

# 研 究 業 績

(平成 30 年1月～12 月)

## [論 文 発 表]

〈工 学 研 究 院〉

Measurement of Barium Ion Displacement Near Surface in a Barium Titanate Nanoparticle by Scanning Transmission Electron Microscopy

Mai Aoki, Yukio Sato\*, Ryo Teranishi, Kenji Kaneko  
Applied Microscopy,48(2018)27-32.

Effects of scandium and zirconium addition on recrystallization behavior of AlMgSi alloy

Ikeda, K.-I., Takashita, T., Akiyoshi, R., Hata, S., Nakashima, H., Yamada, K., Kaneko, K.  
Materials Transactions,594(2018)590-597.

Relationship among elongation and work hardening behavior and dislocation characteristics of Al-Mg-Si series alloys

Koshino, Y., Aruga, Y., Mukai, J., Kaneko, K.  
Keikinzoku/Journal of Japan Institute of Light Metals,684(2018)201-205

Characterization Methods for Nanostructure of Materials

Ohara, S., Adschiri, T., Miyahara, M., Kaneko, K., Ohtomo, A.  
Nanoparticle Technology Handbook,(2018)255-300

Study of Growth Process for  $\text{YBa}_2\text{Cu}_3\text{O}_y$  Coated Conductors With  $\text{BaZrO}_3$  Flux Pinning Centers by Monitoring Electrical Conductivity

Ryo Teranishi , Kazuki Konya, Masayoshi Inoue, Yukio Sato, Kenji Kaneko, Teruo Izumi , and Satoshi Awaji  
IEEE Transactions on Applied Superconductivity,284(2018)1-5

Mesoporous  $\text{La}_{0.6}\text{Ca}_{0.4}\text{CoO}_3$  perovskites with large surface areas as stable air electrodes for rechargeable Zn-air batteries

Ishihara, T., Guo, L.M., Miyano, T., Inoishi, Y., Kaneko, K., Ida, S.  
Journal of Materials Chemistry A,617(2018) 7686-7692

Hybridizing semiconductor nanocrystals with metal-organic frameworks for visible and near-infrared photon upconversion

Amemori, S., Gupta, R.K., Böhm, M.L., Xiao, J., Huynh, U., Oyama, T., Kaneko, K., Rao, A., Yanai, N., Kimizuka, N.  
Dalton Transactions,4726(2018)8590-8594

Nanostructural Analyses of Intra- and Intergranular Precipitates in High-temperature Heat-treated Nitrogen-added Austenitic Stainless Steel

Minoru Ochi, Kousei Sato, Ryo Teranishi, Yukio Sato, Jun-ichi Hamada, Chikako Takushima, Toru Hara, Kenji Kaneko  
ISIJ International,858(2018)1459-1466

Solid solution hardening in supersaturated Al-Mg-Si alloy

Takata, K., Ushioda, K., Kaneko, K., Akiyoshi, R., Ikeda, K.-I., Hata, S., Nakashima, H.  
Nippon Kinzoku Gakkaishi/Journal of the Japan Institute of Metals,828(2018)314-318

Scalable faceted voids with luminescent enhanced edges in  $\text{WS}_2$  monolayers

Kumar, P., Chatterjee, D., Maeda, T., Roy, A., Kaneko, K., Balakrishnan, V.  
Nanoscale,1034(2018)16321-16331

Structural and compositional study of precipitates in under-aged Cu-added Al-Mg-Si alloy  
Takuya Maeda, Kenji Kaneko, Takuya Namba, Yuki Koshino, Yukio Sato, Ryo Teranishi & Yasuhiro Aruga  
Scientific Reports,8(2018)1-7

窒素添加オーステナイト系ステンレス鋼中析出物の分散状態解析  
越智実, 佐藤弘成, 寺西亮, 佐藤幸生, 金子賢治, 濱田純一, 多久島睦子, 原徹  
まてりあ,5712(2018)618

企画にあたって  
赤瀬 善太郎, 木口 賢紀, 佐藤 幸生, 田中 智仁, 田辺 栄司, 寺本 武司, 仲村 龍介, 本間 智之,  
横山 賢一  
まてりあ,5712(2018)583

Mesurement and empirical equation of critical stresses for slip generation from oxide precipitates in silicon wafers

J. Fujise, B. Ko, T. Ono, M. Tanaka  
Japanese Journal of Applied Physics, 57 (2018), 035501.

粒子分散強化型合金の微視組織に生ずる 2 次すべりと巨視的加工硬化特性に関するモデリングと結晶塑性解析

奥山彫夢, 大橋鉄也, 田中將己  
鉄と鋼, 104 (2018), 166-176.

EBSDFEM データ変換インターフェースの構築と それを用いたイメージベース結晶塑性解析  
河野義樹, 大橋鉄也, 眞山 剛, 田中將己, 坂本盛敬, 奥山彫夢, 佐藤満弘  
機械学会論文集, 84 (2018), 17-00559.

Temperature dependence of the yield stress in  $\alpha$ -Titanium investigated with crystal plasticity analysis

Y. Okuyama, M. Tanaka, T. Ohashi, T. Morikawa  
Mater. Sci. Forum, 941 (2018), 1474-1478.

Temperature dependence of mechanical properties in dual phase Ti-6Al-4V

B.R. Anne, M. Tanaka, T. Morikawa

Mater. Sci. Forum, 941 (2018), 1479-1483.

浸炭熱処理または浸窒熱処理を施した純鉄焼結体の耐摩耗機構

日下部 圭祐, Muhammad Kozin, 荒牧 正俊, 古君 修, 尾崎 由紀子  
平成 30 年度粉体粉末冶金春季講演大会講演概要集, 2018.5.14.

閉気孔からなる高密度純鉄焼結体の延性破壊過程における閉気孔の形態および気孔間距離の影響—閉気孔の切欠き効果の検証

中村 公二, 鴨川 知誉, 麦田 康敬, 荒牧 正俊, 芦塚 康佑, 尾崎 由紀子  
平成 30 年度粉体粉末冶金秋季講演大会講演概要集, 2018.10.30.

Four-dimensional (4D) Observation of Ductile Fracture in Sintered Iron using Synchrotron X-ray Laminography

Y. Ozaki, Y. Mugita, M. Aramaki, O. Furukimi, S. Oue, F. Jiang, T. Tsuji, A. Takeuchi, M. Uesugi & K. Ashizuka

Proc.EuroPM2018 in Birbao, Spain, USB.

高圧スライド加工法を用いた Ti-6Al-7Nb の結晶粒微細化と超塑性発現

渡部恭平, 蘆田茉希, 増田高大, Petr KRAL, 瀧沢陽一, 湯本 学, 小田切吉治, Vaclav SKLENICKA, 塙 隆夫, 堀田善治  
軽金属, 68, 1 (2018) 9-15.

巨大ひずみ領域の大面積化を目指した逐送高圧スライド加工法の開発  
瀧沢陽一, 渡部恭平, 梶田貴裕, 澄川考生, 増田高大, 湯本 学, 小田切吉治, 堀田善治  
日本金属学会誌, 82, 1 (2018) 25-31.

Effect of gradient-structure versus uniform nanostructure on hydrogen storage of Ti-V-Cr alloys: Investigation using ultrasonic SMAT and HPT processes  
K. Edalati, M. Novelli, S. Itano, H.W.Li, E. Akiba, Z. Horita, T. Grosdidier  
Journal of Alloys and Compounds, 737 (2018) 337-346.

Effect of Temperature Rise on Microstructural Evolution during High-Pressure Torsion.  
K. Edalati, Y. Hashiguchi, P. H. R. Pereira, Z. Horita, T. G. Langdon  
Materials Science and Engineering A, 714 (2018) 167-171.

Effect of high-pressure torsion on grain refinement and strength enhancement and uniform ductility of EZ magnesium alloy  
K. Bryła, J. Morgiel, M. Faryna, K. Edalati, Z. Horita  
Materials Letters, 212 (2018) 323-326.

Design and synthesis of a magnesium alloy for room temperature hydrogen storage  
K. Edalati, R. Uehiro, Y. Ikeda, H. W. Li, H. Emami, Y. Filinchuk, M. Arita, X. Sauvage, I. Tanaka, E. Akiba, Z. Horita  
Acta Materialia, 149 (2018) 88-96.

Microstructure and creep behaviour of P92 steel after HPT  
P. Kral, J. Dvorak, V. Sklenicka, T. Masuda, Z. Horita, K. Kucharova, M. Kvapilova, M. Svobodova  
Materials Science and Engineering A, 723 (2018) 287-295.

Incremental Feeding High-Pressure Sliding for Grain Refinement of Large-Scale Sheets: Application to Inconel 718  
Y. Takizawa, K. Sumikawa, K. Watanabe, M. Yumoto, Y. Kanai, Y. Otagiri, Z. Horita,  
Metallurgical and Materials Transactions A, 49 (2018) 1830-1840.

Grain growth in nanograined aluminum oxide by high-pressure torsion: Phase transformation and plastic strain effects  
I. Fujita, K. Edalati, X. Sauvage, Z. Horita  
Scripta Materialia, 152 (2018) 11-14.

New MgVCr BCC Alloys Synthesized by High-Pressure Torsion and Ball Milling  
K. Fujiwara, R. Uehiro, K. Edalati, H. W. Li, R. Floriano, E. Akiba, Z. Horita  
Materials Transactions, 59 (2018) 741-746.

Transition from poor ductility to room-temperature superplasticity in a nanostructured aluminum alloy  
K. Edalati, Z. Horita, R. Z. Valiev  
Scientific Report, (2018) 6740 (8p)

High-pressure torsion (HPT) for new hydrogen storage materials  
K. Edalati, E. Akiba, Z. Horita  
Science and Technology of Advanced Materials, 19 (2018) 185-193.

Combination of High-Pressure Torsion with Incremental Feeding for Upsizing Sample  
E. Shigeno, T. Komatsu, K. Sumikawa, T. Masuda, Y. Takizawa, M. Yumoto, Y. Otagiri, Z. Horita  
Materials Transactions, 59 (2018) 1009-1012.

Nanocrystalline gamma magnesium hydride with low dehydrogenation temperature stabilized by plastic straining via high-pressure torsion  
K. Edalati, K. Kitabayashi, Y. Ikeda, J. Matsuda, H. W. Li, I. Tanaka, E. Akiba, Z. Horita  
Scripta Materialia, 157 (2018) 54-57.

Impact of metastable phases on electrical properties of Si with different doping concentrations after processing by high-pressure torsion

B. Chon, Y. Ikoma, M. Kohno, J. Shiomi, M. R. McCartney, D. J. Smith, Z. Horita  
Scripta Materialia, 157 (2018) 120-123.

Hydrolytic hydrogen production on Al-Sn-Zn alloys processed by high-pressure torsion

F. Zhang, K. Edalati, M. Arita, Z. Horita  
Materials, 11 (2018) 1209 (18p).

Low-temperature and high-strain-rate superplasticity of ultrafine grained A7075 processed by high-pressure torsion

S. Lee, K. Watanabe, K. Matsuda, Z. Horita  
Materials Transactions, 59 (2018) 1341-1347.

Crystal and electronic structural changes during annealing in severely deformed Si containing metastable phases formed by high-pressure torsion

Y. Ikoma, B. Chon, T. Yamasaki, K. Takahashi, K. Saito, Q. Guo, Z. Horita  
Applied Physics Letters, 113 (2018) 1011904.

巨大ひずみを利用した軽金属材料の組織微細化と高性能化

堀田善治  
軽金属, 68, 8 (2018) 407-417.

Effect of Surface Textures of Steel Sheets on the Crystal Orientation of Electrodeposited Zinc

Honami Kawano, Satoshi Oue, Takashi Futaba, Akinobu Kobayashi, Yasuto Goto, Hiroaki Nakano  
ISIJ International 58, 11, 2117-2124, 2018

Electrodeposition Behavior of Zn-Polyethyleneimine Composite from Sulfate Solution and Its Micro Structure

Kousuke Fuchi, Satoshi Oue, Yoshiharu Kikuchi, Shinya Akamatsu, Yuki Kashiwa, Hiroaki Nakano.  
Materials Transactions 59, 11, 1767-1776, 2018

Interrupted Interrupted in situ EBSD study of texture evolution and mechanism of surface grains in electroformed Ni after annealing with an initially duplex  $\langle 100 \rangle + \langle 111 \rangle$  fiber texture during uniaxial tensile deformation

Jiang, K., Nakano, H., Oue, S., Morikawa, T., Li, Z., Tian, W.  
MATERIALS CHARACTERIZATION 141, 238-247, 2018

硫酸塩浴からの亜鉛—ポリエチレンイミン複合電析挙動とその微細構造

澗浩輔, 大上悟, 菊池義治, 赤松慎也, 柏裕樹, 中野博昭  
日本金属学会誌 82, 8, 281-288, 2018

電解精製浴からの電析銅の表面粗度および均一電着性に及ぼす添加剤の相乗効果,

鈴木 敦博, 大上 悟, 小林繁夫, 中野博昭  
J. of Japan Inst. Metals and Mater., Vol.81 No.7, 2018, pp.358-365

Strong phonon–phonon interactions securing extraordinary thermoelectric  $\text{Ge}_{1-x}\text{Sb}_x\text{Te}$  with Zn-alloying-induced band alignment

M. Hong, Y. Wang, T. Feng, Q. Sun, S. Xu, S. Matsumura, S. T. Pantelides, J. Zou, Z-Gang Chen  
Journal of American Chemical Society, 10.1021/jacs.8b12624, 2018.12

Coating of 2D flexible metal–organic frameworks on metal nanocrystals

N. Ogiwara, H. Kobayashi, K. Kobayashi, T. Yamamoto, T. Toriyama, S. Matsumura, H. Kitagawa  
Chemistry Letters, 10.1246/cl.180931, 2018.12,

Sequential transmission electron microscopy observation of the shape change of gold nanorods under pulsed laser light irradiation

K. Aso, K. Shigematsu, T. Yamamoto, S. Matsumura  
Microscopy, 10.1093/jmicro/dfy136, 2018.12

A CO adsorption site change induced by copper substitution in a ruthenium catalyst for enhanced CO oxidation activity

B. Huang, H. Kobayashi, T. Yamamoto, T. Toriyama, S. Matsumura, Y. Nishida, K. Sato, K. Nagaoka, M. Haneda, W. Xie, Y. Nanba, M. Koyama, F. Wang, S. Kawaguchi, Y. Kubota, H. Kitagawa  
Angewandte Chemie International Edition, 10.1002/anie.201812325, 2018.12,

Isolated electron-rich Pt at the surface of Pt-Co alloy nanoparticles on  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> support: Synergistic effect between Pt and Co for exhaust purification

K. Sato, A. Ito, H. Tomonaga, H. Kanematsu, Y. Wada, H. Asakura, S. Hosokawa, T. Tanaka, T. Toriyama, T. Yamamoto, S. Matsumura, K. Nagaoka  
ChemPlusChem, 10.1002/cplu.201800542, 2018.12

Emergence of high ORR activity through controlling local density-of-states by alloying immiscible Au and Ir

K. Kusada, D. Wu, T. Yamamoto, T. Toriyama, S. Matsumura, W. Xie, M. Koyama, S. Kawaguchi, Y. Kubota, H. Kitagawa  
Chemical Science, 10.1039/C8SC04135K, 2018.12

Imaging the polymorphic transformation in a single Cu<sub>6</sub>Sn<sub>5</sub> grain in a solder joint

F. Somidin, H. Maeno, X. Q. Tran, S. D. McDonald, M. A. A. Mohd Salleh, S. Matsumura, K. Nogita  
Materials, 10.3390/ma11112229, 11, 11, 2229-2238, 2018.11

Ru/La<sub>0.5</sub>Pr<sub>0.5</sub>O<sub>1.75</sub> catalyst for low-temperature ammonia synthesis

Y. Ogura, K. Tsujimaru, K. Sato, S. Miyahara, T. Toriyama, T. Yamamoto, S. Matsumura, K. Nagaoka  
ACS Sustainable Chemistry & Engineering, 10.1021/acssuschemeng.8b04683, 2018.10

Arrays of planar vacancies in superior thermoelectric Ge<sub>1-x</sub>Cd<sub>x</sub>Bi<sub>y</sub>Te with band convergence

M. Hong, Y. Wang, W. Liu, S. Matsumura, H. Wang, J. Zou, Z.-G. Chen  
Advanced Energy Materials, 10.1002/aenm.201801837, 8, 30, 1801837-1-1801837-10, 2018.09

Nano-scale dislocations induced by self-vacancy engineering yielding extraordinary n-type thermoelectric Pb<sub>0.96-y</sub>In<sub>y</sub>Se

M. Hong, Z.-G. Chen, S. Matsumura, J. Zou  
Nano Energy, 10.1016/j.nanoen.2018.06.030, 50, 785-793, 2018.08

The Electronic State of Hydrogen in the  $\alpha$ Phase of the Hydrogen-Storage Material PdH(D)<sub>x</sub>: Does a Chemical Bond Between Palladium and Hydrogen Exist?

S. Dekura, H. Kobayashi, R. Ikeda, M. Maesato, H. Yoshino, M. Ohba, T. Ishimoto, S. Kawaguchi, Y. Kubota, S. Yoshioka, S. Matsumura, T. Sugiyama, H. Kitagawa,  
Angewandte Chemie International Edition, 10.1002/anie.201805753, 57, 31, 9823-9827, 2018.06

Crystal-phase control of GaAs-GaAsSb core-shell/axial nanowire heterostructures by a two-step growth

C. Zhou, K. Zheng, P.-P. Chen, S. Matsumura W. Lu, J. Zou  
Journal of Materials Chemistry C, 10.1039/C8TC01529E, 6, 25, 6726-6732, 2018.05

Double enhancement of hydrogen storage capacity of Pd nanoparticles by 20 at% replacement with Ir; Systematic control of hydrogen storage in Pd-M nanoparticles (M = Ir, Pt, Au)

H. Kobayashi, M. Yamauchi, R. Ikeda, T. Yamamoto, S. Matsumura, H. Kitagawa  
Chemical Science, 10.1039/C8SC01460D, 9, 25, 5536-5540, 2018.05,

Synthesis of platinum silicide at platinum/silicon oxide interface by photon irradiation

K. Sato, H. Yasuda, S. Ichikawa, M. Imamura, K. Takahashi, S. Hata, S. Matsumura, S. Anada, J.-G. Lee, H. Mori  
Acta Materialia, 10.1016/j.actamat.2018.05.045, 154, 284-294, 2018.05

The local structure in heavily boron-doped diamond and the effect this has on its electrochemical properties

T. Watanabe, S. Yoshioka, T. Yamamoto, H. S.-Amin, T. Ohkubo, S. Matsumura, Y. Einaga,  
Carbon, 10.1016/j.carbon.2018.05.026, 137, 333-342, 2018.05

Influence of the crystal structure of titanium oxide on the catalytic activity of Rh/TiO<sub>2</sub> in steam reforming of propane at low temperature

L. Yu, K. Sato, T. Toriyama, T. Yamamoto, S. Matsumura, K. Nagaoka

Chemistry A European Journal, 10.1002/chem.201800936, 24, 35, 8742-8746, 2018.05

Atomic insights into phase evolution in ternary transition-metal dichalcogenides nanostructures

Y.-C. Zou, Z.-G. Chen, S. Liu, K. Aso, C. Zhang, F. Kong, M. Hong, S. Matsumura, K. Cho, J. Zou

Small, 10.1002/sml.201800780, 14, 22, 1800780-1-1800780-6, 2018.05

STEM analysis of atom location in (Cu, Au, Ni)<sub>6</sub>Sn<sub>5</sub> intermetallic compounds

W. Yang, T. Yamamoto, K. Nogita, S. Matsumura

Solid State Phenomena, 10.4028/www.scientific.net/SSP.273.95, 273, 95-100, 2018.04

Characterising the polymorphic phase transformation at a localised point on a Cu<sub>6</sub>Sn<sub>5</sub> grain

F. Somidin, H. Maeno, M.A.A. Mohd Salleh, X. Q. Tran, S. D. McDonald, S. Matsumura, K. Nogita

Materials Characterization, 10.1016/j.matchar.2018.02.006, 138, 113-119, 2018.04

Solid-solution alloy nanoparticles of the immiscible Ir-Cu system with a wide composition range for enhanced electrocatalytic applications

F. Wang, K. Kusada, D. Wu, T. Yamamoto, T. Toriyama, S. Matsumura, Y. Nanba, M. Koyama, H. Kitagawa

Angewandte Chemie International Edition, 10.1002/anie.201800650, 57, 17, 4505-4509, 2018.02

Selective control of fcc and hcp crystal structures in Au-Ru solid-solution alloy nanoparticles

Q. Zhang, K. Kusada, D. Wu, T. Yamamoto, T. Toriyama, S. Matsumura, S. Kawaguchi, Y. Kubota,

H. Kitagawa

Nature Communications 10.1038/s41467-018-02933-6, 9, Article number: 510, 1-9, 2018.02

X-ray absorption near edge structure and first-principles spectrum investigations of cation disordering in MgAl<sub>2</sub>O<sub>4</sub> induced by swift heavy ions

S. Yoshioka, K. Tsuruta, T. Yamamoto, K. Yasuda, S. Matsumura, N. Ishikawa, E. Kobayashi

Physical Chemistry Chemical Physics, 10.1039/c7cp07591j, 20, 4962-4969, 2018.02

Efficient ammonia synthesis over Ru/La<sub>0.5</sub>Ce<sub>0.5</sub>O<sub>1.75</sub> pre-reduced at high temperature

Y. Ogura, K. Sato, S. Miyahara, Y. Kawano, T. Toriyama, T. Yamamoto, S. Matsumura, S. Hosokawa,

K. Nagaoka

Chemical Science, 10.1039/C7SC05343F, 9, 2230-2237, 2018.01,

Synthesis of Zero-Valent Iron Nanoparticles by Laser Ablation in Formate Ionic Liquid under Atmospheric Conditions

S. Okazoe, Y. Yasaka, M. Kudo, H. Maeno, Y. Murakami and Y. Kimura

Chem. Commun., 54 (2018) 7834-7837.

Illumination Semi-angle of 10<sup>-9</sup> rad Achieved in a 1.2-MV Atomic-resolution Holography Transmission Electron Microscope

T. Akashi, Y. Takahashi, K. Harada, T. Onai, Y. Ono, H. Shinada, and Y. Murakami

Microscopy, 67 (2018) 286-295.

Magnetization Measurements for Grain Boundary Phases in Ga-doped Nd-Fe-B Sintered Magnet

K. Niitsu, A. Sato, T. T. Sasaki, R. Sawada, Y. Cho, Y. Takada, T. Sato, Y. Kaneko, A. Kato, T. Ohkubo,

D. Shindo, K. Hono and Y. Murakami

J. Alloys and Compounds, 752 (2018) 220-230.

Morphology of Phase-separated VO<sub>2</sub> Films Deposited on TiO<sub>2</sub>-(001) Substrate

Y. Cho, S. Aritomi, T. Kanki, K. Kinoshita, N. Endo, Y. Kondo, D. Shindo, H. Tanaka, and Y. Murakami

Mater. Res. Bull., 102 (2018) 289-293.

京都大学工学研究科附属量子理工学教育研究センター (QSEEC) 第19回公開シンポジウム  
安田和弘  
プロシーディングス、pp.15~21.

九州大学での原子力に対する新たな教育プログラム  
藤本望、安田和弘、前畑京介  
保全学、17 (4) pp.2~6.

Carbon Quantum Dots as Fluorescent Component in Peroxyoxalate Chemiluminescence for Hydrogen Peroxide Determination  
K. Nakano, T. Honda, K. Yamasaki, Y. Tanaka, K. Taniguchi, R. Ishimatsu, and T. Imato  
Bull. Chem. Soc. Jpn, 91 (2018) 1128.

Self-Assembly of a Double Hydrophilic Block Glycopolymers and the Investigation of Its Mechanism  
T. Oh, M. Nagao, Y. Hoshino, and Y. Miura  
Langmuir, 2018, 34 (29), pp 8591–8598

Size-tuned hydrogel network of palladium-confining polymer particles: a highly active and durable catalyst for Suzuki coupling reactions in water at ambient temperature  
H. Matsumoto, T. Akiyoshi, Y. Hoshino, H. Seto, Y. Miura  
Polymer Journal 2018, 50, 1179-1186(2018)

Excess heat evolution from nanocomposite samples under exposure to hydrogen isotope gases  
Kitamura, A., Takahashi, A., Takahashi, K., Seto, R., Hatano, T., Iwamura, Y., Itoh, T., Kasagi, J., Nakamura, M., Uchimura, M., Takahashi, H., Sumitomo, S., Hioki, T., Motohiro, T., Furuyama, Y., Kishida, M., Matsune, H.  
International Journal of Hydrogen Energy, 43, 16187-16200.

高周波熱プラズマによる炭素被覆シリコンナノ粒子の合成および炭素膜の特性評価  
山野建太郎, 林田梨里子, 曾根宏隆, 野中侃, 田中学, 渡辺隆行  
プラズマ・核融合学会九州・沖縄・山口支部第22回支部大会研究発表論文集 p.17-18, P01

高周波熱プラズマによる層状岩塩型 Li-Mn-Ni 複合酸化物ナノ粒子の合成  
野中侃, 杜翔宇, 吉田周平, 曾根宏隆, 田中学, 渡辺隆行  
プラズマ・核融合学会九州・沖縄・山口支部第22回支部大会研究発表論文集, p.110-111, C-1

高周波熱プラズマによる重金属ホウ化物ナノ粒子の合成  
田上優太, 劉麗蓓, 野中侃, 田中学, 渡辺隆行  
プラズマ・核融合学会九州・沖縄・山口支部第22回支部大会研究発表論文集, p.25-26, P-5

Induction Thermal Plasma Synthesis of Amorphous Silicon Nanoparticles for Lithium Ion Battery  
Z. Xiaoyu, K. Yamano, R. Hayashida, H. Sone, M. Tanaka, and T. Watanabe  
第35回プラズマ・核融合学会年会, 2018.12, , 3P01

Nanoparticle Synthesis of Lithium Oxide Composite with Refractory Metal for Lithium-Ion Battery Electrodes  
T. Nonaka, S. Yoshida, H. Sone, M. Tanaka, and T. Watanabe  
Proc. 2nd Asia-Pacific Conference on Plasma Physics, 2018.11, AO-16

Nanoparticle Synthesis by Thermal Plasmas for Lithium Ion Battery Application  
T. Watanabe, S. Yoshida, T. Nonaka, R. Hayashida, T. Sone, and M. Tanaka  
Intl. Conf. on Processing; Manufacturing of Advanced Materials, 2018.7, p.877-878.

Control of Crystal structure of Li-Me-Fe Oxide Nanoparticles for Lithium-Ion Battery Electrodes  
T. Nonaka, S. Yoshida, H. Sone, M. Tanaka, and T. Watanabe  
Proc. 5th Japan-Korea Joint Symposium on Advanced Solar Cells 2018.1

Thermal Plasma Synthesis of Spinel Li-Mn-Fe Oxide Nanoparticles for Advanced Li-Ion Battery

M. Tanaka, T. Nonaka, S. Yoshida, H. Sone, and T. Watanabe

Proc. Joint Workshop between SKKU and Kyushu University, 2018.1

Short Crack Growth Behavior and its Transitional Interaction with 3D Microstructure in Ti-6Al-4V

M.Hassanipoura, S.Watanabea, K.Hirayama, H.Toda, K.Uesugi, A.Takeuchi

Materials Science and Engineering A, 738 (2018) 229-237

Influence of hydrogen on strain localization and fracture behavior in Al-Zn-Mg-Cu aluminum alloys

H. Su, H. Toda, R. Masunaga, K. Shimizu, H. Gao, K. Sasaki, M.S. Bhuiyan, K. Uesugi, A. Takeuchi, Y. Watanabe

Acta Mater. 159 (2018) 332–343.

Microstructural Hardness Heterogeneity Triggers Fatigue Crack Non-propagation in As-hot-rolled Fe-30Mn-3Si-3Al Twinning-induced Plasticity Steel

M. Koyama, Y. Yamamura, T. Sawaguchi, K. Tsuzaki, H. Noguchi

International Journal of Fatigue, 108 (2018) 18

Effects of the Shape of Small Flaws and Damage due to a Focused Ion Beam on the Fatigue Strength Characteristics of Annealed Medium-Carbon Steel

J. Sakamoto, S. Hamada, H. Noguchi

Engineering Failure Analysis, Vol. 87(May 2018), pp. 49-

Microstructural Mechanisms of Fatigue Crack Non-propagation in TRIP-maraging Steels

Z. Zhang, M. Koyama, M. Wang, K. Tsuzaki, C. C. Tasan, H. Noguchi

International Journal of Fatigue, 113(2018), 126

Roughness-induced Stress Shielding Effect in Fatigue Crack Propagation under Mode II Loading

S. Hamada, T. Suematsu, S. Fukudome, M. Koyama, M. Ueda, H. Noguchi

International Journal of Fatigue, Vol. (2018), 245

Very-high-cycle fatigue crack initiation and propagation behaviours of magnesium alloy ZK60

Chao He, Yongjie Liu, Jiukai Li, Kun Yang, Qingyuan Wang, Qiang Chen

Materials Science and Technology, 34, (2018) 639–647.

Pt-Ce<sub>0.9</sub>Cu<sub>0.1</sub>O<sub>2</sub>/activated carbon as highly active and stable HI decomposition catalyst

Wachirapun Punkrawee, Azusa Yamanaka, Junko Matsuda, Yukiko Mitoma, Noriko Nishiyama, Tatsumi Ishihara

International Journal of Energy Research, 42(3), 1088-1097, (2018)

Unexpected Homogeneous Bubble Nucleation near a Solid-Liquid Interface

Y. Tomo, Q. Li, T. Ikuta, Y. Takata, K. Takahashi

J. Phys. Chem. C, 122 (2018) 28712.

Meniscus Motion and Void Generation Inside Carbon Nanotubes

Y. Yamada, K. Taguchi, T. Ikuta, A. Horibe, K. Takahashi

J. Phys. Chem. C, 122 (2018), 21910

BUBBLES AND DROPLETS AT THE INITIAL STAGE OF NUCLEATION: RECENT ADVANCES IN EXPERIMENTAL TECHNIQUES

Koji Takahashi

Proc. 16th International Heat Transfer Conference, IHTC-16, August 10-15, 2018, Beijing, China, IHTC16-KN17

Study on liquid-gas interface at nanoscale using transmission electron microscopy

Y. Tomo, A. Askounis, K. Sefiane, Y. Takata, K. Takahashi

Proc. 16th International Heat Transfer Conference, IHTC-16, August 10-15, 2018, Beijing, China, IHTC16-23136



Superstable Ultrathin Water Film Confined in a Hydrophilized Carbon Nanotube

Y. Tomo, A. Askounis, T. Ikuta, Y. Takata, K. Sefiane, K. Takahashi

Nano Lett., 18 (2018), 1869

Calcination effect of borate-bearing hydroxyapatite on mobility of borate.

Keiko Sasaki, Kenta Toshiyuki, Binglin Guo, Keiko Ideta, Yoshikazu Hayashi, Tsuyoshi Hirajima, Jin Miyawaki

J. Hazard. Mater. 344 (2018) 90–97.

Simultaneous immobilization of borate, arsenate and silicate from geothermal waters derived from mining activity by co-precipitation with hydroxyapatite.

Keiko Sasaki, Yoshikazu Hayashi, Kenta Toshiyuki, Binglin Guo

Chemosphere, 207 (2018) 139-146.

Synergetic co-immobilization of  $\text{SeO}_4^{2-}$  and  $\text{Sr}^{2+}$ ; from aqueous solution onto multifunctional graphene oxide and carbon-dot based layered double hydroxide nanocomposites and their mechanistic investigation.

Paulmanickam Koilraj, Yuta Kamura Keiko Sasaki

Journal of Materials Chemistry A, 6 (2018), 10008–10018

Cosorption characteristics of  $\text{SeO}_4^{2-}$  and  $\text{Sr}^{2+}$  radioactive surrogates using 2D/2D graphene oxide-layered double hydroxide nanocomposites

Paulmanickam Koilraj, Yuta Kamura Keiko Sasaki

ACS Sustainable Chemistry & Engineering 6 (2018), 13854-13866.

Size-Controlled Production of Gold Bionanoparticles Using the Extremely Acidophilic Fe(III)-Reducing Bacterium, *Acidocella aromatic*.

I. N. Rizki and N. Okibe

Minerals, 8, 81 (2018)

〈総合理工学研究院〉

Infiltration behavior of molten Mg and its influence on microstructural evolution in SiC-doped  $\text{MgB}_2$  wires prepared by internal Mg diffusion process

Y. Shimada, S. Hata, K. Ikeda, H. Nakashima, A. Matsumoto, K. Togano, H. Kumakura

J. Alloys and Compounds, 740 (2018) 305.

Effects of scandium and zirconium addition on recrystallization behavior of Al–Mg–Si alloy

K. Ikeda, T. Takashita, R. Akiyoshi, S. Hata, H. Nakashima, K. Yamada, K. Kaneko

Mater. Trans., 59 (2018) 590.

Characterization of nonradiative Bloch modes in a plasmonic triangular lattice by electron energy-loss spectroscopy

D. Yoshimoto, H. Saito, S. Hata, Y. Fujiyoshi, H. Kurata

ACS Photonics, 5 (2018) 4476.

マテリアル系電子線トモグラフィーの実際と動向

波多聰, 斉藤光, 村山光宏, 佐藤和久, 工藤博幸

まてりあ, 57 (2018) 589.

HDDR 処理を施した異方性 Nd-Fe-B 磁石粉末の微細構造と保磁力に及ぼす DR 温度の影響

滝沢里奈, 赤嶺大志, 板倉賢, 西田稔, 片山信宏, 森本耕一郎

日本金属学会誌, 82 (2018) 121.

走査電子顕微鏡による強磁性体材料の表面磁区構造観察

赤嶺大志

まてりあ, 57 (2018) 106.

Preparation of Nd-Fe-B/ $\alpha$ -Fe nano-composite thick-film magnets on various substrates using PLD with high laser energy density above 10 J/cm<sup>2</sup>

M. Nakano, H. Kondo, A. Yamashita, T. Yanai, M. Itakura, H. Fukunaga  
AIP Advances, 8 (2018) 056223.

Phase Diagram of near Equiatomic Zr-Pd Alloy

M. Matsuda, T. Nishiura, T. Yamamuro, M. Nishida  
Metals, 8 (2018) 366.

SEM, AFM and TEM Studies for Femtosecond Laser Irradiation Effect on 4H-SiC Substrate at Near Threshold Fluence

Chengwu wang, Syuhei kurokawa, Toshiro Doi, Julong Yuan, Masatoshi Mitsuhara, Weifeng Yao, Kehua Zhang  
the ECS Journal of Solid State Science and Technology 7 (2018), Issue2 29-34

Development of High-Chromium Ferritic Heat-Resistant Steels with High Nitrogen Content

Shigeto Yamasaki, Masatoshi Mitsuhara, Hideharu Nakashima  
ISIJ International 58 (2018), No.6 ,1146-1154

Controlled Growth of Large-Area Uniform Multilayer Hexagonal Boron Nitride as an Effective 2D Substrate

Yuki Uchida, Sho Nakandakari, Kenji Kawahara, Shigeto Yamasaki, Masatoshi Mitsuhara, Hiroki Ago  
ACS Nano 12 (2018) ,6236–6244

Characterization of Antiphase Boundary-Like Structure of B33 Martensite in Zr-Co-Pd Alloy

M. Matsuda, Y. Shinagawa, K. Takashima, M. Mitsuhara, M. Nishida  
Materials Transaction 59 (2018), No.10, 1567-1573

Wide range control of Schottky barrier heights at metal/Ge interfaces with nitrogen-contained amorphous interlayers formed during ZrN sputter deposition

Keisuke Yamamoto, Ryutaro Noguchi, Masatoshi Mitsuhara, Minoru Nishida, Toru Hara, Dong T. Wang, Hiroshi Nakashima  
Semiconductor Science and Technology 33 (2018), No.11 ,114011

Damege Mechanism of Nickel-based Creep Resistant Materials Strengthened by the Laves Phase at the Grain Boundary

Mitsuharu Yonemura, Masatoshi Mitsuhara  
Philosophical Magazine 98 (2018), Issue 36, 3247-3266

〈理 学 研 究 院〉

Calcium molybdate nanoparticles formation in egg phosphatidyl choline based liposome caused by liposome fusion

S. Yamasaki, S. Kurita, A. Ochiai, M. Hashimoto, K. Sueki, and S. Utsunomiya  
Journal of Colloid and Interface Sciences **530** (2018) 473-480.

Novel method to quantify radioactive cesium-rich microparticles (CsMPs) in the environment from the Fukushima Daiichi Nuclear Power Plant.

R. Ikehara, M. Suetake, T. Komiya, G. Furuki, A. Ochiai, S. Yamasaki, W. Bower, G. Law, T. Ohnuki, B. Grambow, R. C. Ewing, and S. Utsunomiya  
Environmental Science & Technology, **52** (2018) 6390-6398 DOI: 10.1021/acs.est.7b06693.

The competing effects of microbially derived polymeric and low molecular-weight substances on the dispersibility of CeO<sub>2</sub> nanoparticles.

Y. Nakano, A. Ochiai, K. Kawamoto, A.Takeda, K. Ichiyoshi, T. Ohnuki, M. F. Hochella, Jr., and S. Utsunomiya  
Scientific Reports, DOI: 10.1038/s41598-018-21976-9.

Uranium dioxides and debris fragments released to the environment with cesium-rich microparticles from the Fukushima Daiichi Nuclear Power Plant.

A. Ochiai, J. Imoto, M. Suetake, T. Komiya, G. Furuki, R. Ikehara, S. Yamasaki, G. Law, T. Ohnuki, B. Grambow, R. C. Ewing, and S. Utsunomiya  
Environmental Science & Technology, 52 (2018) 2586-2594, DOI: 10.1021/acs.est.7b06309

Effective and efficient desorption of Cs from hydrothermal-treated clay minerals for the decontamination of Fukushima radioactive soil.

X. Yin, N. Horiuchi, S. Utsunomiya, A. Ochiai, H. Takahashi, Y. Inaba, X. Wang, T. Ohnuki, and K. Takeshita  
Chemical Engineering Journal 333 (2018) 392-401.

Biom mineralization of middle rare earth element samarium in yeast and bacteria systems.

M. Jiang, T. Ohnuki, S. Utsunomiya  
Geomicrobiology Journal, 35 (2018) 375-384, DOI: 10.1080/01490451.2017.1377320

Adsorption and thermal reactivity of dimethyl trisulfide on a Au(111) singlecrystal surface

Nakamura, I.; Murayama, H.; Tokunaga, M.; Okumura, M.; Fujitani, T.  
Surf. Sci., 677 (2018) 186-092.

Selective adsorption of 1,3-dimethyltrisulfane (DMTS) responsible for aged odour in Japanese sake using supported gold nanoparticles

Murayama, H.; Yamamoto, Y.; Tone, M.; Hasegawa T.; Kimura, M.; Ishida, T.; Isogai, A.; Fujii, T.; Okumura, T.; Tokunaga, M.  
Sci. Rep, 8 (2018) 16064.

Dynamic Kinetic Resolution of N-Protected Amino Acid Esters via Phase-Transfer Catalytic Base Hydrolysis

Yamamoto, E.; Wakafuji, K.; Furutachi, Y.; Kobayashi, K.; Kamachi, T.; Tokunaga, M.  
ACS Catal., 8 (2018) 1150.

Adsorption Behavior of Au(III) Complex Ion on Nickel Carbonate and Nickel Hydroxide Colloids and Surfaces A: Physicochemical and Engineering Aspects

Ando, H.; Kawamoto, D.; Ohashi, H.; Honma, T.; Ishida, T.; Okaue, Y.; Tokunaga M.; Yokoyama, T.  
Colloids and Surfaces A, 2018, A537, 383-389.

Microtexture investigation of amblygonite–montebrasite series with lacroixite: Characteristics and formation process in pegmatites

Y. Shiroye and S. Uehara  
American Mineralogist, 103(2018), 75-84.

〈農 学 研 究 院〉

Cooperative catalysis of cellulose nanofiber and organocatalyst in direct aldol reactions

K. Kanomata, N. Tatebayashi, X. Habaki, T. Kitaoka  
Scientific Reports, 8 (2018) 4098.

Interfacial hydrolysis of acetals on protonated TEMPO-oxidized cellulose nanofibers

Y. Tamura, K. Kanomata, T. Kitaoka  
Scientific Reports, 8 (2018) 5021.

Hydrochloric acid hydrolysis of pulps from oil palm empty fruit bunches to produce cellulose nanocrystals

N. Hastuti, K. Kanomata, T. Kitaoka  
Journal of Polymers and the Environment, 26 (2018) 3698.

Optimal ring-opening polymerization for surface-modified cellulose nanofibers-graft-poly(lactic acid)s  
C. Chuensangjun, T. Kitaoka, C. Yusuf, S. Sirisansaneeyakul  
Proc. 18th European Congress on Biotechnology (ECB2018), New Biotechnology, 2018.

Characteristics of TEMPO-oxidized cellulose nanofibers from oil palm empty fruit bunches produced by different amounts of oxidant  
N. Hastuti, K. Kanomata, T. Kitaoka  
Proc. International Conference on Forest Products 2018, Bogor, Indonesia, 2018.

Nanocellulose from oil palm empty fruit bunches enhanced extractive fermentation in microbial bio-butanol production  
N. Hastuti, K. Kanomata, T. Kitaoka  
Proc. International Conference on Forest Products 2018, Bogor, Indonesia, 2018.

Cooperative catalysis with nanocellulose and proline in stereoselective aldol reactions  
X. Habaki, K. Kanomata, T. Kitaoka  
Proc. 2018 Joint convention of the Society of Wood Science and Technology (SWST) and Japan Wood Research Society (JWRS), Nagoya, 2018.

Organocatalytic Michael additions under mild conditions with efficient proline-mediated catalysis owing to cellulose nanofibers  
N. J. Ranaiwoarimanana, K. Kanomata, T. Kitaoka  
Proc. Joint Seminar at Tainan: Development of Chemical Engineering, NCKU and the Seibu-branch, the Cellulose Society of Japan, Tainan, 2018.

Chitosan nanofiber-catalyzed chemoselective Knoevenagel condensation  
Y. Hirayama, K. Kanomata, T. Kitaoka  
Proc. Joint Seminar at Tainan: Development of Chemical Engineering, NCKU and the Seibu-branch, the Cellulose Society of Japan, Tainan, 2018.

〈応用力学研究所〉

Effects of an alloying element on a c-component loop formation and precipitate resolution in Zr alloys during ion irradiation  
Hideo Watanabe, Katsuhito Takahashi, Kazufumi Yasunaga, Yun Wang, Yasuhisa Aono, Yusaku Maruno, Kenichi Hashizume  
Journal of Nuclear Science and Technology

中性子照射された Fe-0.6Cu 合金のクラスター解析  
渡邊 英雄  
まてりあ,57 巻 12 号

オーステナイト系ステンレス鋼における析出物をボイドの照射挙動  
井上 利彦、関尾 佳弘、渡邊 英雄  
まてりあ,57 巻 12 号

〈エネルギー研究教育機構〉

Durability of template-free Fe-NC foams for electrochemical oxygen reduction in alkaline solution, A. Mufundirwa, G. F. Harrington, B. Smid, B. V. Cunning, K. Sasaki, S. M. Lyth, Journal of Power Sources 375 (2018) 244-254.

【 超顕微科学研究拠点事業 関連成果 】

Preparation of {001}<sub>c</sub>-oriented epitaxial (K, Na)NbO<sub>3</sub> thick films by repeated hydrothermal deposition technique  
T. Shiraishi, Y. Ito, M. Ishikawa, H. Uchida, T. Kiguchi, M. K. Kurosawa, H. Funakubo and T.J. Konno  
J. Ceram. Soc. Jpn., 126, 281-285

非弾性散乱電子による厚い GaN 結晶中の貫通転位の観察

木口賢紀,白石貴久,今野豊彦,谷川智之

まてりあ, 57, 615

整合界面をもつ強誘電体薄膜のドメイン構造形成に及ぼす局所弾性場の影響

木口賢紀、舟窪浩、今野豊彦

まてりあ, 57, 97-105

[口 頭 発 表] . . . . . 4 9 4 編

※共同実験者が複数の場合、業績が重複しているものがあります。