International Symposium on
Novel Energy Nanomaterials, Catalysts and Surfaces for Future Earth

-Material Research, Characterization and Imaging by *In situ*/*Operando* XAFS and X-ray Techniques-

UEC 100th Anniversary Commemorative Event

October 28 (Sat) – 30 (Mon), 2017

Venue: Building B at UEC, Tokyo

PROGRAM

Invited Lectures

SPECIAL

SL To be announced (Ministry of Economy, Trade and Industry (METI), Japan)

PLENARY

PL1 Anatoly I. Frenkel (Stony Brook Univ.; Brookhaven Nat. Lab., USA)
Cutting the Gordian Knots at the Nanoscale by in situ XAFS

PL2 Xinhe Bao (Univ. Sci. Tech. China; Dalian Inst. Chem. Phys., China)
Chainmail for Catalyst − the Role of Penetrating Electron in Catalysis

PL3 Suresh Bhargava (Royal Melbourne Inst. Tech., Australia)
3D Catalysis: Catalyst Development and Process Intensification

PL4 Kiyotaka Asakura (Hokkaido Univ., Japan)
Polarization-dependent Fluorescence XAFS Studies on the Fuel Cell Catalysts

PL5 Yoshitaka Okada (Univ. Tokyo, Japan)
Advanced Photovoltaics: Challenges Towards 50% Efficiency

KEYNOTE

KN1 Mizuki Tada (Nagoya Univ., Japan)
Visualization of Heterogeneity of Solid Catalysts

KN2 Jeroen van Bokhoven (ETH, Switzerland)
Observing Single Particles: How Supports affect the Spillover of Hydrogen

KN3 Carlo Lamberti (Torino Univ., Italy; Southern Federal Univ., Russia)
In situ and Operando XAFS Characterization of Functionalized MOFs

KN4 Yasuhiro Inada (Ritsumeikan Univ., Japan)
Advanced XAFS Techniques for Direct Characterization of Active Species of Catalysts and Batteries

KN5 Wendy. R. Flavell (Univ. Manchester, UK)
Surface and Interface Chemistry in Next Generation Solar Cells

INVITED

IN1 Taiyo Kawai (TOYOTA MOTOR Corp., Japan)
To be announced

IN2 Akihiro Iiyama (Univ. Yamanashi, Japan)
Recent R & D of Electrocatalysts and Polymer Electrolytes with Superlative, Stable, and Scalable Performance

IN3 Tomoya Uruga (Univ. Electro-Commun., Japan Synchrotron Radiation Research Inst. (JSRI), Japan)
SPring-8 BL36XU: Synchrotron Radiation-based Multi-Analytical Beamline for Polymer Electrolyte Fuel Cells under Operating Conditions

IN4 Yasumasa Takagi (Inst. Molec. Sci., Japan)
In-situ Ambient Pressure Hard X-ray Photoelectron Spectroscopic Study of Electrodes of Polymer Electrolyte Fuel Cells

IN5 Jin Nakamura (Univ. Electro-Commun., Japan)
Partial Density of States of Boron and Carbon Compounds Studied by Soft X-ray Absorption and Emission Spectroscopy

IN6 Jae Sung Lee (Ulsan Nat. Inst. Sci. Tech., Korea)
XAFS Studies of Catalysts for CO_2-to-liquid Fuel Conversions

IN7 Takashi Moriya (Honda R&D Co., Ltd., Japan)
To be announced

IN8 Florian Meirer (Utrecht Univ., Netherlands)
In-situ and Multi-modal X-ray Microscopy of Heterogeneous Catalysts

IN9 Hoydoo You (Argonne Nat. Lab., USA)
Coherent X-ray Scattering and Imaging of Electrode Interfaces and Nanocrystals

IN10 Daisuke Hashizume (RIKEN, Japan)
Visualization of Molecular World

IN11 Makina Yabashi (RIKEN; SPring-8 Center, Japan)
Status and Perspective of a Compact X-ray Free Electron Laser Facility SACLA

IN12 Jean-François Guillemoles (CNRS, France; CNRS-RCAST, Japan)
Photovoltaic Nanomaterials, Solar Hydrogen production and Hyperspectral Imaging

IN13 Takaya Kubo (Univ. Tokyo, Japan)
Colloidal Quantum Dot-based Hybrid Nanomaterials towards Solution Processed High Efficiency Solar Cells

IN14 Masamitsu Takahashi (Nat. Inst. Quantum Radiol. Sci. Tech., Japan)
Nano-scale Monitoring of the Growth of Semiconductor Photovoltaic Materials using in situ X-ray Diffraction

IN15 Shuhei Yagi (Saitama Univ., Japan)
Nanostructured Dilute Nitride Alloys for High-efficiency Solar Cells

Oral Presentations **O-1 – O-65**
Poster Presentations **1P-1 – 1P45, 2P-1 – 2P-81**

Oct. 28 (Sat)

SL: SPECIAL LECTURE
PL: PLENARY LECTURE
KN: KEYNOTE LECTURE
IN: INVITED LECTURE
O: ORAL PRESENTATION

Room# B-202

9:00	Registration
9:30	Opening Ceremony
10:00	SL To be announced (Ministry of Economy, Trade and Indus. (METI))
10:30	Coffee Break
10:50	PL1 A. I. Frenkel (Stony Brook Univ.; Brookhaven Nat. Lab., USA) Cutting the Gordian Knots at the Nanoscale by in situ XAFS
11:20	PL2 X. Bao (Univ. Sci. Tech. China.; Dalian Inst. Chem. Phys., China) Chainmail for Catalyst—the Role of Penetrating Electron in Catalysis
11:50	KN1 M. Tada (Nagoya Univ., Japan) Visualization of Heterogeneity of Solid Catalysts
12:15	Lunch
13:20	Poster 50 min
14:10	Group Photo
14:20	Coffee Break
14:40	IN1 T. Kawai (TOYOTA MOTOR CORP., Japan) To be announced
15:00	IN2 A. Iiyama (Univ. Yamanashi, Japan) Recent R & D of Electrocatalysts and Polymer Electrolytes to Realize Superlative, Stable, and Scalable Performance Fuel Cells
15:20	IN3 T. Uruga (Univ. Electro-Commun.; JASRI, Japan) SPring-8 BL36XU: Synchrotron Radiation-based Multi-Analytical Beamline for Polymer Electrolyte Fuel Cells under Operating Conditions
15:40	IN4 Y. Takagi (Inst. Molec. Sci., Japan) *In-situ* Ambient Pressure Hard X-ray Photoelectron Spectroscopic Study of Electrodes of Polymer Electrolyte Fuel Cells
16:00	O-1 H. Matsui (Inst. Molec. Sci., Japan) In-situ Ambient Pressure Hard X-ray Photoelectron Spectroscopic Study of Electrodes of Polymer Electrolyte Fuel Cells
16:15	O-2 J. Inukai (Univ. Yamanashi, Japan) Simultaneous Visualization of Oxygen Partial Pressure and Liquid Water/Ice inside Running Fuel Cell at Different Temperatures and Humidities
16:30	O-3 X. Zhao (Univ. Electro-Commun., Japan) Key Factors for High Performance and Durability of an Octahedral PtNix/C Electrocatalyst for Next–Generation Fuel Cells
16:45	O-4 N. Ishiguro (RIKEN; Nagoya Univ., Japan) ADT Processes of Pt/C and Pt_3Co/C PEFC Cathode Electrocatalysts Studied by Operando Time-resolved Quick-XAFS
17:00	O-5 Y. Wakisaka (Hokkaido Univ., Japan) Back-illuminated XAFS Measurement with the Use of BCLA for Low Concentration Pt/HOPG under Electrochemical Conditions
17:15	O-6 O. Sekizawa (JASRI; Univ. Electro-Commun., Japan) 3D XAFS Imaging Measurement System for Polymer Electrolyte Fuel Cells under Operating Conditions
17:30	O-7 F. E. Feiten (Hokkaido Univ., Japan) EXAFS Analysis of Nanoparticles for the Oxygen Reduction Reaction: Pt, PtCo, PtCoN and AuPtCoN
17:45	

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14:40	IN5 J. Nakamura (Univ. Electro-Commun., Japan) Partial Density of States of Boron and Carbon Compounds Studied by Soft X-ray Absorption and Emission Spectroscopy
15:00	O-8 W.Z. Qian (Tsinghua Univ., China) High Voltage Supercapacitor Based on Graphene and Ionic Liquids
15:15	O-9 K. Kaneko (Shinshu Univ., Japan) Non-Coulombic Accumulation of Co-ions of Ionic Liquids in Carbon Nanopores with HR-MC Aided X-ray Scattering: Insight for Better Supercapacitors
15:30	O-10 J. Nakamura (Univ. Electro-Commun., Japan) Anomalous Enhancement of Seebeck Coefficients of the Graphene/h-BN Composites
15:45	O-11 S. Suzuki (Nagoya Univ., Japan) Development of XANAM toward Chemical Analysis of Nanostructures on
16:00	O-12 T. Kondo (Ochanomizu Univ.; NIMS, Japan) Structure Analysis of Pt Ultra-Thin Layers Electrochemically Prepared on Au(111) by Resonance Surface X-ray Scattering
16:15	O-13 L. Liu (Qingdao Inst. Bioenergy Bioprocess Tech., China) The Flaky Cd Film on Cu Plate Substrate: an Active and Efficient Electrode for Electrochemical Reduction of CO_2 to Formate
16:30	O-14 T. Masuda (Nat. Inst. Mater. Sci., Japan) Active Metal Catalysts Incorporated within Molecular Layers on Si(111) Electrodes for Hydrogen Evolution and CO_2 Reduction
16:45	O-15 Y. Yang (Qingdao Inst. Bioenergy Bioprocess Tech., China) Highly Efficient Alkynes Transformation Catalyzed by a Novel Pd Nanoparticles Immobilized on Heteroatom-Doped Hierarchical Porous Carbon Derived from Bamboo Shoots
17:00	O-16 I. Tanabe (Osaka Univ., Japan) Electronic States of Interfacial Ionic Liquids Investigated by Electrochemical Far- and Deep-Ultraviolet Spectroscopy
17:15	O-17 J. Yu (Qingdao Univ.; Lanzhou Inst. Chem. Phys, China) The Modification of SAPO Molecular Sieves and Enhanced Catalytic Performance for Dimethyl Ether to Olefins
17:30	O-18 X. D. Hao (Tohoku Univ., Japan) Size-dependent Cerium Valence State Variation in the Ultrafine CeO_2 Nanocubes Synthesized from Supercritical Water
17:45	

Oct. 29 (Sun)

Room# B-202

8:30	Registration
9:00	PL3 S. Bhargava (Royal Melbourne Inst. Tech., Australia) 3D Catalysis: Catalyst Development and Process Intensification
9:30	PL4 K. Asakura (Hokkaido Univ., Japan) Polarization-dependent Fluorescence XAFS Studies on the Fuel Cell Catalysts
10:00	KN2 J. van Bokhoven (ETH, Switzerland) Observing Single Particles: How Supports Affect the Spillover of Hydrogen
10:25	Coffee Break
10:45	KN3 C. Lamberti (Torino Univ., Italy; South. Fed. Univ., Russia) In Situ and Operando XAFS Characterization of Functionalized MOFs
11:15	KN4 Y. Inada (Ritsumeikan Univ., Japan) Advanced XAFS Techniques for Direct Characterization of Active Species of Catalysts and Batteries
11:40	IN6 J. S. Lee (Ulsan Nat. Inst. Sci. Tech., Korea) XAFS Studies of Catalysts for CO_2-to-Liquid Fuel Conversions
12:00	IN7 T. Moriya (Honda R&D Co., Ltd., Japan) To be announced
12:20	Lunch
13:20	Poster 60 min
14:20	Coffee Break
14:40	IN8 F. Meirer (Utrecht Univ., Netherlands) In-situ and Multi-modal X-ray Microscopy of Heterogeneous Catalysts
15:00	IN9 H. You (Argonne Nat. Lab., USA) Coherent X-ray Scattering and Imaging of Electrode Interfaces and Nanocrystals
15:20	O-19 J. Guo (Lawrence Berkeley Nat. Lab., USA) In-Situ/Operando Soft X-Ray Characterization of Electrochemical Processes
15:35	O-20 T. Hyodo (JASRI, Japan) Surface Structure Determination by Total-Reflection High-Energy Positron Diffraction (TRHEPD)
15:50	O-21 A. Zitolo (Synchrotron SOLEIL, France) X-ray Absorption Modelling of Catalytic Sites in Non-Precious Metal Fuel Cells Cathodes
16:05	O-22 A. Ishihara (Yokohama Nat. Univ., Japan) Challenges toward Precious-Metal- and Carbon-Free Oxide Cathode for Advanced PEFCs
16:20	O-23 M. Hirose (Yokohama Nat. Univ., Japan) Nanoscale Chemical Imaging of Oxygen Storage and Release Particles by Hard X-ray Spectro-Ptychography
16:35	O-24 H. J. Shin (POSTECH, Korea) A Scanning Transmission Soft-x-ray Microscope for Energy Materials Investigation
16:50	O-25 M. Kimura (KEK; SOKENDAI, Japan) Finding Trigger Sites of Degradation of Structural Materials for Aircrafts Using X-ray Microscopy
17:05	O-26 R. K. Singh (Univ. Electro-Commun., Japan; IIST, India) A Non-Iterative Approach to Recover Phase from Intensity Signal
17:20	O-27 D. Matsumura (Japan Atomic Energy Agency, Japan) TPR-XAFS Study for Water Formation Reaction of Platinum Metal Nanoparticle Catalysts
17:35	O-28 S. Takakusagi (Hokkaido Univ., Japan) Polarization-Dependent Total Reflection Fluorescence (PTRF)-XAFS Study of Single Metal Dispersion on a TiO_2(110) Surface Premodified with a Mercapto Compound
17:50	

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14:40	IN10 D. Hashizume (RIKEN, Japan) Visualization of Molecular World
15:00	O-29 T. Fujita (Mitsui Chemicals, Inc., Japan) Development of New Catalysts for Selective Ethylene Trimerization to 1-Hexene Based on Highly Active Ethylene Polymerization Catalysts (1)
15:15	O-30 T. Nakano (Mitsui Chemicals, Inc., Japan) Development of New Catalysts for Selective Ethylene Trimerization to 1-Hexene Based on Highly Active Ethylene Polymerization Catalysts (2)
15:30	O-31 M. L. Kantam (Inst. Chem. Tech., India) Copper Catalyzed C-H Bond Activation
15:45	O-32 Y. Yuan (Xiamen Univ., China) Unprecedented Regioselective Hydrogenolysis of Aryl Ether C–O Bonds by Tungsten Carbides with Controlled Phase Composition
16:00	O-33 K. Motokura (Tokyo Inst. Tech., Japan) Concerted Catalysis between Metal Complexes and Organic Amines on Surface for Significant Acceleration of Organic Synthesis
16:15	O-34 T. Mitsudome (Osaka Univ., Japan) Vanadium-decorated Platinum Nanoparticle Catalyst for Green Sustainable Hydrogenation of Amides to Amines
16:30	O-35 H. Yoshitake (Yokohama Nat. Univ., Japan) Intermolecular Oxidative Dehydrogenation between Unsaturated Aldehyde and Alcohol on Gold Supported on Nanostructured Oxides
16:45	O-36 T. Mizugaki (Osaka Univ., Japan) Development of High Performance Heterogeneous Catalysts for Selective C–C Bond Scission of Biogenic Oxygenates
17:00	O-37 K. Hara (Tokyo Univ. Tech., Japan) Iron-immobilized Periodic Mesoporous Organosilica as Active and Selective Catalyst for Amino Alcohol Synthesis
17:15	O-38 X. Mu (Qingdao Inst. of Bioenergy and Bioprocess Tech., China) In Situ Encapsulated Ultrasmall Ir Clusters within Mesoporous Carbon Nanospheres for Highly Selective Methylation of Alcohols
17:30	O-39 G. Seong (Tohoku Univ., Japan) Chemical Conversion at Subcritical to Supercritical Hydrothermal Conditions Using {001} Crystal Planes Exposed CeO_2 Nanocatalysts
17:45	

18:15 20:00	Banquet (Creston Hotel Chofu)

Oct. 30 (Mon)

Room# B-202

8:30	Registration
9:00	PL5 Y. Okada (Univ. Tokyo, Japan) Advanced Photovoltaics: Challenges Towards 50% Efficiency
9:30	KN5 W. R. Flavell (Univ. Manchester, UK) Surface and Interface Chemistry in Next-generation Solar Cells
9:55	Coffee Break
10:15	IN11 M. Yabashi (RIKEN; SPring-8 Center, Japan) Status and Perspective of a Compact X-ray Free Electron Laser Facility SACLA
10:35	O-40 H. Abe (KEK, Japan) In Situ TREXS Observation of Surface Reduction Reaction of NiO Flim with ~2 nm Surface Sensitivity
10:50	O-41 J.-O. Wang (Shanghai Inst. Appl. Phys., China) Investigating the Co-base Catalyst Structure in Water Splitting Reaction by X-ray Absorption Spectra
11:05	O-42 M. Nagasaka (Inst. Molec. Sci., Japan) Phase Transition of Aqueous Solution with Lower Critical Solution Temperature Studied by Soft X-ray Absorption Spectroscopy
11:20	O-43 H. Ikeda (TOYOTA MOTOR CORP., Japan) Adsorption State of Reactant on Thin Film Model Catalyst under Near Ambient Pressure Conditions
11:35	O-44 M. Chen (Xiamen Univ. China) Surface Composition of Supported Bimetal Nanoparticles: HS-LEIS & XPS Studies
11:50	O-45 X. Shao (Univ. Sci. Tech. China, China) The Structure and Adsorption Properties of the Au-Cu Bimetallic Systems
12:05	Lunch
13:05	O-46 K. Fukui (Osaka Univ., Japan) Correlation between the Interfacial Structure and Hole Mobility for Electric Double Layer FET using Ionic Liquid
13:20	O-47 M. Shirai (Iwate Univ., Japan) Platinum Nanosheets Intercalated between Graphite Layers
13:35	O-48 Z. Bin (Nat. Univ. Singapore, Singapore) In-situ XAS evidence for the Mars-van-Krevelen mechanism in the Rh Single-atom catalyzed CO oxidation
13:50	O-49 X. Y. Liu (Dalian Inst. Chem. Phys., China) XAS Characterization of Gold-Based Catalysts
14:05	O-50 K. Ueda (Nagoya Univ., Japan) In situ XAFS Studies of Cu Redox Behavior in MFI Zeolite Structure during NH_3-SCR Reaction
14:20	O-51 A. Wang (Dalian Inst. Chem. Phys., China) Atomic Characterization of Single-Atom-Catalysts
14:35	O-52 H. Asakura (Kyoto Univ., Japan) Operando XAFS Study on Pd Species of Pd/Al_2O_3 Model Catalyst During Three-Way Catalytic Reaction
14:50	O-53 T. Takeguchi (Iwate Univ., Japan) Effect of Surface Pt-Ru Bondings to CO Tolerance of PtRu/C PEFC Anode Catalysts
15:05 15:20	O-54 J. Inukai (Univ. Yamanashi, Japan) Surface Composition, Structure, and Oxygen Reduction Reaction Activity on Pt-Co(111) Alloy Single-Crystal Electrodes Prepared under H_2 Atmosphere
15:25 15:45	Award and Closing

Room# B-201

10:15	IN12 J. F. Guillemoles (CNRS, France; CNRS-RCAST, Japan) Photovoltaic Nanomaterials, Solar Hydrogen Production and Hyperspectral Imaging
10:35	IN13 T. Kubo (Univ. Tokyo, Japan) Colloidal Quantum Dot-based Hybrid Nanomaterials towards Solution Processed High Efficiency Solar Cells
10:55	IN14 M. Takahashi (Nat. Inst. Quantum Radiol. Sci. Tech., Japan) Nano-scale Monitoring of the Growth of Semiconductor Photovoltaic Materials using in situ X-ray Diffraction
11:15	IN15 S. Yagi (Saitama Univ., Japan) Nanostructured Dilute Nitride Alloys for High-Efficiency Solar Cells
11:35	O-55 N. Rösch (Univ. München, Germany; Inst. High Performance Computing, Agency Sci., Tech. Res., Singapore) Improving Energy Storage— Modeling the Redox Activity of Polyoxometallates
11:50	O-56 Q. Shen (Univ. Electro-Commun., Japan) Effects of Interface Passivation on Photoexcited Carrier Dynamics and Photovoltaic Properties of Perovskite Solar Cells
12:05	Lunch
13:05	O-57 T. Toyoda (Univ. Electro-Commun., Japan) Photoinduced Interfacial Electron Transfer Dynamics of CdSe Quantum Dots on the (001), (110), and (111) Surfaces of Single Crystal Rutile TiO_2
13:20	O-58 T. Sogabe (Univ. Electro-Comm., Japan) Light Interference Integrated Device Simulation in Thin Film InAs/GaAs Quantum Dot Solar Cell
13:35	O-59 V. Vohra (Univ. Electro-Commun., Japan) Eco-friendly Processes for Polymer Photovoltaic Device Fabrication
13:50	O-60 S. Hosokawa (Kumamoto Univ., Japan) An X-ray Fluorescence Holographic Study on a Fe-based High-temperature Superconductor $FeSe_{0.4}Te_{0.6}$
14:05	O-61 Y. Uchimoto (Kyoto Univ.,Japan) Time-resolved XRD Study on Phase Transition Behavior of Cathode Materials of Lithium-ion Batteries
14:20	O-62 N. Sonoyama (Nagoya Inst. Tech., Japan) XAFS Study of Redox Activity of Al^{3+} in Nanosize Binary Metal Oxide Obtained from Layered Double Hydroxide as an Anode for Lithium Battery
14:35	O-63 H. Zhang (Chiba Univ., Japan) Monitoring of Active Site Structure of Pd/TiO_2 Photocatalyst Under the Reaction Conditions of CO_2 Photoconversion into Fuels
14:50	O-64 H. Onishi (Kobe Univ., Japan) $NaTaO_3$ Photocatalysts Doped with Alkaline Earth Metals: Simultaneous Doping of A site and B site in Perovskite-Structured Lattice
15:05 15:20	O-65 Z.-M. Wang (Nat. Inst. Advanced Indus. Sci. Tech., Japan) Anchoring Titanium Dioxide on Carbon Microspheres for High-performance Visible Light Photocatalysis

Room# B-202

October 28 (Sat)
9:30-10:00
Opening Ceremony

10:00-10:30
SL To be announced
(Ministry of Economy, Trade and Industry, Japan)

10:30-10:50 **Coffee Break**

10:50-11:20
PL1 Cutting the Gordian Knots at the Nanoscale by in situ XAFS
A. I. Frenkel[1,2]
([1]Stony Brook Univ., [2]Brookhaven Nat. Lab., USA)

11:20-11:50
PL2 Chainmail for Catalyst - the Role of Penetrating Electron in Catalysis
X. Bao
(Univ. Sci. Tech. China; Dalian Inst. Chem. Phys., China)

11:50-12:15
KN1 Visualization of Heterogeneity of Solid Catalysts
M. Tada[1,2], H. Matsui[1], and N. Ishiguro[2]
([1]Nagoya Univ., [2]RIKEN, Japan)

12:15-13:20 **Lunch**

13:20-14:10 **Poster Presentations 1P-1 − 1P-45** (Building B Hall)

14:10-14:20 **Group Photo**

14:20-14:40 **Coffee Break**

14:40-15:00
IN1 To be announced
T. Kawai
(TOYOTA MOTOR Corp., Japan)

15:00-15:20
IN2 Recent R & D of Electrocatalysts and Polymer Electrolytes to Realize Superlative, Stable, and Scalable Performance Fuel Cells
A. Iiyama, K. Kakinuma, M. Uchida, H. Yano, J.Inukai, J. Miyake, K. Miyatake, and H. Uchida
(Univ. Yamanashi, Japan)

15:20-15:40

IN3 SPring-8 BL36XU: Synchrotron Radiation-based Multi-analytical Beamline for Polymer Electrolyte Fuel Cells under Operating Conditions
T. Uruga[1, 2], M. Tada[3, 4], Y. Takagi[5, 6], O. Sekizawa[1, 2], T. Sakata[1], K. Higashi[1], T. Yokoyama[5, 6], and Y. Iwasawa[1]
([1]Univ. Electro-Commun., [2]Japan Synchrotron Rad. Res. Inst. (JASRI), [3]RIKEN, [4]Nagoya Univ., [5]Inst. Molec. Sci., [6]Graduate Univ. Advanced Studies (SOKENDAI), Japan)

15:40-16:00

IN4 *In-situ* Ambient Pressure Hard X-ray Photoelectron Spectroscopic Study of Electrodes of Polymer Electrolyte Fuel Cells
Y. Takagi
(Inst. Molec. Sci., Japan)

16:00-16:15

O-1 3D-visualization of PEFC Pt Cathode Catalyst in MEA during ADT Cycles by *Operando* CT-XANES Technique
H. Matsui[1], N. Ishiguro[2], T. Uruga[3,4], O. Sekizawa[3,4], and M. Tada[1,2]
([1]Nagoya Univ., [2]RIKEN, [3]Univ. Electro-Commun., [4]Japan Synchrotron Rad. Res. Inst. (JASRI), Japan)

16:15-16:30

O-2 Simultaneous Visualization of Oxygen Partial Pressure and Liquid Water/Ice inside Running Fuel Cell at Different Temperatures and Humidities
J. Inukai[1], K. Nagase[1,2], M. Uchida[1], A. Iiyama[1], and M. Watanabe[1]
([1]Univ. Yamanashi, [2]Takahata Precision Jpn., Japan)

16:30-16:45

O-3 Key Factors for High Performance and Durability of an Octahedral $PtNi_x$/C Electrocatalyst for Next–Generation Fuel Cells
X. Zhao[1], S. Takao[1], K. Higashi[1], T. Kaneko[1], G. Samjeskè[1], O. Sekizawa[2], T. Sakata[1], Y. Yoshida[1], T. Uruga[1,2], and Y. Iwasawa[1]
([1]Univ. Electro-Commun., [2]Japan Synchrotron Rad. Res. Inst. (JASRI), Japan)

16:45-17:00

O-4 ADT Processes of Pt/C and Pt3Co/C PEFC Cathode Electrocatalysts Studied by Operando Time-resolved Quick-XAFS
N. Ishiguro[1,2], S. Kityakarn[2,3], O. Sekizawa[4,5], T. Uruga[4,5], H. Matsui[2], K. Nagasawa[4], and M. Tada[1,2]
([1]RIKEN, [2]Nagoya Univ., Japan; [3]Kasetsart Univ., Thailand; [4]Univ. Electro-Commun., [5]Japan Synchrotron Rad. Res. Inst. (JASRI), Japan)

17:00-17:15

O-5 Back-illuminated XAFS Measurement with the Use of BCLA for Low Concentration Pt/HOPG under Electrochemical Conditions
Y. Wakisaka[1], H. Uehara[1], D. Kido[1], T. Ohba[1], Q. Yuan[1], S. Mukai[1], Y. Iwasaki[1], S. Takakusagi[1], Y. Uemura[2], T. Yokoyama[2], T. Wada[3], M. Uo[3], O. Sekizawa[4, 5], T. Uruga[4, 5], Y. Iwasawa[4], and K. Asakura[1]
([1]Hokkaido Univ., [2]Inst. Molec. Sci., [3]Tokyo Medical and Dental Univ., [4]Univ. Electro-Commun., [5]Japan Synchrotron Rad. Res. Inst. (JASRI), Japan)

17:15-17:30

O-6 3D XAFS Imaging Measurement System for Polymer Electrolyte Fuel Cells under Operating Conditions

O. Sekizawa[1, 2], T. Uruga[1, 2], T. Sakata[2], N. Ishiguro[3], H. Matsui[4], K. Higashi[2], Y. Iwasawa[2], and M. Tada[3, 4]

([1]Japan Synchrotron Rad. Res. Inst. (JASRI), [2]Univ. Electro-Commun., [3]RIKEN, [4]Nagoya Univ., Japan)

17:30-17:45

O-7 EXAFS Analysis of Nanoparticles for the Oxygen Reduction Reaction : Pt, PtCo, PtCoN and AuPtCoN

F. E. Feiten[1], S. Takahashi[2], O. Sekizawa[3,4], Y. Wakisaka[1], T. Sakata[3], N. Todoroki[2], T. Uruga[3,4], T. Wadayama[2], Y. Iwasawa[3] and K. Asakura[1]

([1]Hokkaido Univ., [2]Tohoku Univ., [3]Univ. Electro-Commun., [4]Japan Synchrotron Rad. Res. Inst. (JASRI), Japan)

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October 28 (Sat)

14:40-15:00

IN5 Partial Density of States of Boron and Carbon Compounds Studied by Soft X-ray Absorption and Emission Spectroscopy
J. Nakamura
(Univ. Electro-Commun., Japan)

15:00-15:15

O-8 High Voltage Supercapacitor Based on Graphene and Ionic Liquids
W.Z. Qian, J.R. Tian, and Y.F. Yang
(Tsinghua Univ., China)

15:15-15:30

O-9 Non-Coulombic Accumulation of Co-ions of Ionic Liquids in Carbon Nanopores with HR-MC Aided X-ray Scattering: Insight for Better Supercapacitors
R. Futamura[1], T. Iiyama[1], Y. Takasaki[1], Y. Gogotsi[2], M. Biggs[3], P. Simon[4], and K. Kaneko[1]
([1]Shinshu Univ., Japan; [2]Drexel Univ., USA; [3]Loughborough Univ., UK; [4] CNRS, France)

15:30-15:45

O-10 Anomalous Enhancement of Seebeck Coefficients of the Graphene/*h*-BN Composites
J. Nakamura[1,2] and A. Akaishi[1,2]
([1]Univ. Electro-Commun., [2]CREST-JST, Japan)

15:45-16:00

O-11 Development of XANAM toward Chemical Analysis of Nanostructures on Surfaces
S. Suzuki[1], S. Mukai[2], W.-J. Chun[3], M. Nomura[4], and K. Asakura[2]
([1]Nagoya Univ., [2]Hokkaido Univ., [3]Int. Christ. Univ., [4]High Energy Accelerator Res. Org. (KEK), Japan)

16:00-16:15

O-12 Structure Analysis of Pt Ultra-Thin Layers Electrochemically Prepared on Au(111) by Resonance Surface X-ray Scattering
T. Kondo[1,2], M. Ishizaki[1], M. Hirota[1], M. Ueda[1], S. Seino[1], T. Masuda[2], and K. Uosaki[2]
([1]Ochanomizu Univ., [2]Nat. Inst. Mater. Sci. (NIMS), Japan)

16:15-16:30

O-13 The Flaky Cd Film on Cu Plate Substrate: an Active and Efficient Electrode for Electrochemical Reduction of CO_2 to Formate
L. Liu[1], Z. Chen[1, 2], and N. Wang[1]
([1]Qingdao Inst. Bioenergy Bioprocess Tech., [2] Univ. Chinese Acad. Sci., China)

16:30-16:45

O-14 Active Metal Catalysts Incorporated within Molecular Layers on Si(111) Electrodes for Hydrogen Evolution and CO_2 Reduction
T. Masuda[1], S. Takakusagi[2], W.-J. Chun[3], T. Kondo[4], K. Asakura[2], and K. Uosaki[1]
([1]Nat. Inst. Mater. Sci. (NIMS), [2]Hokkaido Univ., [3]Int. Christ. Univ., [4]Ochanomizu Univ., Japan)

16:45-17:00

O-15 Highly Efficient Alkynes Transformation Catalyzed by a Novel Pd Nanoparticles Immobilized on Heteroatom-doped Hierarchical Porous Carbon Derived from Bamboo Shoots
Y. Yang, G.-J. Ji, Y.-N. Duan, and S.-C. Zhang
(Qingdao Inst. Bioenergy Bioprocess Tech., China)

17:00-17:15

O-16 Electronic States of Interfacial Ionic Liquids Investigated by Electrochemical Far- and Deep- Ultraviolet Spectroscopy
I. Tanabe, A. Suyama, T. Sato, and K. Fukui
(Osaka Univ., Japan)

17:15-17:30

O-17 The Modification of SAPO Molecular Sieves and Enhanced Catalytic Performance for Dimethyl Ether to Olefins
J. Yu[1, 2], D. Zhao[1], Y. Zhang[1], Z. Li[1], and Y. Wang[2]
([1]Qingdao Univ., [2]Lanzhou Inst. Chem. Phys., China)

17:30-17:45

O-18 Size-dependent Cerium Valence State Variation in the Ultrafine CeO_2 Nanocubes Synthesized from Supercritical Water
X.D. Hao[1], C.L. Chen[1], M. Saito[1,2], S. Takami[1], T. Adschiri[1], and Y. Ikuhara[1,2,3]
([1]Tohoku Univ., [2]Univ. Tokyo, [3]Japan Fine Ceramics Center, Japan)

Room# B-202

October 29 (Sun)

9:00-9:30

PL3 3D Catalysis: Catalyst Development and Process Intensification
S. Bhargava
(Royal Melbourne Inst. Tech., Australia)

9:30-10:00

PL4 Polarization-dependent Fluorescence XAFS Studies on the Fuel Cell Catalysts
K. Asakura
(Hokkaido Univ., Japan)

10:00-10:25

KN2 Observing single particles: how supports affect the spillover of hydrogen
J. van Bokhoven
(ETH, Switzerland)

10:25-10:45 **Coffee Break**

10:45-11:15

KN3 In situ and operando XAFS characterization of functionalized MOFs
C. Lamberti
(Torino Univ., Italy; Southern Federal Univ., Russia)

11:15-11:40

KN4 Advanced XAFS Techniques for Direct Characterization of Active Species of Catalysts and Batteries
Y. Inada
(Ritsumeikan Univ., Japan)

11:40-12:00

IN6 XAFS Studies of Catalysts for CO_2-to-liquid Fuel Conversions
S. H. Choi[1], Y. H. Choi[2], D. H. Youn[2], and J. S. Lee[2]
([1]Pohang Univ. Sci. Tech. (POSTECH), [2]Ulsan Nat. Inst. Sci. Tech. (UNIST), Korea)

12:00-12:20

IN7 To be announced
T. Moriya
(Honda R&D Co., Ltd., Japan)

12:20-13:20 **Lunch**

13:20-14:20 **Poster Presentations 2P-1 − 2P-81** (Building B Hall)

14:20-14:40 **Coffee Break**

14:40-15:00

IN8 In-situ and Multi-modal X-ray Microscopy of Heterogeneous Catalysts

F. Meirer
(Utrecht Univ., Netherlands)

15:00-15:20

IN9 Coherent X-ray Scattering and Imaging of Electrode Interfaces and Nanocrystals
H. You
(Argonne Nat. Lab., USA)

15:20-15:35

O-19 In-Situ/Operando Soft X-Ray Characterization of Electrochemical Processes
J. Guo[1,2]
([1]Lawrence Berkeley Nat. Lab., [2]Univ. California, USA)

15:35-15:50

O-20 Surface Structure Determination by Total-reflection High-Energy Positron Diffraction (TRHEPD)
T. Hyodo[1], I. Mochizuki[1], A. Ichimiya[1], Y. Fukaya[2], H. Ariga[3], and K. Asakura[3]
([1]High Energy Accelerator Res. Org. (KEK), [2]Japan Atomic Energy Agency (JAEA), [3]Hokkaido Univ., Japan)

15:50-16:05

O-21 X-ray Absorption Modelling of Catalytic Sites in Non-Precious Metal Fuel Cells Cathodes
A. Zitolo[1], N. Ranjbar-Sahraie[2], T. Mineva[2], Q. Jia[3], J. Li[3], S. Stamatin[4], P. Krtil[4], V. Armel[2], V. Goellner[2], M.-T. Sougrati[2], L. Stievano[2], S. Mukerjee[3], E. Fonda[1], and F. Jaouen[2]
([1]Synchrotron SOLEIL, [2]Univ. Montpellier, France; [3]Northeastern Univ., USA; [4]J. Heyrovsky Inst. Phys. Chem., Czech Republic)

16:05-16:20

O-22 Challenges toward Precious-Metal- and Carbon-Free Oxide Cathode for Advanced PEFCs
A. Ishihara, T. Nagai, Y. Kuroda, K. Matsuzawa, S. Mitsushima, and K. Ota
(Yokohama Nat. Univ., Japan)

16:20-16:35

O-23 Nanoscale Chemical Imaging of Oxygen Storage and Release Particles by Hard X-ray Spectro-Ptychography
M. Hirose[1,2], N. Ishiguro[2], K. Shimomura[1,2], N. Burdet[2], H. Matsui[3], M. Tada[2,3], and Y. Takahashi[1,2]
([1]Osaka Univ., [2]RIKEN, [3]Nagoya Univ., Japan)

16:35-16:50

O-24 A Scanning Transmission Soft-x-ray Microscope for Energy Materials Investigation
H. J. Shin, N. D. Kim, S. H. Lee, and H. S. Kim
(Pohang Univ. Sci. Tech. (POSTECH), Korea)

16:50-17:05

O-25 Finding Trigger Sites of Degradation of Structural Materials for Aircrafts Using X-ray Microscopy
M. Kimura[1,2], Y. Takeichi[1,2], Y. Niwa[1], T. Watanabe[1], I. Obayashi[3], Y. Hiraoka[3], T. Ishii[1], K. Kimijima[1], T. Yokoi[4], S. Kitaoka[4], K. Takagi[5], and T. Abe[6]
([1]High Energy Accelerator Res. Org. (KEK), [2]Graduate Univ. Advanced Studies (SOKENDAI), [3]Tohoku Univ., [4]Japan Fine Ceramic Center, [5]Mitsubishi Heavy Industries Ltd., [6] Churyo Eng. Co. Ltd., Japan)

17:05-17:20

O-26 A Non-Iterative Approach to Recover Phase from Intensity Signal
R. K. Singh[1,2], S. Vyas[1], and Y. Miyamoto[1]
([1]Univ. Electro-Commun., Japan; [2]Indian Inst. Space Sci. Tech. (IIST), India)

17:20-17:35

O-27 TPR-XAFS Study for Water Formation Reaction of Platinum Metal Nanoparticle Catalysts
D. Matsumura[1], M. Taniguchi[2], T. Tsuji[1], H. Tanaka[3], and Y. Nishihata[1]
([1]Japan Atomic Energy Agency (JAEA), [2]Daihatsu Motor Co., Ltd., [3]Kwansei Gakuin Univ., Japan)

17:35-17:50

O-28 Polarization-Dependent Total Reflection Fluorescence (PTRF)-XAFS Study of Single Metal Dispersion on a TiO_2(110) Surface Premodified with a Mercapto Compound
S. Takakusagi[1], Y. Iwasawa[2], and K. Asakura[1]
([1]Hokkaido Univ., [2]Univ. Electro-Commun., Japan)

18:15-20:00

Banquet (Creston Hotel Chofu)

Room# B-201

October 29 (Sun)

14:40-15:00

IN10 Visualization of Molecular World
D. Hashizume
(RIKEN, Japan)

15:00-15:15

O-29 Development of New Catalysts for Selective Ethylene Trimerization to 1-Hexene Based on Highly Active Ethylene Polymerization Catalysts (1)
S. Ishii, T. Nakano, S. Ichikawa, and T. Fujita
(Mitsui Chemicals, Inc., Japan)

15:15-15:30

O-30 Development of New Catalysts for Selective Ethylene Trimerization to 1-Hexene Based on Highly Active Ethylene Polymerization Catalysts (2)
T. Nakano, S. Ishii, S. Ichikawa, and T. Fujita
(Mitsui Chemicals, Inc., Japan)

15:30-15:45

O-31 Copper Catalyzed C-H Bond Activation
A. V. Nakhate, K. B. Rasal, G. P. Deshmukh, R. S. Vishwakarma, S. S. R. Gupta, and M. L. Kantam
(Inst. Chem. Tech., India)

15:45-16:00

O-32 Unprecedented Regioselective Hydrogenolysis of Aryl Ether C–O Bonds by Tungsten Carbides with Controlled Phase Composition
H. Fang, C. Tian, and Y. Yuan
(Xiamen Univ., China)

16:00-16:15

O-33 Concerted Catalysis between Metal Complexes and Organic Amines on Surface for Significant Acceleration of Organic Synthesis
K. Motokura[1], K. Maeda[1], M. Ikeda[1], M. Nambo[1], W.-J. Chun[2], K. Nakajima[3], and S. Tanaka[4]
([1]Tokyo Inst. Tech., [2]Int. Christ. Univ., [3]Hokkaido Univ., [4]Nat. Inst. Advanced Indus. Sci. Tech. (AIST), Japan)

16:15-16:30

O-34 Vanadium-decorated Platinum Nanoparticle Catalyst for Green Sustainable Hydrogenation of Amides to Amines
T. Mitsudome, Z. Maeno, T. Mizugaki, K. Jitsukawa, and K. Kaneda
(Osaka Univ., Japan)

16:30-16:45

O-35 Intermolecular Oxidative Dehydrogenation between Unsaturated Aldehyde and Alcohol on Gold Supported on Nanostructured Oxides
H. Yoshitake, K. Tsutsumi, S. Kenjo, and S. Nakahara

(Yokohama Nat. Univ., Japan)

16:45-17:00

O-36 Development of High Performance Heterogeneous Catalysts for Selective C–C Bond Scission of Biogenic Oxygenates
T. Mizugaki, K. Uesugi, K. Nitta, Z. Maeno, T. Mitsudome, K. Jitsukawa, and K. Kaneda
(Osaka Univ., Japan)

17:00-17:15

O-37 Iron-immobilized Periodic Mesoporous Organosilica as Active and Selective Catalyst for Amino Alcohol Synthesis
P. Shejwalkar[1], K. Hara[1], Y. Maegawa[2], Y. Teraji[1], and S. Inagaki[2]
([1]Tokyo Univ. Tech., [2]Toyota Central R&D Lab. Inc., Japan)

17:15-17:30

O-38 In Situ Encapsulated Ultrasmall Ir Clusters within Mesoporous Carbon Nanospheres for Highly Selective Methylation of Alcohols
Q. Liu, G. Xu, and X. Mu
(Qingdao Inst.Bioenergy Bioprocess Tech., China)

17:30-17:45

O-39 Chemical Conversion at Subcritical to Supercritical Hydrothermal Conditions Using {001} Crystal Planes Exposed CeO_2 Nanocatalysts
G. Seong and T. Adchiri
(Tohoku Univ., Japan)

18:15-20:00

Banquet (Creston Hotel Chofu)

Room# B-202

October 30 (Mon)

9:00-9:30

PL5 Advanced Photovoltaics: Challenges Towards 50% Efficiency
Y. Okada
(Univ. Tokyo, Japan)

9:30-9:55

KN5 Surface and Interface Chemistry in Next-generation Solar Cells
W. R. Flavell
(Univ. Manchester, UK)

9:55-10:15 **Coffee Break**

10:15-10:35

IN11 Status and Perspective of a Compact X-ray Free Electron Laser Facility SACLA
M. Yabashi
(RIKEN; SPring-8 Center, Japan)

10:35-10:50

O-40 *In situ* TREXS Observation of Surface Reduction Reaction of NiO Flim with ~2 nm Surface Sensitivity
H. Abe[1,2], Y. Niwa[1], Y. Takeichi[1,2], and M. Kimura[1,2]
([1]High Energy Accelerator Res. Org. (KEK), [2]Graduate Univ. Advanced Studies (SOKENDAI), Japan)

10:50-11:05

O-41 Investigating the Co-base Catalyst Structure in Water Splitting Reaction by X-ray Absorption Spectra
J.-Q. Wang
(Shanghai Inst. Appl. Phys., China)

11:05-11:20

O-42 Phase Transition of Aqueous Solution with Lower Critical Solution Temperature Studied by Soft X-ray Absorption Spectroscopy
M.Nagasaka[1,2], T. Ohigashi[1,2], H. Yuzawa[1,2], and N. Kosugi[1,2]
([1]Inst. Molec. Sci., [2]Graduate Univ. Advanced Studies (SOKENDAI), Japan)

11:20-11:35

O-43 Adsorption State of Reactant on Thin Film Model Catalyst under Near Ambient Pressure Conditions
H. Ikeda[1], Y. Koike[1], K. Ueda[2], K. Isegawa[2], N. Shirahata[2], S. Masuda[2], S. Hiwasa[2], K. Mase[3,4], T. Nito[1], and H. Kondoh[2]
([1]TOYOTA MOTOR CORP., [2]Keio Univ., [3]High Energy Accelerator Res. Org. (KEK), [4]Graduate Univ. Advanced Studies (SOKENDAI), Japan)

11:35-11:50

O-44 Surface Composition of Supported Bimetal Nanoparticles: HS-LEIS & XPS Studies

M. Chen, J. Huang, Y. Li, Y. Zheng, and H. Wan
(Xiamen Univ. China)

11:50-12:05

O-45 The Structure and Adsorption Properties of the Au-Cu Bimetallic Systems
X. Shao, W. Y. Wang, H. X. Shi, L. Wang, and H. Shi
(Univ. Sci. Tech. China, China)

12:05-13:05 **Lunch**

13:05-13:20

O-46 Correlation between the Interfacial Structure and Hole Mobility for Electric Double Layer FET using Ionic Liquid
D. Okaue[1], S. Ono[1], K. Bando[1], K. Sakamoto[1], H. Nato[1], H. Miyamoto[1], T. Sato[1], Y. Yokota[2], J. Takeya[3], and K. Fukui[1]
([1]Osaka Univ., [2]RIKEN, [3]Univ. Tokyo, Japan)

13:20-13:35

O-47 Platinum Nanosheets Intercalated between Graphite Layers
M. Shirai[1,2] , H. Amanuma[1], K. Takahashi[1], H. Nanao[1], and N. Hiyoshi[2]
([1]Iwate Univ., [2]Advanced Indus. Sci. Tech., Japan)

13:35-13:50

O-48 In-situ XAS Evidence for the Mars-van-Krevelen Mechanism in the Rh Single-atom Catalyzed CO Oxidation
Z. Bin[1], M. J. Hülsey[1], H. Asakura[2], T. Tanaka[2], and N. Yan[1]
([1]Nat. Univ. Singapore, Singapore; [2]Kyoto Univ., Japan)

13:50-14:05

O-49 XAS Characterization of Gold-Based Catalysts
X. Y. Liu, Y. Tan, A. Wang, and T. Zhang
(Dalian Inst. Chem. Phys., China)

14:05-14:20

O-50 In situ XAFS Studies of Cu Redox Behavior in MFI Zeolite Structure during NH_3-SCR Reaction
K. Ueda[1], J. Ohyama[1,2], and A. Satsuma[1,2]
([1]Nagoya Univ., [2]Kyoto Univ., Japan)

14:20-14:35

O-51 Atomic Characterization of Single-Atom-Catalysts
A. Wang[1], Y. Ren[1,2], W. Liu[1,2], L. Zhang[1], X. Liu[1], and T. Zhang[1]
([1]Dalian Inst. Chem. Phys., [2]Univ. Chinese Acad. Sci., China)

14:35-14:50

O-52 Operando XAFS Study on Pd Species of Pd/Al_2O_3 Model Catalyst During Three-Way Catalytic Reaction
H. Asakura, S. Hosokawa, K. Teramura, and T. Tanaka
(Kyoto Univ., Japan)

14:50-15:05

O-53 Effect of Surface Pt-Ru Bondings to CO Tolerance of PtRu/C PEFC Anode Catalysts

T. Takeguchi[1], P. Dhupatemiya[2], T. Mandai[1], K. Ui[1], O. Sekizawa[3], T. Sakata[3], K. Higashi[3], T. Uruga[3,4], and Y. Iwasawa[3]

([1]Iwate Univ., Japan; [2]Thammasat Univ., Thailand; [3]Univ. Electro-Commun., [4]Japan Synchrotron Rad. Res. Inst. (JASRI), Japan)

15:05-15:20

O-54 Surface Composition, Structure, and Oxygen Reduction Reaction Activity on Pt-Co(111) Alloy Single-Crystal Electrodes Prepared under H_2 Atmosphere

J. Inukai[1], S. Kobayashi[1], M. Wakisaka[2], M. Aoki[1], T. Kawamoto[1], T. Watanabe[3], I. Hirosawa[3], D. A. Tryk[1], A. Iiyama[1], T. Kondo[4], and H. Uchida[1]

([1]Univ. Yamanashi, [2]Toyama Pref. Univ., [3]Japan Synchrotron Rad. Res. Inst. (JASRI), [4]Ochanomizu Univ., Japan)

15:25-15:45

Award and Closing

Room# B-201

October 30 (Mon)

10:15-10:35

IN12 Photovoltaic Nanomaterials, Solar Hydrogen production and Hyperspectral Imaging
J. F. Guillemoles[1,3], A. Delamarre[2,3], L. Lombez[1,3] , and M. Sugiyama[2,3]
([1]CNRS-EDF-ENSCP lab., France; [2]Univ. Tokyo, [3]CNRS-RCAST, Japan)

10:35-10:55

IN13 Colloidal Quantum Dot-based Hybrid Nanomaterials towards Solution Processed High Efficiency Solar Cells
T. Kubo, H. Wang, and H. Segawa
(Univ. Tokyo, Japan)

10:55-11:15

IN14 Nano-scale Monitoring of the Growth of Semiconductor Photovoltaic Materials using in situ X-ray Diffraction
M. Takahashi
(Nat. Inst. Quantum Radiol. Sci. Tech., Japan)

11:15-11:35

IN15 Nanostructured Dilute Nitride Alloys for High-Efficiency Solar Cells
S. Yagi[1], Y. Okada[2], and H. Yaguchi[1]
([1]Saitama Univ., [2]Univ. Tokyo, Japan)

11:35-11:50

O-55 Improving Energy Storage— Modeling the Redox Activity of Polyoxometallates
A. Kremleva, A. Genest, and N. Rösch[1,2]
([1]Tech. Univ. München, Germany; [2]Inst. High Performance Computing, Agency Sci., Tech. Res. (A*STAR), Singapore)

11:50-12:05

O-56 Effects of Interface Passivation on Photoexcited Carrier Dynamics and Photovoltaic Properties of Perovskite Solar Cells
Q. Shen[1,5], Y. Ogomi[2,5], T. Toyoda[1,5], K. Yoshino[3,5], T. Minemoto[4,5] and S. Hayase[2,5]
([1]Univ. Electro-Commun., [2]Kyushu Inst. Tech., [3]Miyazaki Univ., [4]Ritsumeikan Univ., [5]CREST-JST, Japan)

12:05-13:05 **Lunch**

13:05-13:20

O-57 Photoinduced Interfacial Electron Transfer Dynamics of CdSe Quantum Dots on the (001), (110), and (111) Surfaces of Single Crystal Rutile TiO_2
T. Toyoda[1,5], Q. Shen[1,5], K. Kamiyama[2], K. Katayama[3], and S. Hayase[4,5]
([1]Univ. Electro-Commun, [2]Bunkoukeiki Co.,Ltd., [3]Chuo Univ., [4]Kyushu Inst. Tech., [5]CREST-JST, Japan)

13:20-13:35

O-58 Light Interference Integrated Device Simulation in Thin Film InAs/GaAs Quantum Dot Solar Cell
T. Sogabe[1], M.Mori[2], K.Sakamoto[1], K.Yamaguchi[1], and Y.Okada[2]
([1]Univ. Electro-Commun., [2]Univ. Tokyo, Japan)

13:35-13:50

O-59 Eco-friendly Processes for Polymer Photovoltaic Device Fabrication
V. Vohra[1], U. Giovanella[2], F. Galeotti[2], S. Zappia[2], and S. Destri[2]
([1]Univ. Electro-Commun., Japan; [2]Inst. per lo Studio delle Macromolecole, Consiglio Nazionale delle Ricerche, Italy)

13:50-14:05

O-60 An X-ray Fluorescence Holographic Study on a Fe-based High-temperature Superconductor $FeSe_{0.4}Te_{0.6}$
S. Hosokawa[1], Y. Ideguchi[1], J. R. Stellhorn[1], N. Happo[2], K. Kimura[3], K. Hayashi[3], H. Okazaki[4], A. Yamashita[4], and Y. Takano[4]
([1]Kumamoto Univ., [2]Hiroshima City Univ., [3]Nagoya Inst. Tech., [4]Nat. Inst. Mater. Sci. (NIMS), Japan)

14:05-14:20

O-61 Time-resolved XRD Study on Phase Transition Behavior of Cathode Materials of Lithium-ion Batteries
Y. Uchimoto[1], K. Yamamoto[1], K. Nakamoto[1], T. Uchiyama[1], and Y. Orikasa[2]
([1]Kyoto Univ., [2]Ritsumeikan Univ., Japan)

14:20-14:35

O-62 XAFS Study of Redox Activity of Al^{3+} in Nanosize Binary Metal Oxide Obtained from Layered Double Hydroxide as an Anode for Lithium Battery
N. Sonoyama, Y. Ogasawara, T. Tsukada, and S. Yoshida
(Nagoya Inst. Tech., Japan)

14:35-14:50

O-63 Monitoring of Active Site Structure of Pd/TiO_2 Photocatalyst Under the Reaction Conditions of CO_2 Photoconversion into Fuels
H. Zhang, S. Kawamura, and Y. Izumi
(Chiba Univ., Japan)

14:50-15:05

O-64 $NaTaO_3$ Photocatalysts Doped with Alkaline Earth Metals: Simultaneous Doping of A site and B site in Perovskite-Structured Lattice
L. An[1], T. Fujiwara[1], M. Kitta[2], T. Sasaki[3], Y. Ebisu[4], N. Happo[5], K. Kimura[6], N. Ichikuni[3], K. Hayashi[6], and H. Onishi[1]
([1]Kobe Univ., [2]Nat. Inst. Advanced Indus. Sci. Tech., [3]Chiba Univ., [4]Hiroshima Inst. Tech., [5]Hiroshima City Univ., [6]Nagoya Inst. Tech., Japan)

15:05-15:20

O-65 Anchoring Titanium Dioxide on Carbon Microspheres for High-performance Visible Light Photocatalysis
H. Wu[1], X.-L. Wu[1, 2], Z.-M. Wang[1], H. Aoki[1], and S. Kutsuna[1]
([1]Nat. Inst. Advanced Indus. Sci. Tech., Japan; [2]Sichuan Univ., China)

Building B Hall
Poster Presentations

October 28 (Sat)
13:20-14:10

1P-1 Decomposition Behavior of Platinum Precursor on Silica and Alumina Studied by *in-situ* XAFS
T. Yamamoto, and K. Miyamoto
(Tokushima Univ., Japan)

1P-2 Model Structure of Active Sites around Ag Atoms Working on Ag-Au Bimetallic Catalysts
Y. Iizuka[1,2], Y. Hiragi[1], H. Yakushiji[1], and T. Miura[1]
([1]Kyoto Inst. Tech., [2]Nat. Inst. Advanced Indus. Sci. Tech., Japan)

1P-3 Design of Nano-Catalysts for the Efficient Hydrogen Production from Energy Storage Materials
K. Mori[1,2,3], S. Masuda[1], K. Naka[1], and H. Yamashita[1,2]
([1]Osaka Univ., [2]PRESTO-JST, [3]Kyoto Univ., Japan)

1P-4 Pd, Fe and Ru Containing Immobilized Ionic Liquid Catalysts for Organic Reactions
T. Sasaki[1], and B. M. Bhanage[2]
([1]Univ. Tokyo, Japan; [2]Inst. Chem. Tech., India)

1P-5 Local Structure Analyses of a CuO/ZrO_2/KIT-6 Catalyst for CO_2-to-methanol Hydrogenation
S. Tada[1], A. Katagiri[1], K. Kiyota[1], N. Shimoda[1], T. Honma[2], H. Kamei[3], A. Nariyuki[3], and S. Satokawa[1]
([1]Seikei Univ., [2]Japan Synchrotron Rad. Res. Inst. (JASRI), [3]Nikki-Universal Co., Ltd., Japan)

1P-6 Stable Au/Ti-SiO_2 Mesocellular Foam Catalyst for Propylene Epoxidation Using H_2 and O_2
L. Haiqiang, C. Weikun, G. Zhengqiang, Q. Hongyan, and Y. Youzhu
(Xiamen Univ., China)

1P-7 Structures of Supported Ruthenium Catalysts for Enantioselective Hydrogenation of Olefins
Y. Ikutake[1], H. Nakashima[1], H. Murayama[1], T. Honma[2], E. Yamamoto[1], and M. Tokunaga[1]
([1]Kyushu Univ., [2]Japan Synchrotron Rad. Res. Inst. (JASRI), Japan)

1P-8 Unexpected Selective Oxidation of Benzene to Phenol by Alkali- and Alkaline-Earth Metal/Zeolite Catalysts
S. S. Acharyya[1], S. Ghosh[1], S. Yamamoto[1], K. Hayashizaki[1], L. Wang[1], T. Kaneko[1], K. Higashi[1], Y. Yoshida[1], T. Sasaki[2], and Y. Iwasawa[1]
([1]Univ. Electro-Commun., [2]Univ. Tokyo, Japan)

1P-9 Molecular Nanomagnets Consisting of Exchange-Coupled Heavy Rare-Earth Metal Ions and Nitroxide Radicals
T. Kanetomo, T. Nakamura, R. Murakami, and T. Ishida
(Univ. Electro-Commun., Japan)

1P-10 Fluorophore Design Based on the Firefly Light Emitter, Oxyluciferin for a Sustainable World
T. Hirano[1], T. Uehara[1], T. Fujikawa[1], Y. Takahashi[1], R. Misawa[1], S. Maki[1], and M. Yamaji[2]
([1]Univ. Electro-Commun., [2]Gunma Univ., Japan)

1P-11 Evaluation of Stability of Candidates for Energy Nanomaterials by Exploring Transition Structures using GRRM
H. Yamakado[1], T. Mukai[1], K. Hamaguchi[1], H. Tokoyama[2], and K. Ohno[2,3]
([1]Wakayama Univ., [2]Inst. Quantum Chem. Exploration, [3]Tohoku Univ., Japan)

1P-12 Effect of Intercalants on Superlubric Fullerene Molecular Bearings
T. Narita[1], M. Sugimoto[2], H. Sakurai[3], K. Miura[4], and N. Sasaki[1]
([1]Univ. Electro-Commun., [2]Kumamoto Univ., [3]Osaka Univ., [4]Aichi Univ. Educ., Japan)

1P-13 Development of Novel Composites Consisting of TiO_2 Nanoclusters and Layered Compounds and Their Application for Catalysis
Y. Yoshida[1], X. Zhao[1], S. Takao[1], G. Samjeskè[1], T. Kaneko[1], K. Higashi[1], O. Sekizawa[2], T. Sakata[1], T. Uruga[1,2] and Y. Iwasawa[1]
([1]Univ. Electro-Commun., [2]Japan Synchrotron Rad. Res. Inst. (JASRI), Japan)

1P-14 Structure and Properties of Pt Nano Particles Deposited Directly on Various Carbon Substrates as catalysts for oxygen reduction reaction (ORR)
M. Yoshitake[1], Y. Tanaka[1], K. Miyazawa[1], K. Fukutani[2], T. Mizoguchi[2], and A. Nischikata[3]
([1]Tokyo Univ. Sci., [2]Univ. Tokyo, [3]Tokyo Inst. Tech., Japan)

1P-15 The Enhanced Electrocatalytic Activity over Pd-base Intermetallic Compound
T. Gunji, T. Tanabe, T. Ohsaka, and F. Matsumoto
(Kanagawa Univ., Japan)

1P-16 Sonochemical Preparation of Carbon Supported Pt Catalysts for Fuel Cells
S. Hatanaka, and S. Uchiyama
(Univ. Electro-Commun., Japan)

1P-17 *In-situ* Observation of High Temperature CO_2 Capture over Eutectic Mixture Promoted Magnesia-Alumina Composite
H. Jeon, S. Hwang, and J. G. Seo
(Myongji Univ., Korea)

1P-18 *In situ* Visualization of Platinum Chemical Species in a Nano Fuel-cell
S. Takao[1], O. Sekizawa[1], T. Yamamoto[2], G. Samjeské[1], T. Kaneko[1], K. Higashi[1], Y. Yoshida[1], X. Zhao[1], T. Sakata[1], T. Uruga[1,3], and Y. Iwasawa[1]

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1P-19 XAFS Technique: Application and Development on Catalysis at SSRF
Y. Huang
(Shanghai Inst. Appl. Phys., Chinese Acad. Sci. China, China)

1P-20 The Local Structure of Cu-SURFMOFs on TiO_2(110) Determined by Polarization-dependent Total Reflection Fluorescence XAFS
W. –J. Chun[1], M. Hashimoto[2], and T. Kondo[2]
([1]Int. Christ. Univ., [2]Ochanomizu Univ., Japan)

1P-21 The New Synchrotron Radiation Facility for Nanoscopic Engineering and Science in Japan, SLiT-J Project
T. Abukawa, W. Yashiro, T. Ejima, M. Watanabe, N. Nishimori, S. Miura, M. Takata, and H. Hama
(Tohoku Univ., Japan)

1P-22 Beam Dynamics of CW XFEL
T. Ozaki
(High Energy Accelerator Res. Org. (KEK), Japan)

1P-23 Structural Changes of the Photoexcited $BiVO_4$ Observed by Ultrafast XAFS Spectroscopy
Y. Uemura[1], D. Kido[2], A. Koide[1] ,Y. Wakisaka[2], Y. Niwa[3], S. Nozawa[3], S. Adachi[3], T. Katayama[4], T. Togashi[4], M. Yabashi[5], A. Iwase[6], A. Kudo[6], S. Takakusagi[2],T. Yokoyama[1], and K. Asakura[2]
([1]Inst. Molec. Sci., [2]Hokkaido Univ., [3] High Energy Accelerator Res. Org. (KEK), [4]Japan Synchrotron Rad. Res. Inst. (JASRI), [5]RIKEN, [6]Tokyo Univ. Sci., Japan)

1P-24 Total-electron-yield Soft X-Ray Absorption Spectra of Engine Oil Additives Rubbed on Alloy Surfaces
Y. Muramatsu[1], N. Takahashi[2], M. Okuyama[2], M. Tohyama[2], T. Ohmori[2], and E. M. Gullikson[3]
([1]Univ. Hyogo, [2]Toyota Central R&D Labs., Inc., Japan; [3]Lawrence Berkeley Nat. Lab., USA)

1P-25 Anisotropic Local Structural Change in Excited States of WO_3
A. Koide[1], Y. Uemura[1], D. Kido[2], Y. Wakisaka[1], Y. Niwa[3], S. Nozawa[3], S. Adachi[3], T. Katayama[4], M. Yabashi[5], K. Hatada[6], S. Takakusagi[2], K. Asakura[2], B. Ohtani[2], and T. Yokoyama[1]
([1]Inst. Molec. Sci., [2]Hokkaido Univ., [3]PF, [4]Japan Synchrotron Rad. Res. Inst. (JASRI), [5]RIKEN, Japan; [6]Univ. München, Germany)

1P-26 Direct Measurements of Oxygen Vacancy in TiO_2 Single Crystal by μSR
H. Ariga[1], K. Shimomura[2], A. Pant[2], E. Torikai[3], K. Nagamine[4], and K. Asakura[1]
([1]Hokkaido Univ., [2]High Energy Accelerator Res. Org. (KEK), [3]Yamanashi Univ., Japan; [4]Univ. California, USA)

1P-27 Structural Analysis of the Rutile-TiO_2 (110) (1×2) and the Anatase-TiO_2 (001) (1×4) Surfaces Using Total-reflection High-energy Positron Diffraction (TRHEPD)
I. Mochizuki[1], Y. Fukaya[2], H. Ariga[3], R. Yukawa[1], M. Minohara[1], K. Asakura[3], H. Kumigashira[1], A. Ichimiya[1], and T. Hyodo[1]
([1]High Energy Accelerator Res. Org. (KEK), [2] Japan Atomic Energy Agency (JAEA), [3]Hokkaido Univ., Japan)

1P-28 Study of Valence State and Magnetic Property of ^{149}Sm in $SmTi_2Al_{20}$ by Means of Synchrotron-radiation-based Mössbauer Spectroscopy
S. Tsutsui[1], J. Nakamura[2], Y. Kobayashi[2], M. K. Kubo[3], Y. Yoda[1], M. Mizumaki[1], A. Yamada[4], R. Higashinaka[4], T. D. Matsuda[4], and Y. Aoki[4]
([1]Japan Synchrotron Rad. Res. Inst. (JASRI), [2]Univ. Electro-Commun, [3]Int. Christ. Univ., [4]Tokyo Metroporitan. Univ., Japan)

1P-29 Surface Electron Density and Conformational Landscape of Amino Acids
Y. Yamakita, Y. Ishiguro, Y. Takano, and R. Takahashi
([1]Univ. Electro-Commun., Japan)

1P-30 Spatio-temporal Analysis of Automotive Catalysts Studied by Operando XAFS Technique
K. Dohmae[1], T. Tanabe[1], Y. Nagai[1], M. Miura[2], and R. Imoto[2]
([1]Toyota Central R&D Labs., INC., [2]Toyota Motor Corp., Japan)

1P-31 in situ XAFS and XRD Studies of Photoluminescent Tb Doped Fibrous Alumina
K. K. Bando[1], T. Kodaira[1], E. Kobayashi[2], T. Okajima[2], and N. Nagai[3]
([1]Nat. Inst. Advanced Indus. Sci. Tech., [2]Kyushu Synchrotron Light Res. Center, [3]Kawaken Fine Chemicals Co. Ltd., Japan)

1P-32 Simultaneous *in-situ* Time-resolved XAFS–XRD Study on Dynamic Structures and Electronic States of PEFC Cathode Catalysts
T. Kaneko[1], K. Higashi[1], G. Samjeské[1], S. Takao[1], Y. Yoshida[1], T. Gunji[1], T. Sakata[1], O. Sekizawa[1,2], T. Yamamoto[3], T. Uruga[1,2], and Y. Iwasawa[1]
([1]Univ. Electro-Commun., [2]Japan Synchrotron Rad. Res. Inst. (JASRI), [3]Univ. Tokushima, Japan)

1P-33 Potential Distribution in Operating Polymer Electrolyte Fuel Cell by *in situ* Ambient Pressure Hard X-ray Photoelectron Spectroscopy
L. Yu[1], Y. Takagi [1], T. Nakamura[1], O. Sekizawa[2,3], T. Sakata[2],T. Uruga[2,3], M. Tada[4], Y. Iwasawa[2], and T. Yokoyama[1]
([1]Inst. Molec. Sci., [2]Univ. Electro-Commun., [3]Japan Synchrotron Rad. Res. Inst. (JASRI), [4]Nagoya Univ., Japan)

1P-34 *In-situ* Time-resolved XAFS and XCT-XAFS Studies on the Degradation Process of Pt/C Cathode Catalysts in Polymer Electrolyte Fuel Cells by Anode-gas Exchange (start-up/shut-down) Cycles
K. Higashi[1], G. Samjeskè[1], O. Sekizawa[2], T. Sakata[1], S. Takao[1], T. Kaneko[1], Y. Yoshida[1], T. Uruga[1,2], and Y. Iwasawa[1]
([1]Univ. Electro-Commun., [2]Japan Synchrotron Rad. Res. Inst. (JASRI), Japan)

1P-35 Relationship between Electrochemical CV and *in situ* Real-time XAFS Relevant to the ORR Performance and Degradation of a Pt/C Cathode Catalyst in PEFC
G. Samjeské[1], K. Higashi[1], S. Takao[1], T. Kaneko[1], Y. Yoshida[1], T. Sakata[1], O. Sekizawa[1,2], T. Uruga[1,2], and Y. Iwasawa[1]
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1P-36 Near Ambient Pressure Fast Hard X-ray Photoelectron Spectroscopy of Redox of Platinum Electrode Catalysts in a Polymer Electrolyte Fuel Cell
T. Nakamura[1], Y. Takagi[1, 2], L. Yu[1], S. Chaveanghong[1], O. Sekizawa[3, 4], T. Sakata[3], T. Uruga[3, 4], M. Tada[5], Y. Iwasawa[3], and T. Yokoyama[1, 2]
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1P-37 The Present and Future of Near Ambient X-ray Photoelectron Spectroscopy (NAP-XPS)
M. Machida, H. Tomiduka, and R. Oiwa
(Scienta Omicron, Inc., Japan)

1P-38 Hard X-ray Emission Spectrometers for *in-situ* Observation of Electronic States and Adsorbed Species of Pt/C Catalysts in Polymer Electrolyte Fuel Cells
T. Sakata[1], O. Sekizawa[1,2], T. Uruga[1,2], K. Higashi[1], T. Kaneko[1], M. Taguchi[3], and Y. Iwasawa[1]
([1]Univ. Electro-Commun., [2]Japan Synchrotron Rad. Res. Inst. (JASRI), [3]Nara Inst. Sci. Tech., Japan)

1P-39 Reversible Electronic Modulation of PVP-stabilized Gold Clusters by Hydrogen Adsorption/desorption
S. Yamazoe[1,2,3], R. Ishida[1], S. Hayashi[1], and T. Tsukuda[1,2]
([1]Univ. Tokyo, [2]Kyoto Univ., [3]CREST-JST, Japan)

1P-40 Broad Luminescence of Ce^{3+} in Multiple Sites in $(La,Ce,Y)_6Si_4S_{17}$ Phosphor
Y. Nanai[1], H. Kamioka[2], and T. Okuno[3]
([1]Aoyama Gakuin Univ., [2]Nihon Univ. [3]Univ. Electro-Commun., Japan)

1P-41 Automatic Optics Components Optimization Using the Evolutionary Algorithm
X. Shibo, and D. Yonghua
(Inst. Chem. Engineering Sci. A*STAR, Singapore)

1P-42 Visible-light Driven Semiconductor/electrocatalyst Heterojunction for Efficient Solar Fuels Synthesis
S. Ho[1], S. J. A. Moniz[3], A. D. Handoko[2] and J. Tang[3]
([1]Univ. Macau, China; [2]Inst. Mater. Res. Engineering, Agency Sci., Tech. Res. (A*STAR), Singapore; [3]Univ. College London, UK)

1P-43 Near and Short-wavelength Infrared PbS Quantum Dot / ZnO Nanowire Solar Cells
H. Wang, T. Kubo, and H. Segawa
(Univ. Tokyo, Japan)

1P-44 One-dimensional Miniband Formation in InAs/GaAs Quantum Dot Superlattice
T. Kaizu, and T. Kita
(Kobe Univ., Japan)

1P-45 Dependence of Threshold Voltages on Temperature observed in an Array of Au Nanoparticles
M. Moriya[1], M. Moribayashi[1], K. Matsumoto[1], H. T. T. Tran[1], H. Shimada[1], Y. Kimura[2], A. Hirano-Iwata[3], and Y. Mizugaki[1]
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Building B Hall
Poster Presentations

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2P-1 Size Controllable Gold Nanoparticles Prepared from Immobilized Gold-Containing Ionic Liquid on SBA-15
E. N. Kusumawati, and T. Sasaki
(Univ., Tokyo)

2P-2 Preparation and Characterization of FeN_x/C Catalysts with Extraordinary Selectivity for Oxidative Dehydrogenation of Primary Alcohols to Aldehydes
J. P. Zhang[1], S. Nagamatsu[2], J. M. Du[1], C. L. Tong[1], K. Asakura[2], and Y. Z. Yuan[1]
([1]Xiamen Univ., China; [2]Hokkaido Univ., Japan)

2P-3 Preparation of Iron Oxide Nanocluster Catalyst and Application for Selective Oxidation of Benzyl Alcohol
H. Oide, N. Ichikuni, T. Hara, and S. Shimazu
(Chiba Univ., Japan)

2P-4 Immobilized Rh Complex and Tertiary Amine on a Same Silica Surface: Characterization and its Use as a Catalyst for Hydrosilylation
K. Motokura[1], K. Maeda[1], and W.-J. Chun[2]
(Tokyo Inst. Tech., [2]Int. Christ. Univ., Japan)

2P-5 Acid Free Wacker Oxidation of Terminal Olefins over Supported Pd Nanoparticles
T. Mamba[1], Z. Zhang[1], Y. Kumamoto[1], T. Hashiguchi[1], H. Murayama[1], E. Yamamoto[1], T. Ishida[2], T. Honma[3], and M. Tokunaga[1]
([1]Kyushu Univ., [2]Tokyo Metropolitan Univ., [3]Japan Synchrotoron Rad. Res. Inst. (JASRI), Japan)

2P-6 New Insights of the Role of Al_2O_3 in the Promotion of CuZnAl Catalysts: a Model Study
J. Hu, Y. Song, J. Huang, Y. Li, M. Chen, and H. Wan
(Xiamen Univ., China)

2P-7 Direct Inclusion and Catalysis of Triphenylphosphine Derivatives in the Zeolite Y Supercage
Y. Koga, and K. Okumura
(Kogakuin Univ., Japan)

2P-8 Dendritic Fibrous Nanosilica (DFNS) Supported Highly Active and Selective Ultrasmall and Pseudo-single Atom Metal Nanocatalysts
M. Dhiman, and V. Polshettiwar
(Tata Inst. Fundamental Res., India)

2P-9 Introduction of Ce into MFI zeolites and their effect on the catalytic properties
F. Muto[1], M. Horie[1], M. Sakaguchi[1], M. Nakaya[1], K. Kanie[1], and A. Muramatsu[1,2]

([1]Tohoku Univ., [2]CREST-JST, Japan)

2P-10 Multiphase Hydrogenation of Cinnamaldehyde over Platinum Nanosheets Intercalated between Graphite Layers in Solvents
H. Amanuma, S. Kato, Y. Yamazaki, H. Nanao, and M. Shirai
(Iwate Univ., Japan)

2P-11 Activation Energy Calculation of NO-CO Reaction on Rhodium Surface by Density Functional Theory
T. Ito, and Y. Shimizu
(Tohoku Univ., Japan)

2P-12 Surface Sensitive Techniques Applied for $ZnCrO_x$-Al_2O_3 Catalysts: On the Fischer-Tropsch (FT) Synthesis Mechanism
Y. Li, J. Hu, M. Chen, and H. Wan
(Xiamen Univ., China)

2P-13 CuPd Alloy Nanoparticles for CO_2 Electroreduction Catalysts
S. Lee, Y. Mun, and J. Lee
(Pohang Univ. Sci. Tech. (POSTECH), Korea)

2P-14 Electrochemical Behavior on the Ruthenate Nanosheet Surface with the Valence Change
F. Sato, and T. Saida
(Meijo Univ., Japan)

2P-15 *In Situ* XAFS Analysis for Redox Reaction of Dilute Ni Catalysts Supported on Silica
Y. Yamamoto, A. Suzuki, N. Tsutsumi, S. Yamashita, M. Katayama, and Y. Inada
(Ritsumeikan Univ., Japan)

2P-16 X-ray Absorption Study of Platinum Nanoparticle Catalysts on Ion-Beam-Irradiated Carbon Support
K. Kakitani[1,2], T. Kimata[1], T. Yamaki[2], S. Yamamoto[2], T. Taguchi[2], D. Matsumura[3], I. Shimoyama[3], A. Iwase[4], T. Kobayashi[5], and T. Terai[1]
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2P-17 *In-Situ* XAFS Analysis of Redox Reactions for Cu/SiO_2 Catalysts Prepared under the Existence of Organic Additives
K. Nakamura, Y. Yamamoto, R. Iwasaki, S. Yamashita, M. Katayama, and Y. Inada
(Ritsumeikan Univ., Japan)

2P-18 Structural Analysis of Pt/C Catalyst in Constant Current/Voltage Mode by In Situ XAFS under Operando Single Cell Conditions
C. -Y. Ahn[1,2], K. -S Lee[3], J. M. Yoo[1,2], W. Hwang[1,2], S. Kim[1,2], H. Lee[1,2], J. E. Park[1,2], M. Her[1,2], Y. -H. Cho[4], and Y. -E. Sung[1,2]
([1]Inst. Basic Sci. (IBS), [2]Seoul Nat. Univ., [3]Pohang Accelerator Lab. (PAL), [4]Kangwon Nat. Univ., Korea)

2P-19 Kinetics and Reaction Mechanism of Oxidation Processes on Pt/C and Pt_3Co/C Cathode Catalysts Studied by *Operando* Time-resolved QXAFS
S. Ozawa[1], H. Matsui[1], N. Ishiguro[2], T. Uruga[3,4], O. Sekizawa[3,4], T. Sakata[3], K. Higashi[3], and M. Tada[1,2]
([1]Nagoya Univ., [2]RIKEN, [3]Univ. Electro-Commun., [4]Japan Synchrotron Rad. Res. Inst. (JASRI), Japan)

2P-20 *Operando* S-K XANES Study on Reversible and Irreversible Degradation of Polymer Electrolyte Fuel Cell Due to Humidity
K. Isegawa, D. Kim, M. Yoshida, and H. Kondoh
(Keio Univ., Japan)

2P-21 *Operando* Monitoring of the Oxygen Partial Pressures Inside the Gas Diffusion Layer of a Running Polymer Electrolyte Fuel Cell Using Optical Probes
Y. Kakizawa, A. Iiyama, and J. Inukai
(Univ. Yamanashi, Japan)

2P-22 *In Situ* Observation of Electronic State Related to Adsorption State on Pt/C Surface by X-ray Absorption Spectroscopy
S. Kusano[1], D. Matsumura[2], H. Kishi[3], T. Sakamoto[3], S. Yamaguchi[3], K. Ishii[4], H. Tanaka[1], and J. Mizuki[1]
([1]Kwansei Gakuin Univ., [2]Japan Atomic Energy Agency (JAEA), [3]Daihatsu Motor Co., Ltd., [4]Nat. Inst. Quantum Radiol. Sci. Tech., Japan)

2P-23 Relationship between ORR Catalytic Activity and *d*-band Center of Pt and Pt-based Alloy Nanoparticle Deposited on Metal Oxide Support Materials
F. Ando, T. Tanabe, T. Gunji, T. Ohsaka, and F. Matsumoto
(Kanagawa Univ. Japan)

2P-24 Changes in Structure and ORR Activity of PtPdM Ternary Alloy Catalysts *via* Potential Cycling Performed at 80°C
Y. Noguchi, S. Higuchi, Y. Matsui, H. Daimon, T. Doi, and M. Inaba
(Doshisha Univ., Japan)

2P-25 Durability Improvement of Pd Core-Pt Shell Structured Catalyst by Poly-Dopamine Coating
H. Kawasaki, H. Daimon, T. Doi, and M. Inaba
(Doshisha Univ., Japan)

2P-26 Development of Mesoporous Conductive Oxide as Support of Precious–Metal- and Carbon-Free Oxide-based Cathode for PEFCs
H. Igarashi[1], A. Ishihara[1], T. Nagai, Y. Kuroda[1], K. Matsuzawa[1], T. Napporn[1,2], S. Mitsushima[1], and K. Ota[1]
([1]Yokohama Nat. Univ., Japan; [3]Univ. Poitiers, France)

2P-27 Morphology-controlled Titanium Oxide Nano-particles as Supports of Cathode Catalysts for Polymer Electrolyte Fuel Cells
Y. Ma[1], H. Igarashi[1], Y. Ohgi[2], T. Nagai[1], Y. Kuroda[1], K. Matsuzawa[1], S. Mitsushima[1], Y. Liu[3], and A. Ishihara[1]

([1]Yokohama Nat. Univ., [2]Kumamoto Indus. Res. Inst., Japan; [3]Peking Univ., China)

2P-28 Effect of Imparting Electrical Conductivity to Nb-doped Titanium Oxides as Non-Platinum Oxide-Based Cathodes for PEFC
T. Tokai, A. Ishihara, T. Nagai, Y. Kuroda, K. Matsuzawa, S. Mitsushima, and K. Ota
(Yokohama Nat. Univ., Japan)

2P-29 Model Electrode of Oxygen Reduction Catalyst for PEFCs Based on Titanium Oxide by Arc Plasma Deposition
K. Nagano, A. Ishihara, T. Nagai, Y. Kuroda, S. Matsuzawa, S. Mitsushima, and K. Ota
(Yokohama Nat. Univ., Japan)

2P-30 Novel $Ce_{0.1}Sr_{0.9}Co_{0.3}Fe_{0.7}O_{3-\delta}$ Perovskite as Cathode for Intermediate Temperature Solid Oxide Fuel Cells
X. Pairuzha, T. Yu, A. Yoshida, G. Guan, and A. Abudula
(Hirosaki Univ., Japan)

2P-31 Synthesis of N-containing Nanoporous Carbons from Melamine/resorcinol Resin for Oxygen Reduction Electrocatalysis
Y. X. Zhu[1], W. Hu[1], K. Miyake[1], A. Gabe[2], N. Yoshida[1], Y. Uchida[1], D. Cazorla-Amorós[2] and N. Nishiyama[1]
([1]Osaka Univ., Japan; [2]Univ. Alicante, Spain)

2P-32 Oxygen Reduction Reaction on N-doped Graphene Nanoclusters: Dependence on Nitrogen Configuration
H. Matsuyama[1,2], A. Akaishi[1,2], and J. Nakamura[1,2]
([1]Univ. Electro-Commun., [2]CREST-JST, Japan)

2P-33 Biosensor and Biofuel Cell with Thermophilic Flavin Adenine Dinucleotide-Dependent Glucose Dehydrogenase
K. Orihara[1], H. Muguruma[1], H. Iwasa[2], A. Hiratsuka[2], K. Yokoyama[2,3], and H. Uzawa[2]
([1]Shibaura Inst. Tech., [2]Nat. Inst. Advanced Indus. Sci. Tech., [3]Tokyo Univ. Tech., Japan)

2P-34 A Large Size Position Sensitive Detector Based on Photosynthetic Protein
S. Omata, H. Nishioka, and Y. Okada-Shudo
(Univ. Electro-Commun., Japan)

2P-35 Organic Photodetectors Combining PEDOT: PSS with Bacteriorhodopsin
Y. Uno, and Y. Okada-Shudo
(Univ. Electro-Commun., Japan)

2P-36 Temporal and Frequency Response Characteristics of Protein-based Photodetector
S. Osawa, and Y. Okada-Shudo
(Univ. Electro-Commun., Japan)

2P-37 Relationship between Atomic-Scale Real Contact Area and Friction of Graphene
S. Ohmuki[1], T. Ando[2], N. Itamura[2], K. Miura[3], and N. Sasaki[1]
([1]Univ. Electro-Commun, [2]Seikei Univ., [3]Aichi Univ. Educ., Japan)

2P-38 Surface Mapping of the Dynamic Friction and Elastic Stiffness of Nanoscale Contact
T. Suzuki[1], S. Tanahara[1], J. Taniguchi[1], M. Suzuki[1], N. Sasaki[1], M. Ishikawa[2], and K. Miura[2]
([1]Univ. Electro-Commun., [2]Aichi Univ. Educ., Japan)

2P-39 Numerical Study of Potential Engineering on Design Guidelines for CNT Motor
K. Yamasaki[1], K. Miura[2], and N. Sasaki[1]
([1]Univ. Electro-Commun., [2]Aichi Univ. Educ., Japan)

2P-40 Numerical Analysis of Compressive Elasticity of C_{60} Molecular Bearings
S. Komiyama[1], M. Sugimoto[2], H. Sakurai[3], K. Miura[4], and N. Sasaki[1]
([1]Univ. Electro-Commun., [2]Kumamoto Univ., [3]Osaka Univ., [4]Aichi Univ. Educ., Japan)

2P-41 Superlubric Mechanism of Nanoscale Friction of C_{60} Molecular Bearings
R. Ogawa[1], M. Suzuki[1], K. Miura[2] and N. Sasaki[1]
([1]Univ. Electro-Commun., [2]Aichi Univ. Educ, Japan)

2P-42 Laser-induced Hydrogen Production Using Porous Carbon
M. Enomoto[1], Y. Kawajiri,[1] T. Kaizu[1], T. Uchino[1], Y. Ichihashi[1], K. Taniya[1], S. Nishiyama[1], M. Mizuhata[1], M. Sugiyama[2], M. Ueno[3], and T. Kita[1]
([1]Kobe Univ., [2]Univ. Tokyo, [3]Univ. Ryukyus, Japan)

2P-43 A Near-infrared Organic Photosensitizer for Use in Dye-sensitized Photoelectrochemical Water Splitting
O. Suryani, Y. Higashino, J.Y. Mulyana, and Y. Kubo
(Tokyo Metropolitan Univ., Japan)

2P-44 A New and Robust Ruthenium Photosensitizer for Light-induced Hydrogen Production from Water in Dye-sensitized Photoelectrochemical Cells (DSPECs)
I. Purnama, Y. Kubo, and J.Y. Mulyana
(Tokyo Metropolitan Univ., Japan)

2P-45 Nanomagnets of Lanthanide Complexes Using 2,2,6,6-Tetramethylpiperidine 1-Oxyl Ligands
N. Koizumi, and T. Ishida
(Univ., Electro-Commun., Japan)

2P-46 Ground Triplet Spirobiacridine-*N*,*N*'-dioxyls: Preparation, Structures, and Magnetic Properties
K. Ichihashi[1], T. Kanatomo[2], and T. Ishida[1]
([1]Univ. Electro-Commun., [2]Tokyo Univ. Sci., Japan)

2P-47 Construction of an Amorphous Structural Model and XMCD Analysis

T. Takeuchi, N. Komiya, and T. Fujikawa, and K. Niki
(Chiba Univ., Japan)

2P-48 Ultrathin Gold Nanorods: Optical Properties, Atomic Structures and Stability
R. Takahata[1], S. Yamazoe[1,2,3], K. Koyasu[1,2], and T. Tsukuda[1,2]
([1]Univ. Tokyo, [2]Kyoto Univ., [3]CREST-JST, Japan)

2P-49 Influence of Organic Component on Thermoelectric Characteristics of Metal Oxide-Organic Hybrid
S. Masuzawa, T. Fukuda, K. Takahira, and S. Shirai
(Saitama Univ., Japan)

2P-50 Artificial Manipulation of Raman-resonant Four-wave-mixing Process
W. Liu[1,2], C. Ohae[1,2], J. Zheng[1], M.Suzuki[1], K.Minoshima[1,2], and M. Katsuragawa[1,2]
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2P-51 Fabrication of Mesoscopic Tunnel Junctions by Use of In-situ Low-temperature Atomic Layer Deposition for Tunnel Barriers
K. Kikkawa, N. Ito, and H. Shimada
(Univ. Electro-Commun., Japan)

2P-52 Role of Defects for NO Adsorption and Reaction on Nitrogen-doped Amorphous Carbon Films Studied with Photoelectron Spectroscopy (XPS/UPS)
Y. Murata, N. Rempei, F. Ichihara, H. Ono, C. -K. Choo, and K. Tanaka
(Univ. Electro-Commun., Japan)

2P-53 Shape Control of Diamond on Si Substrate by Crystallographic Orientation Dependence of Growth Rate
Y. Saito, R.Yamada, K. Ino, and H. Isshiki
(Univ. Electro-Commun., Japan)

2P-54 Evaluation of Nanocrystal Diamond Prepared by Chemical Vapor Synthesis Using Microwave Plasma Torch
R. Yamada, Y. Saito, Y. Ishii, and H. Isshiki
(Univ. Electro-Commun., Japan)

2P-55 Passivation of Oxygen Vacancies by UV Wet Oxidation of ZnO Nanorods
S. Sakurai[1], J. Cho[2], K. Uchida[1], and S. Nozaki[1]
([1]Univ. Electro-Commun., Japan; [2]Binghamton Univ., USA)

2P-56 Observation of Two-photon Interference for Continuous-wave Light with Homodyne Detection
D. Wu[1], K. Kawamoto[1], K. Kasai[2], M. Watanabe[1], and Y. Zhang[1]
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2P-57 A Low Power Constant g_m Rail-to-Rail Operational Amplifier Operating in Weak Inversion
T. Ito, and C. -K. Pham
(Univ. Electro-Commun., Japan)

2P-58 Characterization of GaN Crystals with the X-ray Topography
Y. Kitano, S. Miyakawa, M. Shoro, and K. Akimoto
(Japan Women's Univ., Japan)

2P-59 Polarization-emission Angle Dependent Hard X-ray Photoemission Study of Thermoelectric Cu-based Delafossite Oxides
K. Takahashi[1], M. Okawa[1], A. Yasui[2], E. Ikenaga[2], T. Okuda[3], S. Ogata[3], M. Ota[3], N. Hamada[1], and T. Saitoh[1]
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2P-60 Study of Molecular Frame X-ray Photoelectron Angular Distributions by Full Potential Multiple Scattering Calculation
F. Ota[1], N. Komiya[1], K. Niki[1], D. Sébilleau[2], and K. Hatada[3]
([1]Chiba Univ., Japan; [2]Inst. Phys. Rennes, France; [3]Univ. Toyama, Japan)

2P-61 Raman Spectroscopy of Single Crystalline $LaFeO_3$
H. Maeda[1], T. Suzuki[1], K. Sato[1], T. Nakano[2], and K. Abe[1]
([1]Univ. Electro-Commun., [2]Health Sci. Univ. Hokkaido, Japan.)

2P-62 Formation Process of 18R-type LPSO in $Mg_{85}Zn_6Y_9$ Alloy
R. Morishita[1], M. Matsushita[1], H. Abe[2], M. Kimura[2], and T. Shinmei[1]
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2P-63 Synthesis and Electrochemical Properties of Lithium Titanate Nanoparticles Synthesized from Amorphous Titanium Dioxide Nanoparticles
M. Ota, Y. Hirota, Y. Uchida, and N. Nishiyama
(Osaka Univ., Japan)

2P-64 Optimization of Calcination Conditions in Preparation of a High Capacity Li-rich Solid-Solution $Li[Li_{0.2}Ni_{0.18}Co_{0.03}Mn_{0.58}]O_2$ Material and its Cathode Performance in Lithium Ion Battery
F. Nomura, L. Yubin, T. Tanabe, T. Ohsaka, and F. Matsumoto
(Kanagawa Univ., Japan)

2P-65 Electrochemical Performances of Polysulfide-Intercalated Mg-Al Layered Double Hydroxide for Lithium-Sulfur Batteries
Q. Wen, R. Mitsui, and N. Sonoyama
(Nagoya Inst. Tech., Japan)

2P-66 Synthesis of Water-Resistant Thin TiO_x Layer-coated High-capacity $LiNi_aCo_bAl_{1-a-b}O_2$ ($a > 0.85$) Cathode and its Stable Charge/Discharge Cycle Cathode Performance to Apply a Water-based Hybrid Polymer Binder to Li-ion Batteries
L. Yubin[1], T. Tanabe[1], K. Miyamoto[1], Y. Irii[2], F. Maki[2], T. Gunji[1], S. Kaneko[1], S. Ugawa[3], H. Lee[3], T. Ohsaka[1], and F. Matsumoto[1]
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2P-67 Improvement of Photovoltaic Performance of Quantum Dot Solar Cells by Surface and Interface Engineering
Y. H. Zhang[1], G. H. Wu[2], C. Ding[1], F. Liu[1], Y. Ogomi[3], T. Toyoda[1,4], S. Hayase[3,4], J. Otsuki[2], and Q. Shen[1,4]
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2P-68 Preventing of Charge Recombination in Colloidal Quantum Dot Solar Cells and Perovskite Solar Cells by Doping the Metal Oxide
C. Ding[1,6], Y. Zhang[1], S. Hayase[2,5], Y. Ogomi[2], T. Toyoda[1,5], K. Yoshino[3,5], T. Minemoto[4,5], and Qing Shen[1,5]
([1]Univ. Electro-Commun, [2]Kyushu Inst. Tech., [3]Univ. Miyazaki, [4]Ritsumeikan Univ., [5]CREST-JST, Japan; [6]China Scholarship Council, China)

2P-69 Elongation of Carrier Diffusion Length in PbS Colloidal Quantum Dot Solar Cell
A. Takahashi[1], T. Fukuda[1], H. -B. Wang[2], T. Kubo[2], and H. Segawa[2]
([1]Saitama Univ. [2]Univ. Tokyo, Japan)

2P-70 Temperature Dependence of Carrier Transport in Quantum Dot Solar Cell
K. Takahira[1], T. Fukuda[1], A. Takahashi[1], H. -B. Wang[2], T. Kubo[2], and H. Segawa[2]
([1]Saitama Univ., [2]Univ. Tokyo, Japan)

2P-71 Influence of Urbach Tail on Fundamental Properties of Solar Cells Using In-Plane Ultrahigh-density InAs Quantum Dots
R. Suzuki, R. Sugiyama, T. Kato, T. Sogabe, and K. Yamaguchi
(Univ. Electro-Commun., Japan)

2P-72 Study on Carrier Dynamics in Ultrahigh-density InAs Quantum-dot Layers for Solar Cell Applications
R. Sugiyama, S. Tatsuki, T. Sogabe, and K. Yamaguchi
(Univ. Electro-Commun., Japan)

2P-73 Multilayer Active Layer Polymer Solar Cells with Enhanced Charge Collection and Power Conversion Efficiencies
S. Inaba[1], T. Anzai[1], W. Porzio[2] and V. Vohra[1]
([1]Univ. Electro-Commun., Japan; [2]Istituto per lo Studio delle Macromolecole, Consiglio Nazionale delle Ricerche, Italy.)

2P-74 Superconductivity in Y-Re-Si-C Compound
Y. Hoshi, M. Batbilguun, and T. Muranaka
(Univ. Electro-Commun., Japan)

2P-75 Superconductivity in Binary TM-Ga Compound
Y. Nakayama, D. Kawada, and T. Muranaka
(Univ. Electro-Commun., Japan)

2P-76 Superconductivity in Lutetium Silicide Carbide
S. Kurokawa, Y. Yamasaki T. Ishida, and T. Muranaka
(Univ. Electro-Commun., Japan)

2P-77 Superconductivity in Pt-Ga Compounds
T. Matsuoka, and T. Muranaka
(Univ. Electro-Commun., Japan)

2P-78 Substitution Effect in $LaRu_3Si_2$ Superconductor with Ru-kagome Lattice
T. Ushioda, T. Takahashi, A. Inagaki and T. Muranaka
(Univ. Electro-Commun., Japan)

2P-79 High-pressure Transport Properties of Candidate Material for Excitonic Insulator Ta_2NiSe_5
H. Arima[1], N. Katayama[2], M. Nohara[3], Y. F. Lu[4], H. Takagi[5,6], Y. Uwatoko[5], and K. Matsubayashi[1]
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2P-80 Orbital Order and Superconductivity of $PrTi_2Al_{20}$ Under High Pressure
F. Motoyama[1], M. Tsuzimoto[2], A.Sakai[2], S. Nakatsuji[2], K. Kitagawa[2], M. Uwatoko[2], and K. Matsubayashi[1]
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2P-81 Pressure-induced Magnetic Order and Quantum Critical Behavior in $YbCo_2Ge_4$
R. Kuwata[1], M. Iwatani[2], K. Kitagawa[3], Y. Uwatoko[3], and K. Matsubayashi[1]
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