed Tandem Carboalkoxylation-Claisen Rearrangement of Arylalkynes Bearing an ortho-1,5-Dihydro-3H-2,4-dioxe-pine Group

Itaru Nakamura, Gan B. Bajracharya, and Yoshinori Yamamoto

Highly Sensitive Flow Analysis of Trace Level Arsenic in Water Based on Vaporization-collection In-line Preconcentration

Perfect vaporization of As at constant condition. Collection of AsH3 into a very small volume of absorbing solution in an annular diffusion scrubber.

Field instrument (on-site measurement without loss of analyte during carrying/storage). Direct measurement of ppb level of As (200 times larger signal than by conventional FIA). Applicable to any trace water pollutant that can be vaporized.

Kei Toda and Takashi Ohba
**Kilogram-scale [60] Fullerene Separation from a Fullerene Mixture: Selective Complexation of Fullerenes with 1,8-Diazabicyclo[5.4.0]undec-7-ene (DBU)**

Koichi Nagata, Eiji Dejima, Yasuharu Kikuchi, and Masahiko Hashiguchi

**Conversion of Conventional NiO Powders into Nanostructures by a Simple Chemical Method**

Jian Quan Qi, Ting Zhang, Mei Lu, Yu Wang, Wan Ping Chen, Long Tu Li, and Helen Lai Wah Chan

**Synthesis of Large-Pore Periodic Mesoporous Organosilica (PMO) with Bicontinuous Cubic Structure of Ia-3d Symmetry**

Zhendong Zhang, Xiaoxia Yan, Bozhi Tian, Shaoqian Shen, Dehong Chen, Guangshan Zhu, Shilun Qiu, and Dongyuan Zhao

**Synthesis and Characterization of Single Crystal \(\alpha\)-Fe\(_2\)O\(_3\) Nanobelts**

Hongzhe Wang, Xingtang Zhang, Bing Liu, Huiling Zhao, Yuncai Li, Yabin Huang, and Zuliang Du

**Oscillation in a SnO\(_2\) Semiconductor Gas Sensor Exposed to Benzyl Alcohol**

Satoshi Nakata, Hirokazu Okunishi, Yusuke Nakashima, and Toshiaki Mori
A Practical Synthesis and Estrogenic Activity of 5-Hydroxy-1-(4′-hydroxyphenyl)-1,3,3-trimethylindan, a Contaminant in Industrial Grade Bisphenol A

Masanori Terasaki, Fujio Shiraishi, Tomohiro Nishikawa, Masatoshi Morita, and Masakazu Makino

Efficient Method for the Esterification of Carboxylic Acids with Alcohols Using Di-2-thienyl Carbonate Promoted by Catalytic Amounts of DMAP and Hf(OTf)₄

Yoshiaki Oohashi, Kentarou Fukumoto, and Teruaki Mukaiyama

Ruthenium Catalyzed Deuterium Labelling of α-Carbon in Primary Alcohol and Primary/Secondary Amine in D₂O

Masaaki Takahashi, Koichiro Oshima, and Seijiro Matsubara

A Simple and Convenient Manganese Dioxide Oxidation of Benzyl Halides to Aromatic Aldehydes under Neutral Condition

Shyamaprosad Goswami, Subrata Jana, Swapan Dey, and Avijit Kumar Adak

Selective Glucose Sensing Utilizing Complexation with Fluorescent Boronic Acid on Polycation

Yasumasa Kanekiyo and Hiroaki Tao
198  Photoinduced Transformation of Silicone-modified TiO$_2$

ESR spectrum of silicone-modified TiO$_2$ powder under irradiation in evacuation condition at 77 K indicates the formation of a methyl radical (quartet signal; $g = 1.984, 1.998, 2.011,$ and 2.025), in addition to Ti$^{3+}$ ($g = 1.961$ and 1.991) and an OH radical ($g = 2.003$ and 2.015).

Akira Nakabayashi, Junko N. Kondo, Michikazu Hara, and Kazunari Domen

200  Au/Rh Nanoparticles Synthesized under High Temperatures and High Pressures

Small size gold (Au) and rhodium (Rh) nanoparticles have been produced by flowing the solution of Au(III) and Rh(III) ions with poly(N-vinyl-2-pyrrolidone) through a high-temperature and high-pressure reactor. Au, mostly monometallic, particles (7.5 nm) are produced together with the smaller Rh nanoparticles (2.5 nm) within a few seconds, of which the structure and sizes are identified by the transmission electron micrograph images and the extended X-ray absorption fine structure.

Masaki Ueji, Masafumi Harada, and Yoshifumi Kimura

202  Electro catalytic Oxidation of Glucose at Carbon Electrodes Modified with Gold and Gold-Platinum Alloy Nanoparticles in an Alkaline Solution

Masato Tominaga, Toshihiro Shimazoe, Makoto Nagashima, and Isao Taniguchi

204  Efficient Incorporation of Metal Oxides into Neutral Surfactants-templated Mesoporous Silicas

Man Chien Chao, Hong Ping Lin, Bo Wen Cheng, and Chi Feng Cheng

Electronic Supporting Information

206  Phenol Hydroxylation Catalyzed by the Rare Earth-adulterated Copper-containing Hydrotalcites

Owing to the fact that the presence of the Cu$^{2+}$ species in La-Cu-PTLCs/H$_2$O$_2$ system is detected by XPS, the generation of HO radicals is deduced to be carried out by the reaction of HO-Cu$^{2+}$-OH species with H$_2$O$_2$.

Chunxia Chen, Chenghua Xu, Liangrong Feng, Jishuan Suo, and Fali Qiu
208 Synthesis and Properties of Nb-containing Mesoporous Materials with Bimodal Pores Using TEOS and Layered Perovskite K$_2$NbO$_3$F

Masataka Ogasawara, Sumio Kato, Hiroshi Tsukidate, Takahiro Akaogi, Yoshio Moriya, and Shinichi Nakata

We synthesized Si-Nb-mesoporous materials using TEOS, layered perovskite K$_2$NbO$_3$F and HDTMACl as starting materials. Mesopores due to the templating effect of HDTMA formed in the nanoparticle, thus producing a bimodal mesoporous material.

210 A Novel Seeding Growth Route to Synthesize Uniform Pt Clusters within Mesoporous Silica by Non-aqueous Electroless Deposition

Hua Li, Jian-lin Shi, Liang Li, Jin-lou Gu, Ling-xia Zhang, Hang-rong Chen, and Wei Shi

Uniform Pt nanoclusters with diameters around 6–7 nm have been synthesized within mesochannels of SBA-15 by non-aqueous electroless deposition. The result shows that non-aqueous electroless deposition combined with in situ reduction is an efficient method for preparing well-confined noble metal nanoclusters without post heat-treatment.

212 Lead Halide-based Layered Perovskites Incorporated with a $p$-Terphenyl Laser Dye

Ken-ichi Sakai, Takuya Sonoyama, Takeo Tsuzuki, Musubu Ichikawa, and Yoshio Taniguchi

Single-crystalline CuO nanosheets with the monoclinic structure have been successfully prepared from a layered precursor (copper(II) acetate hydroxide) in aq NaOH solution by microwave heating or hydrothermal method at 100–200°C. The products were characterized by X-ray powder diffraction, transmission electron microscopy, and selected area electron diffraction.

214 Single-crystalline CuO Nanosheets Synthesized from a Layered Precursor

Zhen-Hua Liang and Ying-Jie Zhu

216 One-pot Synthesis of β-Lactams from Aldimines and Ketene Silyl Acetals by Tandem Lewis Base-catalyzed Mannich-type Addition and Cyclization

Eiki Takahashi, Hidehiko Fujisawa, Toshiharu Yanai, and Teruaki Mukaiyama

E=Ph, H=Ph

N

H

Ph

Ph

AcOLi

(10 mol%) DMF, rt

Cyclization

trans:cis = 92:8

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218 Adsorption of Di-n-butyl Phthalate by Chitosan Beads Modified with Water-soluble Calixarenes

Akihiro Yanagi, Hideyuki Otsuka, and Atsushi Takahara

Electronic Supporting Information

220 MCM-41 Supported Water-soluble TPPTS–Rh Complex in Ionic Liquids: A New Robust Catalyst for Olefin Hydroformylation

MCM-41 mesoporous silica-supported water-soluble TPPTS–Rh complex in the ionic liquid TMGL exhibited high performance and stability for the hydroformylation of 1-hexene, and the catalyst system could be reused many times without reducing the activity and selectivity.

Yong Yang, Haiqiang Lin, Changxi Deng, Jiarong She, and Youzhu Yuan

Electronic Supporting Information

222 Sonochemical Syntheses and Catalytic Properties of Oxide and Carbide Nanocomposites on Carbon Nanotubes

Hyelim Park, Min-Hye Kim, Young Kyu Hwang, Jong-San Chang, and Young-Uk Kwon

224 Growth of Fluorocarbon Macromolecules in a Gas Phase (I). Mass Spectrometric Investigation of Products in the Downstream Region of Ar/CF\textsubscript{4} Plasmas

The plots of intensity in C\textsubscript{n}F\textsubscript{2n+2} and C\textsubscript{n}F\textsubscript{2n} observed in the downstream region of the pure CF\textsubscript{4} plasma strongly suggest the existence of macromolecules with much more than 400 amu.

Kenji Furuya, Shinobu Yukita, Hiroshi Okumura, and Akira Harata

226 A Simple Method for Covalent Immobilization of Proteins on Porous Silicon Surfaces

Biomolecules can be covalently grafted onto the porous silicon surface through a simple three-step method.

Bing Xia, Jun Li, Shou-Jun Xiao, Dong-Jie Guo, Jing Wang, Yi Pan, and Xiao-Zeng You

Electronic Supporting Information
228 Preparation of Nano-films by in situ Polymerization of Hydrogen-bonded Macroclusters of \(N\)-isopropylacrylamide on Silica Surfaces

Guolun Zhong, Masashi Mizukami, Isao Fukuchi, Takashi Miyahara, and Kazue Kurihara

Electronic Supporting Information

230 Effect of a Small Amount of Zirconia Additive on the Activity and Stability of Iron Oxide during Repeated Redox Cycles

Kohei Urasaki, Yasushi Sekine, Naoshi Tanimoto, Eri Tamura, Eiichi Kikuchi, and Masahiko Matsukata

232 Encapsulation of Ferritin within a Hollow Cylinder of Glycolipid Nanotubes

Hiroharu Yui, Yoshiki Shimizu, Shoko Kamiya, Ichiro Yamashita, Mitsutoshi Masuda, Kohzo Ito, and Toshimi Shimizu

234 Applying a Spray-jet Method for Measuring Naphthalene Derivatives by Nanosecond Laser MPI TOF-MS

Hidenori Shinohara, Toshiki Yamada, Maofa Ge, Katsumi Kimura, and Shinro Mashiko

236 Raphide Crystal Structure in Agave Tequilana Determined by X-ray Originating from Synchrotron Radiation

Makoto Tadokoro, Yoshiki Ozawa, Minoru Mitsumi, Kohshiro Toriumi, and Tetsuya Ogura

Electronic Supporting Information
238  **An Efficient PMo\textsubscript{11}V\textsuperscript{4+}/Silica Material Having Cationic Ammonium Moiety: Synthesis, Characterization, and Catalytic Performance for Oxidation of Alcohols with Dioxygen**

Chika N. Kato, Akiko Tanabe, Satoshi Negishi, Kazuhiro Goto, and Kenji Nomiya

240  **Synthesis and Characterization of Hexagonal-like Fe\textsubscript{3}O\textsubscript{4} via Glycothermal Route**

Hexagonal-like Fe\textsubscript{3}O\textsubscript{4} nano flakes with a size of 100–200 nm were hydrothermally synthesized from iron chloride via glycothermal route. Diethylene glycol has a significant influence on the formation of hexagonal-like Fe\textsubscript{3}O\textsubscript{4} nanocrystals.

Dongen Zhang, Xiaojun Zhang, Xiaomin Ni, Huagui Zheng, and Jimei Song

242  **Development of Anisotropic Thermo-sensitive Hairy Particles Using Living Radical Graft Polymerization**

Anisotropic particles spontaneously formed chains.

Daisuke Suzuki, Sakiko Tsuji, and Haruma Kawaguchi

244  **Nanodimensional Microreactor-encapsulation of 18-Membered Decaaza Macrocyclic Copper(II) Complexes**

Copper (II) complexes of 18-membered decaaza macrocyclic have been prepared from the one-pot template condensation reaction of formaldehyde, 2,3-butanedihydrazone with alkyl and benzyl amine in the presence of copper(II) ion within the nanodimensional pores of zeolite Y.

Masoud Salavati-Niasari

246  **Selective Allylation of Arenethiols Using Water-soluble Palladium Complex Catalyst in Recyclable Water/Hexane Biphasic Media**

Allylations of arenethiol by allylic alcohol are smoothly catalyzed by Pd(OAc)\textsubscript{2}/TPPTS in biphasic water/hexane media under ambient conditions.

Nobuyuki Komine, Akari Sako, Shin-ya Hirahara, Masafumi Hirano, and Sanshiro Komiya
248 Self-Assembled Nanowires of Lipid-packaged Halogen-bridged Platinum Complexes Formed by One-pot Oxidation of Pt(en)$_2$ complexes by Au(III) Ions

Kei Yasui and Nobuo Kimizuka

250 Two Characteristic H-bonded O–H Stretching Bands for the Compounds Containing Ether Oxygen and Hydroxyl Oxygen

Keiichi Ohno, Hiroshi Takao, Takashi Masuda, and Yukiteru Katsumoto

252 Synthesis of Whisker-like Boron Nitride by a Diamine Thermal Method

Peijun Cai, Zeheng Yang, Luyang Chen, Liang Shi, Aiwu Zhao, Yunle Gu, and Yitai Qian

254 Structural and Physical Properties of $\lambda$-(BEST)$_2$MCl$_4$ (BEST = Bis(ethylenedithio)tetra(thiafulvalene; M = Fe, Ga) and Analogous Magnetic Organic Conductor

Heng Bo Cui, Saika Otsubo, Yoshinori Okano, and Hayao Kobayashi

256 Palladium-Catalyzed Elimination Reaction of Acyclic (E)-Allylic Acetates: The Stereosemistry Elucidated by “Syn-Effect”

Hiroyuki Takenaka, Yutaka Ukaji, and Katsuhiko Inomata

In this paper we described the synthesis of nanocrystalline boron nitride (BN) with whisker-like morphology by the reaction of boron and diamine hydrate at 550 °C for 10 h. Characterizing by XRD, FTIR, XPS, TEM, the composition and morphology of the product were confirmed.
258  A Novel Ru(II)–DMSO Complex Having Non-coordinating 1-Naphthoylamide Arm: Effects of Intramolecular Hydrogen Bonding on Redox Potential of the Ruthenium Center

Takahiko Kojima and Yoshihisa Matsuda

260  ZnO Microspheres Self-assembled by Hexagonal Nanoplates

Huihu Wang, Changsheng Xie, and Dawen Zeng

262  Strong Base Catalysis of Sulfated Mesoporous Alumina for the Tishchenko Reaction in Supercritical Carbon Dioxide

Tsunetake Seki and Makoto Onaka

264  Very Short and Efficient Syntheses of the Spermine Alkaloid Kukoamine A and Analogs Using Isolable Succinimidyl Cinnamates

Polyamine conjugates of the alkaloid kukoamine A type were efficiently prepared by the direct selective acylation of the primary amino functions of spermine and spermidine with isolable succinimidyl cinnamates.

Thomas Garnelis, Constantinos M. Athanassopoulos, Dionissios Papaioannou, Ian M. Eggleston, and Alan H. Fairlamb

266  Electron Beam-Induced Fries Rearrangement of Sulfonamide and Sulfonate Crystals

The EB sensitivity of sulfonic acid derivatives in the crystalline state was much higher than that of the corresponding carboxylic acid derivatives; especially, sulfonamide derivatives could undergo chemoselective Fries rearrangement.

Jun Kato, Yasunari Maekawa, and Masaru Yoshida
268 Direct Addition of Glycine Derivatives to Enamines

Direct addition of glycine derivatives to enamines proceeded smoothly in the presence of a catalytic amount of a Lewis acid to afford \( \alpha,\beta \)-diamino ester derivatives in excellent yield.

\[
\begin{align*}
\text{R}_1^1 \text{R}_2^2 R_3^3 + \text{Ph} \quad \text{N} & \quad \text{N} \\
\text{O} & \quad \text{O} \\
\text{Zn(OTf)}_2 (10 \text{ mol}%) & \quad \text{Mes} 4 \text{A} \\
\text{toluene, } 0 \degree \text{C} & \quad 18 \text{ h} \\
\end{align*}
\]

Jun Kobayashi, Yasuhiro Yamashita, and Shû Kobayashi

Up to quantitative yield

270 Barotropic Phase Transitions of 1-Palmitoyl-2-stearoylphosphatidylcholine Bilayer Membrane

The bilayer membrane of 1-palmitoyl-2-stearoylphosphatidylcholine induces the interdigitation at high pressures above 50 MPa.

Hitoshi Matsuki, Masaki Goto, Masataka Kusube, Nobutake Tamai, and Shoji Kaneshina

272 Palladium–Platinum Bimetallic Nanoparticle Catalysts Using Dendron Assembly for Selective Hydrogenation of Dienes and Their Application to Thermomorphic System

Makoto Murata, Yuko Tanaka, Tomoo Mizugaki, Kohki Ebitani, and Kiyotomi Kaneda

Electronic Supporting Information