



**The Eighth International Conference
on the Science and Technology
for Advanced Ceramics**

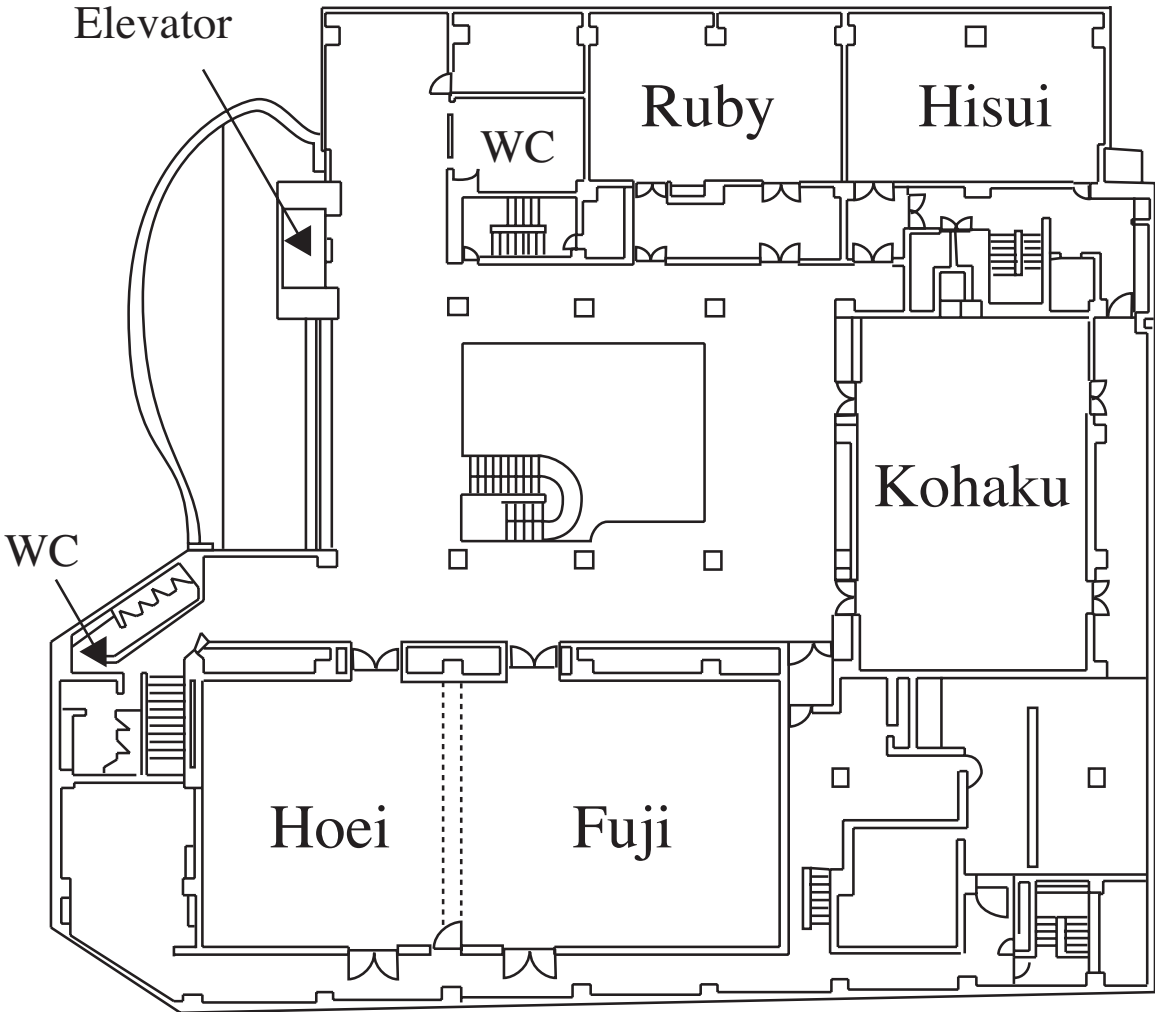
PROGRAM BOOK

June 25-27, 2014

Mielparque-Yokohama, Yokohama, Japan

FLOOR MAP

2nd Floor of Mielparque-Yokohama



CONFERENCE PROGRAM TIMETABLE

June 25 (Wed)

Time	Fuji	Hoei	Ruby	Kohaku
9:00				
10:00	Registration			
10:15	Opening Address			
10:30	25aFI01 Moriwake	25aHI01 Teramura		
10:45	25aFI02 Nakayama	25aHI02 Shimizu		
11:00	Chemistry			
11:15	25aFO01 Kumagai	25aHO01 Kamata		
11:30	25aFO02 Ohkubo	25aHO02 Komanoya		
11:45				
12:00	25aFI03 Kroll	25aHI03 Nakagawa		
12:15	Lunch			
13:45				
14:00	25pFI01 Poepelmeier		25pRI01 Kagawa	
14:15	25pFO01 Okimoto	25pHI01 Kishi	25pRO01 Inoue	
14:30	25pFO02 Matsuzaki	25pHO01 Yano	25pRO02 Demirskiyi	Poster display
14:45	25pFO03 Sato	25pHO02 Nakagawa	25pRO03 Estili	
15:00	25pFO04 Wada	25pHO03 Kim	25pRI02 Tanaka	
15:15	25pFO05 Hirose			
15:30	Coffee Break			
16:00				
16:15	25pFI02 Yamaura		25pRI03 Kruzic	
16:30	25pFO06 Yu	25pHO05 Lu	25pRI04 Nishiyama	Poster display
16:45	25pFO07 Tsujimoto	25pHO06 Li	25pRO04 Yoshida	
17:00	25pFO08 Murata	25pHO07 Stelian	25pRO05 Sakai	
17:15	25pFO09 Kawaji	25pHO08 Hasegawa		
17:30	Poster I			
19:30	Poster I			

June 26 (Thu)

Time	Fuji	Hoei	Kohaku
9:00			
9:15	26aF01 Matsumoto		
9:30	Element Strategy & Chemistry: Glass/Amorphous, Melt, and Defect Sciences		
9:45	26aFO01 Kajihara		
10:00	26aFO02 Kamano		
10:15	26aFO03 Rosales-sosa	26aHI01 Opel	
10:30	26aFO04 Kohara		
10:45	26aFO05 Ishikawa	26aHO01 Nozaki	
11:15	Coffee Break		
11:30	26aF02 Chang	26aHI02 Chen	
11:45	Element Strategy & Theory: Amorphous Oxide Semiconductors	Ferroelectrics	Poster display
12:00	26aF03 Han	26aHO02 Wang	
12:15	Lunch (Photograph)		
13:45			
14:00	26pF01 Hosono	26pHI01 Ding	
14:15	26pF02 Inoshita		
14:30	Element Strategy & Chemistry: Electride	Biomaterials I	Poster display
14:45	26pFO01 Tada	26pHI02 Kogure	
15:00	26pFO02 Kitano	26pHI03 Kuroda	
15:15	26pFO03 Inoue	26pHO01 Takematsu	
15:30	26pFO04 Tomota	Coffee Break	
16:00			
16:15	26pFO05 Kim	26pHI04 Ohara	
16:30	Electronic Materials	Biomaterials II	Poster display
16:45	26pFO06 Kang	26pHO02 Kim	
17:00	26pFO07 Kaneko	26pHO03 Katayanagi	
	26pFO08 Krishnan		
	Poster II		
19:00	Banquet		
21:00			

June 27 (Fri)

Time	Fuji
9:00	
9:15	27aFI01 Janotti
9:30	Element Strategy & Chemistry: Hydrogen and Ion Migration
9:45	27aFI02 Ohashi
10:00	
10:15	27aFI03 Tateyama
10:30	Coffee Break
11:00	
11:15	27aFO01 Kamiya
11:30	Element Strategy & Chemistry: Hydrogen and Defects
11:45	27aFO02 Katase
12:00	27aFO03 Maisuishi
	27aFO04 Bang
12:15	27aFO05 Oba
12:30	Element Strategy: Defects
12:45	27aFO06 Fujimoto
	27aFO07 Aoki
	Closing Remark
13:00	

PROGRAM

Date: June 25 (Fuji)

9:00 Registration (2F Lobby)

10:00–10:15 Opening Address

Chair: M. Azuma

M. Itoh
Materials and Structures Laboratory, Tokyo Institute of Technology

Oral Session: Theory & Element Strategy

Chair: P. Kroll & S. Han

10:15-10:45 25aFI01 Collaborative Research Between First-Principles Calculations and Atomistic Resolution Structure Analysis on Li-Ion Battery Materials (INVITED)

H. Moriwake^{1*}
¹⁾ *Nanostructures Research Laboratory, Japan Fine Ceramics Center / 2-4-1 Mutsuno, Atsuta-ku, Nagoya, 456-8587 Japan*

10:45-11:15 25aFI02 Efficient Computational Exploration of Li Ion Conductors with Informatics (INVITED)

M. Nakayama^{1,2,3*} and R. Jalem^{1,2)}
¹⁾ *Department of Materials Science and Engineering, Nagoya Institute of Technology, Gokiso, Showa, Nagoya, Aichi, 466-8555, Japan* ²⁾ *Unit of Elements Strategy Initiative for Catalysts & Batteries (ESICB), Kyoto University, Katsura, Saikyo-ku, Kyoto, 615-8520* ³⁾ *Japan Science and Technology Agency, PRESTO, 4-1-8 Honcho Kawaguchi, Saitama 332-0012, Japan*

11:15-11:30 25aFO01 First-Principles Calculations of Point Defects in ZnSnP₂

Y. Kumagai^{1,*} and F. Oba^{1,2)}
¹⁾ *Materials Research Center for Element Strategy, Tokyo Institute of Technology, Yokohama 226-8503, Japan* ²⁾ *Department of Materials Science and Engineering, Kyoto University, Kyoto 606-8501, Japan*

11:30-11:45 25aFO02 Two-Dimensional Electronic Structure and Anisotropic Thermoelectric Transport in Layered Complex Nitride SrTiN₂

I. Ohkubo^{1,*} and T. Mori¹⁾
¹⁾ *WPI Research Center, International Center for Materials Nanoarchitectonics (MANA), National Institute for Materials Science (NIMS), Japan*

11:45-12:15 25aFI03 Metal Nitride Phase Diagrams at High Pressure and High Temperature (INVITED)

P. Kroll^{1,*}
Department of Chemistry and Biochemistry, The University of Texas at Arlington, Arlington TX, 76019, USA

12:15–13:45 Lunch

Oral Session: Element Strategy: Solid-State Chemistry of Transition Metals I

Chair: M. Azuma

- 13:45-14:15 25pFI01 Low Temperature Synthesis of (Noncentrosymmetric) Oxide-Fluoride Materials (INVITED)**
 K.R. Poeppelmeier^{1,2,*}, K.B. Chang¹, A. Vinokur¹, R.A.F. Pinlac¹, M.R. Suchome³ and M.R. Marvel⁴
¹) Department of Chemistry, Northwestern University, Evanston, Illinois 60208 USA ²) Chemical Sciences and Engineering Division, Argonne National Laboratory, Argonne, Illinois 60439 USA ³) Advanced Photon Source, Argonne National Laboratory, Argonne, Illinois 60439 USA ⁴) College of Arts and Sciences, Aurora University, Aurora, Illinois 60506 USA
- 14:15-14:30 25pFO01 Ultrafast Real Space Dynamics in A Spin Crossover Cobalt Oxide**
 Y. Okimoto^{1,*}, S. Koshihara^{1,2)} and M. Itoh³⁾
¹) Department of Chemistry and Materials Science, Tokyo Institute of Technology, Meguro, Tokyo 152-8551, Japan, ²) CREST, JST, Chiyoda, Tokyo 102-0076, Japan, ³) Materials and Structures Laboratory, Tokyo Institute of Technology, Yokohama, Kanagawa 226-8503, Japan
- 14:30-14:45 25pFO02 Bipolar Conduction in Cu₃N Epitaxial Films Grown by Molecular Beam Epitaxy**
 K. Matsuzaki^{1,*}, H. Hosono^{1,2)} and T. Susaki¹⁾
¹) Secure Materials Center, Materials and Structures Laboratory, Tokyo Institute of Technology, 4259 Nagatsuta, Midori-ku, Yokohama 226-8503, JAPAN ²) Frontier Research Center, Tokyo Institute of Technology, Nagatsuta, Midori-ku, Yokohama 226-8503, JAPAN
- 14:45-15:00 25pFO03 Heteroepitaxial Growth of Mn-Based Layered Oxypnictides with ZrCuSiAs Structure by Pulsed Laser Deposition**
 H. Sato^{1,*}, H. Hiramatsu^{1,2)}, T. Kamiya^{1,2)} and H. Hosono^{1,2,3)}
¹) Materials and Structures Laboratory, Tokyo Institute of Technology, Japan ²) Materials Research Center for Element Strategy, Tokyo Institute of Technology, Japan ³) Frontier Research Center, Tokyo Institute of Technology, Japan
- 15:00-15:15 25pFO04 Dielectric and Piezoelectric Enhancement of Niobium Oxide -Coated Barium Titanate Nano-Complex Ceramics Based on High-Density Strained Interfaces**
 H. Kawashima¹⁾, Y. Hirose¹⁾, S. Ueno¹⁾, K. Nakashima¹⁾ and S. Wada^{1,*}
¹) Material Science and Technology, Interdisciplinary Graduate School of Medical and Engineering, University of Yamanashi, 4-4-37 Takeda, Kofu, Yamanashi 400-8510, Japan
- 15:15-15:30 25pFO05 Room-Temperature Magnetoelectric Effect with A Reversal of Electrical Polarization Induced by A Magnetic Field in Y-Type Hexaferrite, BaSrCo_{2-x}Zn_xFe₁₁AlO₂₂ (0 ≤ X ≤ 0.4) Ceramics.**
 S. Hirose^{1,*}, K. Haruki²⁾, A. Ando¹⁾ and T. Kimura²⁾
¹) Murata Manufacturing Co., Ltd., Japan ²) Division of Materials Physics, Graduate School of Engineering Science, Osaka University, Japan

15:30–16:00 Coffee Break

Oral Session: Element Strategy: Solid-State Chemistry of Transition Metals II

Chair: K. R. Poeppelmeier

- 16:00-16:30 25pFI02 High-Pressure and High-Temperature Synthesis of Solid-State 5d Perovskite Oxides and Related Materials (INVITED)**
 K. Yamaura^{1,2,*}
¹) Superconducting Properties Unit, National Institute for Materials Science, 1-1 Namiki, Tsukuba, Ibaraki 305-0044, Japan ²) Graduate School of Chemical Sciences and Engineering, Hokkaido University, North 10 West 8, Kita-ku, Sapporo, Hokkaido 060-0810, Japan
- 16:30-16:45 25pFO06 Melting of Pb Charge Glass and Simultaneous Pb-Cr Charge Transfer in PbCrO₃ As The Origin of Volume Collapse**
 R.Z. Yu^{1,*}, M. Mizumaki²⁾, T. Watanuki³⁾, T. Mizokawa⁴⁾, K. Oka¹⁾, H. Hojo¹⁾, A. Machida³⁾, H.J. Kim⁵⁾, K. Sakaki⁵⁾, Y. Nakamura⁵⁾, A. Agui³⁾, D. Mori⁶⁾, Y. Inaguma⁶⁾, M. Schlipf⁷⁾, K.Z.

Rushchanskii⁷⁾, M. Ležaić⁷⁾, M. Matsuda⁸⁾, J. Ma⁸⁾, S. Calder⁸⁾, M. Isobe⁹⁾, M. Azuma¹⁾
¹⁾ *Materials and Structures Laboratory, Tokyo Institute of Technology, 4259 Nagatsuta, Midori, Yokohama, 226-8503, Japan* ²⁾ *Japan Synchrotron Radiation Research Institute, Sayo, Hyogo 679-5198, Japan* ³⁾ *Japan Atomic Energy Agency, SPring-8, Sayo, Hyogo 679-5148, Japan* ⁴⁾ *Department of Complexity Science and Engineering, University of Tokyo, Chiba 277-8561, Japan* ⁵⁾ *National Institute of Advanced Industrial Science and Technology, Central 5, 1-1-1 Higashi, Tsukuba, Ibaraki 305-8565, Japan* ⁶⁾ *Department of Chemistry, Gakushuin University, 1-5-1 Mejiro, Toshima, Tokyo, 171-8588, Japan* ⁷⁾ *Peter GrC⁸⁾ Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831, USA* ⁹⁾ *Institute for Solid State Physics, University of Tokyo, Chiba 277-8581, Japan*

16:45-17:00 25pFO07 New Members of Layered Oxychloride Perovskites with Square-Planar Coordination

Y. Tsujimoto^{1,*)}, C.I. Sathish¹⁾, Y. Matsushita¹⁾, K. Yamaura¹⁾ and T. Uchikoshi¹⁾
¹⁾ *National Institute for Materials Science, Tsukuba, Ibaraki 305-0047, Japan*

17:00-17:15 25pFO08 Synthesis and Photo-Catalytic Activity of Nano-Crystalline α -PbO₂-Type TiO₂

H. Murata^{1,*)}, Y. Kataoka²⁾, T. Kawamoto²⁾, I. Tanaka^{3,4)} and T. Taniguchi¹⁾
¹⁾ *Advanced Key Technologies Division, National Institute for Materials Science, Tsukuba, Ibaraki 305-0044 Japan* ²⁾ *Department of Chemistry, Kanagawa University, Hiratsuka, Kanagawa 259-1293 Japan* ³⁾ *Department of Materials Science and Engineering, Kyoto University, Kyoto, Kyoto 606-8501 Japan* ⁴⁾ *Nanostructures Research Laboratory, Japan Fine Ceramics Center, Atsuta, Nagoya 456-8587 Japan*

17:15-17:30 25pFO09 Thermodynamic Studies of Phase Transition Property of Molecule Substances in The Large-Pore of Metal-Organic Framework Crystal IRMOF-1

H. Kawaji^{1,*)}, R. Matsumoto¹⁾, S. Kaido¹⁾, A. Uchida¹⁾ and T. Ueda²⁾
¹⁾ *Materials and Structures Laboratory, Tokyo Institute of Technology, Yokohama, 226-8503 Japan*
²⁾ *Museum of Osaka University, Osaka University, Toyonaka, 506-0043 Japan*

Date: June 25 (Hoei)

Oral Session: Chemistry

Chair: M. Hara and K. Teramura

10:15-10:45 25aHI01 Artificial Photosynthesis Using Typical Clays -Photocatalytic Conversion of CO₂ in H₂O over Layered Double Hydroxides- (INVITED)

K. Teramura^{1,2,3,*)}, S. Iguchi¹⁾, H. Ishii¹⁾, S. Hosokawa^{1,2)} and T. Tanaka^{1,2)}
¹⁾ *Department of Molecular Engineering, Graduate School of Engineering, Kyoto University, Kyotodaigaku Katsura, Nishikyo-ku, Kyoto 615-8510, Japan* ²⁾ *Elements Strategy Initiative for Catalysts & Batteries (ESICB), Kyoto University, Kyotodaigaku Katsura, Nishikyo-ku, Kyoto 615-8520, Japan* ³⁾ *Precursory Research for Embryonic Science and Technology (PRESTO), Japan Science and Technology Agency (JST), 4-1-8 Honcho, Kawaguchi, Saitama 332-0012, Japan*

10:45-11:15 25aHI02 Base-Tolerant Lewis Acid Catalysis of Metal Oxides in Transformations of Nitriles, Carboxylic Acids and Amides (INVITED)

K. Shimizu^{*)}
Catalysis Research Center, Hokkaido University, JAPAN

11:15-11:30 25aHO01 Chemical Fixation of Carbon Dioxide at Atmospheric Pressure Catalyzed by A Monomeric Tungstate

K. Kamata^{1,2,*)}, T. Kimura²⁾, H. Sunaba²⁾ and N. Mizuno²⁾
¹⁾ *Materials and Structures Laboratory, Tokyo Institute of Technology, Japan* ²⁾ *Department of Applied Chemistry, School of Engineering, The University of Tokyo, Japan*

11:30-11:45 25aHO02 Application of Zirconium Oxide for An Acid-Base Bifunctional Catalysis

T. Komanoya^{1,*)}, K. Nakajima^{1,2)}, M. Kitano³⁾ and M. Hara^{1,4)}
¹⁾ *Materials and Structures Laboratory, Tokyo Institute of Technology, Yokohama 226-8503, Japan* ²⁾ *Japan Science and Technology (JST) agency, PRESTO, Kawaguchi 332-0012, Japan* ³⁾ *Materials Research Center for Elemental Strategy, Tokyo Institute of Technology, Yokohama 226-8503, Japan* ⁴⁾ *Japan Science and Technology (JST) agency, ALCA, Kawaguchi 332-0012, Japan*

11:45-12:15 25aHI03 Catalyst Materials for Glycerol Hydrogenolysis: Production of 1,3-Propanediol

over Bimetallic Catalysts Composed of Noble Metal and Reducible Metal Oxide
(INVITED)
Y. Nakagawa^{1,*}
Department of Applied Chemistry, School of Engineering, Tohoku University

12:15–13:45 Lunch

Oral Session: Optics: Luminescent Materials I

Chair: K. Toda and T. Yano

- 14:15-14:45 25pHI01 Nd³⁺-Doped Tellurite-Glass Terrace-Microsphere Laser (INVITED)**
T. Kishi^{*}, S. Shibuya, T. Yano and S. Shibata
Department of Chemistry and Materials Science, Tokyo Institute of Technology, JAPAN
- 14:45-15:00 25pHO01 Preparation of Spherical Particles of Tb-Doped ZnO-B₂O₃-SiO₂ Long-Lasting Glass and Their Luminescence Properties**
T. Yano^{*}, M. Saito, S. Shibata and T. Kishi
Department of Chemistry and Materials Science, Tokyo Institute of Technology, Japan
- 15:00-15:15 25pHO02 Novel Yellow σ -(Ba,Mg)₂P₂O₇:Eu²⁺ Phosphors Synthesized by The Melt Method**
H. Nakagawa^{1,*}, S.W. Kim¹, K. Uematsu², T. Ishigaki¹, K. Toda¹, H. Takaba³ and M. Sato²
¹ *Graduate School of Science and Technology, Niigata University 8050, Igarashi 2-Nocho, Nishi-ku Niigata, 950-2181, Japan* ² *Department of Chemistry and Chemical Engineering, Niigata University 8050, Igarashi 2-Nocho, Nishi-ku Niigata, 950-2181, Japan* ³ *Department of Environmental and Energy Chemistry, Faculty of Engineering, Kogakuin University, 2665-1 Nakano, Hachioji, Tokyo 192-0015, Japan*
- 15:15-15:30 25pHO03 Improved Luminescence Properties of Na₂TiSiO₅ Phosphor by The Ge⁴⁺ Doping Into The Si⁴⁺ Site in The Host Lattice**
S.W. Kim^{1,*}, K. Sugimoto¹, K. Tanima¹, K. Uematsu², K. Toda¹ and M. Sato²
¹ *Graduate School of Science and Technology, Niigata University, 8050 Ikarashi 2-nocho, Niigata 950-2181, Japan* ² *Department of Chemistry and Chemical Engineering, Niigata University, 8050 Ikarashi 2-nocho, Niigata 950-2181, Japan*

15:30–16:00 Coffee Break

Oral Session: Optics: Luminescent Materials II

Chair: T. Kishi

- 16:30-16:45 25pHO05 Synthesis of (Y_{0.95-x}Gd_xEu_{0.05})₂O₃ Red Phosphors and Fabrication of Transparent Ceramics with Sulfate-Exchanged Nitrate-Type Layered Hydroxide Nanosheets As Precursors**
B. Lu^{1,2*}, J. Li^{1,3}, T. Suzuki¹ and Y. Sakka^{1,2}
¹ *Materials Processing Unit, National Institute for Materials Science, Japan* ² *Department of Materials Science and Engineering, Graduate School of Pure and Applied Sciences, University of Tsukuba, Japan* ³ *Key Laboratory for Anisotropy and Texture of Materials, School of Materials and Metallurgy, Northeastern University, China*
- 16:45-17:00 25pHO06 Photoluminescence Properties of Tb³⁺ in Gadolinium Aluminate Garnet Stabilized with Lu³⁺**
J. Li^{1,*}, J. Li², X. Sun² and Y. Sakka¹
¹ *Materials Processing Unit, National Institute for Materials Science, JAPAN* ² *Key Laboratory for Anisotropy and Texture of Materials (Ministry of Education) and School of Materials and*

Metallurgy, Northeastern University, CHINA

17:00-17:15 25pHO07 Ce:(Y_{1-x}Lu_x)₃Al₅O₁₂ Single-Crystal Phosphors for High-Brightness White LEDs with High Color Rendering Index

A. Stelian^{1,2,*}, EncarnaciC3n G. VC-llora¹, D. Inomata^{3,4}, K. Aoki⁴, Y. Sugahara², K. Shimamura^{1,2}

¹) National Institute for Materials Science, Tsukuba 305-0044, Japan ²) Graduate School of Advanced Science and Engineering, Waseda University, Tokyo 169-8555, Japan ³) Tamura Co., Ltd., Sayama, Saitama 350-1328, Japan ⁴) Koha Co., Ltd., Nerima, Tokyo 176-0022, Japan

17:15-17:30 25pHO08 Growth and Structural Analysis of Alkali - Earth Orthosilicate Phosphor Single Crystal Using Gas Phase Method

S. Hasegawa^{1,*}, S.W. Kim¹, K. Uematsu², T. Ishigaki¹, K. Toda¹, M. Sato², T. Masaki³, D.H. Yoon³, J. Koide⁴, M. Toda⁴ and Y. Kudo⁴

¹) Graduate School of Science and Technology, Niigata University 8050, Igarashi 2-Nocho, Nishi-ku Niigata, 950-2181, Japan ²) Department of Chemistry and Chemical Engineering, Niigata University 8050, Igarashi 2-Nocho, Nishi-ku Niigata, 950-2181, Japan ³) School of Advanced Materials Science and Engineering, Sungkyunkwan University 300 CheonCheon-dong, Jangan-gu, Suwon, Gyeonggi-do, 440-746 Republic of Korea ⁴) N-Luminescence Corporation, 8867-3 Ikarashi 2-nocho, Niigata 950-2102, Japan

Date: June 25 (Ruby)

Oral Session: Engineering Ceramics I

Chair: T. Akatsu

13:45-14:15 25pRI01 Lifetime Prediction Methodology for Thermal Barrier Coating System: Based on Fracture Mechanics Approach (INVITED)

Y. Kagawa^{1,2,*}

¹) Research Center for Advanced Science and Technology, The University of Tokyo, JAPAN ²) National Institute for Materials Science, (NIMS) Japan

14:15-14:30 25pRO01 Damage Evolution Behavior of Short Carbon Fiber-Dispersed SiC Matrix Composite Under Tensile and Compressive Loading Modes

R. Inoue^{1,*} and Y. Kagawa^{1,2}

¹) Research Center for Advanced Science and Technology, The University of Tokyo, JAPAN ²) National Institute for Materials Science (NIMS), JAPAN

14:30-14:45 25pRO02 Effect of Spark-Plasma Sintering Parameters on Densification, Microstructure Evolution and Properties of Nb-Ti-B-C Ceramic Composites

D. Demirskyi^{1,*}, Y. Sakka¹ and O. Vasylykiv¹

Advanced Ceramics Group, National Institute for Materials Science, 1-2-1 Sengen, Tsukuba, Ibaraki 305-0047, Japan

14:45-15:00 25pRO03 Mechanically Reliable Thermoelectric (TE) Nanocomposites by Dispersing and Embedding TE-Nanostructures Inside A Tetragonal ZrO₂ Matrix: The Concept and Experimental Demonstration in Graphene Oxide-3YSZ System

M. Estili^{1,*} and Y. Sakka²

¹) International Center for Young Scientists (ICYS), National Institute for Materials Science (NIMS), Tsukuba, Japan ²) Advanced Ceramics Group, National Institute for Materials Science (NIMS), Tsukuba, Japan

15:00-15:30 25pRI02 Evaluation of Coarse Defects in Alumina Ceramics and Influence on Reliability (INVITED)

S. Tanaka^{*}

Nagaoka University of Technology

15:30-16:00 Coffee Break

Oral Session: Engineering Ceramics II

Chair: F. Wakai

- 16:00-16:30 25pRI03 Fatigue Threshold R-Curves Predict Fatigue Behavior of Bridging Toughened Ceramics (INVITED)**
J.J. Kruzic^{1,*}
¹⁾ School of Mechanical, Industrial, and Manufacturing Engineering, Oregon State University, Corvallis, OR 97331 USA
- 16:30-17:00 25pRI04 Synthesis of Nanocrystalline Bulk SiO₂ Stishovite and Study on Its Toughening Mechanism (INVITED)**
N. Nishiyama^{1,2,*}, H. Ohfuji³, F. Wakai⁴, Y. Tamenori⁵, H. Murata⁶, T. Taniguchi⁶, M. Matsushita⁷ and T. Irifune³
¹⁾ Photon Science, Deutsches Elektronen Synchrotron (DESY), Hamburg, 22607, Germany ²⁾ PRESTO, Japan Science and Technology Agency (JST), Tokyo, 102-0075, Japan ³⁾ Geodynamics Research Center, Ehime University, Matsuyama, 790-8577, Japan ⁴⁾ Materials and Structures Laboratory, Tokyo Institute of Technology, Yokohama, 226-8503, Japan ⁵⁾ Japan Synchrotron Radiation Research Institute (JASRI), Sayo-cyo, 679-5198, Japan ⁶⁾ National Institute for Materials Science (NIMS), Tsukuba, 305-0047, Japan ⁷⁾ Department of Mechanical Engineering, Ehime University, Matsuyama, 790-8577, Japan
- 17:00-17:15 25pRO04 Evaluation of Fracture Toughness of Nano-Polycrystalline Stishovite Using Micro-Cantilever Specimens**
K. Yoshida^{1,*}, N. Nishiyama², F. Wakai¹, Y. Shinoda¹, T. Akatsu¹ and M. Sone¹
¹⁾ Tokyo Institute of Technology, JAPAN ²⁾ Deutsches Elektronen-Synchrotron, GERMANY
- 17:15-17:30 25pRO05 A Pressure-Temperature Phase Diagram of BN**
Y. Sakai^{1,*}, M. Matoba¹, I. Yamada², K. Funakoshi^{3,4}, T. Kunimoto^{3,5}, Y. Higo³, T. Atou⁶ and Y. Kamihara¹
¹⁾ Department of Applied Physics and Physico-Informatics, Keio University, 3-14-1 Hiyoshi, Yokohama 223-8522, Japan ²⁾ Nanoscience and Nanotechnology Research Center, Osaka Prefecture University, 1-2 Gakuen-cho, Naka-ku, Sakai, Osaka 599-8570, Japan ³⁾ Japan Synchrotron Radiation Institute (JASRI), 1-1-1, Kouto, Sayo-cho, Sayo-gun, Hyogo 679-5198, Japan ⁴⁾ Comprehensive Research Organization for Science and Society Research Center for neutron Science and Technology (CROSS), Research Center Neutron Science & Technology, Tokai, Ibaraki 3191106, Japan ⁵⁾ Geodynamics Research Center (GRC), Ehime University, 4-5 Bunkyo-Cho, Matsuyama, Ehime 790-8577, Japan ⁶⁾ Materials and Structures Laboratory, Secure Materials Center, Tokyo Institute of Technology, 4259 Nagatsuta, Midori, Yokohama 226-8503, Japan

17:30–19:30 Poster Session I (Kohaku)

Chemistry

- 25pKP01 Reactive Sintering of Pseudobrookite-Type MgFeNbO₅ and MgFeTaO₅ Ceramics and Their Potential Applications**
Y. Suzuki^{1,*}, H. Abe² and Y. Shinoda³
¹⁾ Faculty of Pure and Applied Sciences, University of Tsukuba, Tsukuba, Ibaraki, 305-8573, Japan
²⁾ Joining and Welding Research Institute, Osaka University, Ibaragi, Osaka 567-0047, Japan ³⁾ Materials and Structures Laboratory, Tokyo Institute of Technology, Yokohama, Kanagawa 226-8503, Japan

EcoMaterials

- 25pKP02 Improvement of Photocatalytic Activity by Grafting Oxide Nano-Clusters Co-Catalyst on TiO₂**
R. Inde¹, M. Liu², M. Nishikawa³, D. Atarashi¹, E. Sakai¹, Y. Nosaka³ and M. Miyauchi^{1,4*}
¹⁾ Graduate School of Science and Engineering, Tokyo Institute of Technology, Tokyo, Japan ²⁾ Department of Chemical System Engineering, The University of Tokyo, Tokyo, Japan ³⁾ Department of Materials Science and Technology, Nagaoka University of Technology, Niigata,

Japan ⁴⁾ PRESTO, Japan Science and Technology Agency (JST), Saitama, Japan

- 25pKP03 Use of High-Alite Clinker in Low Environmental Load Type Blended Cement**
M. Shinsugi^{1,*}, N. Siribudhaiwan¹, D. Atarashi¹, M. Miyauchi¹, E. Sakai¹, N. Nito² and K. Koibuchi²
¹⁾ Department of Metallurgy and Ceramic Science, Tokyo Institute of Technology, Tokyo, 152-8550 ²⁾ DC CO.,LTD, Kawasaki, 210-0005
- 25pKP04 Visible-Light-Driven H₂ Production Based on SnS Quantum Dots Sensitized Electrode**
Y. Shiga¹, S. Nagarajan¹, D. Atarashi¹, E. Sakai¹ and M. Miyauchi^{1,2,*}
¹⁾ Department of Metallurgy and Ceramic Science, Tokyo Institute of Technology, Ookayama, Meguro, 152-8552, Japan ²⁾ PRESTO, Japan Science and Technology Agency (JST), Saitama, 332-0012, Japan.

Energy Materials

- 25pKP05 Photocatalytic Activity and Photoinduced Hydrophilicity of Heteropolyacid/Flaky Anatase Hybrid Materials**
T. Tatsuno^{*}, T. Isobe, S. Matsushita and A. Nakajima
Department of Metallurgy and Ceramics Science, Graduate School of Science and Engineering, Tokyo Institute of Technology 2-12-1 O-okayama, Meguro, Tokyo 152-8552 Japan
- 25pKP06 Photoreduction of CO₂ to Carbon Monoxide on Nb₃O₈⁻ Nanosheets with Copper Nanoclusters Co-Catalyst**
G. Yin¹, D. Atarashi¹, E. Sakai¹ and M. Miyauchi^{1,2,*}
¹⁾ Department of Metallurgy and Ceramics Science, Graduate School of Science and Engineering, Tokyo Institute of Technology ²⁾ Advanced Catalytic Transformation program for Carbon Utilization (ACT-C) JST
- 25pKP07 Development of CuS/FTO Counter Electrode for Quantum Dot Sensitized Solar Cells**
S. Koyasu¹, D. Atarashi¹, E. Sakai¹ and M. Miyauchi^{1,2,*}
¹⁾ Department of Materials Science, Tokyo Institute of Technology, Tokyo 152-8552, Japan. ²⁾ PRESTO, Japan Science and Technology Agency (JST), Saitama, 332-0012, Japan.
- 25pKP08 Thermoelectric Properties in Single Crystals of Layered Chalcogenides ACrSe_{2-x}S_x (A = Ag, Cu)**
R. Yano^{1,*} and T. Sasagawa¹
¹⁾ Materials and Structures Laboratory, Tokyo Institute of Technology, JAPAN

Element Strategy

- 25pKP09 Opto-Electrical Properties of Polycrystalline and Amorphous (Zn,B)O Thin Films Fabricated by Pulse Laser Deposition**
H. Tang^{1,*}, H. Hiramatsu^{1,2}, H. Hosono^{1,2} and T. Kamiya^{1,2}
¹⁾ Materials and Structure Laboratory, Tokyo Institute of Technology, Japan ²⁾ Materials Research Center for Element Strategy, Tokyo Institute of Technology, Japan
- 25pKP10 Independent Quantitative Analysis of Oxygen and Nitrogen in GaN Using Secondary Ion Mass Spectrometry**
M. Hashiguchi^{1,*}, Y. Adachi¹, I. Sakaguchi¹ and N. Ohashi^{1,2}
¹⁾ National Institute for Materials Science (NIMS), 1-1 Namiki Tsukuba, 305-0044, Japan ²⁾ Materials Research Center for Element Strategy, Tokyo Institute of Technology, 4259, Nagatsuta-cho, Midori-ku, Yokohama, Kanagawa 226-8503, Japan
- 25pKP11 Analysis of Atmosphere Effect for Silicon Oxycarbide Synthesis**
M. Narisawa, H. Hokazono, T. Tai and A. Iwase
Graduate School of Engineering, Osaka Prefecture University, Sakai, Osaka 599-8531, Japan
- 25pKP12 Thermoelectric Property of Hexagonal BaTiO_{3-x} Single Crystal**
S. Yasui^{1,*}, Y. Ishimoto¹, T. Shimizu², T. Taniyama¹ and M. Itoh¹
¹⁾ Materials & Structures Laboratory, Tokyo Institute of Technology, Yokohama, 226-8503 Japan ²⁾ TIES, Tokyo Institute of Technology, Yokohama, 226-8502 Japan
- 25pKP13 Surface Stability of Non-Stoichiometric Cubic ZrO₂ and YSZ From First-Principles Calculations**
S. Takemoto^{1,2,*} and T. Tada^{1,2}
¹⁾ Materials and Structures Laboratory, Tokyo Institute of Technology, JAPAN ²⁾ CREST-JST, JAPAN
- 25pKP14 Fabrication of Multiferroic Thin Film BiFe_{1-x}Co_xO₃ by Pulse Laser Deposition**
R. Kawabe^{*}, H. Hojo, H. Yamamoto and M. Azuma
Materials and Structures Laboratory, Tokyo Institute of Technology, Japan

Advanced Processing

- 25pKP15 Fabrication of Textured Hematite Ceramics Using Magnetic Orientation Processing**
A. Yamasaki^{1,2,*}, T. Ishigaki^{1,3)} and T. Uchikoshi²⁾
¹⁾ Department of Applied Chemistry, Hosei University, JAPAN ²⁾ Materials Processing Unit, National Institute for Materials Science, JAPAN ³⁾ Department of Chemical Science and Technology, Hosei University, JAPAN
- 25pKP16 Surface Modification of Ca- α -SiAlON: Eu²⁺ Phosphor Particles by SiO₂ Coating and Fabrication of Its Deposit by Electrophoretic Deposition (EPD) Process**
C. Zhang^{1,*}, T. Uchikoshi¹⁾, T. Nishimura²⁾, Y. Sakka¹⁾ and N. Hirotsuki²⁾
¹⁾ Materials Processing Unit, National Institute for Materials Science, Tsukuba, Ibaraki 305-0047, Japan ²⁾ Sialon Unit, National Institute for Materials Science, Tsukuba, Ibaraki 305-0044, Japan
- 25pKP17 Fabrication of Macroporous Ceramics by Direct Foaming Method.**
H. Kobayashi^{1,*}, O. Sakurai¹⁾, A. Nishiyama¹⁾, N. Wakiya²⁾, J.S. Cross¹⁾, T. Shiota¹⁾ and K. Shinozaki¹⁾
¹⁾ Dept. Metal. & Ceramic Science, Tokyo Institute of Technology, Meguro-ku, Tokyo 152-8550 Japan ²⁾ Res. Institute of Electronics, Shizuoka University, Hamamatsu-shi, Shizuoka 432-8561 Japan
- 25pKP18 Fabrication Process on Highly Sinterable Powder of Lanthanum Silicate Oxyapatite**
K. Hirai^{1,*}, K. Kobayashi²⁾, T. Akashi¹⁾ and Y. Sakka²⁾
¹⁾ Department of Applied Chemistry, Hosei University, Koganei, Tokyo 184-8584 Japan ²⁾ Materials Processing Unit, National Institute for Materials Science, Tsukuba 305-0047 Japan
- 25pKP19 Effect of residual temperature for shock-induced vitrification process of α -quartz**
M. Shimizu^{1,*}, T. Nakagawa¹⁾ and T. Atou²⁾
¹⁾ Department of Materials Science and Engineering, Tokyo Institute of Technology ²⁾ Materials and Structures Laboratory, Tokyo Institute of Technology
- 25pKP20 Single-Nano Surface Patterning of Glassy Materials by Nanoimprint Technique**
T. Funabasama^{1,*}, G. Tan¹⁾, H. Oi²⁾, M. Mita²⁾, S. Kaneko^{1,3)}, A. Matsuda¹⁾ and M. Yoshimoto¹⁾
¹⁾ Department of Innovative and Engineered Materials, Tokyo Institute of Technology, JAPAN ²⁾ Kyodo International Incorporated, JAPAN ³⁾ Kanagawa Industrial Technology Center, JAPAN
- 25pKP21 Negative Thermal Expansion in Bi_{1-x}Pb_xNiO₃**
K. Nakano^{1,*}, K. Nabetani¹⁾, K. Oka^{1,2)} and M. Azuma¹⁾
¹⁾ Materials and Structures Laboratory, Tokyo Institute of Technology ²⁾ Faculty of Science and Engineering, Chuo University
- 25pKP22 Low Temperature Calcination of Lanthanum Ferrite Using Hydrothermally Synthesized Particles**
K. Miyamoto^{1,*}, Y. Makinose¹⁾, S. Mimuro¹⁾, K. Katsumata¹⁾ and N. Matsushita¹⁾
¹⁾ Materials and Structures Laboratory, Tokyo Institute of Technology, Nagatsuta 4259, Midori, Yokohama, Kanagawa Japan
- 25pKP23 Hydrothermally Grown Titanium Oxide Nanowire Arrays on Fluorine Doped Tin Oxide Glass Substrates**
N. Kitazawa^{1,*}, M. Aono¹⁾ and Y. Watanabe¹⁾
¹⁾ Department of Materials Science and Engineering, National Defense Academy, JAPAN
- 25pKP24 Shape Controlled Ceria Nanoparticles by Hydrothermal Synthesis Using Surfactant**
Y. Makinose^{1,*}, T. Taniguchi²⁾, K. Katsumata¹⁾ and N. Matsushita¹⁾
¹⁾ Materials and Structures Laboratory, Tokyo Institute of Technology, Japan ²⁾ Graduate School of Science and Technology, Kumamoto University, Japan
- 25pKP26 Interaction Between A-Site Deficient La_{0.8}Sr_{0.2}Ga_{0.8}Mg_{0.2}O_{3- δ} (LSGM8282) and Ce_{0.9}Gd_{0.1}O_{3- δ} (GDC) Electrolytes**
T. Uchikoshi^{1,*}, H.T. Suzuki^{1,2)}, C. Matsunaga¹⁾, K. Furuya³⁾ and F. Munakata²⁾
¹⁾ Materials Processing Unit, National Institute for Materials Science, Japan ²⁾ Department of Energy Science and Nuclear Engineering, Tokyo City University, Japan ³⁾ AGC Seimi Chemical Co., Ltd., Japan

Composites

- 25pKP29 Mechanical Properties of An Alumina/Zirconia Dual-Phase Matrix Composite Reinforced with Silicon Carbide Whiskers at Elevated Temperatures**
T. Akatsu, Y. Shinoda and F. Wakai
Secure Materials Center, Materials and Structures Laboratory, Tokyo Institute of Technology, JAPAN
- 25pKP30 Degradation of Mullite/Si/SiC Environmental Barrier Coating System After Heat Exposure at 1300 and 1400°C**
Y. Arai^{*}) and Y. Kagawa

Research Center for Advanced Science and Technology, The University of Tokyo, 4-6-1 Komaba Meguroku, Tokyo 153-8904 Japan

25pKP31 Change of Microstructure in Mullite/Si/(SiC/SiC) Environmental Barrier Coating System After Cyclic Heat Exposure

T. Kuribara^{1,*} and Y. Kagawa¹

¹ *Research Center for Advanced Science and Technology, The University of Tokyo, Japan*

25pKP32 Optimum Design Procedure of High Temperature Thermal Radiation Energy Reflection EBCs: Geometrical Optics Region

M. Yamazoe^{1*} and Y. Kagawa¹

¹ *Research Center for Advanced Science and Technology, The University of Tokyo, JAPAN*

Characterization

25pKP34 High Pressure Behavior of C12A7 Electride with Different Pressure Mediums

K. Yoshida^{1,*}, H. Hara², T. Atou³, K. Takemura⁴ and H. Hosono⁵

¹ *Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology, JAPAN* ² *Kunitachi high school, JAPAN* ³ *Materials and Structures Laboratory, Tokyo Institute of Technology, JAPAN* ⁴ *High Energy Accelerator Research Organization (KEK), JAPAN* ⁵ *Frontier Research Center, Tokyo Institute of Technology, JAPAN*

25pKP35 Gate Capacitance Dependence on Coulomb Island Position in Single-Electron Transistor with Metal-Bridge Top-Gate Electrode.

Y. Azuma^{1,*}, D. Tanaka², M. Sakamoto², T. Teranishi² and Y. Majima^{1,3}

¹ *Materials and Structures Laboratory, Tokyo Institute of Technology, Yokohama 226-8503, JAPAN* ² *Institute for Chemical Research, Kyoto University, Uji, Kyoto 611-0011, JAPAN* ³ *Department of Printed Electronics Engineering, Suncheon National University, Suncheon 540-742, KOREA*

25pKP36 Thermal Expansion of Frustrated Pyrochlore Magnet $Tb_2Ti_2O_7$

S. Kitani^{1,*}, M. Tachibana^{2,3} and H. Kawaji¹

¹ *Materials and Structures Laboratory, Tokyo Institute of Technology, JAPAN* ² *National Institute for Materials Science, JAPAN* ³ *Department of Physics and Astronomy, McMaster University, Canada*

25pKP37 Composition Dependence on Glass Transition and Crystallization Properties of Ni-Nb-Zr Glassy Alloys

A. Uchida¹, K. Tateishi¹, H. Kawaji¹ and M. Fukuhara²

¹ *Materials and Structures Laboratory, Tokyo Institute of Technology, JAPAN* ² *Research Institute for Electromagnetic Materials, Japan*

25pKP38 Synthesis of Nanocrystalline Aluminum Titanate by Spark Plasma Sintering

Y. Shinoda^{1,*} and Y. Suzuki²

¹ *Materials and Structures Laboratory, Tokyo Institute of Technology, JAPAN* ² *Faculty of Pure and Applied Sciences, University of Tsukuba, JAPAN*

25pKP39 Effect of Sintering Additive on Evolution of Microstructure and Glass Chemistry of Superplastic Silicon Nitride Nanoceramics

R. Wananuruksawong^{*}, Y. Shinoda, T. Akatsu and F. Wakai

Materials and Structures Laboratory, Tokyo Institute of Technology, JAPAN

Date: June 26 (Fuji)

Oral Session: Element Strategy & Glass/Amorphous, Melt, and Defect Sciences

Chair: K. Kajihara & T. Kamiya

- 09:00-09:30 26aFI01 Melting Dynamics of Ice (INVITED)**
K. Mochizuki¹⁾, M. Matsumoto^{1,*} and I. Ohmine²⁾
¹⁾ Department of Chemistry, Okayama University, Okayama 700-8530, Japan ²⁾ Institute for Molecular Science, Okazaki, Aichi 444-8585, Japan
- 09:30-09:45 26aFO01 Formation and Annihilation of Frenkel Defects in High-Purity Crystalline and Amorphous SiO₂ Irradiated with ⁶⁰Co γ -Rays**
K. Kajihara^{1,*}, L. Skuja²⁾ and H. Hosono³⁾
¹⁾ Department of Applied Chemistry, Graduate School of Urban Environmental Sciences, Tokyo Metropolitan University, Japan ²⁾ Institute of Solid-State Physics, University of Latvia, Latvia ³⁾ Materials and Structures Laboratory & Frontier Research Center, Tokyo Institute of Technology, Japan
- 09:45-10:00 26aFO02 Structure of Sodium-Aluminosilicate Glasses and Melts by High-Temperature Raman Spectroscopy**
H. Kamano^{1,*}, T. Kishi¹⁾, T. Yano¹⁾, K. Shiraki²⁾, Y. Nagashima²⁾ and K. Sakaguchi²⁾
¹⁾ Department of Chemistry and Materials Science, Tokyo Institute of Technology, JAPAN ²⁾ R&D Japan, Nippon Sheet Glass Co., Ltd., JAPAN
- 10:00-10:15 26aFO03 Elastic Properties and Indentation Behavior of Al₂O₃-SiO₂ Glasses Fabricated by Aerodynamic Levitation**
G.A. Rosales-sosa^{1,*}, A. Masuno¹⁾, H. Inoue¹⁾, K. Tae-hyun²⁾, K. Matsumoto²⁾ and S. Kojima²⁾
¹⁾ Institute of Industrial Science, The University of Tokyo, JAPAN ²⁾ Graduate School of Pure and Applied Sciences, University of Tsukuba, JAPAN
- 10:15-10:30 26aFO04 Network Topology for The Formation of Solvated Electrons in CaO-Al₂O₃ Glasses**
S. Kohara^{1,*}, J. Akola^{2,3,4)}, K. Ohara¹⁾, A. Fujiwara¹⁾, Y. Watanabe⁵⁾, A. Masuno⁵⁾, T. Usuki⁶⁾, T. Kubo⁷⁾, A. Nakahira⁷⁾, K. Nitta¹⁾, T. Uruga¹⁾, J.K.R. Weber^{8,9)} and C.J. Benmore⁹⁾
¹⁾ Research and Utilization Division, Japan Synchrotron Radiation Research Institute/SPring-8, Japan ²⁾ Department of Physics, Tampere University of Technology, Finland ³⁾ Department of Applied Physics, Aalto University, Finland ⁴⁾ Peter-GrC ⁵⁾ Institute of Industrial Science, The University of Tokyo, Japan ⁶⁾ Graduate School of Science and Engineering, Yamagata University, Japan ⁷⁾ Material Science and Engineering, Osaka Prefecture University, Japan ⁸⁾ Materials Development, Inc., USA ⁹⁾ Advanced Photon Source, Argonne National Laboratory, Argonne, USA
- 10:30-10:45 26aFO05 Hydrogen Desorption and Bandgap Narrowing in Amorphous In-Ga-Zn-O**
K. Ishikawa^{1,*}, Y. Hanyu¹⁾, H. Hiramatsu^{1,2)}, H. Kumomi²⁾, H. Hosono^{1,2,3)} and T. Kamiya^{1,2)}
¹⁾ Materials and Structures Laboratory, Tokyo Institute of Technology, JAPAN ²⁾ Materials Research Center for Element Strategy, Tokyo Institute of Technology, JAPAN ³⁾ Frontier Research Center, Tokyo Institute of Technology, JAPAN

10:45–11:15 Coffee Break

Oral Session: Element Strategy & Theory: Amorphous Oxide Semiconductors

Chair: T. Kamiya

- 11:15-11:45 26aFI02 Defects Responsible for The Instability of Amorphous In-Ga-Zn-O Based Thin Film Transistors (INVITED)**

Y.J. Oh¹⁾, W.H. Han¹⁾, H. Noh²⁾ and K.J. Chang^{1,*)}

¹⁾ Department of Physics, Korea Advanced Institute of Science and Technology, Daejeon 305-701, Korea ²⁾ Samsung Electronics Co., Ltd., Suwon 443-742, Korea

11:45-12:15 26aFI03 Electronic, Transport, and Optical Properties of Amorphous Semiconducting Oxides (INVITED)

Y. Kang¹⁾, H. Song¹⁾ and S. Han^{1,*)}

Materials Theory and Computation Group, Department of Materials Science and Engineering, Seoul National University, Korea

12:15–13:45 Lunch

Oral Session: Element Strategy & Chemistry: Electride

Chair: K. J. Chang & H. Kumomi

13:45-14:15 26pFI01 Amorphous Electride: Structure and Properties (INVITED)

H. Hosono^{1,2,3*)}, Y. Tomota¹⁾, Y. Toda^{1,3)} and P. Sushko^{3,4)}

¹⁾ Frontier Research Center & Materials and Structures Laboratory, Tokyo Institute of Technology, Yokohama 226-8503, Japan ²⁾ Materials Research Center for Element Strategy, Tokyo Institute of Technology ³⁾ ACCEL Project, Japan Science and Technology Agency ⁴⁾ Pacific Northwest National

14:15-14:30 26pFI02 Quest for Two-Dimensional Electrifies via Material Databases and Ab Initio Calculations (INVITED)

T. Inoshita^{1,*)}, S. Jeong²⁾, N. Hamada³⁾ and H. Hosono²⁾

¹⁾ National Institute for Materials Science, JAPAN ²⁾ Materials and Structures Laboratory, Tokyo Institute of Technology, JAPAN ³⁾ Faculty of Science and Technology, Tokyo University of Science, JAPAN

14:30-14:45 26pFO01 High-Throughput Ab Initio Study for Two Dimensional Electride Materials

T. Tada^{1,*)}, S. Takemoto¹⁾, S. Matsuishi¹⁾ and H. Hosono^{1,2,3,4)}

¹⁾ Materials Research Center for Element Strategy, Tokyo Tech., Yokohama, 226-8503, Japan ²⁾ Materials and Structures Laboratory, Tokyo Tech., Yokohama, 226-8503, Japan ³⁾ Frontier Research Center, Tokyo Tech., Yokohama, 226-8503, Japan ⁴⁾ ACCEL Project, Japan Science and Technology Agency, Japan

14:45-15:00 26pFO02 Reaction Mechanism of Ammonia Synthesis on Ru-Loaded 12CaO•7Al₂O₃ Electride Catalyst

M. Kitano^{1,*)}, Y. Inoue²⁾, S. Kanbara²⁾, T. Yokoyama³⁾, M. Hara²⁾ and H. Hosono^{1,2,3)}

¹⁾ Materials Research Center for Element Strategy, Tokyo Institute of Technology, 4259 Nagatsuta, Midori-ku, Yokohama 226-8503, Japan ²⁾ Materials and Structures Laboratory, Tokyo Institute of Technology, 4259 Nagatsuta, Midori-ku, Yokohama 226-8503, Japan ³⁾ Frontier Research Center, Tokyo Institute of Technology, 4259 Nagatsuta, Midori-ku, Yokohama 226-8503, Japan

15:00-15:15 26pFO03 Preparation of Co-Loaded 12CaO•7Al₂O₃ Electride As A Catalyst for Ammonia Synthesis

Y. Inoue^{1,*)}, M. Tokunari¹⁾, M. Kitano²⁾, M. Hara¹⁾ and H. Hosono^{1,2,3)}

¹⁾ Frontier Research Center, Tokyo Institute of Technology, JAPAN ²⁾ Material Research Center for Element Strategy, Tokyo Institute of Technology, JAPAN ³⁾ Materials and Structures Laboratory, Tokyo Institute of Technology, JAPAN

15:15-15:30 26pFO04 Synthesis and Magnetic Property of Ca₁₂Fe₁₀Si₄O₃₂Cl₆

Y. Tomota^{1,*)}, S. Matsuishi²⁾ and H. Hosono^{1,2,3)}

¹⁾ Materials and Structures Laboratory, Tokyo Institute of Technology, Japan ²⁾ Materials Research Center for Element Strategy, Tokyo Institute of Technology, Japan ³⁾ Accel Program, Japan Science and Technology Agency (JST), Japan

15:30–16:00 Coffee Break

Oral Session: Electronic Materials

Chair: S. Matsuishi

- 16:00-16:15 26pFO05 Effects of Sulfur Substitution in Amorphous InGaZnO₄**
J. Kim^{1,2,*}, H. Hiramatsu^{1,2)}, H. Hosono^{1,2,3)} and T. Kamiya^{1,2)}
¹⁾ *Materials and Structures Laboratory, Tokyo Institute of Technology, Yokohama, JAPAN* ²⁾ *Materials Research Center for Element Strategy, Yokohama, JAPAN* ³⁾ *Frontier Research Center, Tokyo Institute of Technology, Yokohama, JAPAN*
- 16:15-16:30 26pFO06 Intrinsic Absorption Edge of Crystalline and Amorphous Semiconducting Oxides**
Y. Kang^{1,*} and S. Han¹⁾
¹⁾ *Department of Materials Science and Engineering and Research Institute of Advanced Materials, Seoul National University, Seoul, 151-747, Korea*
- 16:30-16:45 26pFO07 Synthesis of SrMoO₄ Using Water Assisted Room Temperature Solid State Reaction**
T. Kaneko^{1,*}, K. Uematsu²⁾, T. Ishigaki¹⁾, S.W. Kim¹⁾, K. Toda¹⁾, M. Sato²⁾, J. Koide³⁾, M. Toda³⁾ and Y. Kudo³⁾
¹⁾ *Graduate School of Science and Technology, Niigata University, Japan* ²⁾ *Department of Chemistry and Chemical Engineering, Niigata University, Japan* ³⁾ *N-Luminescence Corporation, Japan*
- 16:45-17:00 26pFO08 Transmission Electron Microscopy Study of Magnesium Silicide-Sapphire Interface**
P.S.S.R. Krishnan^{1,*}, S. Ogawa¹⁾, A. Katagiri¹⁾, M. Matsushima¹⁾, K. Akiyama^{1,2)}, H. Uchida³⁾ and H. Funakubo¹⁾
¹⁾ *Department of Innovative and Engineered Materials, Tokyo Institute of Technology, J2-43, 4259 Nagatsuta-cho, Midori-ku, Yokohama 226-8502, Japan* ²⁾ *Kanagawa Industrial Technology Center, 705-1 Shimoimaizumi, Ebina-shi, Kanagawa 243-0435, Japan* ³⁾ *Department of Materials and Life Sciences, Sophia University -1 Kioi-cho, Chiyoda, Tokyo 102-8554, Japan*

Date: June 26 (Hoei)

Oral Session: Electromagnetic Heterostructures

Chair: T. Taniyama

- 10:00-10:30 26aHI01 Magnetoelectric and Magnetoelastic Effects in BaTiO₃-Based Multiferroic Hybrid Structures (INVITED)**
M. Opel^{*}
Walther-Meissner-Institut, Bayerische Akademie der Wissenschaften, Garching, GERMANY
- 10:30-10:45 26aHO01 Electric Control of Magnetization in Cr₂O₃/Ferromagnet Thin Film System**
T. Nozaki^{1,*}, T. Ashida¹⁾, M. Oida¹⁾, N. Shimomura¹⁾, T. Shibata²⁾ and M. Sahashi¹⁾
¹⁾ *Department of Electronic Engineering, Tohoku University, Sendai, 980-8579, Japan* ²⁾ *TDK Corporation, Technology HQ, Advanced Technology Development Center, Ichikawa 272-8558, Japan*

10:45–11:15 Coffee Break

Oral Session: Ferroelectrics

Chair: H. Hojo

11:15-11:45 26aHI02 Structure and Negative Thermal Expansion in PbTiO₃-Based Ferroelectrics (INVITED)

J. Chen^{1,*}, F. Wang¹, J. Deng¹, R. Yu¹ and X. Xing¹

¹⁾ *Department of Physical Chemistry, University of Science and Technology Beijing, Beijing 100083, China*

11:45-12:00 26aHO02 Ferroelectric and Piezoelectric Properties of MnO-Modified Lead Free Perovskite Niobate Solid Solutions

R. Wang^{1,*}, N. Kikuchi¹, K. Tonooka¹, Y. Aiura¹, K. Awazu¹, T. Higuchi¹ and S. Kojima²

¹⁾ *National Institute of Advanced Industrial Science and Technology, Tsukuba, Ibaraki 305-8568, JAPAN* ²⁾ *University of Tsukuba, Tsukuba, Ibaraki 305-8573, JAPAN*

12:15–13:45 Lunch

Oral Session: Biomaterials I

Chair: N. Matsushita & T. Ikoma

13:45-14:15 26pHI01 Calcium-Based Ceramics for Bone Repair and Regeneration (INVITED)

S. Ding^{*}

Institute of Oral Science, Chung Shan Medical University, TAIWAN

14:15-14:45 26pHI02 Regulation of Calcium Carbonate Crystals in Shells (INVITED)

T. Kogure^{1,*}, T. Okumura¹ and M. Suzuki²

¹⁾ *Department of Earth and Planetary Science, Graduate School of Science, the University of Tokyo, Tokyo, Japan* ²⁾ *Department of Applied Biological Chemistry, Graduate School of Agricultural and Life Sciences, the University of Tokyo, Tokyo, Japan*

14:45-15:15 26pHI03 Surface Modified Titanium Implants Using Hydro-Thermal Treatment (INVITED)

K. Kuroda^{1,*} and M. Okido¹

¹⁾ *EcoTopia Science Institute, Nagoya University, Japan*

15:15-15:30 26pHO01 Bioactive Surface Modification of TNTZ Alloy by Solution Processes

E. Takematsu^{1,*}, J. Hieda², M. Niinomi³, K. Katsumata¹ and N. Matsushita¹

¹⁾ *Materials and Structures Laboratory, Tokyo Institute of Technology, Yokohama, 226-8553, Japan* ²⁾ *Manufacturing Science and Technology Laboratory, Tokyo Institute of Technology, Tokyo, 152-8550, Japan* ³⁾ *Institute for Materials Research, Tohoku University, Sendai, 980-8577, Japan*

15:30–16:00 Coffee Break

Oral Session: Biomaterials II

Chair: K. Kuroda

16:00-16:30 26pHI04 Fabrication of Pd-DNA and Pd-CNT Hybrid Nanomaterials (INVITED)

S. Ohara^{1,*}, M. Umetsu², T. Adschiri^{3,4} and Z. Tan¹

¹⁾ *Joining and Welding Research Institute, Osaka University, Japan* ²⁾ *Department of Biomolecular Engineering, Tohoku University, Japan* ³⁾ *Advanced Institute for Materials Research, Tohoku University, Japan* ⁴⁾ *Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan*

16:30-16:45 26pHO02 Silica Coated Magnetite Nanoparticles Prepared with Cationic Surfactant Dimethyldidodecylammonium Bromide (DMAB) for Biomedical Applications

S. Kim^{*}, K. Katsumata, K. Okada and N. Matsushita

Materials and Structures Laboratory, Tokyo Institute of Technology University, Japan

- 16:45-17:00 **26pHO03 Avidin and Biotin Immobilized Pt and Fluorine-Doped Tin Oxide Electrodes for Electrochemical Biosensor**
Y. Katayanagi^{1,*}, K. Katsumata¹, T. Ikoma², J. Tanaka² and N. Matsushita¹
¹ *Materials and Structures Laboratory, Tokyo Institute of Technology, Kanagawa, 226-8503 Japan*
² *Department of Inorganic Materials, Tokyo Institute of Technology, Tokyo, 152-8550 Japan*

17:00–19:00 Poster Session II (Kohaku)

Engineering Ceramics

- 25pKP27 **Action Mechanism of Superplasticizer in Consideration of Early Hydration of Cement**
Y. Ohtsuka^{1,*}, D. Atarashi¹, M. Miyauchi¹ and E. Sakai¹
¹ *Graduate school of Science and Engineering, Tokyo Institute of Technology, JAPAN*
- 25pKP28 **Simple Synthesis of Metal Oxide Loaded Carbon Paper From Bacterial Cellulose Gel and Its Electrochemical Behavior in KOH Electrolyte**
N. Miyajima^{1,*}, T. Matsubara², T. Matsumura², H. Sakane², T. Akatsu³ and O. Tanaike⁴
¹ *Center for Instrumental Analysis, University of Yamanashi, Japan* ² *Graduate School of Medicine and Engineering, University of Yamanashi, Japan* ³ *Materials and Structures Laboratory, Tokyo Institute of Technology, Japan* ⁴ *Research Center for Compact Chemical System, National Institute of Advanced Industrial Science and Technology, Japan*

Theory

- 25pKP33 **Searching for Super High-K Dielectrics Using High-Throughput Ab Initio Calculation**
K. Yim^{1,*}, Y. Yong¹, J. Lee¹, K. Lee¹ and S. Han¹
¹ *Dept. of Materials Science and Engineering, Seoul National University, Seoul, KOREA*

Glass

- 26pKP01 **X-Ray CT Analysis of Drying Process of Simulated High-Level Radioactive Waste Solution and Borosilicate Glass Beads in Laboratory-Scale Pseudo-Cold Cap Containing Dibutylphosphate**
K. Mori^{1,*}, T. Yano¹, K. Watanabe¹, J. Ogata¹, T. Kishi¹, K. Takeshita², K. Minami³, S. Komamine³ and E. Ochi³
¹ *Department of Chemistry and Materials Science, Tokyo Institute of Technology, Japan* ² *Department of Nuclear, Tokyo Institute of Technology, Japan* ³ *Japan Nuclear Fuel Limited (JNFL), Japan*
- 26pKP02 **Glass Mold Modified by Carbon Ion Irradiation**
Y. Teranishi¹, M. Ishizuka¹, T. Shimizu^{2,*}, H. Komiya¹, H. Nagasaka¹, Y. Kondou¹, A. Mituo¹ and T. Kobayashi³
¹ *Tokyo Metropolitan Industrial Technology Research Institute (TIRI)* ² *Division of Human Mechatronics Systems, Tokyo Metropolitan University* ³ *The Inst. of Phys. and Chem. Res. (RIKEN)*

Element Strategy

- 26pKP03 **Interface Electronic Structure of SnS/Si Heterojunction Probed by Electrical Characteristics and Hard X-Ray Photoemission Spectroscopy**
T. Inoue^{1,*}, H. Hiramatsu^{1,2}, H. Hosono^{1,2,3}, T. Kamiya^{1,2}, S. Ueda⁴ and N. Ohashi^{2,4}
¹ *Materials and Structures Laboratory, Tokyo Institute of Technology, JAPAN* ² *Materials Research Center for Element Strategy, Tokyo Institute of Technology, JAPAN* ³ *Frontier Research Center, Tokyo Institute of Technology, JAPAN* ⁴ *National Institute for Materials Science, JAPAN*
- 26pKP04 **Layer-By-Layer Growth of Titanium Hydride on Metal-Oxide Substrates**
T. Suzuki^{1,*}, K. Yoshimatsu¹, N. Tsuchimine², T. Oshima¹, K. Horiba^{3,4}, H. Kumigashira^{3,4} and A. Ohtomo^{1,4}
¹ *Department of Applied Chemistry, Tokyo Institute of Technology, JAPAN* ² *TOSHIMA Manufacturing Co., Ltd, JAPAN* ³ *Photon Factory, Institute of Materials Structure Science (IMSS), High Energy Accelerator Research Organization (KEK), JAPAN* ⁴ *Materials Research Center for Element Strategy (MCES), Tokyo Institute of Technology, JAPAN*
- 26pKP05 **Epitaxial Growth of ZnGa₂O₄ Films by Mist Chemical Vapor Deposition**
M. Niwa^{1,*}, T. Oshima¹, A. Mukai¹, T. Nagami², T. Suyama² and A. Ohtomo^{1,3}
¹ *Department of Applied Chemistry, Tokyo Institute of Technology, JAPAN* ² *Tokuyama Corporation, JAPAN* ³ *Materials Research Center for Element Strategy, Tokyo Institute of*

Technology, JAPAN

- 26pKP06 Epitaxial Structure of ZnO on Patterned Glass Substrates**
K. Ohashi^{1,*}, M. Irino¹, T. Oshima¹ and A. Ohtomo^{1,2,3}
¹ Department of Applied Chemistry, Tokyo Institute of Technology, Japan ² Materials Research Center for Element Strategy, Tokyo Institute of Technology, Japan ³ ALCA, Lapan Science and Technology Agency(JST), Japan
- 26pKP07 Heteroepitaxial Growth of Superconducting Ba(Fe,Co)₂As₂ Thin Films by Pulsed Laser Deposition Using Four Different Laser Wavelengths**
H. Hiramatsu^{1,2*}, H. Sato¹, T. Katase³, T. Kamiya^{1,2} and H. Hosono^{1,2,3}
¹ Materials and Structures Laboratory, Tokyo Institute of Technology, Japan ² Materials Research Center for Element Strategy, Tokyo Institute of Technology, Japan ³ Frontier Research Center, Tokyo Institute of Technology, Japan
- 26pKP08 Work Function Modulation in MgO/Nb:SrTiO₃ by Utilizing Highly Nonequilibrium Thin Film Growth**
T. Susaki^{1,*}, N. Shigaki¹, K. Matsuzaki¹ and H. Hosono^{1,2}
¹ Secure Materials Center, Materials and Structures Laboratory, Tokyo Institute of Technology, Nagatsuta, Midori, Yokohama 226-8503, Japan. ² Frontier Research Center, Tokyo Institute of Technology, Nagatsuta, Midori, Yokohama 226-8503, Japan

Electronic Materials

- 26pKP09 Diffusion Between (Bi_{1/2}K_{1/2})TiO₃ Ceramics and Ag Electrodes**
N. Iwagami^{1,*}, H. Nagata¹, I. Sakaguchi² and T. Takenaka¹
¹ Faculty of Science and Technology, Tokyo University of Science, JAPAN ² National Institute for Materials Science, JAPAN
- 26pKP10 Spin Filtering Effect at Perpendicularly Magnetized Ferromagnetic Multilayer/GaAs(001) Interfaces Under Optical Spin Orientation**
Y. Shirahata^{1,*}, E. Wada¹, M. Itoh¹ and T. Taniyama¹
¹ Materials and Structures Laboratory, Tokyo Institute of Technology, Yokohama, 226-8503, Japan
- 26pKP11 Stabilization of Metastable GaFeO₃-Type Al_{2-x}Fe_xO₃ (001) Thin Films on A SrTiO₃(111) Substrates by Pulsed Laser Deposition**
Y. Hamasaki^{1,*}, T. Shimizu², S. Yasui¹, T. Taniyama¹ and M. Itoh¹
¹ Materials & Structures Laboratory, Tokyo Institute of Technology, Nagatsuta, Yokohama JAPAN ² Tokodai Institute for Element Strategy, Tokyo Institute of Technology, Nagatsuta, Yokohama JAPAN
- 26pKP12 Exploration of Three-dimensional Rashba Materials and Polar Topological Insulators**
Exploration of Three-dimensional Rashba Materials and Polar Topological Insulators
M. Kanou^{1,*}, Y. Chen², Z. Shen³ and T. Sasagawa¹
¹ Materials and Structures Laboratory, Tokyo Institute of Technology, JAPAN ² Department of Physics, University of Oxford, UK ³ Geballe Laboratory for Advanced Materials, Stanford University, USA
- 26pKP13 Electric Control of Giant Magnetoresistance in Co/Cu/Fe/BaTiO₃ Multiferroicheterostructures**
S.S. Pillai^{1,*}, H. Kojima¹, M. Itoh¹ and T. Taniyama¹
¹ Materials and Structures Laboratory, Tokyo Institute of Technology, 4259 Nagatsuta, Midori-ku, Yokohama, Japan
- 26pKP14 Spin Structure Change in Multiferroic BiFe_{1-x}Co_xO₃.**
H. Yamamoto^{1,*}, K. Oka^{1,2}, T. Kihara³, A. Miyake³, M. Tokunaga³ and M. Azuma¹
¹ Materials and Structures Laboratory, Tokyo Institute of Technology, Yokohama, 226-8503, Japan ² Department of Applied Chemistry, Faculty of Science and Engineering, Chuo University, Bunkyo-ku, 112-8551, Japan ³ The Institute for Solid State Physics, The University of Tokyo, Kashiwa, 277-8581, Japan
- 26pKP15 Cuprous Oxide Single Crystals Grown by The Floating Zone Method**
K. Chang^{1,*}, L. Frazer², J. Schwartz^{1,2}, R.D. Schaller³, J.B. Ketterson^{2,4} and K.R. Poeppelmeier^{1,5}
¹ Department of Chemistry, Northwestern University, Evanston, Illinois 60208 USA ² Department of Physics, Northwestern University, Evanston, Illinois 60208 USA ³ Center for Nanoscale Materials, Argonne National Laboratory, Argonne, Illinois 60439 ⁴ Department of Electrical Engineering and Computer Science, Northwestern University, Evanston, Illinois 60208 USA ⁵ Chemical Sciences and Engineering Division, Argonne National Laboratory, Argonne, Illinois 60439 USA

- 26pKP16 First Principle Calculations of Electronic Band Structures of Wurtzite β -CuGaO₂ and β -AgGaO₂**
I. Suzuki^{1,*}, H. Nagatani¹⁾, M. Kita²⁾, Y. Iguchi³⁾, C. Sato³⁾, H. Yanagi³⁾, N. Ohashi⁴⁾ and T. Omata¹⁾
¹⁾ Graduate School of Engineering, Osaka University, Suita, Osaka 565-0871, Japan ²⁾ Department of Mechanical Engineering, Toyama National College of Technology, Hongo-machi, Toyama 939-8630, Japan ³⁾ Interdisciplinary Graduate School of Medical & Engineering Material Science & Technology, University of Yamanashi, Kofu, Yamanashi 400-8510, Japan ⁴⁾ National Institute for Materials Science, 1-1 Namiki, Tsukuba, Ibaraki 305-0044, Japan
- 26pKP17 A New Direct and Narrow Band Gap Oxide Semiconductor; Wurtzite CuGaO₂**
H. Nagatani^{1,*}, I. Suzuki¹⁾, M. Kita²⁾, H. Yanagi³⁾, N. Ohashi⁴⁾ and T. Omata¹⁾
¹⁾ Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University, Japan ²⁾ Department of Mechanical Engineering, Toyama National College of Technology, Japan ³⁾ Interdisciplinary Graduate School of Medical & Engineering Material Science & Technology, University of Yamanashi, Japan ⁴⁾ National Institute for Materials Science, Japan
- 26pKP18 First-Principles Study of Amorphous InGaZnO-SiO₂ Interfaces**
H. Song^{1,*}, Y. Kang¹⁾, H. Nahm²⁾ and S. Han¹⁾
¹⁾ Department of Materials Science and Engineering and Research Institute of Advanced Materials, Seoul National University, Seoul 151-744, Korea ²⁾ Center for Functional Interfaces of Correlated Electron Systems, Institute for Basic Science (IBS), Seoul 151-747, Republic of Korea ²⁾ Department of Physics and Astronomy, Seoul National University, Seoul 151-747, Republic of Korea
- 26pKP19 Impurities, Nonstoichiometry, and Electronic Properties in ZnO Crystals Annealed in Ultrahigh Vacuum**
T. Ohsawa^{1,*}, M. Hashiguchi¹⁾, I. Sakaguchi¹⁾ and N. Ohashi^{1,2)}
¹⁾ National Institute for Materials Science (NIMS), 1-1 Namiki, Tsukuba 305-0044, Japan. ²⁾ Materials Research Center for Element Strategy (MCES), Tokyo Institute of Technology, 4259 Nagatsuta, Midori-ku, Yokohama 226-0026, Japan.
- 26pKP20 Compositional Study of YSr₂(Cu,M)₃O_z (M: Mo or W)**
T. Maeda^{1,*}, Y. Oka¹⁾, S. Hirano¹⁾ and G. Matsui¹⁾
¹⁾ School of Environmental Science and Technology, Kochi University of Technology
- 26pKP21 Crystal Growth and Effects of Bi-Deficiency on Normal and Superconducting Properties of Noncentrosymmetric α -PdBi**
K. Okawa^{1,*}, M. Kanou¹⁾, T. Katagiri¹⁾, H. Kashiwaya²⁾, S. Kashiwaya²⁾ and T. Sasagawa¹⁾
¹⁾ Materials and Structures Laboratory, Tokyo Institute of Technology, Japan ²⁾ National Institute of Advanced Industrial Science and Technology (AIST), Japan
- 26pKP22 Effect of Synthesis Temperatures on Superconducting Properties of Double Perovskite Bismuth Oxides**
M.H.K. Rubel¹⁾, A. Miura¹⁾, T. Takei¹⁾, N. Kumada^{1,*}, K. Oka²⁾ and M. Azuma²⁾
¹⁾ Center for Crystal Science and Technology, University of Yamanashi, 7-32 Miyamae Kofu, 400-8511 Japan ²⁾ Materials and Structural laboratory, Tokyo Institute of Technology 4259 Nagatsuta, Midori-ku Yokohama-city, Kanagawa 226-8503 Japan

Thin Films

- 26pKP23 Effect of Surface Microstructure of YSZ Electrolyte on Morphological Stability of Pt Thin Film Electrode**
T. Shiota^{1,*}, H. Ito¹⁾, O. Sakurai¹⁾ and K. Shinozaki¹⁾
¹⁾ Department of Metallurgy and Ceramics Science, Tokyo Institute of Technology, JAPAN
- 26pKP24 Effects of Applying Dc-Electric Field on Crystal Structure of Epitaxial SrTiO₃ Thin Film by Rf-Magnetron Sputtering**
K. Torii^{1,*}, N. Sakamoto^{1,2)}, K. Shinozaki³⁾, H. Suzuki^{1,2,4)} and N. Wakiya^{1,2,4)}
¹⁾ Department of Electronics and Materials Science, Shizuoka University, Hamamatsu 432-8561, Japan ²⁾ Research Institute of Electronics, Shizuoka University, Hamamatsu 432-8561, Japan ³⁾ Department of Metallurgy and Ceramics Science, Tokyo Tech., Meguro-ku 182-8550, Japan ⁴⁾ Graduate School of Science and Technology, Shizuoka University, Hamamatsu 432-8561, Japan
- 26pKP25 Possibility of Spontaneous Superlattice Formation for Stabilized Zirconia Thin Film Using Dynamic Aurora PLD**
W. Kumasaka^{1,*}, N. Sakamoto^{1,2)}, K. Shinozaki³⁾, H. Suzuki^{1,2,4)} and N. Wakiya^{1,2,4)}
¹⁾ Department of Electronics and Materials Science, Shizuoka University, Hamamatsu 432-8561, Japan ²⁾ Research Institute of Electronics, Shizuoka University, Hamamatsu 432-8561, Japan ³⁾

Department of Metallurgy and Ceramics Science, Tokyo Tech., Meguro-ku 182-8550, Japan ⁴⁾
Graduate School of Science and Technology, Shizuoka University, Hamamatsu 432-8561, Japan

26pKP26 Crystallographic Properties of Bi₃Fe₅O₁₂ Films Prepared by Metal-Organic Decomposition Method

T. Ishibashi^{*)}, G. Lou and M. Sasaki

Dept. of Materials Science & Technology, Nagaoka Univ. of Tech., Japan

26pKP27 Optimization of Deposition Conditions of α -Al₂O₃ Thin Films by Low Pressure MOCVD Using Al(CH₃)₃

C.F. Lin^{1,*)}, A. Tanaka¹⁾, N. Ishizaki¹⁾, A. Nishiyama¹⁾, N. Wakiya²⁾, J.S. Cross¹⁾, T. Shiota¹⁾, O. Sakurai¹⁾ and K. Shinozaki¹⁾

¹⁾ *Department of Metallurgy and Ceramics Science, Tokyo Institute of Technology, 2-12-1 Ookayama, Meguro-ku, Tokyo 152-8550, JAPAN* ²⁾ *Research Institute of Electronics, Shizuoka University, 3-5-1 Johoku, naka-ku, Hamamatsu-shi, Shizuoka 432-8561, JAPAN*

26pKP28 Heteroepitaxial Growth of Scandium Nitride Films on M-Face Sapphire Substrates

T. Ohgaki^{1,*)}, K. Watanabe¹⁾, I. Sakaguchi¹⁾, S. Hishita¹⁾, N. Ohashi¹⁾ and H. Haneda¹⁾

¹⁾ *National Institute for Materials Science, JAPAN*

26pKP29 Crystal and Domain Structure of The Co-Substituted BiFeO₃ Thin Films on LaAlO₃ Substrates

K. Shimizu^{1,*)}, K. Onuma¹⁾, H. Hojo¹⁾ and M. Azuma¹⁾

¹⁾ *Materials and Structures Laboratory, Tokyo Institute of Technology, 4259 Nagatsuta, Midori-ku, Yokohama 226-8503, Japan*

BioMaterials

26pKP30 Adsorption and Release Properties of Bisphosphonate for Calcium Phosphate Carriers

S. Akiyama^{1,*)}, T. Yoshioka¹⁾, T. Ikoma¹⁾ and J. Tanaka¹⁾

¹⁾ *Tanaka-Ikoma Laboratory, Tokyo Institute of Technology, Japan*

26pKP31 Graphene Coated SPR Biosensor for Low Concentrations Detection of Amyloid-Beta

R. Murai^{*)}, J.S. Cross, T. Ikoma, T. Yoshioka and J. Tanaka

Department of Metallurgy and Ceramics Science, Tokyo Institute of Technology, Japan

26pKP32 Fabrication of Mesoporous Silica for The Slow Delivery of Prostaglandin

Y. Kimura^{*)}, T. Yoshioka, T. Ikoma and J. Tanaka

Department of Metallurgy and Ceramics Science, Tokyo Institute of Technology, JAPAN

26pKP33 Hydrothermal Synthesis for Luminescent Hydroxyapatite Nano-Crystals

R. Horimoto^{1,*)}, T. Ikoma¹⁾, T. Yoshioka¹⁾ and J. Tanaka¹⁾

¹⁾ *Department of Metallurgy and Ceramics Science, Tokyo Institute of Technology, Japan*

26pKP34 Equivalent Circuit Analysis of An Iontophoresis Electrode/Rat Skin System

Y. Hemmi^{1,*)}, T. Yoshioka¹⁾, T. Ikoma¹⁾, N. Ohashi²⁾, K. Matsumoto³⁾, T. Ebisawa³⁾, R. Wakita³⁾, H. Fukayama³⁾ and J. Tanaka¹⁾

¹⁾ *Department of Metallurgy and Ceramics Science, Tokyo Institute of Technology, JAPAN* ²⁾ *National Institute for Materials Science, JAPAN* ³⁾ *Anesthesiology and Clinical Physiology, Graduate School, Tokyo Medical and Dental University, JAPAN*

26pKP35 Influence of Small Amount of Additive and γ -Ray Irradiation to Mechanical Strength of Apatite-Collagen Composite

M. Minemoto^{*)}, T. Yoshioka, T. Ikoma and J. Tanaka

Department of Metallurgy and Ceramics Science, Tokyo Institute of Technology, JAPAN

26pKP36 Alignment of Tilapia Fish-Scale Collagen Fibers with Flowing Fluid on Glass Substrate and Silicon Wafer

S. Hirose^{1,*)}, T. Yoshioka¹⁾, T. Ikoma¹⁾ and J. Tanaka¹⁾

¹⁾ *Department of Metallurgy and Ceramics Science, Tokyo Institute of Technology, JAPAN*

26pKP37 Detection of Volatile Organic Compounds with Graphene Field Effect Transistor

T. Aoyagi^{*)}, J.S. Cross, T. Yoshioka, T. Ikoma and J. Tanaka

Department of Metallurgy and Ceramics Science, Tokyo Institute of Technology, JAPAN

26pKP38 Preparation Method of Porous Composites of Hydroxyapatite and Tilapia Scale Collagen for Artificial Bone

N. Yamaoka^{1,*)}, T. Ikoma¹⁾, T. Yoshioka¹⁾ and J. Tanaka¹⁾

¹⁾ *Department of Metallurgy and Ceramics Science, Tokyo Institute of Technology, JAPAN*

26pKP39 Formation of Polyphosphate/Collagen/Hydroxyapatite Composite Membranes

R. Watanabe^{*)}, Z. Xu, T. Yoshioka, T. Ikoma and J. Tanaka

Department of Metallurgy and Ceramics Science, Tokyo Institute of Technology

Superconductor

25pKP40 Electrochemical Modulation of Superconducting Properties of LiTi₂O₄ Thin Films by Ionic Liquid Gating
S. Maruyama^{1,2,*}, J. Shin¹, X. Zhang¹, J. Kui¹, R. Suchoski¹, S. Yasui^{1,3}, Y. Matsumoto², R.L. Greene¹ and I. Takeuchi¹
¹ Univ. of Maryland, College Park, MD 20742 USA ² Tohoku Univ., 6-6-07 Aoba, Aramaki, Aoba-ku, Sendai, 980-8579 Japan ³ Tokyo Tech, J2 4259 Nagatsutacho, Aoba-ku, Yokohama, 226-8503 Japan

19:00–21:00 Banquet (Fuji-Hoei)

Date: June 27 (Fuji)

Oral Session: Element Strategy & Chemistry: Hydrogen and Ion Migration

Chair: H. Hosono

- 09:00-09:30 27aFI01 Defects and Doping in Oxide Semiconductors (INVITED)**
A. Janotti^{1,*}
Materials Department, University of California, Santa Barbara, CA 93106-5050, USA
- 09:30-10:00 27aFI02 Hydrogen in Oxides: The Most Hidden Donor Element in Oxides (INVITED)**
N. Ohashi^{1,2,*}, T. Ohsawa¹, K. Watanabe¹, I. Sakaguchi¹, M. Hashiguchi¹, Y. Adachi¹ and H. Haneda¹
¹ *National Institute for Materials Science, Tsukuba, Ibaraki, Japan* ² *Materials Research Center for Element Strategy, Tokyo Institute of Technology, Yokohama, Japan*
- 10:00-10:30 27aFI03 DFT Simulation Study on Reactions in Electrolyte and at Electrode-Electrolyte Interface in Lithium Ion Battery (INVITED)**
Y. Tateyama^{1,2,3,*}
¹ *International Center for Materials Nanoarchitectonics (WPI-MANA), National Institute for Materials Science (NIMS), Tsukuba, Ibaraki 305-0044 Japan* ² *Elements Strategy Initiative for Catalysts & Batteries (ESICB), Kyoto University, Nishikyo-ku, Kyoto 615-8245, Japan* ³ *PRESTO & CREST, Japan Science and Technology Agency (JST), Kawaguchi, Saitama 333-0012, Japan*

10:30–11:00 Coffee Break

Oral Session: Element Strategy & Chemistry: Hydrogen and Defects

Chair: A. Janotti

- 11:00-11:15 27aFO01 Evidence of Defect Passivation in Amorphous In-Ga-Zn-O Obtained by Hard X-Ray Photoemission Spectroscopy**
T. Kamiya^{1,*}, J. Herms¹, T. Orui¹, Y. Hanyu¹, H. Hiramatsu¹, H. Kumomi¹, H. Hosono¹, S. Ueda² and N. Ohashi^{1,2}
¹ *Tokyo Institute of Technology, 4259 Nagatsuta, Midori-ku, Yokohama 226-8503, Japan* ² *National Institute for Materials Science, 1-1 Namiki, Tsukuba 305-0044, Japan*
- 11:15-11:30 27aFO02 Electric-Field Induced Hydrogenation of VO₂ Thin Films; Toward The Modulation of Metal-Insulator Transition and Thermopower**
T. Katase^{1,*}, K. Endo¹ and H. Ohta¹
¹ *Research Institute for Electronic Science, Hokkaido University, Sapporo, 001-0020, Japan*
- 11:30-11:45 27aFO03 First principles study of vibrational modes of anion species in Ca₁₂Al₁₄O₃₃**
S. Matsuishi^{1,*} and H. Hosono^{1,2,3}
¹ *Materials Research Center for Element Strategy, Tokyo Institute of Technology, 4259 Nagatsuta-cho, Midori-ku, Yokohama 226-8503, Japan* ² *Materials and Structures Laboratory, Tokyo Institute of Technology, 4259 Nagatsuta-cho, Midori-ku, Yokohama 226-8503, Japan* ³ *Frontier Research Center, Tokyo Institute of Technology, 4259 Nagatsuta-cho, Midori-ku, Yokohama 226-8503, Japan*
- 11:45-12:00 27aFO04 Hydrogen-Ordering-Induced Structural Transition in Sr₂VO_{4-x}H_x**
J. Bang^{1,*}, S. Matsuishi², H. Hiraka³, F. Fujisaki⁴, T. Otomo^{3,4}, S. Maki², J. Yamaura², R. Kumai^{3,4}, Y. Murakami^{3,4} and H. Hosono^{1,2,5}
¹ *Materials and Structures Laboratory, Tokyo Institute of Technology, Yokohama 226-8503, Japan* ² *Materials Research Center for Element Strategy, Tokyo Institute of Technology, Yokohama 226-8503, Japan* ³ *Institute of Materials Structure Science, High Energy Accelerator Research*

Organization (KEK), Tsukuba, Ibaraki 305-0801, Japan ⁴⁾ Department of Materials Structure Science, The Graduate University for Advanced Studies, Tsukuba, Ibaraki 305-0801, Japan ⁵⁾ Frontier Research Center, Tokyo Institute of Technology, Yokohama 226-8503, Japan

Oral Session: Element Strategy: Defects

Chair: T. Tada

12:00-12:15 27aFO05 Accurate Band Alignment of Semiconductors From First Principles

F. Oba^{1,2,*}, Y. Hinuma¹⁾, Andreas GrC<neis³⁾, G. Kresse³⁾

¹⁾ Department of Materials Science and Engineering, Kyoto University, Japan ²⁾ Materials Research Center for Element Strategy, Tokyo Institute of Technology, Japan ³⁾ University of Vienna, Faculty of Physics and Center for Computational Materials Science, Austria

12:15-12:30 27aFO06 Electronic Structures of Hexagonal Boron-Nitride Bilayer Sheets

Y. Fujimoto^{1,*}, T. Koretsune¹⁾ and S. Saito^{1,2,3)}

¹⁾ Department of Physics, Tokyo Institute of Technology, Meguro, Tokyo 152-8551 Japan ²⁾ International Research Center for Nanoscience and Quantum Physics, Tokyo Institute of Technology, Meguro, Tokyo 152-8551 Japan ³⁾ Materials Research Center for Element Strategy, Tokyo Institute of Technology, Yokohama, Kanagawa 226-8503 Japan

12:30-12:45 27aFO07 Theoretical Prediction of Phase Diagram and Other Related Properties of TiO₂ Polymorphs From First Principles

Y. Aoki^{1,*} and S. Saito^{1,2,3)}

¹⁾ Department of Physics, Tokyo Institute of Technology, JAPAN ²⁾ International Research Center for Nanoscience and Quantum Physics, Tokyo Institute of Technology, JAPAN ³⁾ Materials Research Center for Element Strategy, Tokyo Institute of Technology, JAPAN

12:45–13:00: Closing Remark