

# 業績レポート

## 都市環境・環境地理学講座

### 環境動態論分野

#### 【論文】

- High-Temperature Protonic Conduction in LaFeO<sub>3</sub>-SrFeO<sub>3-δ</sub>-SrZrO<sub>3</sub> Solid Solutions [JOURNAL OF THE ELECTROCHEMICAL SOCIETY, 158 (2), (2011), B180-B188] Unemoto, Atsushi Kaimai, Atsushi Sato, Kazuhisa Kitamura, Naoto Yashiro, Keiji Matsumoto, Hiroshige Mizusaki, Junichiro Amezawa, Koji Kawada, Tatsuya
- In situ Observation of the Deformation and Mechanical Damage of SOFC Cell/Stack [ECS Transactions, 35(1), (2011), 225-229] K. Sato, T. Sakamoto, A. Kaimai, K. Yashiro, K. Amezawa T. Hashida, J. Mizusaki and T. Kawada
- Evaluation of Stress Conditions in Operated Anode Supported Type Cells Based on In-situ Raman Scattering Spectroscopy [ECS Transactions, 35(1), (2011), 519-525] Masafumi Nagai, Fumitada Iguchi, Syo Onodera, Noriko Sata, Tatsuya Kawada, Hiroo Yugami
- Multiscale Simulation of Electro-Chemo-Mechanical Coupling Behavior of PEN Structure under SOFC Operation [ECS Transactions, 35(1), (2011), 923-933] K. Terada, T. Kawada, K. Sato, F. Iguchi, K. Yashiro, K. Amezawa, M. Kubo, H. Yugami, T. Hashida, J. Mizusaki, H. Watanabe, T. Sasagawa and H. Aoyagi
- Mechanical Properties of Ce<sub>0.9</sub>Gd<sub>0.1</sub>O<sub>2-δ</sub> at High Temperatures under Controlled Atmospheres [ECS Transactions, 35(1), (2011), 1145-1149] Takuto Kushi, Kazuhisa Sato, Atsushi Unemoto, Koji Amezawa, Tatsuya Kawada
- Effect of Redox Cycling on Mechanical Properties of Ni-YSZ Cermets for SOFC Anodes [ECS Transactions, 35(1), (2011), 1473-1482] S. Sukino, S. Watanabe, K. Sato, F. Iguchi, H. Yugami, T. Kawada, J. Mizusaki, T. Hashida
- Cooperative Investigations on Degradation of Cathode Materials in Segment-in-Series Cells by MHI [ECS Transactions, 35(1), (2011), 2191-2200] Harumi Yokokawa, Haruo Kishimoto, Katsuhiko Yamaji, Teruhisa Horita, Takao Watanabe, Tohru Yamamoto, Koichi Eguchi, Toshiaki Matsui, Kazunari Sasaki, Yusuke Shiratori, Tatsuya Kawada, Kazuhisa Sato,

Toshiyuki Hashida, Atsushi Unemoto, Tatsuo Kabata, Kazuo Tomida

- Material Stability and Cation Transport of La<sub>0.6</sub>Sr<sub>0.4</sub>Co<sub>0.2</sub>Fe<sub>0.8</sub>O<sub>3-δ</sub> in SOFC Cathodic Conditions [ECS Transactions, 35(1), (2011), 2249-2253] M. Oh, A. Unemoto, K. Amezawa, T. Kawada
- Mechanical Properties of La<sub>0.6</sub>Sr<sub>0.4</sub>Co<sub>1-y</sub>FeyO<sub>3-δ</sub> under Various Temperatures and Oxygen Partial Pressures [ECS Transactions, 35(1), (2011), 2429-2434] Y. Kimura, T. Kushi, S. Hashimoto, S. Watanabe, K. Amezawa, T. Kawada, Y. Fukuda, A. Unemoto, K. Sato, K. Yashiro, J. Mizusaki, and T. Hashida
- Nanoprotonics in perovskite-type oxides: Reversible changes in color and ion conductivity due to nanoionics phenomenon in platinum-containing perovskite oxide [Solid State Ionics, 182(1), (2011), 13-18] Hiroshige Matsumoto, Takayoshi Tanji, Koji Amezawa, Tatsuya Kawada, Yoshiharu Uchimoto, Yoshihisa Furuya, Takaaki Sakai, Maki Matsuka, Tatsumi Ishihara
- Structure, water uptake and electrical conductivity of TiP<sub>2</sub>O<sub>7</sub> [Journal of the American Ceramic Society, 94 (5), (2011), 1514-1522] V. Nalini, M. H. Sorby, K. Amezawa, R. Haugsrud, H. Fjellvag, T. Norby
- Defects in scandium doped barium zirconate studied by Sc-45 NMR [Solid State Ionics, 192(1), 83-87] Itaru Oikawa, Mariko Ando, Yasuto Noda, Koji Amezawa, Hajime Kiyono, Tadashi Shimizu, Masataka Tansho, and Hideki Maekawa
- Control of mixed protonic and electronic conductivity by mixing rare-earth ortho-borates [Solid State Ionics, 192(1), (2011), 275-278] Hayato Takahashi, Atsushi Unemoto, Koji Amezawa, and Tatsuya Kawada
- Elastic Modulus and Internal Friction of SOFC Electrolytes at High Temperatures under Controlled Atmospheres [Journal of Power Sources, 196, (2011), 7989-7993] Takuto Kushi, Kazuhisa Sato, Atsushi Unemoto, Shinichi Hashimoto, Koji Amezawa, Tatsuya Kawada
- 高温・酸化 / 還元環境下における機械的特性評価法の開発 [日本機械学会論文集A編, 77(780), (2011), 1357-1366] 渡辺智, 佐藤一永, 武山陽平, 井口史匡, 八代圭司, 雨澤浩史, 湯上浩雄, 橋田俊之, 水崎純一郎, 川田達也
- Elastic Moduli of Ce<sub>0.9</sub>Gd<sub>0.1</sub>O<sub>2-d</sub> at High Temperatures under Controlled Atmospheres [Solid State Ionics, 198 (1), (2011), 32-38] Koji Amezawa, Takuto Kushi,

Kazuhisa Sato, Atsushi Unemoto, Shin-ichi Hashimoto, Tatsuya Kawada

- X-ray Absorption Spectroscopic Study on La<sub>0.6</sub>Sr<sub>0.4</sub>CoO<sub>3-δ</sub> Cathode Materials Related with Oxygen Vacancy Formation [Journal of Physical Chemistry C, 115 (33), (2011), 16433-16438] Yuki Oriksa, Toshiaki Ina, Takayuki Nakao, Atsushi Mineshige, Koji Amezawa, Masatsugu Oishi, Hajime Arai, Zempachi Ogumi, Yoshiharu Uchimoto
- Local structural analysis for oxide ion transport in La<sub>0.6</sub>Sr<sub>0.4</sub>FeO<sub>3-δ</sub> cathodes [Journal of Materials Chemistry, 21, (2011), 14013-14019] Yuki Oriksa, Takayuki Nakao, Masatsugu Oishi, Toshiaki Ina, Atsushi Mineshige, Koji Amezawa, Hajime Arai, Zempachi Ogumi, Yoshiharu Uchimoto
- X-ray Absorption Spectroscopic Study on Mixed Conductive La<sub>0.6</sub>Sr<sub>0.4</sub>Co<sub>0.8</sub>Fe<sub>0.2</sub>O<sub>3-δ</sub> Cathodes I. Electrical Conductivity and Electronic Structure [Physical Chemistry Chemical Physics, 13, (2011), 16637-16643] Yuki Oriksa, Toshiaki Ina, Takayuki Nakao, Atsushi Mineshige, Koji Amezawa, Masatsugu Oishi, Hajime Arai, Zempachi Ogumi, Yoshiharu Uchimoto
- Ionic Conductivity of Magnesium Titanium Phosphates densified by using Spark Plasma Sintering Method [Proceedings of the 12th Conference of the European Ceramic Society, ECerS XII, (2011)] Hiroo Takahashi, Koji Amezawa, and Hitoshi Takamura
- 【総説・解説】
  - In situ測定(5) X線吸収分光法 蓄電池・SOFC. [電気化学および工業物理化学, 79(9), (2011), 720-727] 雨澤浩史, 内本喜晴
- 【自然／人間環境地理学分野】
  - 【論文】
    - 仙台のヒートアイランドと海風の影響 [地学雑誌, 120(2), (2011), 382-391] 境田清隆, 江越新, 倉持真之
    - Land subdivision and land use change in the frontier settlement zone of Mount Meru, Tanzania [African Study Monographs, Supplementary issue (42), (2011), 101-118] Gen Ueda
  - 【著書】
    - 山の民の地域システム—タンザニア農村の場所・世帯・共同性 [東北大出版会, (2011)] 上田元
- 【都市・地域環境システム学分野】
  - 【論文】
    - Possible earthen dam failure mechanisms of Fujinuma reservoir due to the Great East Japan Earthquake of 2011. [Hydrological Research Letters, 5, (2011), 69-72]

Keisuke Ono, So Kazama, Seiki Kawagoe, Yoshiyuki Yokoo and Luminda Gunawardhana

- Evaluation of seasonal habitat variations of freshwater fishes, fireflies, and frogs using a habitat suitability index model that includes river water temperature. [Ecological Modelling, 222 (20-22), (2011), 3718-3726] Kei Nukazawa, Jun-ichi Shiraiwa, So Kazama
- Impact of Urbanization and Climate Change on Aquifer Thermal Regimes. [Water Resources Management, 25 (13), (2011), 3247-3276] Luminda Niroshana Gunawardhana, So Kazama, Saeki Kawagoe
- Groundwater Temperature as a Proxy to Estimate Ground Surface Warming Attributed to Anthropogenic Impacts in 20th Century in Japan. [ASPIRE/IWA, 19-33, (2011)] L. N. Gunawardhana and S. Kazama
- The relationship between discharge and nutrient concentration in inundation areas in Cambodia. [ASPIRE/IWA, P-18-7, (2011)] A. Amano and S. Kazama
- Climate change impacts on groundwater temperature change in the Sendai plain, Japan. [Hydrological Processes, 25 (17), (2011), 2665-2678] Luminda Niroshana Gunawardhana and So Kazama
- Water conflict vulnerability of regions. [Risk in water resources management, IAHS publication, 347, (2011), 267-273] Nilupul Gunasekara and So Kazama
- Monte Carlo experiments for uncertainty investigation of glacier melt discharge predictions through surface energy balance analysis. [Cold regions hydrology in a changing climate, IAHS publication, 346, (2011), 103-108] Freddy Soria and So Kazama
- Temporal variation in acidity and ion concentration of snowmelt water in light and heavy snow years. [Cold regions hydrology in a changing climate, IAHS publication, 346, (2011), 86-91] Yoshihiro Asaoka, Yukari Takeuchi and So Kazama
- Groundwater temperature as a tracer to estimate anthropogenic impacts: past, present and future. [Conceptual and Modelling Studies of Integrated Groundwater, Surface Water, and Ecological Systems, IAHS Publication, 345, (2011), 10-16] Luminda Gunawardhana and So Kazama
- Analysis of extreme daily rainfall in southeast Asia with a gridded daily rainfall data set. [Hydroclimatology: Variability and Change, IAHS Publication, 344, (2011), 169-175] Keisuke Ono and So Kazama
- Damage from the Great East Japan Earthquake and Tsunami - A quick report. [Mitigation and Adaptation Strategies for Global Change, 16 (7), (2011), 803-818] Nobuo Mimura & Kazuya Yasuhara & Seiki Kawagoe & Hiromune Yokoki & So Kazama
- Benthic communities and genetic structure of caddisfly Stenopsyche marmorata along a mountain stream

- fragmented by slit and unslit sabo dams. [River Basin Management VI, WIT Transactions on Ecology and the Environment, 146, (2011), 263-274] K. Nukazawa, S.Kazama, K. Watanabe & J. Kang
- 河川水温を考慮した HSI モデルによる水生生物の生息環境評価 [水工学論文集, 55, (2011), 1255-1260] 麻澤桂, 白岩淳一, 風間聰
  - 水理氾濫モデルと現地患者数を用いた水系感染症リスクの時空間分布 [水工学論文集, 55, (2011), 643-648] 天野文子, 佐久間太佑, 風間聰
  - 積雪深データ同化による融雪出水解析 [水工学論文集, 55, (2011), 403-408] 柏俊輔, 朝岡良浩, 風間聰
  - 東南アジア熱帯地域における降雨極値の空間解析 [水工学論文集, 55, (2011), 283-288] 小野桂介, 風間聰
  - Monitoring inequalities in irrigation water supplies for sustainable irrigation management. [Annual J. of Hydraulic Engineering, 55, (2011), 115-120] Nilupul Gunasekara and So KAZAMA
  - Potential Impacts of climate change on the tropical Andes. [Annual J. of Hydraulic Engineering, 55, (2011), 79-84] Freddy Soria and So KAZAMA
  - Snow and glacier contribution from Ialian Alps for seasonal river discharge in Tagliamento River. [Annual J. of Hydraulic Engineering, 55, (2011), 67-73] Luminda Gunawardhana and So KAZAMA
  - Distributed specific sediment yield estimations in Japan attributed to extreme-rainfall-induced slope failures under a changing climate. [Hydrology and Earth System Science, 15, (2011), 197-207] K. Ono, T. Akimoto, L. N. Gunawardhana, S. Kazama, and S. Kawagoe
  - Water disaster impact on climate change and its adaptation. [Proceedings of International Symposium, Promoting Synergies among adaptation networks in the Asia-Pacific Region, (2011), 27] So Kazama
  - Mineralization of antibiotic sulfamethoxazole by photoelectro-Fenton treatment using activated carbon fiber cathode and under UVA irradiation [Applied Catalysis B: Environmental, 102, (2011), 378-386] Aimin Wang, Yu-You Li, Adriana Ledezuma
  - Fluorescence spectral characteristics of the supernatants from an anaerobic hydrogen-producing bioreactor [Applied Microbiology and Biotechnology, 89(1), (2011), 217-224] Wei-Hua Li, Guo-Ping Sheng, Rui Lu, Han-Qing Yu and Yu-You Li, Hideki harada
  - UASB 法による製紙工場メタノール含有廃水と廃棄物の複合処理 [環境技術, 40(3), (2011), 130-137] 高橋慎太郎, 小林拓朗, 李玉友, 原田秀樹
  - 食品標準成分に基づく生ごみのメタン発酵および水素発酵によるエネルギー回収ボテンシャル評価 [環境技術, 40(3), (2011), 159-166] 小林拓朗, 李東烈, 徐開欽, 李玉友, 稲森悠平
  - Feasible power production from municipal sludge using an improved anaerobic digestion system [Ozone: Science & Engineering, 33, (2011), 164-170] K. Komatsu, H. Yasui, R. Goel, Y.Y. Li, and T. Noike
  - Novel anaerobic digestion process with sludge ozonation for economically feasible power production from biogas [Water Science and Technology, 63(7), (2011), 1467-1475] K. Komatsu, H. Yasui, R. Goel, Y.Y. Li, and T. Noike
  - Performance and characterization of a newly developed self-agitated anaerobic reactor with biological desulfurization [Bioresource Technology, 102, (2011), 5580-5588] Takuro Kobayashi, Yu-You Li
  - メタノール廃水の UASB 処理およびグラニュール形成に及ぼすデンプン添加の影響 [土木学会論文集 G (環境), 67(2), (2011), 60-68] 関峰, 小林拓朗, 高橋慎太郎, 李玉友, 大村達夫
  - Enhancement of thermophilic anaerobic digestion of thickened waste activated sludge by combined microwave and alkaline pretreatment [Journal of Environmental Science, 23(8), (2011), 1-9] Yong-Zhi Chi, Yu-You Li, Xue-Ning Fei, Shao-Po Wang, Hong-Ying Yuan.
  - Effect of starch addition on the biological conversion and microbial community in a methanol-fed UASB reactor during long-term continuous operation [Bioresource Technology, 102, (2011), 7713-7719] Takuro Kobayashi, Feng Yan, Shinichiro Takahashi, Yu-You Li.
  - Novel online monitoring and alert system for anaerobic digestion reactors, [Environmental Science and Technology, 45, (2011), 9093-9100] Fang Dong, Quan-Bao Zhao, Wen-Wei Li, Guo-Ping Sheng, Jin-Bao Zhao, Yong Tang, Han-Qing Yu, Kengo Kubota, Yu-You Li and Hideki Harada.
  - High-solid mesophilic methane fermentation of food waste with an emphasis on Iron, Cobalt, Nickel requirement [ASPIRE/IWA, 22-5-3, (2011)] Hong Qiang, Dong-Li Lang, Yu-You Li.
  - Effect of temperature on hydrogen fermentation on cellulose [Proc. of the 7th International Conference on Environmental Anaerobic Technologies and Bioenergy, (2011), 100-108] Gadow S. I., and Yu-You Li.
  - High-solid thermophilic methane fermentation of food waste with an emphasis on Iron, Cobalt, Nickel requirements [Proc. of the 7th International Conference on Environmental Anaerobic Technologies and Bioenergy, (2011), 109-119] Hong Qiang, and Yu-You Li.
  - Performance evaluation and effect on circulation rate in a bio-desulfurization process aerated by biogas circulation [Proc. of the 7th International Conference on Environmental Anaerobic Technologies and Bioenergy, (2011), 198-214] Takuro Kobayashi, Kaiqin Xu, Yu-You Li, Yuhei Inamori.
  - Comparison between thermophilic and mesophilic

- anaerobic digestion of waste activated sludge by combined NaOH-microwave pretreatment [Proc. of the 7th International Conference on Environmental Anaerobic Technologies and Bioenergy, (2011), 255-264] Yong-Zhi Chi, Yu-You Li, Min Ji, Shao-Po Wang, Hong-Ying Yuan, Xue-Ning Fei.
- 污水汚泥中病原微生物の性質及灭活方法 [天津城市建设学院学报, 17(1), (2011), 48-54] 池勇志, 薛彩虹, 习钰兰, 费学宁, 李玉友
  - 厌氧消化技术在日本有机废水和废弃物处理中的应用 [中国给水排水, 27(8), (2011), 27-33] 池勇志, 习钰兰, 薛彩虹, 小林拓朗, 李玉友
  - 萤光原位杂交技术在活性污泥菌群识别中的研究进展 [化学通报, 74(6), (2011), 520-527] 费学宁, 曹阳, 郝亚超, 池勇志, 李玉友

## 国際環境・地球環境学講座

### 国際経済環境研究分野

#### 【論文】

- 東アジアにおけるリサイクル貿易の現状と課題 [日本通商政策論, (2011)] 佐竹正夫, 斎藤崇

### 環境・エネルギー経済研究分野

#### 【論文】

- Potential Climate Effect on Japanese Rice Productivity [Climate Change Economics, 2(3), (2011), 237-255] Tanaka K., S. Managi, K. Kondo, K. Masuda, Y. Yamamoto.
- Heterogeneity on the Technical Efficiency in Japanese Airports [The Singapore Economic Review, 56(4), (2011), 523-534] Barros, C.P., Managi, S. and Y. Yoshida.
- Testing the International Linkage in the Platinum-group Metal Futures Markets [Resources Policy, 36(4), (2011), 339-345] Aruga, K. and S. Managi.
- Price Linkages in the Copper Futures, Primary, and Scrap Markets [Resources, Conservation & Recycling, 56(1), 43-47] Aruga, K. and S. Managi.
- A License Scheme: An Optimal Waste Management Policy under Asymmetric Information [Journal of Regulatory Economics, (2011)] Shinkuma, T. and S. Managi, S.
- Does the Housing Market Respond to Information Disclosure?: Effects of Toxicity Indices in Japan [Journal of Environmental Management, (2011)] Hibiki, A. and S. Managi.
- The Impacts of Exchange Rate Volatility on Vegetable Trade Flows [Applied Economics, (2011)] Karemra, D., Managi, S., Reuben, L., and Spann, O.
- Cost Efficiency of Japanese Steam Power Generation Companies: A Bayesian Comparison of Random and Fixed Frontier Models [Applied Energy, (2011)] Assaf, A., Barros, C.P., and S. Managi, S.
- Stock Prices of Clean Energy Firms, Oil and Carbon Markets: A Vector Autoregressive Analysis [Energy

- Economics, (2011)] Kumar, S., Managi, S. and A. Matsuda, S.
- Catch Limits, Capacity Utilization and Cost Reduction in Japanese Fishery Management [Agricultural Economics, (2011)] Yagi, M. and S. Managi, S.
  - Modal Choice between Air and Rail: A Social Efficiency Benchmarking Analysis that considers CO<sub>2</sub> Emissions [Environmental Economics and Policy Studies, (2011)] Fukuyama, H., Yoshida, Y., and S. Managi, S.
  - The Pollution Release and Transfer Register System in the U.S. and Japan: An Analysis of Productivity [Journal of Cleaner Production, (2011)] Fujii, H., Managi, S., and H. Kawahara, S.
  - 国内製造業の環境技術特許と財務パフォーマンスの因果関係性分析 [環境科学会誌, (2011)] 藤井秀道, 八木迪幸, 馬奈木俊介, 金子慎治
  - 生物多様性と生態系サービスの経済分析 [季刊環境研究, (2011)] 馬奈木俊介
  - 都市ガス事業への規制緩和の効果 [ガス事業研究会報告書, (2011)] 馬奈木俊介
  - Tests on Price linkage between the U.S. and Japanese Gold and Silver Futures Markets [Economics Bulletin, 31 (2), (2011), 1038-1046] Aruga, K. and S. Managi.
  - The Technical Efficiency of the Japanese Banks: Non-Radial Directional Performance Measurement with Undesirable Output [Omega - The International Journal of Management Science, 40 (1), (2011), 1-8] Barros, C.P., S. Managi, and R. Matousek.
  - VOC 排出量を考慮した国内製造業の生産性分析 [計画行政, (2011)] 藤井秀道, 馬奈木俊介, 川原博満
  - 低炭素社会への道: 政策とビジネスとのリンク [公営企業, 6, (2011), 18-24] 馬奈木俊介
  - コンパクトシティは環境改善に繋がるか? 全国市町村データを用いた実証分析 [環境科学会誌, (2011)] 岩田和之, 馬奈木俊介
  - 生物多様性保全に関する環境意識の決定要因~ミレニアム開発目標との関係性において [環境科学会誌, (2011)] 倉増啓・鶴見哲也・馬奈木俊介
  - 経済実験による排出量取引市場の取引メカニズムの評価 [環境科学会誌, (2011)] 田中健太, 小谷浩示, 馬奈木俊介
  - 自治体における教育効果の要因分析 [山梨県立大学国際政策学部紀要, 6, (2011), 129-138] 森田玉雪, 馬奈木俊介

- 【著書】**
- Waste and Recycling: Theory and Empirics. [Routledge, New York, USA., (2011)] Shinkuma, T. and Managi, S.
  - Technology, Natural Resources and Economic Growth: Improving the Environment for a Greener Future. [Edward Elgar Publishing Ltd, Cheltenham, UK., (2011)] Managi, S.
  - 生物多様性の経済学—経済評価と制度分析 [中央経済社, (2011)] 馬奈木俊介
  - 環境・資源経済学入門—市場は有効か? [昭和堂, (2011)] 馬奈木俊介

- (2011)] 馬奈木俊介
- 環境政策とビジネス—環境経営学入門— [昭和堂, (2011)] 馬奈木俊介, 豊澄智己

## 環境技術イノベーション分野

### 【論文】

- 東北大学大学院環境科学研究所における高度社会人環境人材養成プログラムの実践と課題 [環境科学会誌, 24(4), (2011), 320-328] 古川柳蔵, 石田秀輝
- 【著書】
- 未来の働き方をデザインしよう—2030年のエコワークスタイルブック [日刊工業新聞社, (2011)] 石田秀輝, 古川柳蔵, コクヨ(株)RDIセンター
- 次世代バイオミメティクス研究の最前線 [シーエムシー出版, (2011)] 石田秀輝, 古川柳蔵
- スマートハウスの発電・蓄電・給電技術の最前線 [シーエムシー出版, (2011)] 田路和幸監修 古川柳蔵ほか

### 【総説・解説】

- 地下資源文明からの離陸—新しいくらしのかたち— [空気調和・衛生工学, 85 (10), (2011), 777-783] 石田秀輝, 古川柳蔵, 須藤祐子
- バックキャスティングから見た、日本人のライフスタイル—2020年へ向けた生活者のライフスタイル— [公益財団法人吉田秀雄記念事業財団委託研究プロジェクト第7回研究会レポート, (2011), 1-68] 古川柳蔵
- イノベーションを通してライフスタイルを変えることができるのか [SUIRAN, (25), (2011), 33-36] 古川柳蔵
- ネイチャー・テクノロジー—自然に学び技術をみがき、未来をつくる— [milsil, 20 (4), (2011), 6-9] 石田秀輝, 古川柳蔵

## 太陽地球システム・エネルギー学講座

## 地球環境・エネルギー学分野

### 【論文】

- Progress of hydration reactions in olivine-H<sub>2</sub>O and orthopyroxenite-H<sub>2</sub>O systems at 250°C and vapor-saturated pressure [Chemical Geology, 289, (2011), 245-255] Atsushi Okamoto, Yuichi Ogasawara, Yasumasa Ogawa and Noriyoshi Tsuchiya
- Determination of total contents of bromine, iodine and several trace elements in soil by polarizing energy-dispersive X-ray fluorescence spectrometry [Soil Science and Plant Nutrition, 57 (1), (2011), 19-28] Akira Takeda, Shin-ichi Yamasaki, Hirofumi Tsukada, Yuichi Takaku, Shun'ichi Hisamatsu, and Noriyoshi Tsuchiya
- 偏光式エネルギー分散型蛍光X線分析法による土壤およ

- よび底質中の微量元素の同時分析 [分析化学, 69 (4), (2011), 315-323] 山崎慎一, 松波寿弥, 武田晃, 木村和彦, 山路功, 小川泰正, 土屋範芳

- Effects of general zero-valent metals power of Co/W/Ni/Fe on hydrogen production with H<sub>2</sub>S as a reductant under hydrothermal conditions [International Journal of Hydrogen Energy, 36, (2011), 8878-8884] Shiping Zhang, Fangming Jin, Xu Zeng, Jiajun Hu, Zhibao Huo, Yuanqing Wang, Noriaki Watanabe, Nobuo Hirano, and Noriyoshi Tsuchiya

- Precise 3D Numerical Modeling of Fracture Flow Coupled With X-Ray Computed Tomography for Reservoir Core Samples [SPE (Society of Petroleum Engineers) Journal, 16 (3), (2011), 683-691] Noriaki Watanabe, Takuya Ishibashi, Nobuo Hirano, Yutaka Ohsaki, Yoshihiro Tsuchiya, Tetsuya Tamagawa, Hiroshi Okabe, and Noriyoshi Tsuchiya

- Enhanced hydrogen production from biomass via the sulfur redox cycle under hydrothermal conditions [International Journal of Hydrogen Energy, 36, (2011), 10674-10682] Putri Setiani, Javier Vilca'ez, Noriaki Watanabe, Atsushi Kishita, Noriyoshi Tsuchiya

- Sustainable and Enhanced Hydrogen Production from Biomass through Sulfur Redox Cycle using Georeactor [Geothermal Resources Council Transaction, 35, (2011), 135-138] Putri Setiani, Javier Vilca'ez, Noriaki Watanabe, Atsushi Kishita, and Noriyoshi Tsuchiya

- Advanced Direct Use of Geothermal Energy for Hydrogen Production and Material Conversion [Geothermal Resources Council Transaction, 35, (2011), 143-146] Noriyoshi Tsuchiya and Noriaki Watanabe

- Geology and Surface Hydrothermal Alteration of Malabar Area, Northern Part of the Wayang Windu Geothermal Field, Indonesia [Geothermal Resources Council Transaction, 35, (2011), 1029-1031] Arif Susanto, Noriyoshi Tsuchiya, Emmy Suparka, Nobuo Hirano, Atsushi Kishita, Yudi Indra Kusumah

- 酸性河川中でのレアメタル (In, Ga) よりび有害元素 (As, Pb) の吸着・分別挙動に関する実験的研究 [資源地質, 61 (3), (2011), 167-180] 梶原雅博, 小川泰正, 土屋範芳

- Application of the microboudin method to palaeodifferential stress analysis of deformed impure marbles from Syros, Greece: Implications for grain-size and calcite-twin palaeopiezometers [Journal of Structural Geology, (2011)] Toshiaki Masuda, Tomoya Miyake, Nozomi Kimura, Atsushi Okamoto

- In situ observation of the crystallization pressure induced by halite crystal growth in a microfluidic channel [American Mineralogist, 96, (2011), 1012-1019] Kotaro Sekine, Atsushi Okamoto, Kazuo Hayashi
- Textures of syntaxial quartz veins synthesized by

- hydrothermal experiments [Journal of Structural Geology, (2011)] Atsushi Okamoto, Kotaro Sekine

- Thermodynamic forward modeling of progressive dehydration reactions during subduction of oceanic crust under greenschist facies conditions [Earth and Planetary Science Letters, (2011)] Tatsu Kuwatani, Atsushi Okamoto, Mitsuhiro Toriumi

- Development of CFR-PEEK core holder for X-ray CT based numerical analysis of fluid flow within fractured samples under confining pressure. [Proceedings of 17th Formation Evaluation Symposium of Japan, CD-ROM, (2011), Paper C] N. Watanabe, T. Ishibashi, N. Tsuchiya, Y. Ohsaki, T. Tamagawa, Y. Tsuchiya, H. Okabe, H. Ito

- Evaluation and Prediction of fluid flow through fracture under confining pressure in various scales. [Proceedings of 17th Formation Evaluation Symposium of Japan, CD-ROM, (2011), Paper N] T. Ishibashi, N. Watanabe, N. Hirano, A. Okamoto, N. Tsuchiya

- Core analysis towards the integration with logging and borehole data. [Proceedings of 17th Formation Evaluation Symposium of Japan, CD-ROM, (2011), Paper T] H. Ito, Y. Sanada, N. Watanabe, T. Tsuji, T. Mukunoki, F. Yamada, K. Kawabata

- X-ray CT based numerical analysis of fracture flow for core samples under various confining pressures. [Engineering Geology, 123, (2011), 338-346] N. Watanabe, T. Ishibashi, Y. Ohsaki, Y. Tsuchiya, T. Tamagawa, N. Hirano, H. Okabe, N. Tsuchiya

- Characterisation and photocatalytic activity of structure-controlled spherical granules of anatase/hydroxyapatite composite. [Materials Research Bulletin, 46 (12), (2011), 2283-2287] M. Kamitakahara, O. Kawaguchi, N. Watanabe, K. Ioku

- Hydrothermal synthesis of porous hydroxyapatite ceramics composed of rod-shaped particles and evaluation of their fracture behavior. [Ceramics International, 38, (2011), 1649-1654] S. Murakami, K. Kato, Y. Enari, M. Kamitakahara, N. Watanabe, K. Ioku

- Morphology and composition of hydroxyapatite particles synthesized hydrothermally from tricalcium phosphates. [Transactions of the Materials Research Society of Japan, 36 (3), (2011), 405-408] M. Kamitakahara, Y. Enari, N. Watanabe, K. Ioku

## 太陽地球計測学分野

### 【論文】

- Reflection imaging of EGS reservoirs using microseismicity as a source [Proc. Stanford Geothermal Workshop, (2011), 909-913] H. Asanuma, K. Tamakawa, N. Soma H. Niitsuma, R. Baria, M. Haring

- Estimation of structure inside EGS reservoir at Cooper Basin, Australia by analysis of source parameters [EAGE WS on microseismicity, PAS23, (2011)] H. Asanuma, Y. Kawamura, H. Niitsuma and D. Wyborn
- Characteristics of microearthquakes at Yanaizu-Nishiyama geothermal field [Transactions GRC, 35, (2011), CD-ROM] H. Asanuma, S. Mitsumori, M. Adachi, M. Saeki, K. Aoyama, H. Ozeki, Y. Mukuhira and H. Niitsuma
- Reflection imaging of EGS reservoirs at Soultz and Basel using microseismic multiplets as a source [Transactions GRC, 35, (2011), CD-ROM] H. Asanuma, K. Tamakawa, H. Niitsuma, R. Baria, M. Haring
- Identification of fracture orientation for the large magnitude microseismic events recorded at Basel, Switzerland in 2006 [Transactions GRC, 35, (2011), CD-ROM] Y. Mukuhira, H. Asanuma, H. Niitsuma and M. Haring
- Reflection imaging of the Aneth CCS reservoir using microseismic multiplet sources [SEG Expanded Abstracts, (2011), CD-ROM] H. Asanuma, K. Tamakawa, H. Niitsuma, N. Soma, J. Rutledge and C. Rowe
- Characteristics of microseismic events with large magnitude from geothermal reservoirs [Proc. GeoProc2011, (2011), CD-ROM] H. Asanuma, Y. Mukuhira, S. Mitsumori, H. Niitsuma, D. Wyborn and M. Haring
- Characteristics of the large events from the seismically activated fractures at Basel geothermal reservoir [Proc. 10th SEG Symp., 10, (2011), 116-119] Y. Mukuhira, H. Asanuma, H. Niitsuma, and M. Haring
- Estimation of structure of geothermal reservoir at Cooper Basin, Australia, by integrated analysis of microseismic multiplet and source parameter [Proc. 10th SEG Symp., 10, (2011), 120-124] H. Asanuma, Y. Kawamura, H. Niitsuma, D. Wyborn
- Principles of coherence reflection method and its applicability to seismic reflection survey [Proc. 10th SEG Symp., 10, (2011), 55-58] H. Asanuma, K. Tamakawa, N. Soma, and H. Niitsuma
- Application of an arrival time and cross correlation value-based location algorithm to the Basel 1 microseismic data [Proc. EAGE 2011 Annual Meeting, (2011)] J. Kummerow, S.A. Shapiro, H. Asanuma, M. Haing
- Using microseismicity to image the structure of the Basel geothermal reservoir [Proc. EAGE 2011 Annual Meeting, (2011)] A. Reshetnikov, J. Kummerow, S.A. Shapiro, H. Asanuma, M. Haing
- Characteristics of earthquakes observed at Yanaizu-Nishiyama geothermal field, Japan [AGU 2011 Fall Meeting Abstract S44B-08 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec., (2011)]

H. Asanuma, S. Mitsumori, M. Adachi, M. Saeki, K. Aoyama, H. Ozeki, Y. Mukuhira, H. Niitsuma

- Investigation on the characteristics of seismic events observed during stimulation of geothermal reservoirs at Basel, Switzerland [AGU 2011 Fall Meeting Abstract S41C-2119 presented at 2011 Fall Meeting, AGU, San Francisco, Calif., 5-9 Dec., (2011)] Y. Mukuhira, H. Asanuma, H. Niitsuma, M. Haring

● Phase-only correlation of time-varying spectral representations of microseismic data for identification of similar seismic events. [Geophysics, 76 (6), (2011), WC35-WC51] Hirokazu Moriya

- Identification and classification of similar seismic events by using phase-only correlation technique. [Proc. 10th SEG International Symposium, 10, (2011), 133-136] Hirokazu Moriya

● Observational Studies of Earthquake Preparation and Generation to Mitigate Seismic Risks in Mines. [Proc. IUGG, in press, (2011)] H. Ogasawara, R. Durrheim, M. Nakatani, Y. Yabe, A. Milev, A. Cichowicz, H. Kawakata, O. Murakami, M. Naoi, H. Mori, T. Satoh, SATREPS research group

● Imaging of deep structure using reflection waves detected by spectral matrix analysis and confidence levels. [Journal of Acoustic Emission, (2012), -to be published] H. Mori

● Observed and simulated time evolution of HCl, ClONO<sub>2</sub>, and HF total column abundances [Atmos. Chem. Phys. Discuss., 11, (2011), 32085-32160] R. Kohlhepp, R. Ruhnke, M. P. Chipperfield, M. De Maziere, J. Notholt, S. Barthlott, R. L. Batchelor, R. D. Blatherwick, Th. Blumenstock, M. T. Coffey, P. Demoulin, H. Fast, W. Feng, A. Goldman, D. W. T. Griffith, K. Hamann, J. W. Hannigan, F. Hase, N. B. Jones, A. Kagawa, I. Kaiser, Y. Kasai, O. Kirner, W. Kouker, R. Lindenmaier, E. Mahieu, R. L. Mittermeier, B. Monge-Sanz, I. Murata, H. Nakajima, I. Morino, M. Palm, C. Paton-Walsh, U. Raffalski, Th. Redmann, M. Rettinger, C. P. Rinsland, E. Rozanov, M. Schneider, C. Senten, C. Servais, B.-M. Sinnhuber, D. Smale, K. Strong, R. Sussmann, J. R. Taylor, G. Vanhaelewijn, T. Warneke, C. Whaley, M. Wiehle, and S. W. Wood

#### 【著書】

- Subsurface Sensing. [Wiley, (2011)] Ahmet S. Turk, Koksal A. Hocaoglu, Alexey A. Vertiy (Eds.), Hiroshi Asanuma, et al.

#### 地殻システム情報学分野

##### 【論文】

- ベーンポンプ式減速機構を備えた自転型ノズルシステムの回転速度 [噴流工学, 28 (1), (2011), 4-10] 木崎彰久, 横井研太, 坂口清敏, 松木浩二

● Analysis of uniaxial tensile fracture of monomineral polycrystalline rock based on intergranular cracking [Proceedings of the 12th International Congress on Rock Mechanics, Beijing, (2011), 731-734] K. Matsuki, Y. Karino, K. Sakaguchi, A. Kizaki

● Effects of fracture size and normal stress on the shear behavior of a fracture as estimated by mortar replica [Proceedings of the 12th International Congress on Rock Mechanics, Beijing, (2011), 613-616] A.A. Giweli, K. Matsuki, K. Sakaguchi, A. Kizaki, H. Sekino, K. Okatsu

● In situ rock stress measurement using an improved Downward Compact Conical-ended Borehole Overcoring technique. [Proceedings of the 12th International Congress on Rock Mechanics, Beijing, (2011), 1101-1104] K. Sakaguchi, A. Kizaki, K. Matsuki

● Development of low speed self-rotating nozzle system for drilling [Proceedings of the 12th International Congress on Rock Mechanics, Beijing, (2011), 1719-1722] A. Kizaki, K. Yokoi, K. Sakaguchi, K. Matsuki

● 粒界の粘弾性挙動に基づく応力解放時の岩石の損傷評価 [Journal of MMJ, 128 (3), (2012), 掲載予定] 松木浩二, 及川寧己, 坂口清敏, 木崎彰久

● Laboratory Investigation of Effect of Gouge Material on Closure During Shearing [Proceedings of the 45th US Rock Mechanics Symposium, (2011)] Giweli, A.A., K. Matsuki, K. Sakaguchi, H. Sekino and K. Okatsu

● In-situ rock stress measurement using Downward Compact Conical-ended Borehole Overcoring technique in a vertical HQ-size borehole [Proc. of Int. Symp. on Field Measurement in GeoMechanics, (2011)] K. Sakaguchi, A. Kizaki and K. Matsuki

● 地殻応力下における单一き裂の透水性評価 [日本地熱学会誌, 34 (2), (2012), 掲載予定] 松木浩二, 坂口清敏, 木崎彰久

#### 地球開発環境学分野

##### 【論文】

● A New Recycling System for High Water Content Mud and Strength Characteristics of Modified Soils Produced by This System [Proc. of the 1st Vietnam/Japan Joint Symposium on Saigon River Bank Erosion, 1, (2011), 79-88] H.Takahashi and M.Mori

● Numerical Simulation on Strength and Deformation Characteristics of Fiber-Cement-Stabilized Soil [Proc. of the 1st Vietnam/Japan Joint Symposium on Saigon River Bank Erosion, 1, (2011), 89-99] N.Konda, H. Takahashi, Y.Suto and T.Satomi

● Study on Strength and Durability of Fiber-Cement-Stabilized Soils by using Rice Straw [Proc. of the 1st Vietnam/Japan Joint Symposium on Saigon River Bank Erosion, 1, (2011), 100-110] Ngoc Nguyen-Anh, H. Takahashi, M.Mori and Luu Xuan Loc

● 繊維質固化処理土の変形・強度特性に関する数値シミュレーション [テラメカニックス, (31), (2011), 37-42] 今田直希, 高橋弘

● 曲進可能な無排土小型掘進機械の開発に関する研究 [テラメカニックス, (31), (2011), 49-54] 森田光飛, 高橋弘, 須藤祐子, 里見知昭

● Experimental Study and Modeling of Pressure Loss for Foam-Cuttings Mixture Flow in Horizontal Pipe [Journal of Hydrodynamics, 23 (4), (2011), 431-438] Amna Gumati and Hiroshi Takahashi

● 個別要素法を用いた纖維質固化処理土の変形強度特性の評価 [応用力学論文集, 14 (1), (2011), 375-384] 里見知昭, 今田直希, 高橋弘

● Experimental Consideration on Adhesion Properties between Clay-rich Soil and Metallic Surface [Proc. of the 12 th Conference on Science and Technology, 1, (2011), CD-ROM] Tomoaki SATOMI, Haruya NIHEI and Hiroshi TAKAHASHI

● Vibration Effect on Agitating Torque by Soil Recycling Machine [Proc. of the 6th International Symposium on Advanced Science and Technology in Experimental Mechanics, 1, (2011), CD-ROM] Hiroshi TAKAHASHI, Dai NOJIRI and Tomoaki SATOMI

● Study on Evaluation of Soil Strength Parameters by using the Resistive Forces acting on an Excavating Blade [Proc. of the 6th International Symposium on Advanced Science and Technology in Experimental Mechanics, 1, (2011), CD-ROM] Tomoaki SATOMI, Chen MIN and Hiroshi TAKAHASHI

● Study on Development of New Equipment to Recycle the Waste Asphalt Blocks Containing Roadbed Materials [Proc. of the 6th International Symposium on Advanced Science and Technology in Experimental Mechanics, 1, CD-ROM] Hiroshi TAKAHASHI, Shota AOKI and Tomoaki SATOMI

● 繊維質物質を用いた高含水比泥土の再資源化工法の開発 [季刊環境研究, (165), (2011), 34-43] 高橋弘, 森雅人, 益子恵治

● 試験施工報告: 津波堆積物(ヘドロ)再資源化による人工地盤造成 [平成23年度建設施工と建設機械シンポジウム論文集・梗概集, 1, (2011), 248-253] 高橋弘, 森雅人

● Numerical Simulation for Mixing Solids with Liquids using Smoothed Particle Hydrodynamics Method [Proc. of the International Symposium on Earth Science and Technology 2011, 1, (2011), 57-62] Tomoaki SATOMI, Kousuke NAKAMURA and Hiroshi TAKAHASHI

● Numerical Simulation on Crushing of Concrete Blocks by Mobile Crusher [Proc. of the International Symposium on Earth Science and Technology 2011, 1, (2011), 75-78] Hiroshi TAKAHASHI, Yuki SANDO and Tomoaki SATOMI

● Study on Movement of Wheel-Typed Vehicle with Crawler between Front and Rear Wheels [Proc. of the

International Symposium on Earth Science and Technology 2011, 1, (2011), 85-88] Hiroshi TAKAHASHI, Ryosuke ETO and Tomoaki SATOMI

● Experimental Investigation on Characteristics of Soil Adhesion to Metallic Material Surface [Proc. of the International Symposium on Earth Science and Technology 2011, 1, (2011), 95-100] Tomoaki SATOMI, Haruya NIHEI and Hiroshi TAKAHASHI

● Effect of the Load Condition on Frictional Heat Generation and Temperature Increase within a Tri-Cone Bit during High-Temperature Formation Drilling [Geothermics, 40 (4), (2011), 267-274] Yuko SUTO and Hiroshi TAKAHASHI

● Slope Monitoring System at a Slope behind an Important Cultural Asset [Journal of Disaster Research, 6 (1), (2011), 70-79] Kazunari Sako, Ryoichi Fukagawa, Tomoaki Satomi

## 自然共生システム学講座

### 環境修復生態学分野

#### 【論文】

● Effects of cultivation conditions on the uptake of arsenite and arsenic chemical species accumulated by *Pteris vittata* in hydroponics [Journal of Bioscience and Bioengineering, 111 (3), (2011), 326-332] Masayoshi Hatayama, Takahiko Sato, Kozo Shinoda, Chihiro Inoue

● Preferential utilization of petroleum oil hydrocarbon components by microbial consortia reflects degradation pattern in aliphatic-aromatic hydrocarbon binary mixtures [World journal of microbiology & biotechnology, 27 (5), (2011), 1109-1117] Hernando Pactao Bacosa, Koichi Suto, Chihiro Inoue

● Microbial Diversity and Changes in the Distribution of Dehalogenase Genes during Dechlorination with Different Concentrations of cis-DCE [Environmental Science & Technology, 45 (12), (2011), 5339-5345] Kotaro Ise, Koichi Suto, Chihiro Inoue

● 二酸化炭素吹込みによる生石灰混合処理の改良 [Journal of MMIJ, 127 (8), (2011), 印刷中] 中川勇樹, 橋本久儀, 須藤孝一, 井上千弘

● 震災による環境汚染の実態と今後 [化学物質と環境, 110, (2011), 4-6] 井上千弘

● CDF 解析による低液深横流式加圧浮上装置の処理水取水部の構造最適化 [土木学会論文集 G (環境), 67 (7), (2011), 705-713] 寺嶋光春, 安井英齊, ラジブ ゴエル, 須藤孝一, 井上千弘

● Characterization of As efflux from the roots of As hyperaccumulator *Pteris vittata* L. [Planta, 234, (2011), 1275-1284] Huang, Y., Hatayama, M., Inoue, C.

### 環境分析化学分野

#### 【論文】

● pH-Responsive Switching of Near-Infrared Absorption of a Diradical Complex of PtII and 3, 4-Diaminobenzoate Formed in Aqueous Solutions [Inorg. Chim. Acta, 378, (2011), 81-86] Kousaku Tamura, Atsuko Masuya, Nobuhiko Iki, Yasunori Ohba, Seigo Yamauchi, and Hitoshi Hoshino

#### 【総説・解説】

● Designing strategies for supramolecular luminescent complex of lanthanide-heterometal assembly. [Supramol. Chem., 23 (1), (2011), 160-168] Nobuhiko Iki

### 環境機能学分野

#### 【論文】

● An electrochemical device with microwells for determining the photosynthetic activity of a single cyanobacterium [Sens. Actuat. B, 153, (2011), 474-478] M. Koide, T. Yasukawa, K. Nagamine, H. Shiku, T. Itayama, T. Matsue

● Electrorotation chip consisting of three-dimensional interdigitated array electrodes [Sens. Actuat. B, 153, (2011), 468-473] K. Ino, A. Ishida, K. Y. Inoue, M. Suzuki, M. Koide, T. Yasukawa, H. Shiku, T. Matsue

● Addressable electrode array device with IDA electrodes for high-throughput detection [Lab Chip, 11, (2011), 385-388] K. Ino, W. Saito, M. Kokide, T. Umemura, H. Shiku, T. Matsue

● Influence of Tip Size on Single Yeast Cell Imaging Using Scanning Electrochemical Microscopy [Electroanalysis, 23, (2011), 1168-1174] K. Nagamine, Y. Takahashi, K. Ino, H. Shiku, T. Matsue

● Development of an electrochemical Limulus amebocyte lysate assay technique for portable and highly sensitive endotoxin sensor [Innate Immunity, (2011)] K. Y. Inoue, S. Takahashi, K. Ino, H. Shiku, T. Matsue

● Electrochemical Detection of Receptor-Mediated Endocytosis by Scanning Electrochemical Microscopy [Phys. Chem. Chem. Phys., 13, (2011), 16569-16573] Y. Takahashi, T. Miyamoto, H. Shiku, K. Ino, T. Yasukawa, R. Asano, I. Kumagai, T. Matsue

● Fabrication of the Double-Barrel Carbon SECM-SICM Nanoprobe for Simultaneous nanoscale Electrochemical and Topographical Imaging [Angew. Chem. Int. Ed., 50 (41), (2011), 9638-9642] Y. Takahashi, A. I. Shevchuk, P. Novak, Y. Zhang, E. Neil, J. V. Macpherson, P. R. Unwin, A. Pollard, D. Roy, C. A. Clifford, H. Shiku, T. Matsue, D. Klenerman, Y. E. Korchev

● Monitoring oxygen consumption of single mouse

embryos using an integrated electrochemical microdevice [Biosens. Bioelectron., 30, (2011), 100-106] Y. Date, S. Takano, H. Shiku, T. Saito, K. Ino, T. Ito-Sasaki, M. Yokoo, H. Abe, T. Matsue

● Amperometric detection of DNA Hybridization using a multi-point, addressable electrochemical device [Sens. Actuat B, 160 (1), (2011), 923-928] X. Zhu, K. Ino, Z. Lin, H. Shiku, G. Chen, T. Matsue

● Electrochemical Chip Integrating Scalable Ring-Ring Electrode Array to Detect Secreted Alkaline Phosphatase [Analyst, 136 (23), (2011), 4991-4996] M. Takeda, H. Shiku, K. Ino, T. Matsue

● Addressable electrode array device incorporated with IDA electrodes for biological analyses. [Proceedings of Conference The 15th International Conference on Miniaturized Systems for Chemistry and Life Sciences, (2011)] Kosuke Ino, Taku Nishijo, Wataru Saito, Hitoshi Shiku, Tomokazu Matsue

#### 【著書】

● 電気化学ナノイメージング, 監修 民谷栄一 “ナノ融合による先進バイオデバイス”[シーエムシー出版, (2011)] 珠玖仁, 末永智一

### 環境共生機能学分野

#### 【論文】

● Recovery of poly sulfide anions in basic solution produced by the decomposition of  $H_2S$  by fullerene [Fullerenes, Nanotubes and Carbon Nanostructures, 19, (2011), 684-691] Tsugumi Hayashi, Yohei Baba, Toshiharu Taga, Akira Kishimoto, Hideyuki Takahashi, Kazuyuki Tohji

● Preparation of well-crystallized  $Pd_{20}Te_7$  alloy nanoparticulate catalyst with uniform structure and composition in liquid-phase [Applied Catalysis A: General, 392, (2011), 80-85] Hideyuki Takahashi, Norikazu Konishi, Hironobu Ohno, Kazunari Takahashi, Kiyotaka Asakura, Atsushi Muramatsu

● Synthesis of Cd hydroxide particles with hollow structures by a one-step process [Industrial & Engineering Chemistry Research, 50, (2011), 13585-13588] Ying Tian, Xin Cui, Fangming Jin, Xu Zeng, Tsugumi Hayashi, Hideyuki Takahashi, Kazuyuki Tohji

● Influence of carbon structure of the anode on the production of graphite in single-walled carbon nanotube soot synthesized by arc discharge using a Fe-Ni-S catalyst [Carbon, 49, (2011), 3607-3614] Hikaru Nishizaka, Masaru Namura, Kenichi Motomiya, Yasumasa Ogawa, Yasuo Udagawa, Kazuyuki Tohji, Yoshinori Sato

● Toxicity evaluations of various carbon nanomaterials [Dental Materials Journal, 30, (2011), 245-263] Motohiro

Uo, Tsukasa Akasaka, Fumio Watari, Yoshinori Sato, Kazuyuki Tohji

● Boron-Assisted Transformation to Rod-Like Graphitic Carbons from Multi-Walled Carbon Nanotubes in Boron-Mixed Multi-Walled Carbon Nanotube Solids [ACS Applied Materials & Interfaces, 3, (2011), 2431-2439]

● カーボンナノチューブ—ホウ素焼結体中に含まれる無定形ホウ素と炭化ホウ素の形態別分離定量 [分析化学, 60, (2011), 807-811] 石黒三岐雄, 佐藤義倫, 田路和幸, 我妻和明

● Influence of the structure of the nanotube on the mechanical properties of binder-free multi-walled carbon nanotube solids [Carbon, 50, (2012), 34-39] Yoshinori Sato, Hikaru Nishizaka, Shunichi Sawano, Atsushi Yoshinaka, Kazutaka Hirano, Shinji Hashiguchi, Takayuki Arie, Seiji Akita, Go Yamamoto, Toshiyuki Hashida, Hisamichi Kimura, Kenichi Motomiya, Kazuyuki Tohji

● Partial Sulfurization of Oxide Fine Particles and their Application to Visible-Light Absorbable Photocatalysts [High Temperature Materials and Processes, (2012), in press] Atsushi Muramatsu, Nobuaki Sato, Jhon Cuya, Katsutoshi Yamamoto and Hideyuki Takahashi

● Innovative solution-based recycle technique for solder alloy particles from wasted solder paste [Proceedings of 2nd ISASWR, (2012), in press] Hideyuki Takahashi, Takeshi Tanaka, Masakazu Hamada, Kazuyuki Tohji

● MECHANICAL PRETREATMENT OF LEAD-BASED ALLOY ANODE FOR ZINC ELECTROWINNING [2012 TMS Annual Meeting & Exhibition, (2012) in press]

## 資源循環プロセス学講座

### リサイクル化学分野

#### 【論文】

● Feedstock recycling of waste polymeric material [Journal of Material Cycles and Waste Management, 13, (2011), 265-282] Guido Grause, Alfons Buekens, Yusaku Sakata, Akitsugu Okuwaki, Toshiaki Yoshioka

● Effect of the Nucleophilicity and Solvent on the Chemical Modification of Flexible Poly (vinyl chloride) by Substitution [POLYMER ENGINEERING AND SCIENCE, (2011), 1108-1115] Tomohito Kameda, Yuuzou Fukuda, Guido Grause, Toshiaki Yoshioka

● Antibacterial effect of thiocyanate substituted poly (vinyl chloride) [Journal of Polymer Research, 18, (2011), 945-947] Tomohito Kameda, Masahiko Ono, Guido Grause, Tadaaki Mizoguchi, Toshiaki Yoshioka

● Pyrolysis of Mixed Plastics in a Fluidized Bed of Hard

Burnt Lime [Industrial&Engineering Chemistry Research, 50(9), (2011), 5459-5466] Guido Grause, Shotaro Matsumoto, Tomohito Kameda, Toshiaki Yoshioka

● Improvement of the Benzene Yield During pyrolysis of Terephthalic Acid Using a CaO Fixed-Bed Reactor [Industrial & Engineering Chemistry Research, 50(11), (2011), 6594-6600] Shogo Kumagai, Guido Grause, Tomohito Kameda, Tatsuo Takano, Hideki Horiuchi, and Toshiaki Yoshioka

● Removal of antimonate ions and simultaneous formation of a brandholzite-like compound from magnesium-aluminum oxide [Separation and Purification Technology, 80, (2011), 235-239] Tomohito Kameda, Masaaki Honda, Toshiaki Yoshioka

● Decomposition of Gaseous Terephthalic Acid in the Presence of CaO [Industrial & Engineering Chemistry Research, 50(4), (2011), 1831-1836] Shogo Kumagai, Guido Grause, Tomohito Kameda, Tatsuo Takano, Hideki Horiuchi, Toshiaki Yoshioka

● Kinetics and equilibrium studies on the treatment of nitric acid with Mg-Al oxide obtained by thermal decomposition of  $\text{NO}_3^-$ -intercalated Mg-Al layered double hydroxide [Journal of Colloid and Interface Science, 362, (2011), 497-502] Tomohito Kameda, Yuki Fubasami, Toshiaki Yoshioka

● Treatment of gaseous hydrochloric acid with magnesium-aluminum oxide using batch operation [Desalination, 280, (2011), 424-427] Tomohito Kameda, Naoya Uchiyama, Toshiaki Yoshioka

● Removal of HCl,  $\text{SO}_2$ , and NO by treatment of acid gas with Mg-Al oxide slurry [Chemosphere, 82, (2011), 587-591] Tomohito Kameda, Naoya Uchiyama, Toshiaki Yoshioka

● Effect of Temperature Management on the Hydrolytic Degradation of PET in a Calcium Oxide filled tube reactor [Chemical Engineering Journal, 166, (2011), 523-528] Guido Grause, Tomohiko Handa, Tomohito Kameda, Tadaaki Mizoguchi, Toshiaki Yoshioka

● Uptake of  $\text{Sc}^{3+}$  and  $\text{La}^{3+}$  from aqueous solution using ethylenediaminetetraacetate-intercalated Cu-Al layered double hydroxide reconstructed from Cu-Al oxide [Solid State Sciences, 13, (2011), 366-371] Tomohito Kameda, Kazuaki Hoshi, Toshiaki Yoshioka

● Ni-Al layered double hydroxides modified with citrate, malate, and tartrate: Preparation by coprecipitation and uptake of  $\text{Cu}^{2+}$  from aqueous solution [Journal of Physics and Chemistry of Solids, 72, (2011), 846-851] Tomohito Kameda, Hidenori Takeuchi, Toshiaki Yoshioka

● Dehydrochlorination of poly (vinyl chloride) with  $\text{Ca(OH)}_2$  in ethylene glycol and the effect of ball milling [Journal of Polymer Research, 18, (2011), 1687-1691]

Tomohito Kameda, Shintaro Wachi, Guido Grause, Tadaaki Mizoguchi, Toshiaki Yoshioka

● TG-MS investigation of brominated products from the degradation of brominated flame retardants in high-impact polystyrene [Chemosphere, 85, (2011), 368-373] Guido Grause, Daiki Karakita, Jun Ishibashi, Tomohito Kameda, Thallada Bhaskar, Toshiaki Yoshioka

● Treatment of Gaseous HCl using Mg-Al Oxide [Proc. THE 11th INTERNATIONAL SYMPOSIUM ON EAST ASIA RESOURCES RECYCLING TECHNOLOGY, (2011), 460-463] Tomohito Kameda, Naoya Uchiyama, Toshiaki Yoshioka

#### 【著書】

● Dehydrochlorination of Poly (Vinyl Chloride) with Substitute Reaction and Possibility of Applications [Recycling: Processes, Costs and Benefits, Nova Science Publishers, Inc., Chapter 6, (2011), 185-204] Toshiaki Yoshioka, Tomohito Kameda, Guido Grause

● Hybrid Inorganic – organic Composites of Layered Double Hydroxides Intercalated with Organic Acid Anions for the Uptake of Hazardous Substances from Aqueous Solution [METAL, CERAMIC AND POLYMERIC COMPOSITES FOR VARIOUS USES, INTECH, Chapter 6, (2011), 123-148] Tomohito Kameda, Toshiaki Yoshioka

#### 【総説・解説】

● 大震災、復興への道—災害廃棄物リサイクルで仙台市支援 [塩化ビニル環境対策協議会 PVC ニュース, 79, (2011), 6-8] 吉岡敏明

● 災害廃棄物を災害資源物と捉える施策 [青葉工業会(東北大工学部同窓会) 青葉工業会報, 55, (2011), 17-17] 吉岡敏明

● 戦略的災害廃棄物分別・処理マニュアルの世界標準化 [東北大工学部同窓会 Annual Review 2011, (2011), 16-16] 吉岡敏明

● 震災復興につながる災害廃棄物処理の方向性 [財団法人日本環境衛生センター 生活と環境, 56(9), (2011), 20-24] 吉岡敏明

● 東日本大震災に果たした学会の役割と今後の方向性 [廃棄物資源循環学会誌, 22(4), (2011), 261-262] 吉岡敏明

● 震災による災害廃棄物処理の現状と方向性—被災地の視点から一 [（社）廃棄物処理施設技術管理協会 環境技術会誌, (144), (2011), 24-28] 吉岡敏明

● 災害廃棄物処理の現状と問題点 [東北大工学部同窓会環境科学研究科ニュースレター, (12), (2011), 8-8] 吉岡敏明

● 震災による災害廃棄物処理課題と方向性 [東北大工学部広報課 まなびの杜, (56), (2011)] 吉岡敏明

#### 循環社会開発学分野

##### 【論文】

● Development of CFR-PEEK core holder for X-ray CT

based numerical analysis of fluid flow within fractured samples under confining pressure. [Proceedings of 17th Formation Evaluation Symposium of Japan, CD-ROM, (2011), Paper C] N. Watanabe, T. Ishibashi, N. Tsuchiya, Y. Ohsaki, T. Tamagawa, Y. Tsuchiya, H. Okabe, H. Ito

● Evaluation and Prediction of fluid flow through fracture under confining pressure in various scales. [Proceedings of 17th Formation Evaluation Symposium of Japan, CD-ROM, (2011), Paper N] T. Ishibashi, N. Watanabe, N. Hirano, A. Okamoto, N. Tsuchiya

● Core analysis towards the integration with logging and borehole data. [Proceedings of 17th Formation Evaluation Symposium of Japan, CD-ROM, (2011), Paper T] H. Ito, Y. Sanada, N. Watanabe, T. Tsuji, T. Mukunoki, F. Yamada, K. Kawabata

● X-ray CT based numerical analysis of fracture flow for core samples under various confining pressures. [Engineering Geology, 123, (2011), 338-346] N. Watanabe, T. Ishibashi, Y. Ohsaki, Y. Tsuchiya, T. Tamagawa, N. Hirano, H. Okabe, N. Tsuchiya

● Characterisation and photocatalytic activity of structure-controlled spherical granules of an anatase/hydroxyapatite composite. [Materials Research Bulletin, 46(12), (2011), 2283-2287] M. Kamitakahara, O. Kawaguchi, N. Watanabe, K. Ioku

● Hydrothermal synthesis of porous hydroxyapatite ceramics composed of rod-shaped particles and evaluation of their fracture behavior. [Ceramics International, 38, (2011), 1649-1654] S. Murakami, K. Kato, Y. Enari, M. Kamitakahara, N. Watanabe, K. Ioku

● Enhanced hydrogen production from biomass via the sulfur redox cycle under hydrothermal conditions. [International Journal of Hydrogen Energy, 36(17), (2011), 10674-10682] P. Setiani, J. Vilcaez, N. Watanabe, A. Kishita, N. Tsuchiya

● Effects of general zero-valent metals power of Co/W/Ni/Fe on hydrogen production with  $\text{H}_2\text{S}$  as a reductant under hydrothermal conditions. [International Journal of Hydrogen Energy, 36(15), (2011), 8878-8884] S. Zhang, F. Jin, X. Zeng, J. Hu, Z. Huo, Y. Wang, N. Watanabe, N. Hirano, N. Tsuchiya

● Morphology and composition of hydroxyapatite particles synthesized hydrothermally from tricalcium phosphates. [Transactions of the Materials Research Society of Japan, 36(3), (2011), 405-408] M. Kamitakahara, Y. Enari, N. Watanabe, K. Ioku

● Advanced direct use of geothermal energy for hydrogen production and material conversion. [Geothermal Resources Council Transactions, 35, (2011), 143-146] N. Tsuchiya, N. Watanabe

● Sustainable and enhanced hydrogen production from biomass through sulfur redox cycle using georeactor.

[Geothermal Resources Council Transactions, 35, (2011), 135-138] P. Setiani, J. Vilcaez, N. Watanabe, A. Kishita, N. Tsuchiya

● Precise 3D numerical modeling of fracture flow coupled with X-ray computed tomography for reservoir core samples. [SPE Journal, SPE-146643-PA, (2011)] N. Watanabe, T. Ishibashi, N. Hirano, N. Tsuchiya, Y. Ohsaki, T. Tamagawa, Y. Tsuchiya, H. Okabe

#### 環境グリーンプロセス学分野

##### 【論文】

● Infinite dilution partition coefficients of benzene derivative compounds in supercritical carbon dioxide + ionic liquid systems: 1-butyl-3-methylimidazolium chloride [ $\text{bmim}^+ \text{Cl}^-$ ], 1-butyl-3-methylimidazolium acetate [ $\text{bmim}^+ \text{Ac}^-$ ] and 1-butyl-3-methylimidazolium octylsulfate [ $\text{bmim}^+ \text{OCSO}_4^-$ ] [Journal of Supercritical Fluids, (2011), Article in Press.] Hiraga, Y., Endo, W., Machida, H., Sato, Y., Aida, T.M., Watanabe, M., Smith Jr., R.L.

● Green chemical processes with supercritical fluids: Properties, materials, separations and energy [Journal of Supercritical Fluids, 60, (2011), 2-15] Machida, H., Takesue, M., Smith, R.L.

● Catalytic conversion of cellulose into 5-hydroxymethylfurfural in high yields via a two-step process [Cellulose, 18(5), (2011), 1327-1333] Qi, X., Watanabe, M., Aida, T.M., Smith Jr., R.L.

● Restructuring mechanism of  $\text{NbO}_6$  octahedrons in the crystallization of  $\text{KNbO}_3$  in supercritical water [Journal of Supercritical Fluids, 58(2), (2011), 279-285] Kaseda, K., Takesue, M., Aida, T.M., Watanabe, M., Hayashi, H., Smith Jr., R.L.

● The 13 Principles of Green Chemistry and Engineering for a Greener Africa [Green Chemistry, 13(5), (2011), 1059-1060] Asfaw, N., Chebude, Y., Ejigu, A., Hurisso, B.B., Licence, P., Smith, R.L., Tang, S.L.Y., Poliakoff, M.

● Measurement and correlation of high pressure densities of ionic liquids, 1-ethyl-3-methylimidazolium L-lactate ( $[\text{emim}]^+ \text{Lactate}^-$ ), 2-hydroxyethyltrimethylammonium L-lactate ( $[(\text{C}_2\text{H}_5\text{OH})^+ (\text{CH}_3)_3\text{N}]^+ \text{Lactate}^-$ ), and 1-butyl-3-methylimidazolium chloride ( $[\text{bmim}]^+ \text{Cl}^-$ ) [Journal of Chemical and Engineering Data, 56(4), (2011), 923-928] Machida, H., Taguchi, R., Sato, Y., Smith Jr., R.L.

● Properties and phase equilibria of fluid mixtures as the basis for developing green chemical processes [Fluid Phase Equilibria, 302(1-2), (2011), 65-73] Smith, R.L., Fang, Z.

● High-yield reduction of carbon dioxide into formic acid by zero-valent metal/metal oxide redox cycles [Energy and Environmental Science, 4(3), (2011),

881-884] Jin, F., Gao, Y., Jin, Y., Zhang, Y., Cao, J., Wei, Z., Smith Jr, R.L.

●Effects of nitrate and oxygen on photoautotrophic lipid production from Chlorococcum littorale [Bioresource Technology, 102 (3), (2011), 3286-3292] Ota, M., Kato, Y., Watanabe, M., Sato, Y., Smith, R.L., Rosello-Sastre, R., Posten, C., Inomata, H.

●Reaction of d-glucose in water at high temperatures (410°C) and pressures (180 MPa) for the production of dyes and nano-particles [Journal of Supercritical Fluids, 56 (1), (2011), 41-47] Fang, Z., Smith Jr, R.L., Kozinski, J.A., Minowa, T., Arai, K.

●Decomposition kinetics and recycle of binary hydrogen-tetrahydrofuran clathrate hydrate [AIChE Journal, 57 (1), (2011), 265-272] Yoshioka, H., Ota, M., Sato, Y., Watanabe, M., Inomata, H., Smith Jr, R.L., Peters, C.J.

## 循環材料プロセス学分野

### 【論文】

●溶鋼中介在物の異種凝集挙動に関する基礎的研究[日本学術振興会第19委員会反応プロセス研究会報告書, (2011), 1-20] 谷口尚司, 新井宏忠, 高道悠季, 鳩崎真一

●Formation of uniformly sized metal droplets from a capillary jet by electromagnetic force [Appl. Math. Modelling, 35, (2011), 1571-1580] S.Shimasaki and S. Taniguchi

●Application of Electromagnetic Processing of Materials (EPM) to Aluminum Recycling Technology [6th International Symposium on Advanced Science and Technology in Experimental Mechanics, ISEM-11, (2011), 23-28] Shoji Taniguchi and Shin-ichi Shimasaki

●Limits to Resources, Economic Growth and Happiness [10th International Conference in Eco-materials (ICEM2011), Nov.21-24, 2011, Shanghai, China, (2011), 87-93] Shoji Taniguchi

●Microstructure Analysis of Fe<sub>3</sub>O<sub>4</sub> Heated by Microwaves in a TE<sub>10</sub> Mode Cavity: Surface and Volume Characterization [Journal of Microwave Power and Electromagnetic Energy, 45 (2), (2011), 79-85] Tomotsugu Kato, Kosei Kobayashi, Noboru Yoshikawa, Shoji Taniguchi

●Morphology and Phase Evolution in Microwave Synthesized Al/Fe<sub>3</sub>O<sub>4</sub> System [Journal of Microwave Power and Electromagnetic Energy, 45 (3), (2011), 148-154] Lee Chang Chuan, Noboru Yoshikawa and Shoji Taniguchi

●Dehydration Behavior of Goethite Blended with Graphite by Microwave Heating [ISIJ International, 51 (6), (2011), 878-883] Youichi Saito, Keita Kawahira, Noboru Yoshikawa, Hidekazu Todoroki and Shoji Taniguchi

●Microwave Magnetic Field Heating of a Cobalt-Based

Amorphous Ribbon [Japanese Journal of Applied Physics, 50, (2011), 033001-1-033001-5] Tomotsugu Kato, Noboru Yoshikawa, Shoji Taniguchi, Yutaro Terakado, Naoki Ito, Motoki Ohta, and Yoshihito Yoshizawa

●Microwave-induced substitutional-combustion reaction of Fe<sub>3</sub>O<sub>4</sub>/Al ceramic matrix porous composite [J. Mater. Sci., 46, (2011), 7004-7011] C. C. Lee, N. Yoshikawa, S. Taniguchi

●Phase transformations in Si-based alloy powder mixtures induced by microwave heating in a 2.45 GHz single-mode applicator [Intermetallics, 18, (2011), 2030-2033] Song Li, Guoqiang Xie, Dmitri V. Louzguine-Luzgin, Ziping Cao, Noboru Yoshikawa, Motoyasu Sato, Akihisa Inoue

●Effect of electromagnetic stirring on fabrication of Al-Si semi-solid slurry by the cup cast method. [Proc. 8th Int. pamir Conf. on Fundamental and Applied MHD, 2, (2011), 855-859] Y. Takado, H. Nakaya, S. Shimasaki, and S. Taniguchi

●Microstructure of selectively heated (hot spot) region in Fe<sub>3</sub>O<sub>4</sub> powder compacts by microwave irradiation [Journal of the European Ceramic Society, 32, (2012), 419-424] N. Yoshikawa, G.Xie, Z.Cao and D.V. Louzguine

### 【著書】

●Recent Studies on Fundamentals and Application of Microwave Processing of Materials. [INTECH Open Access Publisher, (2011)] Noboru Yoshikawa

### 【総説・解説】

●軽金属へのマイクロ波加熱の高度利用技術[日本軽金属学会 日本軽金属学会誌, 61(8), (2011), 404-409] 吉川昇

### 【特許】

●部分強化型金属基複合材料の製造方法 [特許4661548] 谷口尚司, 菅野能昌, 吉川昇, 加藤洋史

## 循環生態系計画学分野

### 【論文】

●Comprehensive study of proteins that interact with microcystin-LR. [Anal. Bioanal. Chem., (2011)] T. Mori, T. Kubo, K. Kaya, K. Hosoya

●Solid phase extraction element based on epoxy polymer monolith for determination of polar organic compounds in aqueous media. [J. Sep. Sci., 34, (2011), 2925-2932] T. Takahashi, K. Odagiri, A. Watanabe, C. Watanabe, T. Kubo, K. Hosoya

●Determination of Bisphenol A with Effective Pretreatment Medium Using Automated Column Switching HPLC with Fluorescence Detection. [J. Sep. Sci., 34, (2011), 2840-2846]

T. Tanigawa, Y. Watabe, T. Kubo, K. Hosoya

●Fundamental retention properties of macroporous spongy monolith and its application for effective concentration of PAHs. [Jurnal of Separation Science, 34, (2011), 2193-2198] T. Tanigawa, K. Kato, Y. Watabe, T. Kubo, K. Hosoya

●Polymer-Based Photocoupling Agent for the Efficient Immobilization of Nanomaterials and Small Molecules. [Langmuir, 27, (2011), 9372-9378] T. Kubo, X. Wang, Q. Tong, M. Yan

●Functional polymers for the efficient fabrication of carbohydrate microarrays. [ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY, 241, (2011), 73] M. Yan, Q. Tong, T. Kubo, H. Wang

●Surface Modification of TiO<sub>2</sub> for Selective Photodegradation of Toxic compounds. [Catalysis Communications, 12, (2011), 785-789] Y. Tominaga, T. Kubo, K. Hosoya

●Polymers of 2-Methacryloyloxyethyl Phosphorylcholine Truly Work as Cell Membrane Mimic ?. [Colloids and Surfaces B: Biointerfaces, 84, (2011), 181-186] T. Mori, T. Kubo, T. J. Konno, K. Hosoya

### 【著書】

●分析化学便覧 [(2011)] 久保拓也, 細矢憲

## 化学再生プロセス学分野

### 【論文】

●Utilization of Ores with High Combined Water Content for Ore-Carbon Composite and Iron Coke. [ISIJ International, 51 (8), (2011), 1220-1226] Taichi Murakami, and Eiki Kasai

●Effect of Agglomeration Agent on the Structural Change and Pressure Drop in Sintering Bed. [METEC InSteelConference 2011, 6th European Coke and Ironmaking Congress (ECIC), (2011)] Kazuya Fujino, Taichi Murakami, Kazuya Kunitomo and Eiki Kasai

●Influence of H<sub>2</sub> and H<sub>2</sub>O Concentration in Reducing Gas on the Reduction Disintegration Behavior of Iron Ore Sinter. [METEC InSteelConference 2011, 6th European Coke and Ironmaking Congress (ECIC), (2011)] Yousuke Kamiya, Taichi Murakami, and Eiki Kasai

●Reduction Mechanism of Iron Oxide-Carbon Composite with Polyethylene at Lower Temperature. [ISIJ International, 51 (1), (2011), 9-13] Taichi Murakami, Eiki Kasai

●Vitrification Treatment of Asbestos Waste with Incineration Ash of Solid Waste. [High Temperature Materials and Processes, 30 (4-5), (2011), 345-352] Eiki Kasai, Hiroshi Goto and Yusuke Mase

●Recovery of Calcium from BF Slag and Synthesis of Zeolite A using Its Residue. [ISIJ International, 51 (6), (2011), 901-905] Taichi Murakami, Yoshiyuki Sugano, Tsunetoshi Kinami, Takayuki Narushima, Yasutaka Iguchi and Chiaki Ouchi

●Alkali Hydrothermal Synthesis of Zeolite A Using Oxide By-products. [ISIJ International, 51 (1), (2011), 158-165] Taichi Murakami, Yoshiyuki Sugano, Tsunetoshi Kinami, Takayuki Narushima, Yasutaka Iguchi, Chiaki Ouchi

### 【総説・解説】

●添加剤が発泡鉄の気孔形成と組織に及ぼす影響[東北大多元物質科学研究所素材工学研究彙報, 66 (1, 2), (2011), 7-14] 村上太一, 大豆生田剛, 葛西栄輝

## 環境創成計画学講座

## 環境分子化学分野

### 【論文】

●Unique Inclusion Properties of Crystalline Powder p-tert-Butylthiacalix [4] arene toward Alcohols and Carboxylic Acids. [Org. Lett., 13, (2011), 3292-3295] Naoya Morohashi, Shintaro Noji, Hiroko Nakayama, Yasutaka Kudo, Shinya Tanaka, Chizuko Kabuto, and Tetsutaro Hattori

●Synthesis of Mono- and 1,3-Diaminocalix [4] arenes via Ullmann-Type Amination and Amidation of 1,3-Bistriflate Esters of Calix [4] arenes. [J. Org. Chem., 76, (2011), 2168-2179] Yuka Nakamura, Shinya Tanaka, Ryuichi Serizawa, Naoya Morohashi, and Tetsutaro Hattori

●Synthesis of novel dihydroxydiphosphines and dihydroxydicarboxylic acids having a tetra (thio-1,3-phenylene-2-yl) backbone. [Supramol. Chem., 23, (2011), 144-155] Yuki Akahira, Kazutoshi Nagata, Naoya Morohashi, and Tetsutaro Hattori

## ライフサイクル評価学分野

### 【論文】

●Domestic Substance Flow of Zinc and Present Status of EAF Dust Management for Zinc Recovery in Taiwan. [Resource Conservation and Recycling, 56 (1), (2011), 134-140] Hwong-wen Ma, Kazuyo Matsubae, Kenichi Nakajima, Min-Shing Tsai, Kung-Hsien Shao, Pi-Cheng Chen, Chia-Ho Lee and Tetsuya Nagasaka

●Identifying the Substance Flow of Metals Embedded in Japanese International Trade by use of WIO-MFA model. [ISIJ International, 51 (11), (2011), 1934-1939] Kenichi Nakajima, Keisuke Nansai, Kazuyo Matsubae, Yasushi Kondo, Shigemi Kagawa, Rokuta Inaba, Shinichiro Nakamura and Tetsuya Nagasaka

- Dissolution Behavior of Selenium from Coal Fly Ash Particles for the Development of an Acid-Washing Process. [Chemosphere, 85 (4), (2011), 598-602] S. Kashiwakura, H. Ohno, Y. Kumagai, H. Kubo, K. Matsubae and T. Nagasaka
- Virtual Phosphorus Ore Requirement of Japanese Economy. [Chemosphere, 84 (6), (2011), 767-772] K. Matsubae, J. Kajiyama, T. Hiraki and T. Nagasaka
- Thermodynamic Criteria for the Removal of Impurities from End-of-Life Magnesium Alloys by Evaporation and Flux Treatment. [Science and Technology of Advanced Materials, 12 (3), (2011), 035003] T. Hiraki, O. Takeda, K. Nakajima, K. Matsubae, S. Nakamura and T. Nagasaka
- Thermodynamic Analysis for the Controllability of Elements in Recycling Process of Metals. [Environmental Science & Technology, 45 (11), (2011), 4929-4936] K. Nakajima, O. Takeda, T. Miki, K. Matsubae and T. Nagasaka
- Vaporization Behavior of Boron from Standard Coals in the Early Stage of Combustion. [Fuel, 90 (4), (2011), 1408-1415] S. Kashiwakura, T. Takahashi and T. Nagasaka
- UPIOM: A New Tool of MFA with Application to the Flow of Iron and Steel Associated with Car Production. [Environmental Science & Technology, 45 (3), (2011), 1114-1120] S. Nakamura, Y. Kondo, K. Matsubae, K. Nakajima and T. Nagasaka
- Analysis of Atomic Scale Chemical Environments of Boron in Coal by <sup>11</sup>B Solid State NMR. [Environmental Science & Technology, 45 (3), (2011), 890-895] T. Takahashi, S. Kashiwakura, K. Kanehashi, S. Hayashi, T. Nagasaka
- Impacts on CO<sub>2</sub> of the Recovery of Secondary Ferrous Materials from Alternative ELV Treatment Methods: A Waste Input Output Analysis. [ISIJ International, 51 (1), (2011), 151-157] K. Matsubae, K. Nakajima, S. Nakamura and T. Nagasaka
- Substance Flow Analysis of Zinc Cycle and Current Status of Electric Arc Furnace Dust Management for Zinc Recovery in Taiwan. [Resources Conservation and Recycling, (2011)] H.-W. Ma, K. Matsubae, K. Nakajima, M.-S. Tsai, K.-H. Shao, P.-C. Chen, C.-H. Lee and T. Nagasaka

## 【著書】

- リン資源枯渇危機とはいかないのちの元素(阪大リーブル29) [大阪大学出版会, (2011)] 大竹久夫(編著), 長坂徹也・松八重一代・黒田章夫・橋本光史(著)

## 環境調和素材学分野

### 【論文】

- Characterisation and photocatalytic activity of structure-controlled spherical granules of anatase/

hydroxyapatite composite. [Mater. Res. Bull., 46, (2011), 2283-2287] Masanobu Kamitakahara, Osamu Kawaguchi, Noriaki Watanabe, Koji Ioku

● Morphology and Composition of Hydroxyapatite Particles Synthesized Hydrothermally from Tricalcium Phosphates. [Trans MRS-J, 36 (3), (2011), 405-408] Masanobu Kamitakahara, Yuki Enari, Noriaki Watanabe and Koji Ioku

● Effect of Synthetic Conditions on Morphology and Composition of Carbonate-Containing Hydroxyapatite Hydrothermally Synthesized from Calcium Carbonate. [Phosphorous Research Bulletin, 25, (2011), 72-77] Woonkyoung Park, Masanobu Kamitakahara, Takuya Nagamori, Koji Ioku

● Lateral bone augmentation with newly developed  $\beta$ -tricalcium phosphate block: an experimental study in the rabbit mandible. [Clin Oral Implants Res., 22, (2011), 1366-1371] D. Ono, R. Jimbo, G. Kawachi, K. Ioku, T. Ikeda, T. Sawase

● Behavior of  $\beta$ -tricalcium phosphate granules composed of rod-shaped particles in the rat tibia. [J. Ceram. Soc. Japan, 119 (2), (2011), 101-104] Teruhito Okumura, Yoshinori Gonda, Koji Ioku, Masanobu Kamitakahara, Takatoshi Okuda, Ikuho Yonezawa, Hisashi Kurosawa, Izumi Asahina, Tohru Ikeda

● Preparation of Granules of Calcium Deficient Hydroxyapatite Composed of Rod-Shaped particles and Evaluation of their potential for Drug Carrier. [J. Australian Ceram. Soc., 47 (1), (2011), 28-31] Masanobu Kamitakahara, Kiyoko Sato, Ryosuke Fujii, Ryohei Imai, Koji Ioku

● Effect of preparative conditions on crystallinity of apatite particles obtained from simulated body fluids. [Colloids and Surfaces B: Biointerfaces, 84, (2011), 545-549] Mineo Hashizume, Yuka Nagasawa, Tomohiko Suzuki, Shin Kawashima, Masanobu Kamitakahara

### 【著書】

- セラミックス機能化ハンドブック. [エヌ・ティー・エス, (2011)] 大槻主税, 上高原理暢

### 【総説・解説】

- Preparation of highly functional artificial bones using the properties of calcium phosphates. [J. Ceram. Soc. Japan, 119, (2011), 266-270] Masanobu Kamitakahara

## 環境創成機能素材分野

### 【論文】

- Preparation of tobermorite introducing phosphate species. [The 11th Asian Bioceramics Symposium, (2011)] H. Maeda, E. H. Ishida, T. Kasuga
- Utilization of calcite and waste glass for preparing

cinstructio materials with a low environmental load. [J. of Environmental Management, 92, (2011), 2881-2885] H. Maeda, H. Imaizumi, E. H. Ishida

● Hydrothermal synthesis of porous materials from sepiorite. [Res. Chem. Interned, (37), (2011), 219-232] Z. Wang, Z. Jing, Ke Wu, L. Zhou, J. Yu, Z. Li, E. H. Ishida

● Hydrothermal synthesis of aluminin substitute tobermorite by using various crystal phase of alumina. [J. of Ceramic Soc. Japan, 119 (5), (2011), 375-377] H. Maeda, K. Abe and E. H. Ishida

● 東北大学大学院環境科学研究科における高度社会人環境人材養成プログラムの実践と課題. [環境科学会誌, 24 (4), (2011), 320-328] 古川柳蔵 石田秀輝

● Preparation of porous Mordenite/Calcium silicate hydrate composites for indoor environment control. [Int. J. Appl. Ceram. Technol., 8 (5), (2011), 1067-1072] H. Maeda, T. Okada, and E. H. Ishida

● Hydrothermal preparation of diatomaceous earth combined with calcium silicate hydrates gels. [Journal of Hazardous Materials, (185), (2011), 858-861] Hirotaka Maeda, Emile Hideki Ishida

● 地下資源文明からの離陸—新しいくらしのかたち—. [空気調和・衛生工学, 85, (2011), 777-784] 石田秀輝・古川柳蔵・須藤祐子

● Effect of the load condition on frictional heat generation and temperature increase within a tri-cone bit during high-temperature formation drilling. [Geothermics (40), (2011), 267-274] Yuko Suto and Hiroshi Takahashi

### 【著書】

● 次世代バイオミックス研究の最前線 [シーエムシー出版, (2011), 29-34] 下村正嗣(監修), 石田秀輝, 古川柳蔵

● d-labo 夢をかたちに夢に日付を [SURUGA bank, (2011), 70-71] 石田秀輝ほか99名

● 自然に学ぶ! ネイチャー・テクノロジー [Gakken, (2011), 1-120] 石田秀輝・下村正嗣(監修)

● 未来の働き方をデザインしよう —2030年のエコワークスタイルブック [日刊工業新聞社, (2011), 1-215] 石田秀輝, 古川柳蔵, コクヨ(株)RDIセンター

● survivalism 70億人の生存意義 [ダイヤモンド社, (2011), 40-51] 石田秀輝, 馬場悠男, 大沼克彦, 加藤博文, 印東道子, 西秋良宏(監修協力)

● ヤモリの指から不思議なテープ [アリス館, (2011), 1-143] 石田秀輝(監修), 松田素子・江口絵里(文), 西澤真樹子(絵)

● 敵しい地球環境下, 心豊かに生きる知恵—自然界の営みにこそ解がある (日本の論点) [株文藝春秋社, (2011), 592-595] 曽野綾子, 石原慎太郎, 堀屋太一, 石田秀輝ほか, 計115名

● すごい自然図鑑 [PHP研究所, (2011), 1-127] 石田秀輝(監修)

### 【総説・解説】

- New methods of Production and Future Lifestyles. [株

文化事業部 Obusession, 53, (2011), 1-38] Emile H. Ishida

● ネイチャー・テクノロジー がんを治す虫たちの力 [聖教新聞 聖教新聞, (2011)] 石田秀輝

● ネイチャー・テクノロジー 肌で感じる音 [聖教新聞, (2011)] 石田秀輝

● ネイチャー・テクノロジー トンボの翅 [聖教新聞, (2011)] 石田秀輝

● ネイチャー・テクノロジー クマムシの耐久性 [聖教新聞, (2011)] 石田秀輝

● milsil ネイチャー・テクノロジー [国立科学博物館 milsil, 4 (2), (2011), 6-9] 石田秀輝 古川柳蔵

● 自然から「まなぶ」 [東日本建設業保証株式会社 East Times 春号, (2011), 10-11] 石田秀輝

● バックキャスティングで考える新しいモノづくりのかたち [JIPM ソリューション TPM エイジ, 23 (4), (2011), 30-31] 石田秀輝

● ネイチャーテクノロジーが開く新たなライフスタイル [東京市政調査会 都市問題, 102 (4), (2011), 34-44] 石田秀輝

● 新しいテクノロジーは日本人の自然観にあった! [MOKU 出版 MOKU, 229 (4), (2011), 62-69] 石田秀輝

● ネイチャー・テクノロジー 水のいらないお風呂 [聖教新聞, (2011)] 石田秀輝

● ネイチャー・テクノロジー カタツムリの殻 [聖教新聞, (2011)] 石田秀輝

● テクノロジーがライフスタイルに責任を持つ時代がやってきた [無機マテリアル学会 無機マテリアル学会, 18 (5), (2011), 115-116] 石田秀輝

● シロアリ塚に学ぶ無電源エアコン [JIPM ソリューション TPM エイジ, 23 (5), (2011), 30-31] 石田秀輝

● ネイチャー・テクノロジー 無電源エアコン 聖教新聞, 2011] 石田秀輝

● 自然の循環を学び、循環共生するみちのく自然共生園(監修) [石田秀輝

● 地下資源文明からの離陸 [日本粉体工業技術協会 粉体技術, 3 (6), (2011), 51-58] 石田秀輝 古川柳蔵

● 泡に学ぶ水のいらないお風呂 [JIPM ソリューション TPM エイジ, 23 (6), (2011), 30-31] 石田秀輝

● 遊べや遊べ、もっと遊べ! [石川県自治と教育研究会 石川, 自治と教育, 62, (2011), 20-39] 石田秀輝

● 自然に学ぶ新しい暮らし方のか・た・ち [東北芸術工科大学デザイン哲学研究所 デザイン哲学叢書デザインの知, (5), (2011), 238-251] 石田秀輝

● 自然に学ぶ新しい暮らし方とものづくり [宣伝会議 環境会議, (33), (2011), 268-273] 石田秀輝 古川柳蔵

● ネイチャー・テクノロジー 蜂の巣の構造 [聖教新聞, (2011)] 石田秀輝

● ネイチャー・テクノロジー 竹の不思議 [聖教新聞, (2011)] 石田秀輝

● トンボに学ぶマイクロ風力発電 [JIPM ソリューション TPM エイジ, 23 (7), (2011), 30-31] 石田秀輝

● 3.11日本の覚醒 [第1部] 原発事故から見えてきたグローバリゼーションと金融資本主義の限界 [MOKU 出

- 版 MOKU, (7), (2011), 24-41] 中村桂子, 佐藤勝彦, 松本健一, 石田秀輝
- 3.11日本の覚醒 [第2部] 日本人の自然観に基づくテクノロジーとパラダイムシフト [MOKU出版 MOKU, (7), (2011), 62-75] 中村桂子, 佐藤勝彦, 松本健一, 石田秀輝
  - ネイチャー・テクノロジー 新しい産業革命へ [聖教新聞, (2011)] 石田秀輝
  - ネイチャー・テクノロジー 家庭農場 [聖教新聞, (2011)] 石田秀輝
  - カタツムリに学ぶ汚れない表面 (TPM エイジ) [JIPM ソリューション, 23(8), (2011), 30-31] 石田秀輝
  - ネイチャーテクノロジー最前線 (ムー) [学研 ムー, (2011), 149-162] 石田秀輝 (監修)
  - 東日本大震災に学ぶものづくりと暮らし方のパラダイムシフト (巻頭言) [エヌ・ティー・エス 未来材料, 11(9), (2011), 1] 石田秀輝
  - 微生物の多様性に学ぶ家庭農場 (TPM エイジ) [JIPM ソリューション TPM エイジ, 23(9), (2011), 30-31] 石田秀輝
  - 環境も人も豊かにする暮らし方とともにつくりのかたち—東日本大震災が教えてくれたこと— [日本粉体技術工業会 粉体技術, 3(10), (2011), 65-68] 石田秀輝
  - 強く、軽く、しなやかな素材をつくる (TPM エイジ) [JIPM ソリューション TPM エイジ, 23(10), (2011), 30-31] 石田秀輝
  - 地下資源文明からの離陸。 [空気調和・衛生工学会 空気調和・衛生工学, 85(10), (2011), 13-19] 石田秀輝, 古川柳蔵, 須藤祐子
  - 「東日本大震災」一生の記憶を基盤としたパラダイムシフトに向けて— [本田財団 本田財団レポート, (139), (2011), 1-63] 石田秀輝
  - 自然を活かし、自然を往なす (TPM エイジ) [JIPM ソリューション TPM エイジ, 23(11), (2011), 30-31] 石田秀輝
  - 群れから学ぶ自然の不思議 (TPM エイジ) [JIPM ソリューション TPM エイジ, 23(12), (2011), 30-31] 石田秀輝
  - 東日本大震災が教えてくれたテクノロジーとライフスタイルのパラダイムシフトへの道 [工業製品技術協会(株)テクノプラザ) Ceramic Data Book, 39(93), (2011), 44-47] 石田秀輝, 古川柳蔵, 物部朋子
  - ライフスタイルのパラダイムシフトに向けて [株]不動産流通研究所 月刊不動産流通, 355(12), (2011), 8-9] 石田秀輝

## 環境調和材料強度学分野

### 【論文】

- Creep Behavior and Degradation of Subgrain Structures Pinned by Nanoscale Precipitates in Strength-Enhanced 5 to 12 Pct Cr Ferritic Steels. [Metallurgical and Materials Transactions A, 42,

- (2011), 3084-3094] Hassan Ghassemi Armaki, Ruiping Chen, Kouichi Maruyama, Masaaki Igarashi
- Development of Oxide Dispersion Strengthened Steels for High Temperature Nuclear Structural Applications. [Engineering Asset Management and Infrastructure Sustainability, (2011), 1147-1160] H. Zhu, T. Wei, R. Harrison, L. Edwards, K. Maruyama
  - Microstructural Degradation during High Temperature Exposure up to  $10^5$  h and its Effects on Creep of Gr. 91 Steel. [Advances in Materials Technology for Fossil Power Plants, (2011), 654-666] R.P. Chen, H. Ghassemi Armaki, K. Maruyama, Y. Minami, M. Igarashi
  - Long-term microstructural degradation and creep strength in Gr.91 steel. [Materials Science and Engineering A, 528, (2011), 4390-4394] R.P. Chen, H. Ghassemi Armaki, K. Maruyama, M. Igarashi
  - Microstructural Evolution of Mo-Si-B Ternary Alloys through Heat Treatment at 1800°C. [Advanced Materials Research, 278, (2011), 527-532] Kyosuke Yoshimi, Seong-Ho Ha, Kouichi Maruyama, Rong Tu, Takashi Goto
  - 希土類元素を添加した Mg-Al-Ca 熱間押出合金の組織とクリープ強度 [日本学術振興会耐熱金属材料第123委員会研究報告, 52(1), (2011), 41-49] 角田直彬, 吉見享祐, 丸山公一

### 【著書】

- マクロおよびナノポーラス金属の開発最前線 [シーエムシー出版, (2011)] 吉見享祐

### 【特許】

- リサイクル型 Fe-Al 複合材料の製造方法 [特許 4852737] 糸井貴臣, 峰田暁, 広橋光治, 吉見享祐, 花田修治

## 環境複合材料創成科学分野

### 【論文】

- Toxicity evaluations of various carbon nanomaterials. [Dental Materials Journal, 30, (2011), 245-263] Motohiro Uo, Tsukasa Akasaka, Fumio Watari, Yoshinori Sato, Kazuyuki Tohji
- Boron-Assisted Transformation to Rod-Like Graphitic Carbons from Multi-Walled Carbon Nanotubes in Boron-Mixed Multi-Walled Carbon Nanotube Solids. [ACS Applied Materials & Interfaces, 3, (2011), 2431-2439] Yoshinori Sato, Hikaru Nishizaka, Kenichi Motomiya, Go Yamamoto, Akira Okubo, Hisamichi Kimura, Mikio Ishikuro, Kazuaki Wagatsuma, Toshiyuki
- Influence of carbon structure of the anode on the production of graphite in single-walled carbon nanotube soot synthesized by arc discharge using a Fe-Ni-S catalyst. [Carbon, 49, (2011), 3607-3614]

- Hikaru Nishizaka, Masaru Namura, Kenichi Motomiya, Yasumasa Ogawa, Yasuo Udagawa, Kazuyuki Tohji, Yoshinori Sato

- カーボンナノチューブ—ホウ素焼結体中に含まれる無定形ホウ素と炭化ホウ素の形態別分離定量 [分析化学, 60, (2011), 807-811] 石黒三岐雄, 佐藤義倫, 田路和幸, 我妻和明

- Influence of the structure of the nanotube on the mechanical properties of binder-free multi-walled carbon nanotube solids. [Carbon, 50, (2012), 34-39] Yoshinori Sato, Hikaru Nishizaka, Shunichi Sawano, Atsushi Yoshinaka, Kazutaka Hirano, Shinji Hashiguchi, Takayuki Arie, Seiji Akita, Go Yamamoto, Toshiyuki Hashida, Hisamichi Kimura, Kenichi Motomiya, Kazuyuki Tohji

### 【総説・解説】

- カーボンナノチューブ固化体の高機能高強度特性 [セラミックスデータブック 2011, 39, (2011), 143 - 147] 佐藤義倫

### 【特許】

- カーボンナノチューブおよびその製造方法 [特開2011-016711] 佐藤義倫, 田路和幸, 名村優
- 単層カーボンナノチューブフィルムおよびその製造方法 [特開2011-057516] 佐藤義倫, 田路和幸, 名村優
- 電気二重層キャパシタおよびその製造方法 [特開2011-082485] 佐藤義倫, 田路和幸, 名村優

## 環境物質制御学講座

### 地圈環境学分野

#### 【論文】

- Distribution of Minor Metals in E-Waste. [Abstracts of Conference of Metallurgists, (2011), 32-33] Tetsuya YUMOTO and Toshikazu SHIRATORI
- Bioleaching of indium from sulfide ore. [19th International Biohydrometallurgy Symposium, (2011), A35] Chihiro Inoue, Jun Sato, Yasumasa Ogawa, Yui Takahashi, Roichi Yamada, Koichi Suto
- Preferential utilization of petroleum oil hydrocarbon components by microbial consortia reflects degradation pattern in aliphatic-aromatic hydrocarbon binary mixtures. [World Journal of Microbiology and Biotechnology, 27, (2011), 1109-1117] Bacosa Hernando, Koichi Suto, and Chihiro Inoue
- Microbial Diversity and Changes in the Distribution of Dehalogenase Genes during Dechlorination with Different Concentrations of cis-DCE. [Environmental Science and Technology, 45(12), (2011), 5339-5339] Kotaro Ise, Koichi Suto, and Chihiro Inoue

- 二酸化炭素吹込みによる生石灰混合汚染土壤処理の改良 [Journal of MMJ, 127(8), (2011), 512-518] 中川勇樹, 橋本久儀, 須藤孝一, 井上千弘

- Microbial structure of TCE degrading cultures obtained from several contaminated groundwater around Japan. [Final Programme and Abstracts of ISSM2011 8th International Symposium of Subsurface Microbiology, (2011), 50] Koichi SUTO, Kotaro ISE, Sho NAKASORA, and Chihiro INOUE
- CFD解析による低液深横流式加圧浮上装置の処理水取水部の構造最適化 [土木工学論文集 G (環境), 67(7), (2011), III\_705-III\_713] 寺島光春, 安井英齊, ラジブ, ゴエル, 須藤孝一, 井上千弘

## エネルギー・セキュリティ学講座

### エネルギー・セキュリティ学分野

#### 【論文】

- Enhanced hydrogen production from biomass via the sulfur redox cycle under hydrothermal conditions [Int. J. Hydrogen Energy, 36(17), 10674-10682] Putri Setiani, Javier Vilcáz, Noriaki Watanabe, Atsushi Kishita, Noriyoshi Tsuchiya
- Reduction of Carbon Dioxide in Hydrothermal Cracking of Polymer Wastes [Energy Fuels, 25(6), 2749-2752] Xu Zeng, Fangming Jin, Zhibao Huo, Takeo Mogi, Atsushi Kishita, and Heiji Enomoto

#### 【総説・解説】

- 産学連携講座(寄付講座)研究室紹介: エネルギーセキュリティ学 (JAPEX) 講座 [石油技術協会誌, 76(2), 170-175] 木下睦・アリエフ ヌルヤディ・プトゥリ セティアニ

## 環境適合材料創製学講座

### 環境適合材料創製学分野

#### 【論文】

- Microstructural degradation mechanisms during creep in strength enhanced high Cr ferritic steels and their evaluation by hardness measurement [J. of Nuclear Materials, 416(3), (2011), 273-279] H. Aramaki, R. Chen, S. Kano, K. Maruyama, Y. Hasegawa, M. Igarashi

## 地球環境変動学講座

### 地球環境変動学分野

#### 【論文】

- Observed and simulated time evolution of HCl, ClONO<sub>2</sub>, and HF total column abundances. [Atmos. Chem. Phys. Discuss., 11, (2011), 32085-32160, doi: 10.5194/acpd-11-32085-2011] Kohlhepp, R., Ruhnke, R., Chipperfield, M. P., De Mazière, M., Notholt, J., Barthlott, S., Batchelor, R. L., Blatherwick, R. D., Blumenstock, Th., Coffey, T. M., Demoulin, P., Duchatelet, P., Fast, H., Feng, W., Goldman, A., Griffith, D. W. T., Hamann, K., Hase, F., Jones, N. B., Kagawa, A., Kaiser, I., Kasai, Y., Kirner, O., Kouker, W., Lindenmaier, R., Mahieu, E., Mittermeier, R. L., Monge-Sanz, B., Morino, I., Murata, I., Nakajima, H., Palm, M., Paton-Walsh C., Raffalski, U., Reddmann, Th., Rettinger, M., Rinsland, C. P., Rozanov, E., Schneider, M., Senten, C., Sinnhuber, B. -M., Smale, D., Strong, K., Sussmann, R., Taylor, J. R., Vanhaelewijn, G., Warneke, T., Whaley, C., Wiehle, M., and Wood, S. W.
- Unprecedented Arctic ozone loss in 2011. [Nature 478, (2011), 469-475, doi: 10.1038/nature10556] Manney, G. L., Santee, M. L., Rex, M., Livesey, N. J., Pitts, M. C., Veefkind, P., Nash, E. R., Wohltmann, I., Lehmann, R., Froidevaux, L., Poole, L. R., Schoeberl, M. R., Haffner, D. P., Davies, J., Dorokhov, V., Gernandt, H., Johnson, B., Kivi, R., Kyrö, E., Larsen, N., Levelt, P. F., Makshtas, A., McElroy, C. T., Nakajima, H., Parrondo, M. C., Tarasick, D. W., von der Gathen, P., Walker, K. A., and Zinoviev, N. S.
- Evaluating a 3-D transport model of atmospheric CO<sub>2</sub> using ground-based, aircraft, and space-borne data. [Atmos. Chem. Phys., 11, (2011), 2789-2803, doi: 10.5194/acp-11-2789-2011] Feng, L., Palmer, P. I., Yang, Y., Yantosca, R. M., Kawa, S. R., Paris, J.-D., Matsueda, H., and Machida, T.
- Carbon balance of South Asia constrained by passenger aircraft CO<sub>2</sub> measurements. [Atmos. Chem. Phys., 11, (2011), 4163-4175, doi: 10.5194/acp-11-4163-2011] Patra, P. K., Niwa, Y., Schuck, T. J., Brenninkmeijer, C. A. M., Machida, T., Matsueda, H., and Sawa, Y.
- Interannual variability and trends in atmospheric methane over the western Pacific from 1994 to 2010. [J. Geophys. Res., 116, (2011), D14303, doi: 10.1029/2010JD015467] Y. Terao, H. Mukai, Y. Nojiri, T. Machida, Y. Tohjima, T. Saeki and S. Maksyutov.
- CO emissions from biomass burning in South-east Asia in the 2006 El Niño year: shipboard and AIRS satellite observations. [Environ. Chem., 8, (2011), 213-223, doi: 10.1071/EN10113] H. Nara, H. Tanimoto, Y. Nojiri, H. Mukai, J. Zeng, Y. Tohjima, and T. Machida

● Evaluation of methane emissions from west Siberian wetlands based on inverse modeling. [Environ. Res. Lett., 6, (2011), 035201, doi: 10.1088/1748-9326/6/3/035201.] Kim, H.-S., S. Maksyutov, M.V. Glagolev, T. Machida, P.K. Patra, K. Sudo and G. Inoue

● Methane emission from middle taiga oligotrophic hollows of Western Siberia. [Bull. Tomsk State Pedagogical Univ., 5 (107), (2011), 135-143.] Sabrekov, A. F., I. E. Kleptsova, M. V. Glagolev, Sh. Sh. Maksyutov, T. Machida.

● Regional methane emission from West Siberia mire landscapes. [Environ. Res. Lett. 6, (2011), 045214.] Glagolev, M., I. Kleptsova, I. Filippov, S. Maksyutov and T. Machida.

● Onboard measurement system of atmospheric carbon monoxide in the Pacific by voluntary observing ship. [Atmos. Meas. Tech., 4, (2011), 2495-2507.] Nara, H., H. Tanimoto, Y. Nojiri, H. Mukai, T. Machida and Y. Tohjima.

● Global CO<sub>2</sub> fluxes inferred from surface air-sample measurements and from TCCON retrievals of the CO<sub>2</sub> total column. [Geophys. Res. Lett., 38, (2011), 24, doi: 10.1029/2011GL049899] Chevallier, F., N. Deutscher, T.J. Conway, P. Ciais, L. Ciattaglia, S. Dohe, M. Fröhlich, A.J. Gomez-Pelaez, D. Griffith, F. Hase, L. Haszpra, P. Krummel, E. Kyrö, C. Labuschagne, R. Langenfelds, T. Machida, F. Maignan, H. Matsueda, I. Morino, J. Notholt, M. Ramonet, Y. Sawa, M. Schmidt, V. Sherlock, P. Steele, K. Strong, R. Sussmann, P. Wennberg, S. Wofsy, D. Worthy, D. Wunch, M. Zimnoch.

● The seasonal cycle amplitude of total column CO<sub>2</sub>: Factors behind the model-observation mismatch. [J. Geophys. Res., 116, (2011), D23306, doi: 10.1029/2011JD016124.] Basu, S., S. Houweling, W. Peters, C. Sweeney, T. Machida, S. Maksyutov, P. Patra, R. Saito, F. Chevallier, Y. Niwa, H. Matsueda and Y. Sawa.

● Three-dimensional variations of atmospheric CO<sub>2</sub>: aircraft measurements and multi-transport model simulations. [Atmos. Chem. Phys., 11, (2011), 13359-13375, doi: 10.5194/acp-11-13359-2011.] Niwa, Y., P. K. Patra, Y. Sawa, T. Machida, H. Matsueda, D. Belikov, T. Maki, M. Ikegami, R. Imasu, S. Maksyutov, T. Oda, M. Satoh, and M. Takigawa.

● Aircraft observation of the seasonal variation in the transport of CO<sub>2</sub> in the upper atmosphere. [J. Geophys. Res., (2011) doi: 10.1029/2011JD016933, in press.] Sawa, Y., T. Machida, and H. Matsueda

#### 【総説・解説】

- 2011年春季北極上空で観測史上最大のオゾンが破壊。[冷凍空調設備, 38, (2011), 5-8] 中島英彰
- 定期航空路による温室効果ガス観測[計測と制御, 50 (10), (2011), 840-847] 町田敏暢, 松枝秀和, 澤庸介

## 環境リスク評価学講座

### 環境リスク評価学分野

#### 【論文】

● Characterization of humic acids in sediments from dam reservoirs by pyrolysis-gas chromatography/mass spectrometry using tetramethylammonium hydroxide: Influence of the structural features of humic acids on iron(II) binding capacity. [Journal of Analytical and Applied Pyrolysis, 91, (2011), 323-331] Fukushima M., Furubayashi, K., Fujisawa, N., Takeuchi, M., Komai, T., Ootsuka, K., Yamamoto, M., Kawabe, Y., and Horiya, S.

● Comparative study of microbial dechlorination of chlorinated ethenes in an aquifer and a clayey aquitard. [J. Contam. Hydrol., 124, (2011), 14-24] Takeuchi, M., Kawabe, Y., Watanabe, E., Oiwa, T., Takahashi, M., Nanba, K., Kamagata, Y., Hanada, S., Ohko, Y., Komai, T.

● Electric conductivity and pH profiles of pore water extracted from the latest Pleistocene to Holocene sediments in the Tokyo and the Nakagawa Lowlands, central Japan. [Bull. Geol. Surv. Japan, (62), (2011), 85-104] Uchiyama M., Hara M., Takeuchi M., Kimura K.

● A distinct freshwater-adapted subgroup of ANME-1 dominates active archaeal communities in terrestrial subsurfaces in Japan. [Environmental Microbiology, 13 (12), (2011), 3206-3218] Takeuchi, M., H. Yoshioka, Y. Seo, S. Tanabe, H. Tamaki, H. A. Takahashi, S. Igari, D. Mayumi, S. Sakara.

● Risk Assessment of Enhanced Geological Storage of CO<sub>2</sub> Using Gas Hydrates, Proceedings of the 7th International Conference on Gas Hydrates. [(2011)] Takeshi Komai, Yasuhide Sakamoto, Atsuko Tanaka

● Geo-informatics System for Geo-hazards and Environmental Risk Assessment, Proceedings of International Symposium on Disaster Simulation. [(2011)] Takeshi Komai, Junko Hara, Noriyoshi Tsuchiya

● 放射能による土壤汚染問題を考える—環境リスクとその対策— [噴流工学, 28 (2), (2011), 26-30] 駒井武

● 腐植酸鉄供給の環境受容性と流域環境評価 [海洋理工学会誌, 17 (1), (2011), 9-12] 駒井武, 川辺能成, 原淳子

● 電気を用いた未利用バイオマスからの物質生産(その1) —グリセロール変換微生物の探索と電気化学的活性制御—. [電力中央研究所研究報告, V10033, (2011)] 松本伯夫, 平野伸一, 大村直也

● バイオマスのエネルギー利用の拡大に向けて. [DEN-CHU-KEN TOPICS, Vol.6, (2011)] 井内正直, 大高円, 渡部良朋

● 電気培養. [バイオ電池の最新動向(加納健司監修) (2011), シーエムシー出版] 松本伯夫, 平野伸一

#### 【総説・解説】

● 電気培養による新規発酵技術創出の可能性. [生物工学会誌, 89 (6), (2011)] 松本伯夫.

#### 【特許】

● 窒素代謝微生物の活性化方法及びバイオリアクタ [特開2011-182786] 平野伸一, 松本伯夫, 大村直也

● 水素資化性メタン菌のメタン生成活性制御方法 [特開2011-223895] 平野伸一, 松本伯夫, 大村直也

## 環境マネジメント人材育成プログラム

#### 【論文】

● 東北大学大学院環境科学研究科における高度社会人環境人材養成プログラムの実践と課題. [環境科学会誌, 24 (4), (2011), 320-328] 古川柳蔵 石田秀輝

● 地下資源文明からの離陸—新しいくらしのかたち—. [空気調和・衛生工学, 85, (2011), 777-784] 石田秀輝・古川柳蔵・須藤祐子

#### 【著書】

● 次世代バイオミックス研究の最前線 [シーエムシー出版, (2011), 29-34] 下村正嗣(監修), 石田秀輝, 古川柳蔵

● d-labo 夢をかたちに夢に日付を [SURUGA bank, (2011), 70-71] 石田秀輝ほか99名

● 自然に学ぶ! ネイチャー・テクノロジー [Gakken, (2011), 1-120] 石田秀輝・下村正嗣(監修)

● 未来の働き方をデザインしよう —2030年のエコワークスタイルブック [日刊工業新聞社, (2011), 1-215] 石田秀輝, 古川柳蔵, コクヨ株 RDIセンター

● survivalism 70億人の生存意義 [ダイヤモンド社, (2011), 40-51] 石田秀輝, 馬場悠男, 大沼克彦, 加藤博文, 印東道子, 西秋良宏(監修協力)

● ヤモリの指から不思議なテープ [アリス館, (2011), 1-143] 石田秀輝(監修), 松田素子・江口絵里(文), 西澤真樹子(絵)

● 厳しい地球環境下, 心豊かに生きる知恵—自然界的営みにこそ解がある (日本の論点) [株文藝春秋社, (2011), 592-595] 曽野綾子, 石原慎太郎, 堀屋太一, 石田秀輝ほか, 計115名

● すごい自然図鑑 [PHP研究所, (2011), 1-127] 石田秀輝(監修)

## バイオエコマネジメント学講座

### バイオエコマネジメント学分野

#### 【著書】

● 電気を用いた革新的微生物変換技術の開発(その2) —プラント生産微生物の電気による制御—. [電力中央研究所研究報告, V10028, (2011)] 平野伸一, 松本伯夫, 大村直也。

【総説・解説】

- New methods of Production and Future Lifestyles. [株文化事業部 Obusession, 53, (2011), 1-38] Emile H. Ishida
- milsil ネイチャー・テクノロジー [国立科学博物館 milsil, 4 (2), (2011), 6-9] 石田秀輝 古川柳蔵
- 新しいテクノロジーは日本人の自然観にあった! [MOKU 出版 MOKU, 229 (4), (2011), 62-69] 石田秀輝
- テクノロジーがライフスタイルに責任を持つ時代がやってきた [無機マテリアル学会 無機マテリアル学会, 18 (5), (2011), 115-116] 石田秀輝
- 地下資源文明からの離陸 [日本粉体工業技術協会 粉体技術, 3 (6), (2011), 51-58] 石田秀輝 古川柳蔵
- 遊べや遊べ、もっと遊べ! [石川県自治と教育研究会 石川, 自治と教育, 62, (2011), 20-39] 石田秀輝
- 自然に学ぶ新しい暮らし方とものづくり [宣伝会議 環境会議, (33), (2011), 268-273] 石田秀輝 古川柳蔵
- 3.11日本の覚醒 [第1部] 原発事故から見えてきたグローバリゼーションと金融資本主義の限界 [MOKU 出版 MOKU, (7), (2011), 24-41] 中村桂子, 佐藤勝彦, 松本健一, 石田秀輝
- 3.11日本の覚醒 [第2部] 日本人の自然観に基づくテクノロジーとパラダイムシフト [MOKU 出版 MOKU, (7), (2011), 62-75] 中村桂子, 佐藤勝彦, 松本健一, 石田秀輝
- 環境も人も豊かにする暮らし方とものつくりのかたち—東日本大震災が教えてくれたこと— [日本粉体技術工業会 粉体技術, 3 (10), (2011), 65-68] 石田秀輝
- 地下資源文明からの離陸 [空気調和・衛生工学会 空気調和・衛生工学, 85 (10), (2011), 13-19] 石田秀輝, 古川柳蔵, 須藤祐子
- 「東日本大震災」一生の記憶を基盤としたパラダイムシフトに向けて— [本田財団 本田財団レポート, (139), (2011), 1-63] 石田秀輝
- 東日本大震災が教えてくれたテクノロジーとライフスタイルのパラダイムシフトへの道 [工業製品技術協会(株)テクノプラザ) Ceramic Data Book, 39 (93), (2011), 44-47] 石田秀輝, 古川柳蔵, 物部朋子

[エレクトロニクス実装学会誌, 15 (1), (2012), 29] 田中泰光  
／環境調和型実装技術委員会

## 国際エネルギー・資源戦略を立案する環境リーダー育成拠点

【論文】

- Simulation of adsorption equilibrium of heavy metal cations on soils in circumneutral aqueous solution: influences of solution pH and dissolved humus substances. [Advanced Materials Research, 287-290, (2011), 2822-2825] Yuyu Liu\*, Takeshi Kobayashi, Takashi Kameya, Yukari Takahashi, Yuko Ohashi
- 追記型光ディスク (BD-R, DVD, and CD-R) の CO<sub>2</sub>排出量報告 [JRIA, (2011)] 田中泰光, JRIA 環境委員会

【総説・解説】

- 環境調和型実装技術—省エネルギー・新材料・新しい技術—