Highlight Review

Molecular Structures on Solid Substrates Probed by Sum Frequency Generation (SFG) Vibration Spectroscopy

Shen Ye and Masatoshi Osawa
doi:10.1246/cl.2009.386

Sum frequency generation (SFG) vibration spectroscopy is a powerful tool to study interfacial structures of organic thin films on solid substrates at a molecular level. The unique structural information obtained from SFG is essential to design and control functionalities of surfaces and interfaces. Recent advances in SFG spectroscopy are reviewed.

Letter

Synthesis and Properties of Triphenylamine- and 9-Phenylcarbazole-cored Star-shaped Terfluorenes: Understanding the Effect of Molecular Dimensionality

Wen-Yong Lai, Xing-Rong Zhu, Qi-Yuan He, and Wei Huang
doi:10.1246/cl.2009.392
Electronic Supporting Information
Free-standing bamboo-like Ni nanowire arrays of periodical branches have been prepared using layer-by-layer AAM by electrochemical deposition.

Wen Jun Zheng, Guang Tao Fei, Biao Wang, and Li De Zhang
doi:10.1246/cl.2009.394

Novel N-Doped Carbon Cathode Catalyst for Polymer Electrolyte Membrane Fuel Cells Formed on Carbon Black

Rieko Kobayashi and Jun-ichi Ozaki
doi:10.1246/cl.2009.396

A new technique for back-extraction using photoreduction by the fourth harmonic of Nd:YAG laser has been successfully demonstrated in a liquid–liquid extraction system composed of 1-octanol solution of Eu³⁺(TODGA)₃ complex and water.

Morihisa Saeki, Yuji Sasaki, and Atsushi Yokoyama
doi:10.1246/cl.2009.398

Synthesis and X-ray Structural Analysis of Hydrido(thiolato) Platinum(II) Complexes

Norio Nakata, Suzuki Yamamoto, Wataru Hashima, and Akihiko Ishii
doi:10.1246/cl.2009.400

Halogen-bonded and Hydrogen-bonded Network Structures in Crystals of 1-Propyl- and 1-Butyl-4,5-dibromo-3-methylimidazolium Bromides

Tomohiro Mukai and Keiko Nishikawa
doi:10.1246/cl.2009.402
Electronic Supporting Information
**404 Room-temperature Preparation of BaMoO$_4$ Nano-octahedra by Microemulsion Method**

Yan Mi, Zaiyin Huang, Zeguang Zhou, Feilong Hu, and Qiafeng Meng

doi:10.1246/cl.2009.404

The uniform barium molybdate nano-octahedra with a mean edge length of 50 nm have been prepared in Triton X-100 water-in-oil (w/o) microemulsions at room temperature.

**406 The Application of the Huang Method in the Analysis of Microwave Heating**

Xiao-Qing Yang, Li-Jun Yang, and Guo-Zhu Jia


Good agreement between the measured and calculated results verifies the feasibility of the simulation of microwave heating on chemical reaction by the Huang method.

**408 Laboratory-GISAXS Measurements of Block Copolymer Films with Highly Ordered and Normally Oriented Nanocylinders**

Motonori Komura, Kazuhito Watanabe, Tomokazu Iyoda, Takeshi Yamada, Hirohisa Yoshida, and Yoshio Iwasaki

doi:10.1246/cl.2009.408

**410 Photocatalytic Reduction of Nitrobenzene to Aniline in an Aqueous Suspension of Titanium(IV) Oxide Particles in the Presence of Oxalic Acid as a Hole Scavenger and Promotive Effect of Dioxygen in the System**

Hiroshi Kominami, Shin-ichi Iwasaki, Tsuyoshi Maeda, Kazuya Imamura, Keiji Hashimoto, Yoshiya Kera, and Bunsho Ohtani

doi:10.1246/cl.2009.410

Nitrobenzene was effectively and selectively reduced to aniline in an acidic aqueous suspension of titanium(IV) oxide photocatalyst in the presence of oxalic acid as a hole scavenger and the aniline yield was improved in the presence of a small amount of dioxygen.

**412 Recognition of Monosaccharides with Energy-transfer Luminescence Using Residual Coordination Sites of Lanthanide(III)–4-Aminobenzyl-EDTA Complex in Aqueous Solution**

Shingo Saito, Atsushi Hikichi, Takao Kamura, Kazuyuki Hattori, Masakazu Aoyama, and Masami Shibukawa

doi:10.1246/cl.2009.412

A new type of luminescent lanthanide complex receptor for monosaccharides is presented in this work, with a particular focus on N-acetylneuraminic acid, which has high affinity with a stability constant about 5000 in alkaline aqueous solution.

Electronic Supporting Information
414 Chemical Degelation of Polysilane Organogel by Selective Scission of Silicon Main Chain by Fluoride Anion

Masanobu Naito, Takuma Kawabe, Masashi Nakamura, Keiji Wakayama, Woojung Chung, Ken-ichi Yasui, and Michiya Fujiki
doi:10.1246/cl.2009.414

Electronic Supporting Information

416 Electric Conduction Properties of Self-assembled Monolayer Films of Ru Complexes with Disulfide/Phosphonate Anchors in a Au–(Molecular Ensemble)–(Au Nanoparticle) Junction

Keiichi Terada, Katsuaki Kobayashi, Jiro Hikita, and Masaaki Haga
doi:10.1246/cl.2009.416

Electronic Supporting Information

418 Stepwise Radial Complexation of Organic Molecules and Organic–Metal Hybrid Assembly in Dendritic Polyphenylazomethines

Atunobu Fujii, Yousuke Ochi, Reina Nakajima, and Kimihisa Yamamoto
doi:10.1246/cl.2009.418

Electronic Supporting Information

420 Molecular Modification of 2,7-Diphenyl-[1]benzothieno[3,2-b]benzothiophene (DPH-BTBT) with Diarylamo Substituents: From Crystalline Order to Amorphous State in Evaporated Thin Films

Takahumi Izawa, Hiroki Mori, Yusuke Shinmura, Masahito Iwatani, Eigo Miyazaki, Kazuo Takimiya, Hsio-Wen Hung, Masayuki Yairo, and Chihaya Adachi
doi:10.1246/cl.2009.420

Electronic Supporting Information

422 Preparation of Monoclinic Scheelite BiVO₄ Photocatalyst by an Ultrasound-assisted Solvent Substitution Method

Wenzong Yin, Wenzhong Wang, Meng Shang, Ling Zhang, and Jia Ren
doi:10.1246/cl.2009.422

Electronic Supporting Information
Effect of Alkylthio Tail on Phase Behaviors of Bent-shaped Molecules Based on Naphthalene Core

Xiaodong Li, Seng Kue Lee, Sungmin Kang, Masatoshi Tokita, Susumu Kawauchi, and Junji Watanabe
doi:10.1246/cl.2009.424
Electronic Supporting Information

RIKEN Gas-filled Recoil Ion Separator (GARIS) as a Promising Interface for Super-heavy Element Chemistry—Production of Element 104, 261Rf, Using the GARIS/Gas-jet System—
Hiromitsu Haba, Daitya Kaji, Yukiko Komori, Yuki Kudou, Kouji Morimoto, Kosuke Morita, Kazuhiro Ooe, Kazutaka Ozeki, Nozomi Sato, Atsushi Shinohara, and Akira Yoneda
doi:10.1246/cl.2009.426
Electronic Supporting Information

New n-Type Field-effect Transistors Based on Pyrimidine-containing Compounds with (Trifluoromethyl)phenyl Groups
Takahiro Kojima, Jun-ichi Nishida, Shizuo Tokito, and Yoshiro Yamashita
doi:10.1246/cl.2009.428
Electronic Supporting Information

Palladium(II)-catalyzed Selective Oxidation of \( \alpha,\beta \)-Unsaturated Aldehydes to \( \alpha,\beta \)-Unsaturated Carboxylic Acids with Hydrogen Peroxide
Yoshihiro Kon, Daisuke Imao, Takuya Nakashima, and Kazuhiko Sato
doi:10.1246/cl.2009.430
Electronic Supporting Information

Efficient Site-selective RNA Activation and Scission Achieved by Geometry Control of Acridine Intercalation in RNA/DNA Heteroduplex
Akinori Kuzuya, Yun Shi, Keita Tanaka, Kenzo Machida, and Makoto Komiyama
doi:10.1246/cl.2009.432
Electronic Supporting Information
Hydrogen Production from Water Catalyzed by an Air-stable Di-iron Complex with a Bio-relevant Fe$_2$(μ-S)$_2$ Core

Tosiki Yamaguchi, Shigeyuki Masaoka, and Ken Sakai
doi:10.1246/cl.2009.434
Electronic Supporting Information

A High-contrast Dichroic Crystal: A New Metal-containing Tecton with Hybrid Coordination- and Hydrogen-bonding Interactions

Hirohiko Houjou, Misako Kokubun, Isao Yoshikawa, and Koji Araki
doi:10.1246/cl.2009.436
Electronic Supporting Information

PNA Arrays for miRNA Detection

Tamaki Endoh, Mizuki Kitamatsu, Masahiko Sisido, and Takashi Ohtsuki
doi:10.1246/cl.2009.438

Geranyl Bearing Polysoprenylated Benzoyl-phloroglucinol Derivatives from Hypericum sampsonii

Yi Han Zeng, Qing Mu, Zhi Yong Xiao, Yu Xu, M. Mukhlesur Rahman, and Simon Gibbons
doi:10.1246/cl.2009.440
Electronic Supporting Information

Preparation of Siliceous Vesicles with Adjustable Sizes, Wall Thickness, and Shapes

Meihua Yu, Jun Zhang, Pei Yuan, Hongning Wang, Nian Liu, Yunhua Wang, and Chengzhong Yu
doi:10.1246/cl.2009.442
Electronic Supporting Information
Regio- and Enantioselective Allylation of Indole Catalyzed by a Planar-chiral Cyclopentadienyl–Ruthenium Complex

Kiyotaka Onitsuka, Chiaki Kameyama, and Hiroaki Sasai
doi:10.1246/cl.2009.444
Electronic Supporting Information

Preparation of Poly(vinylidene fluoride-co-trifluoroethylene) Film with a Hydrophilic Surface by Direct Surface-initiated Atom Transfer Radical Polymerization without Pretreatment

Taichi Kimura, Motoyasu Kobayashi, Masamichi Morita, and Atsushi Takahara
doi:10.1246/cl.2009.446
Electronic Supporting Information

Preparation of Nanocomposite Microspheres Containing High Concentration of TiO₂ Nanoparticles via Bead Mill Dispersion in Organic Solvent

Masayoshi Takeda, Eishi Tanabe, Toru Iwaki, Akihiro Yabuki, and Kikuo Okuyama
doi:10.1246/cl.2009.448

Size-controlled Preparation of Poly(allylamine)-stabilized CdS Nanoparticles by Solution pH

Junjiro Hayashi, Mitsumi Nishi, and Mio Wanaka
doi:10.1246/cl.2009.450

One Component Membrane Reactor for Partial Oxidation of Methane Using Asymmetric Membranes

Sadao Araki, Yasushi Hoshi, Satoshi Hamakawa, Susumu Hikazudani, and Fujio Mizukami
doi:10.1246/cl.2009.452
454  **Fragilide E, a Novel Chlorinated 20-Acetoxybriarane from the Gorgonian Coral *Junceella fragilis***

Ping-Jyun Sung, Gung-Ying Li, Yu-Pei Chen, I-Chu Huang, Bo-Yuan Chen, Su-Hui Wang, and Sheng-Kai Huang  
doi:10.1246/cl.2009.454

456  **Investigation of the Effect of the NH–OC Hydrogen Bond from Cys69 to PYP Chromophore Using Novel Active-center Model Compound**

Kentaro Okamoto, Norio Hamada, Toshiaki Sumi, Taka-aki Okamura, Norikazu Ueyama, and Hitoshi Yamamoto  
doi:10.1246/cl.2009.456  
Electronic Supporting Information

458  **Direct Transformation of Unprotected Sugars to Aryl 1-Thio-β-glycosides in Aqueous Media Using 2-Chloro-1,3-dimethylimidazolinium Chloride**

Tomonari Tanaka, Takeshi Matsumoto, Masato Noguchi, Atsushi Kobayashi, and Shin-ichiro Shoda  
doi:10.1246/cl.2009.458  
Electronic Supporting Information

460  **Electronegative Oligothiophenes Having Difluorodioxocyclopentene-annelated Thiophenes as Solution-processable n-Type OFET Materials**

Yutaka Ie, Makoto Okabe, Yoshikazu Unemoto, Hirokazu Tada, and Yoshio Aso  
doi:10.1246/cl.2009.460  
Electronic Supporting Information

462  **Atom-transfer Radical Addition of α-Iodo Esters to 1-Alkynyl Sulfides**

Junichi Imoto, Akinori Sato, Hideki Yorimitsu, and Koichiro Oshima  
doi:10.1246/cl.2009.462
464 Electrochemical Sensing of Sulfate Using Mixed Thiol-derivatized β-Cyclodextrin/Pentanethiol Monolayers

Yasuhiro Domi, Katsuaki Shimazu, and Marc D. Porter
doi:10.1246/cl.2009.464

Mixed CD-SH/C5SH monolayer as a novel electrochemical sensor of sulfate.

466 Seed-mediated Preparation of CuO Nano-flowers and their Application as Hydrazine Sensor

Xiaojun Zhang, Aixia Gu, Guangfeng Wang, Wen Wang, Huaqiang Wu, and Bin Fang
doi:10.1246/cl.2009.466

CuO nanoflowers made up of nanobelts (CuO NFNBs) were successfully prepared in one step by a simple and reliable seed-mediated route. A glassy carbon electrode modified with CuO NFNBs was then used to detect hydrazine. The results show that the CuO NFNBs show a very high activity for detecting hydrazine.

468 B12–TiO2 Hybrid Catalyst for Dehalogenation of Organic Halides

Hisashi Shimakoshi, Emiko Sakumori, Kenji Kaneko, and Yoshio Hisaeda
doi:10.1246/cl.2009.468

Electronic Supporting Information

470 Simple Determination of Melamine Based on Self-assembly of Citrate-capped Gold Nanoparticles

Zhu Hong Qin, Hua Wen Zhao, Cheng Zhi Huang, and Li Ping Wu
doi:10.1246/cl.2009.470

Electronic Supporting Information

472 From Supramolecular Hydrogel to Macroscopic Spheres: Nucleation-controlled Polymorphic Transition

Yu Jiang Wang, Kai Chen, and Li Ming Tang
doi:10.1246/cl.2009.472

Electronic Supporting Information

A novel two-dimensional inorganic–organic composite solid material of the iron(III) molybdate [enH2][Fe2(MoO4)4] (I) (en = ethylenediamine) has been hydrothermally synthesized and structurally characterized by elemental analysis, IR and X-ray diffraction analysis. The sheet structure is constructed by binuclear [FeO6] octahedra and bridging [MoO4] tetrahedra. The two iron octahedra are edge-shared, and all of the oxygen atoms in iron coordination spheres are provided from the [MoO4] tetrahedral units which interconnect the diiron core through corner sharing, leading to a novel two-dimensional framework.

Junwei Zhao, Jiangping Liu, Jingping Wang, and Jingyang Niu
doi:10.1246/cl.2009.474
Electronic Supporting Information

476 Accelerated Formation of β-Dicalcium Silicate by Solid-state Reaction in Water Vapor Atmosphere

Water vapor accelerated the formation of β-Ca2SiO4 by solid-state reactions of CaCO3 and amorphous SiO2, and single β-Ca2SiO4 phase was obtained at 800 and 650 °C for 2 h in air and water vapor atmosphere, respectively.

Takahiro Kozawa, Ayumu Onda, and Kazumichi Yanagisawa
doi:10.1246/cl.2009.476
Electronic Supporting Information

478 Shape-controlled Preparation of Gold Nanocrystals Using a Microwave–polyol Method

The catalysts covered with an organosilica layer containing (a) phenyl or (b) methyl groups show higher conversion than that covered with silica without a functional group.

Masaharu Tsuji, Daisuke Ueyama, Md. Jahangir Alam, and Sachie Hikino
doi:10.1246/cl.2009.478
Electronic Supporting Information

480 Effects of Organosilica-derived Microporous Coverage of Carbon-supported Pt Catalysts on Dehydrogenation of Cyclohexane

The catalysts covered with an organosilica layer containing (a) phenyl or (b) methyl groups show higher conversion than that covered with silica without a functional group.

Keizo Nakagawa, Yusuke Tanimoto, Ken-Ichiro Sotowa, Shigeru Sugiyama, Sakaie Takenaka, and Masahiro Kishida
doi:10.1246/cl.2009.480

482 Crystal Growth of Glycine Controlled by a Focused CW Near-infrared Laser Beam

Crystal growth of glycine was accelerated by photon pressure of a near-infrared CW YVO4 laser beam, which was focused at a position adjacent to the spontaneously generated crystal. The growth rate depended on the distance between the focal spot and the crystal, and the unique growth and dissolution behavior due to Ostwald ripening were observed.

Teruki Sugiyama, Takuji Adachi, and Hiroshi Masuhara
doi:10.1246/cl.2009.482
484 One-step Direct Conversion of Heterocyclic Aldehydes to Esters

Shyamaprosad Goswami and Anita Hazra
doi:10.1246/cl.2009.484
Electronic Supporting Information

486 Generation and Reactions of α-Silyloxiranyl-lithium in a Microreactor

Aiichiro Nagaki, Eiji Takizawa, and Jun-ichi Yoshida
doi:10.1246/cl.2009.486
Electronic Supporting Information

488 Enantioselective Construction of a 2,8-Dioxa-bicyclo[3.2.1]octane Ring System via [2,3]-Sigmatropic Rearrangement of Oxonium Ylide Using Chiral Dirhodium(II) Carboxylates

Naoyuki Shimada, Seiichi Nakamura, Masahiro Anada, Motoo Shiro, and Shunichi Hashimoto
doi:10.1246/cl.2009.488
Electronic Supporting Information

490 Structures and Dielectric Properties in Thermochromic Nickel(II) Compounds

Shinya Hayami, Daisuke Urakami, Shoya Sato, Yoshihiro Kojima, Katsuya Inoue, and Masaaki Ohba
Electronic Supporting Information

492 Organic Films Containing Trinuclear Ruthenium Clusters that Exhibit Redox-state-dependent Heat-shielding Characteristics

Yuki Tomiyasu, Masaaki Abe, Yasushi Morihara, Hiroyuki Ohgi, Tomiaki Otake, and Yoshio Hisaeda
doi:10.1246/cl.2009.492
Electronic Supporting Information
494 Multistep Coloring and Bleaching of Viologens Monomolecularly Incorporated in DNA

Takeshi Kakibe, Ryo Kurihara, and Hiroyuki Ohno
doi:10.1246/cl.2009.494

496 Interaction of Self-assembled Cationic Nano-gels with Oligo-DNA and Function as Artificial Nucleic Acid Chaperone

Nobuyuki Morimoto, Junko Tamada, Shin-ichi Sawada, Naohiko Shimada, Arihiro Kano, Atsushi Maruyama, and Kazunari Akiyoshi
doi:10.1246/cl.2009.496

498 Synthesis of Helical Polymers with a Pentasilane Core

Yasuhiro Morisaki, Hiromichi Otaka, Atsushi Nagai, Kensuke Naka, and Yoshiki Chujo
doi:10.1246/cl.2009.498

Electronic Supporting Information

500 Preparation and Structure Characterization of β-BaB$_2$O$_4$ Nanowires

Jiang Zhang, Shaojun Liang, and Guiping He
doi:10.1246/cl.2009.500

502 Oxide Glass/Amorphous Metal Alloy Laminated Membrane for Hydrogen Separation

Hiromasa Tawarayama, Hideo Hosono, Shin-ichi Yamaura, Wei Zhang, and Akihisa Inoue
doi:10.1246/cl.2009.502
A novel direct electron-transfer (DET)-based biofuel cell was established using indium–tin-oxide (ITO) substrates and hemoglobin (Hb) as the electrocatalyst for hydrogen peroxide ($\text{H}_2\text{O}_2$) in the cathodic reaction systems. The observed open-circuit voltage (OCV) and the maximum power density in the assembled single cell were 0.34 V and 0.15 µW cm$^{-2}$, respectively.

Yusuke Ayato and Naoki Matsuda
doi:10.1246/cl.2009.504

A novel dodecanuclear Mo–Cu cluster derived from $\text{[Mo}_6\text{S}_2\text{(edt)}_4\text{(μ-S)}_2\text{]_-2}$ as a metalloligand: Preparation and Structure of $\text{[Mo}_6\text{(edt)}_4\text{(μ-μ-S)}_2\text{Cu}_6\text{(μ-dppe)}_2\text{]_-2DMF} \cdot \text{C}_6\text{H}_14$ (edt = \text{SC}_2\text{H}_4\text{S})

Jing-Jing Li, Taike Duan, Qian-Feng Zhang, and Wa-Hung Leung
doi:10.1246/cl.2009.506

New Zn$^{II}$ complexes, $\text{[Zn(bpimp)}_3\text{]}_2X_2$ (bpimp: 2-(4-tert-butylphenyl)imidazo[4,5-f]-1,10-phenanthroline), were prepared. While the ligand does not exhibit fluorescence in the solid state, the new complexes exhibit fluorescence both in solution and in solid states.

Tomoharu Ama, Takahiko Sakaguchi, Katsuhiro Yoshida, and Masanori Yamaguchi
doi:10.1246/cl.2009.508

Electronic Supporting Information