

	Online Room A		Online Room B		Online Room C		Online Room D	
JST	Mon (Nov. 29)							
8:00-8:20	Registration							
8:20-8:40								
8:40-9:00	Opening Ceremony 8:40-9:20 @ Room A							
9:00-9:20								
9:20-9:40	Plenary 1 29aA-PL H. Peng 9:20-10:20							
9:40-10:00								
10:00-10:20								
10:20-10:40								
10:40-11:00	Break / Breakout Session							
Cutting-edge of data-driven surface science	29aA-1 (I) J. C. Agar	Biomaterial interfaces	29aB-1 (I) M. Rolandi	Physics at surfaces and thin films	29aC-1 K. Asakawa	Nanotechnology and nanomaterials	29aD-1 M. Yano	
			29aB-2 T. Xiao		29aC-2 H. Maruyama		29aD-2 T. Yamada	
			29aA-2 (I) N. Artrith		29aB-3 A. Oshima		29aC-3 Y. Gohda	29aD-3 S. Ichinokura
					29aC-4 P. Viswanath		29aD-4 Y. Zhao	
12:00-12:20	Break / Breakout Session							
12:20-12:40								
12:40-13:00								
Cutting-edge of data-driven surface science	29pA-1 (I) T. Toyao	Biomaterial interfaces	29pB-1 (I) X. Duan	Physics at surfaces and thin films	29pC-1 Y. Kubota	Surface and interface structures	29pD-1 X. Zhang	
					29pC-2 Ø. S. Handegard		29pD-2 R. Kawamura	
	29pA-2 T. Mizoguchi		29pB-2 S. T. Lee		29pC-3 D. H. Pinilla		29pD-3 Y. Fuseya	
	29pA-3 H. Iwasawa		29pB-3 Y. Cui		29pC-4 Y. Yamashita		29pD-4 H. Aoyama	
	29pA-4 (I) S. Han		29pB-4 (I) T.-E. Lin		29pC-5 Y. Tsuda		29pD-5 A. F. Z. Abidin	
					29pC-6 D. Fujita		29pD-6 Y. Wang	
15:00-15:20	Break / Breakout Session							
Cutting-edge of data-driven surface science	29pA-5 M. Shiga	Biomaterial interfaces	29pB-5 R. Kojima	Physics at surfaces and thin films	29pC-7 T. Konishi	Advanced surface engineering and characterization	29pD-7 (I) S.-h. Phark	
	29pA-6 A. Yoshinari		29pB-6 K. Fujiwara		29pC-8 Y. Nakayama			
	29pA-7 (I) K. Nagata		29pB-7 (I) G. Fragneto		29pC-9 H. Sato			29pD-8 M. Kamiya
					29pC-10 S. A. Ab Rahman			29pD-9 T. Sumi
16:40-17:00	Break / Breakout Session							
17:00-17:20	Plenary 2 29pA-PL M. Scheffler 17:00-18:00							
17:20-17:40								
17:40-18:00								
18:00-18:20	Break / Breakout Session							
18:20-18:40								
18:40-19:00								
Vacuum and surface technology of big science	29nA-1 (I) O. Malyshev	Surface and interface structures	29nB-1 (I) J. G. Horstmann	Surface chemistry	29nC-1 (I) J. Libuda	Advanced surface engineering and characterization	29nD-1 (I) J. Peng	
	29nA-2 (I) E. Al-Dmour		29nB-2 T. Ikarashi		29nC-2 H. Imada		29nD-2 T. Harashima	
			29nB-3 T. Sato		29nC-3 M. I.-Imada		29nD-3 O. Takeuchi	
	29nA-3 (I) V. Baglin		29nB-4 (I) S. Wippermann		29nC-4 H.-J. Freund		29nD-4 (I) S. Eisebitt	
	29nC-5 M. Dürr							
21:00-21:20	Breakout session							

	Online Room A		Online Room B		Online Room C		Online Room D	
JST	Tue (Nov. 30)							
8:00-8:20	Registration							
8:20-8:40								
8:40-9:00	Plenary 3 30aA-PL Y. Iwasa 8:40-9:40							
9:00-9:20								
9:20-9:40								
9:40-10:00								
10:00-10:20	Breakthroughs in 2D materials	30aA-1 R. Nouchi	Vacuum and surface technology of big science	30aB-1 J. Kamiya	Surface and interface science / Surface science in hydrogenomics	30aC-1 R. Sagehashi	Energy and environmental science	30aD-1 H. Nishiyama
10:20-10:40		30aA-2 (I) J. T. Sadowski		30aB-2 Y. Tanimoto		30aC-2 T. Kawamura		30aD-2 (I) A. A. Gewirth
10:40-11:00		30aB-3 K. Mase		30aC-3 J. Nakamura				
10:40-11:00	Break/Breakout session							
11:00-11:20	Breakthroughs in 2D materials	30aA-3 H. Fukidome	Vacuum and surface technology of big science	30aB-4 Y. Kudo	Surface science in hydrogenomics	30aC-4 (I) I. Hamada	Energy and environmental science	30aD-3 (I) S. L. Anderson
11:20-11:40		30aA-4 T. Hamada		30aB-5 (I) H. Sakai				
11:40-12:00		30aA-5 R. Yusa				30aC-5 H. S. Kato		30aD-4 K. Hayashi
12:00-12:20	Break / Breakout Session							
12:20-12:40								
12:40-13:00								
13:00-13:20	Breakthroughs in 2D materials	30pA-1 H. Kageshima	Nanotechnology and nanomaterials	30pB-1 A. N. Hattori	Surface science in hydrogenomics	30pC-1 (I) M. Nakamura	Energy and environmental science / Surface and interface structures	30pD-1 P. Krüger
13:20-13:40		30pA-2 Y. Fukaya		30pB-2 K. Nishikawa				30pD-2 S. E. M. Putra
13:40-14:00		30pA-3 (I) K. Wu		30pB-3 S. Suzuki		30pC-2 Y. Kataoka		30pD-3 K. Iwata
14:00-14:20				30pB-4 K. Ikita		30pC-3 E. F. Arguelles		30pD-4 M. Kimura
14:20-14:40		30pA-4 (I) J. Wang		30pB-5 T. Maruyama		30pC-4 (I) T. U. Ito		30pD-5 K. Shimizu
14:40-15:00				30pB-6 K. Hirayama				30pD-6 L. Feng
15:00-15:20	Break / Breakout Session							
15:20-15:40	Breakthroughs in 2D materials	30pA-5 P. Amrit	Nanotechnology and nanomaterials	30pB-7 (I) Y. Paltiel	Surface science in hydrogenomics	30pC-5 A. N. Itakura	Energy and environmental science / Surface and interface structures	30pD-7 (I) C. Walther
15:40-16:00		30pA-6 L. Xie				30pC-6 H. Nakatsu		
16:00-16:20		30pA-7 H. Kusaka		30pB-8 (I) P. Milani		30pC-7 (I) A. M. Wodtke		30pD-8 Y. Pihosh
16:20-16:40		30pA-8 H. Mogi						30pD-9 H. Yamashita
16:40-17:00	Break / Breakout Session							
17:00-17:20	Breakthroughs in 2D materials	30pA-9 T. Uchihashi	Nanotechnology and nanomaterials	30pB-9 (I) U. Höfer	Surface chemistry	30pC-8 K. Sakata	Energy and environmental science / Surface and interface structures	30pD-10 F. Nishino
17:20-17:40		30pA-10 (I) Y. Zhang						30pC-9 (I) B. R. Cuenya
17:40-18:00				30pB-10 K. Kawaguchi				30pD-12 T. A. Jung
18:00-18:20	Break / Breakout Session							
18:20-18:40								
18:40-19:00								
19:00-19:20	Poster/ Breakout Session (online)							
19:20-19:40								
19:40-20:00								
20:00-20:20								
20:20-20:40								
20:40-21:00	Breakout session							
21:00-21:20								

	Online Room A		Online Room B		Online Room C		Online Room D		
JST	Wed (Dec 1)								
8:00-8:20	Registration								
8:20-8:40	Registration								
8:40-9:00	Physics at surfaces and thin films	01aA-1 I. Matsuzawa	Surface chemistry	01aB-1 (I) M. Trenary	Nanotechnology and nanomaterials	01aC-1 Y. Ochiai	Operando surface science	01aD-1 (I) J. Guo	
9:00-9:20		01aA-2 M. Horio				01aC-2 P. Verma			
9:20-9:40		01aA-3 T. Wada		01aB-2 P. H. McBreen		01aC-3 (I) L.-C. Chen		01aD-2 S. Karasawa	
9:40-10:00		01aA-4 K. Sakamoto		01aB-3 H. Nakanishi				01aD-3 M. Ohara	
10:00-10:20	Break / Breakout Session								
10:20-10:40	Poster/ Breakout Session (online)								
10:40-11:00									
11:00-11:20									
11:20-11:40									
11:40-12:00	Break / Breakout Session								
12:00-12:20									
12:20-12:40									
12:40-13:00									
13:00-13:20	Physics at surfaces and thin films	01pA-1 R. Noguchi	Surface chemistry	01pB-1 K. Amemiya	Nanotechnology and nanomaterials / Physics at surfaces and thin films	01pC-1 K. Hirao	Operando surface science	01pD-1 (I) N. Ishida	
13:20-13:40		01pA-2 H. Abe		01pB-2 S. Ogawa		01pC-2 T. N. Pham			
13:40-14:00		01pA-3 A. Takayama		01pB-3 K. Takeyasu		01pC-3 S. Kaito			
14:00-14:20		01pA-4 M. C. Escaño		01pB-4 H. Ueta		01pC-4 T. Yamamoto			
14:20-14:40		01pA-5 F. Komori		01pB-5 H. Onishi		01pC-5 (R) T. Kumagai			01pD-3 Y. Yokota
14:40-15:00		01pA-6 I. Seo		01pB-6 I. Tanabe					01pD-4 H. Sato
15:00-15:20	Break / Breakout Session								
15:20-15:40	Physics at surfaces and thin films	01pA-7 Y. Sato	Surface chemistry	01pB-7 K. Hirata	Nanotechnology and nanomaterials / Physics at surfaces and thin films	01pC-6 Y. Kainuma	Operando surface science	01pD-6 A. Imanishi	
15:40-16:00		01pA-8 S. Yoshizawa		01pB-8 R. Zhang		01pC-7 T. Takashiro		01pD-7 H. Ishii	
16:00-16:20		01pA-9 (I) J. Kröger		01pB-9 M. Futamata		01pC-8 Y. Yasui		01pD-8 (I) P. Amann	
16:20-16:40				01pB-10 A. Shiotari					
16:40-17:00	Break / Breakout Session								
17:00-17:20	Rohrer Medal Lecture 01pA-R A. Heinrich 17:00-18:00								
17:20-17:40									
17:40-18:00									
18:00-18:20	Closing Ceremony 18:00-18:20 @ Room A								

	Online Room A		Online Room B		Online Room C		Online Room D		
JST	Mon (Nov. 29)								
8:00-8:20	Registration								
8:20-8:40									
8:40-9:00	Opening Ceremony 8:40-9:20 @ Room A								
9:00-9:20									
9:20-9:40	Plenary 1 29aA-PL H. Peng 9:20-10:20								
9:40-10:00									
10:00-10:20									
10:20-10:40	Break / Breakout Session								
10:40-11:00	Cutting-edge of data-driven surface science	29aA-1 (I) J. C. Agar	Biomaterial interfaces	29aB-1 (I) M. Rolandi	Physics at surfaces and thin films	29aC-1 K. Asakawa	Nanotechnology and nanomaterials	29aD-1 M. Yano	
11:00-11:20						29aC-2 H. Maruyama		29aD-2 T. Yamada	
11:20-11:40		29aA-2 (I) N. Artrith		29aB-2 T. Xiao		29aC-3 Y. Gohda		29aD-3 S. Ichinokura	
11:40-12:00				29aB-3 A. Oshima		29aC-4 P. Viswanath		29aD-4 Y. Zhao	
12:00-12:20	Break / Breakout Session								
12:20-12:40									
12:40-13:00									
13:00-13:20	Cutting-edge of data-driven surface science	29pA-1 (I) T. Toyao	Biomaterial interfaces	29pB-1 (I) X. Duan	Physics at surfaces and thin films	29pC-1 Y. Kubota	Surface and interface structures	29pD-1 X. Zhang	
13:20-13:40								29pC-2 Ø. S. Handegard	29pD-2 R. Kawamura
13:40-14:00		29pA-2 T. Mizoguchi		29pB-2 S. T. Lee		29pC-3 D. H. Pinilla		29pD-3 Y. Fuseya	
14:00-14:20		29pA-3 H. Iwasawa		29pB-3 Y. Cui		29pC-4 Y. Yamashita		29pD-4 H. Aoyama	
14:20-14:40		29pA-4 (I) S. Han		29pB-4 (I) T.-E. Lin		29pC-5 Y. Tsuda		29pD-5 A. F. Z. Abidin	
14:40-15:00						29pC-6 D. Fujita		29pD-6 Y. Wang	
15:00-15:20	Break / Breakout Session								
15:20-15:40	Cutting-edge of data-driven surface science	29pA-5 M. Shiga	Biomaterial interfaces	29pB-5 R. Kojima	Physics at surfaces and thin films	29pC-7 T. Konishi	Advanced surface engineering and characterization	29pD-7 (I) S.-h. Phark	
15:40-16:00		29pA-6 A. Yoshinari		29pB-6 K. Fujiwara		29pC-8 Y. Nakayama			
16:00-16:20		29pA-7 (I) K. Nagata		29pB-7 (I) G. Fragneto		29pC-9 H. Sato			29pD-8 M. Kamiya
16:20-16:40						29pC-10 S. A. Ab Rahman			29pD-9 T. Sumi
16:40-17:00	Break / Breakout Session								
17:00-17:20	Plenary 2 29pA-PL M. Scheffler 17:00-18:00								
17:20-17:40									
17:40-18:00									
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18:20-18:40									
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19:20-19:40						29nC-2 H. Imada		29nD-2 T. Harashima	
19:40-20:00		29nA-2 (I) E. Al-Dmour		29nB-2 T. Ikarashi		29nC-3 M. I.-Imada		29nD-3 O. Takeuchi	
20:00-20:20				29nB-3 T. Sato		29nC-4 H.-J. Freund		29nD-4 (I) S. Eisebitt	
20:20-20:40		29nA-3 (I) V. Baglin		29nB-4 (I) S. Wippermann		29nC-5 M. Dürr			
20:40-21:00									
21:00-21:20	Breakout session								

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JST	Wed (Dec 1)							
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9:00-9:20		01aA-2 M. Horio				01aC-2 P. Verma		
9:20-9:40		01aA-3 T. Wada		01aB-2 P. H. McBreen		01aC-3 (I) L.-C. Chen	01aD-2 S. Karasawa	
9:40-10:00		01aA-4 K. Sakamoto		01aB-3 H. Nakanishi			01aD-3 M. Ohara	
10:00-10:20	Break / Breakout Session							
10:20-10:40	Poster/ Breakout Session (online)							
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13:20-13:40		01pA-2 H. Abe		01pB-2 S. Ogawa		01pC-2 T. N. Pham		
13:40-14:00		01pA-3 A. Takayama		01pB-3 K. Takeyasu		01pC-3 S. Kaito		01pD-2 K. Fukui
14:00-14:20		01pA-4 M. C. Escaño		01pB-4 H. Ueta		01pC-4 T. Yamamoto		01pD-3 Y. Yokota
14:20-14:40		01pA-5 F. Komori		01pB-5 H. Onishi		01pC-5 (R) T. Kumagai		01pD-4 H. Sato
14:40-15:00		01pA-6 I. Seo		01pB-6 I. Tanabe				01pD-5 T. T. Suzuki
15:00-15:20	Break / Breakout Session							
15:20-15:40	Physics at surfaces and thin films	01pA-7 Y. Sato	Surface chemistry	01pB-7 K. Hirata	Nanotechnology and nanomaterials / Physics at surfaces and thin films	01pC-6 Y. Kainuma	Operando surface science	01pD-6 A. Imanishi
15:40-16:00		01pA-8 S. Yoshizawa		01pB-8 R. Zhang		01pC-7 T. Takashiro		01pD-7 H. Ishii
16:00-16:20		01pA-9 (I) J. Kröger		01pB-9 M. Futamata		01pC-8 Y. Yasui		01pD-8 (I) P. Amann
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18:00-18:20	Closing Ceremony 18:00-18:20 @ Room A							

ISSS-9 Greetings

Welcome Message

Welcome to the 9th International Symposium on Surface Science, ISSS-9, organized by the Japan Society of Vacuum and Surface Science (JVSS), Public Interest Incorporated Association. This symposium takes place from November 29 to December 1, 2021, online. At first ISSS-9 was planned to hold in Takamatsu, Kagawa, Japan, but due to the COVID-19 pandemic, we decided to hold the ISSS-9 as an online-meeting. Technical program of the ISSS-9 includes eight basic sessions; Surface and interface structures, Data-driven surface science, Nanotechnology and nanomaterials, Surface chemistry, Physics at surfaces and thin films, Advanced surface engineering and characterization, Vacuum technology, Biomaterial interfaces, Energy and environmental science, and five focused topical ones; Cutting-edge of data-driven surface science, Operando surface science, Breakthroughs in 2D materials, Surface science in hydrogenomics, Vacuum and surface technology of big science.

In 1989, the Surface Science Society of Japan (SSSJ, it was later merged with the Vacuum Society of Japan on April, 2018 for the founding of JVSS) organized the ISSS-1 -New Developments and Trends in Surface Science- as the 10-year anniversary of SSSJ, which launched international activities of the society. Through the symposia in 1996 and 1999, SSSJ began to organize the international symposium every three years from 2005. The last symposium, the 8th International Symposium on Surface Science (ISSS-8) was held at the Tsukuba International Congress Center (EPOCHAL TSUKUBA) in Tsukuba, Ibaraki, Japan in 2017, where we had 692 participants from 21 countries. Today, ISSS is one of the largest international conferences held in Japan in the field related to science and nanotechnology at surfaces and interfaces.

The Heinrich Rohrer Medal, which is composed of the Grand Medal and the Rising Medal, was established in 2013 to celebrate Dr. Rohrer's great achievements in surface science. The medals are awarded to outstanding researchers in this symposium. We express our gratitude to the IBM Research - Zurich Lab, JEOL Ltd., Scienta Omicron, Inc., and UNISOKU Co., Ltd for their contribution to fundraising. In particular, we would like to express sincere thanks to Ms. Rose-Marie Rohrer, Dr. Rohrer's wife, for her thoughtful support and huge donation.

We would like to thank the Japan Society for the Promotion of Science (JSPS) for financial support. We hope you will enjoy the exciting sessions, scientific discussion during the whole meeting.

Sincerely,

Hiroshi Daimon
Conference Chair, ISSS-9 2021



Plenary Speakers

Matthias Scheffler (Fritz Haber Institute, Germany)

Artificial Intelligence for Surface Science and Heterogeneous Catalysis: Learning Rules and Creating Maps of Materials Properties

Huisheng Peng (Fudan University, China)

Fiber Sensors and Systems

Yoshihiro Iwasa (The University of Tokyo, Japan)

Emergent van der Waals heterostructures of transition metal dichalcogenides

Andreas Heinrich (Ewha Womans University, Korea, The 3rd Heinrich Rohrer Medal (Grand Medal))

Investigating the Quantum Magnetism of Atoms on Surfaces with Scanning Tunneling Microscopy

Invited Speakers

Takashi Toyao (Hokkaido University)

Toward Discovery of Novel Heterogeneous Catalysts using Extrapolative Machine Learning Method

Kenji Nagata (NIMS)

Bayesian Estimation for Spectral Analysis

Joshua C. Agar (Lehigh University)

Real-Time Physics-Constrained Machine Learning in Multimodal Scanning Probe Microscopy

Seungwu Han (Seoul National University)

Multi-scale simulation of atomic layer deposition of W and TiN thin film

Nongnuch Artrith (Columbia University and Brookhaven National Laboratory)

Modelling of Complex Energy Materials with Machine Learning

Peter Amann (Stockholm university)

Catalytic Reactions Explored by the High Pressure X-ray Photoelectron Spectroscopy (HPXPS) Endstation POLARIS

Jian Wang (Peking University)

The observation of in-plane quantum Griffiths singularity in two-dimensional crystalline superconductors

Kehui Wu (CAS Beijing)

Manipulation of Quantum Well States in Two-dimensional Semiconductors

Yuanbo Zhang (Fudan University)

Electronic Properties of Novel Two-dimensional Materials

Hiroshi Sakai (KEK)

The advanced technologies of Energy Recovery Linac (ERL)

Eshraq Al-Dmour (MAX-IV)

MAX IV Vacuum System: Design and Operation.

Oleg B. Malyshev (ASTeC, STFC Daresbury Laboratory)

Non-evaporable getter coating development

Paolo Milani (University of Milan)

All-Printed Green Micro-Supercapacitors Based on a Natural-derived Ionic Liquid for Flexible Transient Electronics

Beatriz Roldán Cuenya (Fritz Haber Institute of the Max Planck Society)

Dynamic Catalysts under Operando Conditions

Jörg Libuda (Friedrich Alexander University)

Complex model interfaces for energy storage and conversion: From surface science to the solid/liquid and the electrified interface

Yossi Partiel (Hebrew University of Jerusalem Israel)

Chiral molecules and the electron spin

Stefan Eisebitt (Max-Born-Institut)

Ultrafast optical generation and control of magnetic skyrmions

Marco Rolandi (University of California, Santa Cruz)

Bioelectronic devices for control of cell function

Xiaojie Duan (Peking University)

Materials and technologies for soft and multi-modal neural interfacing

Tzu-En Lin (National Chiao Tung University)

Electrochemical detection and cleaning of the contaminated contact lens by using scanning electrochemical microscopy (SECM)

Andrew A. Gewirth (University of Illinois at Urbana-Champaign)

Controlling CO₂ Electrolyzer Reactivity Using Alloy and Polymer-modified Electrodes

Scott L. Anderson (The University of Utah)

Size- and Composition-Selected Cluster Catalysts and Electrocatalysts

Clemens Walther (Leibniz University Hannover)

Quasi non-destructive ultra-trace characterization and isotope imaging of natural and anthropogenic nanoparticles by SN MS

Jerzy Sadowski (Brookhaven National Laboratory)

Spectro-Microscopy of Twisted Bilayer Graphene Structures

Michael Trenary (University of Illinois at Chicago)

Selective hydrogenation reactions over a Pd-Cu(111) single-atom alloy studied with ambient pressure infrared spectroscopy

Ikutaro Hamada (Osaka University)

Adsorption and reaction of formic acid on Cu(111): The importance of the intermolecular interaction

Masashi Nakamura (Chiba University)

Effect of interfacial hydrophilicity/hydrophobicity on the fuel cell reactions

Alec Wodtke (Max-Planck-Institut)

Pump-probe experiments with neutral matter: A new approach to the kinetics of surface reactions

Vincent Baglin (CERN)

Qualifications for the upgraded High-Luminosity Large Hadron Collider Vacuum System

Stefan Wippermann (Max-Planck-Institut)

Electrified surfaces at constant electrode potential: an ab initio perspective

Li-Chyong Chen (National Taiwan University)

Probing the Photo-catalytic CO₂ Reduction on Low-dimensional Nano-catalysts via in situ and Operando Spectroscopies

Jörg Kröger (Technische Universität Ilmenau)

Quantum excitations and forces explored by scanning probe methods

Ulrich Höfer (Philipps-Universität Marburg)

Ultrafast Dynamics of Lightwave-Driven Currents in Topological Surface States

Takashi Ito (Japan Atomic Energy Agency)

Positive Muons in SrTiO₃: Electronic Structure of the Hydrogen-Like Defects and Their Potential Use in Depth-Resolved Detection of Oxygen Vacancies

Nobuyuki Ishida (NIMS)

Dynamically visualizing battery reactions by operando Kelvin probe force microscopy

Jinghua Guo (Lawrence Berkeley National Laboratory)

Operando soft x-ray spectroscopy characterization of surfaces and interfaces

Jan-Gerrit Horstmann (University of Göttingen)

Ultrafast Probing and Coherent Vibrational Control of a Surface Structural Phase Transition

Soo-Hyon Phark (IBS)

Double Electron Spin Resonance of Engineered Atomic Structures on a Surface

Giovanna Fragneto (Institut Laue-Langevin)

Structural Characterization of Biomembranes by Neutron Scattering

Takashi Kumagai (IMS, The 3rd Heinrich Rohrer Medal (Rising Medal))

Atomic-Scale Optical Spectroscopy in Plasmonic Scanning Tunneling Microscope Junctions

Heinrich Rohrer Medal



The Third Awarding of The Heinrich Rohrer Medals

February 1, 2020

The Japan Society of Vacuum and Surface Science (JVSS)

It is our great pleasure to announce the winners of the third awarding of The Heinrich Rohrer Medals. The Medal was established after the name of Late Dr. Heinrich Rohrer, one of the Laureates of Nobel Prize in Physics in 1986, for recognizing researchers who have made the world-top level achievements in the fields of nanoscience and nanotechnology.

The 3rd Heinrich Rohrer Medal –Grand Medal–

- **Andreas Heinrich, Ewha Womans University, Korea**

“For his ground-breaking development of scanning tunneling microscope methods to study the spin properties of magnetic atoms on surfaces for revealing the quantum nature of the magnetism at the atomic scale”



The 3rd Heinrich Rohrer Medal –Rising Medal–

- **Takashi Kumagai (born in 1984),**

Fritz Haber Institute of the Max Planck Society, Germany

“For his outstanding achievements in the field of near-field physics and chemistry in plasmonic STM junctions ”



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- Joseph A. Stroscio (National Institute of Standard Technology, U.S.A.)
- Roland Wiesendanger (University of Hamburg, Germany)

Award Ceremony

The award ceremony will be held at The 9th International Symposium on Surface Science, ISSS-9 (<https://www.jvss.jp/iss9/>), which is organized by The Japan Society of Vacuum and Surface Science (JVSS).

The laureates will deliver the award lectures on their research achievements during ISSS-9.

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Awards for Young Researchers

ISSS-9 conference will offer poster awards, titled "Young Researchers' Award", on a competitive basis. Anyone 36 years old or younger on November 14, 2021, is encouraged to apply as eligible.

The award winners will be selected by the participants' voting during the poster session. We request the applicant to prepare one screen poster that summarizes the research. This will help the voting by many participants.

We plan to announce the winners during the conference. The winner is recommended to submit a conference paper to publish the work widely.

Instructions for presentations

The conference presentation language is **English**.

<Oral Presentations>

All the oral presentations will take place at online rooms.

Presentation time

Duration of the individual types are summarized in the following table. Short questions or comments are made in the discussion time of 5 mins after each presentation.

	Talk	Discussion	Total
Contributed	15 min	5 min	20 min
Invited	35 min	5 min	40 min
Plenary	55 min	5 min	60 min

Breakout session

Break time is shared with breakout sessions to have more discussion with the speakers.

Preparation room

Additional online rooms will be prepared to meet participants and to check the appearance of their presentation files.

<Poster presentations>

The poster sessions will take place online in the evening (19:00-20:40 JST) on Nov. 30 and in the morning (10:20-12:00 JST) on Dec. 01.

An online room will be offered to each poster presentation. The presentation style is flexible and the poster can be described with a conventional A0 poster, an oral-presentation-style slide show, or a movie.

In addition to the above-mentioned presentation material, we recommend the presenter to prepare one screen page that summarizes the research. This will help to make discussions with many participants.

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- The Iron and Steel Institute of Japan
- Atomic Energy Society of Japan

Nov.29(Mon)**Online Room A, B, C, D****29aA Plenary Session**

Chair: I. Matsuda (The Univ. of Tokyo)

9:20-10:20 29aA-PL Fiber Sensors and SystemsH. Peng*Fudan Univ., China***Online Room A****29aA Cutting-edge of data-driven surface science**

Chair: Y. Ando (National Inst. of Advanced Industrial Science and Technology)

10:40-11:20 29aA-1 (I) Real-Time Physics-Constrained Machine Learning in Multimodal Scanning Probe MicroscopyJ. C. Agar*Lehigh Univ., USA***11:20-12:00 29aA-2 (I) Modelling of Complex Energy Materials with Machine Learning**N. Artrith*Utrecht Univ., The Netherlands***29pA Cutting-edge of data-driven surface science**

Chair: M. Kotsugi (Tokyo Univ. Sci.)

13:00-13:40 29pA-1 (I) Toward Discovery of Novel Heterogeneous Catalysts using Extrapolative Machine Learning MethodT. Toyao^{1,2}, S. Mine¹, S. Takakusagi¹, I. Takigawa^{1,3} and K. Shimizu^{1,2}¹Hokkaido Univ., Japan, ²Kyoto Univ., Japan, ³RIKEN, Japan**13:40-14:00 29pA-2 Data-driven approaches for materials characterization: core-loss spectroscopy and surface adsorption**T. Mizoguchi, K. Shibata, E. Suzuki and K. Kikumasa*The Univ. of Tokyo, Japan***14:00-14:20 29pA-3 Unsupervised Learning for Identifying Surface Inhomogeneity on Electronic Structures of High-Tc Cuprate**H. Iwasawa^{1,2}, T. Ueno¹, T. Masui³ and S. Tajima⁴¹Synchrotron Radiation Research Center, National Institutes for Quantum and Radiological Science and Technology, Japan ²Hiroshima Synchrotron Radiation Center, Hiroshima Univ., Japan, ³Kindai Univ., Japan, ⁴Osaka Univ., Japan**14:20-15:00 29pA-4 (I) Multi-scale simulation of atomic layer deposition of W and TiN thin film**S. Kim, H. An, S. Oh and S. Han*Seoul National Univ., Republic of Korea***29pA Cutting-edge of data-driven surface science**

Chair: K. Hukushima (The Univ. of Tokyo)

15:20-15:40 29pA-5 Statistical Machine Learning Methods for Noisy Spectral Imaging DataM. Shiga^{1,2} and S. Muto³¹Gifu Univ., Japan, ²RIKEN, Japan, ³Nagoya Univ., Japan**15:40-16:00 29pA-6 Automatic analysis of RHEED patterns using machine learning techniques**A. Yoshinari^{1,2}, Y. Iwasaki^{2,3}, M. Kotsugi¹ and N. Nagamura^{1,2,3}¹Tokyo Univ. of Science, Japan, ²National Inst. for Materials Science, Japan, ³JST PRESTO, Japan

16:00-16:40 29pA-7 (I) Bayesian Estimation for Spectral Analysis

K. Nagata

National Inst. for Materials Science, Japan

Online Room B

29aB Biomaterial interfaces

Chair: T. Miyake (Waseda Univ.)

10:40-11:20 29aB-1 (I) Bioelectronic devices for control of cell function

M. Rolandi

Department of Electrical and Computer Engineering Univ. of California, USA

11:20-11:40 29aB-2 A wireless, stretchable sensor lens for intraocular pressure measuring

T. Xiao¹, Q. Zhang¹, T. Takamatsu¹, L. Hu¹ and T. Miyake^{1,2}

¹Waseda Univ., Japan, ²JST-PRESTO, Japan

11:40-12:00 29aB-3 Liquid-ordered phase formation in freestanding bilayer lipid membranes by modifying the edge shape of microwell aperture

A. Oshima¹, M. Yamaguchi¹ and K. Sumitomo²

¹NTT Basic Research Laboratories and Bio-Medical Informatics Research Center, NTT Corporation, Japan, ²Univ. of Hyogo, Japan

29pB Biomaterial interfaces

Chair: R. Tero (Toyohashi Univ. Tech.)

13:00-13:40 29pB-1 (I) Materials and technologies for soft and multi-modal neural interfacing

X. Duan¹, G. Li¹, S. Zhao¹, X. Liu¹, L. Lu¹ and Z. Liang²

¹Peking Univ., China, ²Inst. of Neuroscience, CAS Center for Excellence in Brain Sciences and Intelligence Technology, Chinese Academy of Sciences, China

13:40-14:00 29pB-2 Transient fibrous nascent adhesion at initial stage of cell adhesion visualized on a plasmonic metasurface

S. T. Lee, T. Kuboki, S. Kidoaki, Y. Aida, S. Ryuzaki, Y. Arima and K. Tamada

Kyushu Univ., Japan

14:00-14:20 29pB-3 Non-mydratic near-infrared fundus imaging with light illumination from electric contact lens

Y. Cui¹, K. Shimizu¹ and T. Miyake^{1,2}

¹Waseda Univ., Japan, ²PRESTO, Japan Science and Technology Agency, Japan

14:20-15:00 29pB-4 (I) Electrochemical detection and cleaning of the contaminated contact lens by using scanning electrochemical microscopy (SECM)

T.-E. Lin¹, Y.-T. Hsu¹, Y. Zhu², S. Darvishi² and H. Girault²

¹College of Electrical and Computer Engineering, National Yang Ming Chiao Tung Univ., Taiwan, ²École Polytechnique Fédérale de Lausanne, Switzerland

29pB Biomaterial interfaces

Chair: T. Shimanouchi (Okayama Univ.)

15:20-15:40 29pB-5 Establishment of a method for visualizing nanometer-scale three-dimensional structures of chromosomes by three-dimensional atomic force microscopy

R. Kojima¹, K. Miyazawa¹, M. Meguro², T. Sumikama¹, K. Imadate³, N. Okano¹, S. Horike², K. Hirahara³ and T. Fukuma¹

¹Kanazawa Univ., Japan, ²Research Center for Experimental Modeling of Human Disease, Japan, ³Osaka Univ., Japan

- 15:40-16:00 29pB-6** **Specific Detection of Biological Nanoparticles by Microparticles with Molecularly-coated Surface under Optical Condensation in Microflow System**
K. Fujiwara^{1,2,3}, Y. Takagi^{1,2}, M. Tamura^{2,4}, I. Nakase^{1,2}, S. Tokonami^{2,3} and T. Iida^{1,2}
¹Graduate School of Science, Osaka Prefecture Univ., Japan, ²Research Inst. for Light-induced Acceleration System (RILACS), Osaka Prefecture Univ., Japan, ³Graduate School of Engineering, Osaka Prefecture Univ., Japan, ⁴Osaka Univ., Japan
- 16:00-16:40 29pB-7 (I)** **Structural Characterization of Biomembranes by Neutron Scattering**
G. Fragneto
 Institut Laue-Langevin, France

Online Room C
29aC Physics at surfaces and thin films

Chair: Y. Yamashita (National Inst. for Materials Science)

- 10:40-11:00 29aC-1** **Temperature dependence of internal magnetic field on the Fe₃O₄(111) surface**
K. Asakawa^{1,2}, T. Kawauchi¹ and K. Fukutani^{1,3}
¹Inst. of Industrial Science, the Univ. of Tokyo, Japan, ²Tokyo Univ. of Agriculture of Technology, Japan, ³Japan Atomic Energy Agency (JAEA), Japan
- 11:00-11:20 29aC-2** **Spin polarization measurement of metastable He atoms scattered from Fe₃O₄(100)**
H. Maruyama¹, M. Kurahashi², K. Asakawa¹ and A. Hatakeyama¹
¹Tokyo Univ. of Agriculture and Technology, Japan, ²National Inst. for Materials Science, Japan
- 11:20-11:40 29aC-3** **Multiferroic interfaces studied by first-principles electron theory**
Y. Gohda, R. C.-Amaral and A. M. Yatmeidhy
 Tokyo Tech, Japan
- 11:40-12:00 29aC-4** **Organic Ferroelectric Tunnel Junctions at Nanoscale**
P. Viswanath, T. Ikeda, K. K. H. De Silva and M. Yoshimura
 Surface Science Laboratory, Graduate School of Engineering, Toyota Technological Inst., Japan

29pC Physics at surfaces and thin films

Chair: T. Kinoshita (Japan Synchrotron Radiation Research Inst.)

- 13:00-13:20 29pC-1** **Recent Achievements in Materials Science at SACLA**
Y. Kubota
 RIKEN SPring-8 Center, Japan
- 13:20-13:40 29pC-2** **Photothermal perfect absorbers based on the extraordinary high refractive index of semimetal bismuth for spectroscopic infrared photodetection**
Ø. S. Handegard^{1,2}, D. H.-Pinilla², T. D. Dao², N. Furuhashi², Y. Wada³ and T. Nagao^{1,2}
¹Hokkaido Univ., Japan, ²International Center for Materials Nanoarchitectonics (MANA), National Inst. for Materials Science (NIMS), Japan, ³Research Center for Functional Materials, National Inst. for Materials Science (NIMS), Japan
- 13:40-14:00 29pC-3** **Spectrally-selective ultra-narrowband devices with multilayer photonic structures**
D. H. Pinilla¹, N. Furuhashi¹ and T. Nagao^{1,2}
¹International Center for Materials Nanoarchitectonics (NIMS), Japan, ²Hokkaido Univ., Japan
- 14:00-14:20 29pC-4** **Interfacial Atomic Structures and Interface States at SiO₂/4H-SiC**
Y. Yamashita^{1,2}, E. D. Indari^{1,2} and R. Hasunuma³
¹NIMS, Japan, ²Kyusyu Univ., Japan, ³The Univ. of Tsukuba, Japan

14:20-14:40 29pC-5 Comparison of the oxidation reaction kinetics between SiO₂/n- and p-Si(001) interfaces

Y. Tsuda¹, S. Ogawa², A. Yoshigoe¹, T. Sakamoto¹ and Y. Takakuwa³

¹MSRC, JAEA, Japan, ²SRIS, Tohoku Univ., Japan, ³μSIC, Tohoku Univ., Japan

14:40-15:00 29pC-6 Controlled 2D Materials Growth via Impurity Surface Segregation

D. Fujita

National Inst. for Materials Science, Japan

29pC Physics at surfaces and thin films

Chair: Y. Kubota (RIKEN SPring-8 Center)

15:20-15:40 29pC-7 Quantitative analysis of energy loss process for the core level intensities in Hard X-ray Photoemission

T. Konishi¹, S. Ueda² and T. Kinoshita³

¹Chiba Univ., Japan, ²National Inst. for Materials Science (NIMS), Japan, ³Japan Synchrotron Radiation Research Inst.(JASRI), Japan

15:40-16:00 29pC-8 Angle-resolved Electron Energy-loss Measurements on the Single Crystal Surface of an Organic Semiconductor Pentacene

Y. Nakayama¹, F. C. Bocquet², R. Tsuruta¹, S. Soubatch² and F. S. Tautz²

¹Tokyo Univ. of Science, Japan ²Forschungszentrum Jülich GmbH, Germany

16:00-16:20 29pC-9 Measurement of LUMO Band Structure of Organic Semiconductor

H. Sato, H. Orio and H. Yoshida

Chiba Univ., Japan

16:20-16:40 29pC-10 Evidence of Polaron Formation in Organic Semiconductor Proved by Temperature-Dependent HOMO/LUMO bandwidths

S. A. Ab. Rahman¹, Y. Yamada¹, H. Sato¹, H. Ishii² and H. Yoshida¹

¹Chiba Univ., Japan, ²Tsukuba Univ., Japan

Online Room D

29aD Nanotechnology and nanomaterials

Chair: J. T. Sadowski (Brookhaven National Laboratory)

10:40-11:00 29aD-1 Graphene nanoribbon growth on Au(100)

M. Yano and H. Asaoka

ASRC, JAEA, Japan

11:00-11:20 29aD-2 Carrier scattering mechanism of CVD graphene

Y. Okigawa¹, T. Masuzawa², K. Watanabe³, T. Taniguchi³ and T. Yamada¹

¹AIST, Japan, ²Shizuoka Univ., Japan, ³NIMS, Japan

11:20-11:40 29aD-3 Van Hove Singularity in Thickness Controlled Li-Intercalated Graphene

S. Ichinokura¹, M. Toyoda¹, M. Hashizume¹, K. Horii¹, S. Kusaka¹, S. Ideta², K. Tanaka², R. Shimizu³, T. Hitosugi³, S. Saito¹ and T. Hirahara¹

¹Department of Physics, Tokyo Inst. of Technology, Japan, ²UVSOR Facility, Inst. for Molecular Science, Japan, ³Department of Applied Chemistry, Tokyo Inst. of Technology, Japan

11:40-12:00 29aD-4 Interface hot carrier dynamics in quasi-crystalline twisted bilayer graphene and epitaxial graphene

Y. Zhao¹, T. Suzuki¹, T. Iimori¹, S. J. Ahn², J. R. Ahn², J. Xu¹, Q. Ren¹, T. Kanai¹, J. Itatani¹, K. Okazaki¹, S. Shin³, H. Fukidome⁴, S. Tanaka⁵, F. Komori¹ and I. Matsuda¹

¹Inst. for Solid State Physics, Univ. of Tokyo, Japan, ²Sungkyunkwan Univ., Republic of Korea,

³Office of Univ. Professor, the Univ. of Tokyo, Japan, ⁴Tohoku Univ., Japan, ⁵Kyushu Univ., Japan

29pD Surface and interface structures

Chair: A. Takayama (Waseda Univ.)

- 13:00-13:20 29pD-1 Electronic Structure of Borophane, studied by X-ray spectroscopy**
X. Zhang¹, Y. Tsujikawa¹, M. Niibe², N. T. Cuong³, M. Horio¹, S. Okada³, T. Kondo³ and I. Matsuda¹
¹The Univ. of Tokyo, Japan, ²Univ. of Hyogo, Japan, ³Univ. of Tsukuba, Japan
- 13:20-13:40 29pD-2 Substitutional doping from boron to carbon in hydrogen boride sheets**
R. Kawamura¹, R. Ishibiki¹, Y. Fujimoto², T. Goto¹, S. Ito^{1,2}, T. Fujita³, T. Tokunaga⁴, M. Miyauchi², S. Iimura², A. Yamamoto⁵, D. Umeyama⁶, S. Tominaka⁶, S. Saito², H. Hosono^{2,6} and T. Kondo^{1,2}
¹Univ. Tsukuba, Japan, ²Tokyo Tech., Japan, ³Kouchi Uni. Tech., Japan, ⁴Nagoya Univ., Japan, ⁵TAT, Japan, ⁶NIMS, Japan
- 13:40-14:00 29pD-3 Nanoscale Turing patterns in bismuth monolayer**
Y. Fuseya¹, H. Katsuno², K. Behnia³ and A. Kapitulnik⁴
¹Univ. of Electro-Communications, Japan, ²Hokkaido Univ., Japan, ³ESPCI Paris, PSL Research Univ., France, ⁴Stanford Univ., USA
- 14:00-14:20 29pD-4 Revealing complete three-dimensional structure of Si(110)3×2-Bi surface**
H. Aoyama¹ and T. Abukawa^{1,2}
¹IMRAM, Tohoku Univ., Japan, ²SRIS, Tohoku Univ., Japan
- 14:20-14:40 29pD-5 Catalytic activity of FeN₄ and CoN₄ embedded graphene for oxygen reduction reaction: a comparative density functional theory study**
A. F. Z. Abidin, and I. Hamada
 Osaka Univ., Japan
- 14:40-15:00 29pD-6 Density functional theory on nitrogen (N) doped graphdiyne as electrocatalyst for oxygen reduction reaction (ORR)**
Y. Wang¹, T. N. Pham¹, L. Yan⁴ and Y. Morikawa^{1,2,3}
¹Department of Precision Engineering, Graduate School of Engineering, Osaka Univ., Japan, ²Elements Strategy Initiative for Catalysts and Batteries (ESICB), Kyoto Univ., Japan, ³Research Center for Ultra-Precision Science and Technology, Graduate School of Engineering, Osaka Univ., Japan, ⁴Northeast Normal Univ., China

29pD Advanced surface engineering and characterization

Chair: J. Peng (Tsukuba Univ.)

- 15:20-16:00 29pD-7 (I) Double Electron Spin Resonance of Engineered Atomic Structures on a Surface**
S.-h. Phark^{1,2,3}, Y. Chen^{1,3}, H. T. Bui^{1,3}, Y. Wang^{1,3}, M. Haze¹, C. Wolf^{4,3}, J. Kim^{1,3}, C. P. Lutz², A. J. Heinrich^{1,3} and Y. Bae^{1,3}
¹Center for Quantum Nanoscience, IBS, Republic of Korea, ²IBM Almaden Research Center, USA, ³Ewha Womans Univ., Republic of Korea
- 16:00-16:20 29pD-8 Effects of magnetron sputtering on ion bombardment of Sm-Fe thin films**
M. Kamiya¹, R. Kataoka², S. Ono³, H. T. Uchida³, Y. Matsumura¹ and R. Gemma¹
¹Course of Applied Science, Graduate School of Engineering, Tokai Univ., Japan, ²Department of Nuclear Engineering, School of Engineering, Tokai Univ., Japan, ³Course of Mechanical Engineering, Graduate School of Engineering, Tokai Univ., Japan
- 16:20-16:40 29pD-9 Observing Soft X-ray Second Harmonic Generation from a GaAs Crystal**
T. Sumi¹, T. Senoo¹, M. Horio¹, Y. Kubota², Y. Hirata³, K. Yamamoto^{4,5}, Y. Sato¹, T. Wada¹, Y. Tsujikawa¹, X. Zhang¹, H. Akai¹, S. Owada^{2,6}, K. Tono^{2,6}, M. Yabashi^{2,6} and I. Matsuda¹
¹The Univ. of Tokyo, Japan, ²RIKEN SPring-8 Center, Japan, ³National Defense Academy of Japan, Japan, ⁴Inst. for Molecular Science, Japan, ⁵SOKENDAI, the Graduate Univ. for Advanced Studies, Japan, ⁶Japan Synchrotron Radiation Research Inst., Japan

Online Room A, B, C, D

29pA Plenary Session

Chair: I. Matsuda (The Univ. of Tokyo)

17:00-18:00 29pA-PL Artificial Intelligence for Surface Science and Heterogeneous Catalysis: Learning Rules and Creating Maps of Materials Properties

M. Scheffler

The NOMAD Laboratory at the Fritz Haber Inst. of the Max Planck Society, Germany

Online Room A

29nA Vacuum and surface technology of big science

Chair: Y. Tanimoto (KEK)

19:00-19:40 29nA-1 (I) Non-evaporable getter coating development

O. Malyshev and R. Valizadeh

UKRI/STFC Daresbury Laboratory, UK

19:40-20:20 29nA-2 (I) MAX IV Vacuum System: Design and Operation.

E. Al-Dmour and M. Grabski

MAX IV Laboratory, Lund Univ., Sweden

20:20-21:00 29nA-3 (I) Qualifications for the upgraded High-Luminosity Large Hadron Collider Vacuum System

V. Baglin

European Organisation for Nuclear Research CERN, Switzerland

Online Room B

29nB Surface and interface structures

Chair: P. Krüger (Chiba Univ.)

19:00-19:40 29nB-1 (I) Ultrafast Probing and Coherent Vibrational Control of a Surface Structural Phase Transition

J. G. Horstmann¹, H. B.-Clemens¹, B. Wit¹, F. Kurtz¹, G. Storeck¹ and C. Ropers^{1,2}

¹*IV. Physical Inst., Univ. of Göttingen, Germany*, ²*Max Planck Inst. for Biophysical Chemistry, Germany*

19:40-20:00 29nB-2 Investigation of Subnanometer-Scale Structures of Ionic Liquid/Au Electrode Interfaces by 3D-SFM

T. Ikarashi¹, R. Sakakibara¹, T. Yoshino¹, K. Miyazawa¹, T. Sumikama¹, K. Miyata¹, S. Shimizu², Y. Iwasa^{3,4} and T. Fukuma¹

¹*Kanazawa Univ., Japan*, ²*CRIEPI, Japan*, ³*The Univ. of Tokyo, Japan*, ⁴*RIKEN CEMS, Japan*

20:00-20:20 29nB-3 Analyses of the interfacial ionic liquid on Au(111) electrode using electrochemical XPS through the precursor film region

T. Sato¹, H. Ueda¹, A. Takahashi¹, Y. Hirota¹, I. Tanabe¹, A. Imanishi¹ and K. Fukui^{1,2}

¹*Osaka Univ., Japan*, ²*Inst. for Molecular Science, Japan*

20:20-21:00 29nB-4 (I) Electrified surfaces at constant electrode potential: an ab initio perspective

F. Deißbeck, C. Freysoldt, M. Todorova, J. Neugebauer, F. Deißbeck and

S. Wippermann

Max-Planck-Institut für Eisenforschung GmbH, Germany

Online Room C

29nC Surface chemistry

Chair: H. Kondoh (Keio Univ.)

19:00-19:40 29nC-1 (I) Complex model interfaces for energy storage and conversion: From surface science to the solid/liquid and the electrified interfaceJ. Libuda*Interface Research and Catalysis, Universität Erlangen-Nürnberg, Germany***19:40-20:00 29nC-2 Single-molecule precise laser nanospectroscopy**H. Imada^{1,2}, M. I.-Imada¹, K. Miwa^{2,3}, H. Yamane⁴, T. Iwasa^{2,5}, Y. Tanaka^{1,6}, N. Toriumi¹, K. Kimura¹, N. Yokoshi⁴, A. Muranaka^{1,6}, M. Uchiyama^{1,6}, T. Taketsugu⁵, Y. K. Kato¹, H. Ishihara^{4,7} and Y. Kim¹¹RIKEN, Japan, ²PRESTO, JST, Japan, ³Inst. for Molecular Science, Japan, ⁴Osaka Prefecture Univ., Japan, ⁵Hokkaido Univ., Japan, ⁶The Univ. of Tokyo, Japan, ⁷Osaka Univ., Japan**20:00-20:20 29nC-3 Atomic-scale investigation of single-molecule photocurrent generation**M. I.-Imada¹, H. Imada^{1,2}, K. Miwa^{1,3}, Y. Tanaka^{4,5}, K. Kimura¹, I. Zoh^{1,6}, R. B. Jaculbia¹, H. Yoshino¹, A. Muranaka⁴, M. Uchiyama^{4,5} and Y. Kim¹¹SISL, RIKEN, Japan, ²PRESTO, JST, Japan, ³Inst. for Molecular Science, Japan, ⁴Advanced Elements Chemistry Laboratory, RIKEN, Japan, ⁵The Univ. of Tokyo, Japan, ⁶Seoul National Univ., Republic of Korea**20:20-20:40 29nC-4 Surface action spectroscopy with inert gas messenger atoms**H.-J. Freund*Fritz Haber Inst. of the MPG, Germany***20:40-21:00 29nC-5 Starting from a Fixed Geometry: Real-Time XPS Investigation of a Surface Reaction with Controlled Molecular Configurations**T. Glaser¹, C. Länger¹, J. Heep¹, J. Meinecke², M. G. Silly³, U. Koert² and M. Dürr¹¹Institut für Angewandte Physik, Justus-Liebig-Univ. Giessen, Germany, ²Fachbereich Chemie, Philipps-Univ. Marburg, Germany, ³Synchrotron SOLEIL, France

Online Room D

29nD Advanced surface engineering and characterization

Chair: Y. Kubota (RIKEN)

19:00-19:40 29nD-1 (I) Atomically resolved single-molecule triplet quenchingJ. Peng¹, S. Sokolov¹, D. H.-Pérez², F. Evers¹, L. Gross³, J. M. Lupton¹ and J. Repp¹¹Univ. of Regensburg, Germany, ²Weizmann Inst. of Science, Israel, ³IBM Research-Zurich, Switzerland**19:40-20:00 29nD-2 Self-restoring single-molecule junction by a DNA zipper.**T. Harashima¹, T. Terakawa², N. Kurita³ and T. Nishino¹¹Tokyo Inst. of Technology, Japan, ²Kyoto Univ., Japan, ³Toyohashi Univ. of Technology, Japan**20:00-20:20 29nD-3 100 ps time resolution realized with optical-pump bias-voltage-probe scanning tunneling microscopy**O. Takeuchi, Y. Fujimaki, T. Kogure, H. Mogi, Y. Arashida, S. Yoshida, A. Taninaka and H. Shigekawa*Univ. of Tsukuba, Japan***20:20-21:00 29nD-4 (I) Ultrafast optical generation and control of magnetic skyrmions**S. Eisebitt*Max Born Inst., Germany*

Nov.30(Tue)**Online Room A, B, C, D****30aA Plenary Session**

Chair: I. Matsuda (The Univ. of Tokyo)

8:40-9:40 30aA-PL Emergent van der Waals heterostructures of transition metal dichalcogenidesY. Iwasa^{1,2}¹The Univ. of Tokyo, Japan, ²RIKEN Center for Emergent Matter Science, Japan**Online Room A****30aA Breakthroughs in 2D materials**

Chair: Y. Takamura (Japan Advanced Inst. of Science and Technology)

9:40-10:00 30aA-1 Gate-Controlled Chemical Reactions at Graphene SurfacesR. Nouchi^{1,2}, M. Matsumoto¹, K. Ikeda¹ and N. Mitoma^{1,3}¹Osaka Prefecture Univ., Japan, ²PRESTO, Japan Science and Technology Agency, Japan³Center for Emergent Matter Science, RIKEN, Japan**10:00-10:40 30aA-2 (I) Spectro-Microscopy of Twisted Bilayer Graphene Structures**J. T. Sadowski

Center for Functional Nanomaterials, Brookhaven National Laboratory, USA

30aA Breakthroughs in 2D materials

Chair: D. Fujita (National Inst. for Materials Science)

11:00-11:20 30aA-3 Creation of Beyond 6G devices using high-quality epitaxial graphene on affordable device-type wafersH. Fukidome

Tohoku University, Japan

11:20-11:40 30aA-4 First principles Study on Absorbance of Triple Layer Graphene in a Far-infrared or Tera-Hz Frequency RegionT. Hamada, T. Ohno and J. Nara

National Inst. for Materials Science, Japan

11:40-12:00 30aA-5 PEEM study of the growth process of h-BN and graphene on Ni foil for fabrication of graphene/h-BN heterostructuresR. Yusa¹, T. Shimizu¹, S. Ogawa^{1,2} and T. Abukawa^{1,2}¹IMRAM, Tohoku Univ., Japan, ²SRIS, Tohoku Univ., Japan**30pA Breakthroughs in 2D materials**

Chair: T. Uchihashi (National Inst. for Materials Science)

13:00-13:20 30pA-1 Theoretical Study on Role of Edge Termination in CVD Growth of hBN/ Graphene Heterostructure on Cu SurfaceH. Kageshima¹, S. Wang² and H. Hibino³¹Shimane Univ., Japan, ²NTT Basic Research Labs., Japan, ³Kwansei Univ., Japan**13:20-13:40 30pA-2 Atomic configuration of two-dimensional Ge bitriangular structure on ZrB₂(0001) at low temperature**Y. Fukaya¹, C.-C. Lee^{2,3}, A. Fleurence⁴, Y. Hasegawa², T. Ozaki² and Y. Y.-Takamura⁴¹Japan Atomic Energy Agency, Japan, ²The Univ. of Tokyo, Japan, ³Tamkang Univ., Taiwan,⁴Japan Advanced Inst. of Science and Technology (JAIST), Japan**13:40-14:20 30pA-3 (I) Manipulation of Quantum Well States in Two-dimensional Semiconductors**K. Wu, L. Chen and B. Feng

Inst. of Physics, Chinese Academy of Sciences, China

14:20-15:00 30pA-4 (I) The observation of in-plane quantum Griffiths singularity in two-dimensional crystalline superconductors

J. Wang

Peking Univ., China

30pA Breakthroughs in 2D materials

Chair: S. Ichinokura (Tokyo Inst. of Technology)

15:20-15:40 30pA-5 STM-IETS study of FePc molecule in 2D Molecular Lattice at 77K

P. Amrit¹, N. Kawakami¹, Y. -Y. Lai¹, E. Minamitani², R. Arafune³, N. Takagi⁴ and C. -L. Lin¹

¹National Yang Ming Chiao Tung Univ., Taiwan, ²Inst. for Molecular Science, Japan,

³International Center for Materials Nanoarchitectonics (MANA), National Inst. for Materials Science (NIMS), Japan, ⁴Kyoto Univ., Japan

15:40-16:00 30pA-6 Nonlinear mechanical response of rippled MoS₂ nanosheet

L. Xie, and Y. Oshima

Japan Advanced Inst. of Science and Technology, Japan

16:00-16:20 30pA-7 Crystalline boron monosulfide nanosheets with tunable bandgaps

H. Kusaka¹, R. Ishibiki¹, M. Toyoda², T. Fujita³, T. Tokunaga⁴, A. Yamamoto^{2,5}, M. Miyakawa⁶, K. Matsushita⁶, K. Miyazaki², L. Li¹, S. S. Laxman¹, T. Sakurai¹, E. Nishibori¹, T. Masuda⁶, K. Horiba⁷, K. Watanabe⁶, S. Saito², M. Miyauchi², T. Taniguchi⁶, H. Hosono^{2,6} and T. Kondo^{1,2}

¹Univ. of Tsukuba, Japan, ²Tokyo Inst. of Technology, Japan, ³Kochi Univ. of Technology, Tech., Japan, ⁴Nagoya Univ., Japan, ⁵Tokyo Univ. of Agriculture & Technology, Japan, ⁶National Inst. for Materials Science, Japan, ⁷High Energy Accelerator Research Organization (KEK), Japan

16:20-16:40 30pA-8 Revealing Local Exciton Dynamics on a Monolayer WS₂ probed by Time-resolved Multiprobe STM

H. Mogi¹, R. Mizuno¹, N. Wada², Y. Miyata², Y. Arashida¹, A. Taninaka¹, S. Yoshida¹, O. Takeuchi¹ and H. Shigekawa¹

¹Univ. of Tsukuba, Japan, ²Tokyo Metropolitan Univ., Japan

30pA Breakthroughs in 2D materials

Chair: J. Wang (Peking Univ.)

17:00-17:20 30pA-9 Atomic-layer Rashba-type superconductor protected by dynamic spin-momentum locking

S. Yoshizawa¹, T. Kobayashi², Y. Nakata³, K. Yaji⁴, K. Yokota^{1,6}, F. Komori⁴, S. Shin⁴, K. Sakamoto⁵ and T. Uchihashi^{1,6}

¹National Inst. for Materials Science, Japan, ²Department of Material and Life Science, Osaka Univ., Japan, ³Chiba Univ. Japan, ⁴The Univ. of Tokyo, Japan, ⁵Department of Applied Physics, Osaka Univ., Japan, ⁶Hokkaido Univ., Japan

17:20-18:00 30pA-10 (I) Electronic Properties of Novel Two-dimensional Materials

Y. Zhang

Fudan Univ., China

Online Room B

30aB Vacuum and surface technology of big science

Chair: M. Yamamoto (KEK)

9:40-10:00 30aB-1 Titanium vacuum chamber as repetitively used UHV getter pump

J. Kamiya¹, K. Takano¹, H. Yuza¹ and K. Wada²

¹Japan Atomic Energy Agency/J-PARC, Japan, ²Tokyo Electronics Co. LTD., Japan

- 10:00-10:20 30aB-2 Development of a Flange Mountable TiZrV Non-evaporable Getter Coating Device**
Y. Tanimoto^{1,2}, M. Okano³, X. Jin^{1,2}, T. Uchiyama¹ and T. Honda^{1,2}
¹High Energy Accelerator Research Organization (KEK), Japan, ²Graduate Univ. for Advanced Studies (SOKENDAI), Japan, ³JEOL Ltd., Japan
- 10:20-10:40 30aB-3 Study of High-Purity Titanium Thin Film with a Partially Nitrided Surface as a New Nonevaporable Getter by Scanning Transmission Electron Microscopy and Electron Energy Loss Spectroscopy**
M. Ono¹, K. Yoshioka¹, I. Yoshikawa¹, K. Mase^{2,3}, T. Kikuchi², M. Yamanaka⁴ and A. Hashimoto^{4,5}
¹Univ. of Tokyo, Japan, ²Inst. of Materials Structure Science, KEK, Japan, ³SOKENDAI (The Graduate Univ. for Advanced Studies), Japan, ⁴National Inst. for Materials Science, Japan, ⁵Univ. of Tsukuba, Japan

30aB Vacuum and surface technology of big science

Chair: T. Abukawa (Tohoku Univ.)

- 11:00-11:20 30aB-4 A novel measurement approach for near-edge x-ray absorption fine structure: continuous 2π angular rotation of linear polarization**
Y. Kudo¹, Y. Hirata², M. Horio¹, M. Niibe^{1,3} and I. Matsuda^{1,4}
¹Inst. for Solid State Physics, the Univ. of Tokyo, Japan, ²National Defense Academy, Japan, ³Univ. of Hyogo, Japan, ⁴Trans-scale Quantum Science Inst., Univ. of Tokyo, Japan
- 11:20-12:00 30aB-5 (I) The advanced technologies of Energy Recovery Linac (ERL)**
H. Sakai
High Energy Accelerator Research Organization (KEK), Japan

30pB Nanotechnology and nanomaterials

Chair: K. Nakajima (Tokyo Inst. of Technology)

- 13:00-13:20 30pB-1 Modulation of metal-insulator transition properties of VO₂ in the three-dimensionally controlled nano-micro space**
A. N. Hattori¹, A. I. Osaka¹, R. Li¹, X. Q. Shi², F.Z. Guo², K. Hattori³ and H. Tanaka¹
¹SANKEN, Osaka Univ., Japan, ²Dalian Jiaotong Univ., China, ³Nara Inst. of Science and Technology, Japan
- 13:20-13:40 30pB-2 Morphology of nanostructured VO₂ films fabricated by sputtering and annealing process**
K. Nishikawa, M. Yoshimura and Y. Watanabe
Toyota Technological Inst., Japan
- 13:40-14:00 30pB-3 In-situ Formation of Micro- and Nanobubbles by Water Radiolysis in a Scanning Electron Microscope**
K. Takahara and S. Suzuki
Univ. of Hyogo, Japan
- 14:00-14:20 30pB-4 Energy dependence of energy-filtered secondary electron images based on image data using HSA detector**
K. Ikita¹, T. Uchida¹, K. Yokouchi¹, A. Tanaka¹, K. Tsutsumi¹, N. Ikeo¹ and N. Taguchi²
¹JEOL Ltd., Japan, ²National Inst. of Advanced Industrial Science and Technology (AIST), Japan
- 14:20-14:40 30pB-5 Growth of vertically-aligned and small-diameter single-walled carbon nanotubes by CVD using Ir and Os catalysts**
T. Maruyama^{1,2}, K. P. Sharma², D. Yamamoto¹, T. Okada¹, M. Kobayashi¹, T. Saida^{1,2} and S. Naritsuka³
¹Department of Applied Chemistry, Meijo Univ., Japan, ²Nanomaterial Research Center, Meijo Univ., Japan, ³Department of Materials Science and Engineering, Meijo Univ., Japan

- 14:40-15:00 30pB-6 Strong photoluminescence from single-walled carbon nanotubes dispersed with coconut-based natural detergent**
K. Hirayama, M. Kitamura, R. Hamano and K. Umemura
Tokyo Univ. of Science, Japan

30pB Nanotechnology and nanomaterials

Chair: K. Miki (Univ. of Hyogo)

- 15:20-16:00 30pB-7 (I) Chiral molecules and the electron spin**
Y. Paltiel
The Hebrew Univ., Israel

- 16:00-16:40 30pB-8 (I) All-Printed Green Micro-Supercapacitors Based on a Natural-derived Ionic Liquid for Flexible Transient Electronics**
 L. Migliorini,¹ C. Piazzoni¹, K. P.-Esko², M. D. Girolamo¹, A. Vitaloni¹, F. Borghi¹,
 T. Santaniello¹, A. Aabloo² and P. Milani¹
¹Università degli Studi di Milano, Italy, ²Univ. of Tartu, Estonia

30pB Nanotechnology and nanomaterials

Chair: S. Ohno (Yokohama National Univ.)

- 17:00-17:40 30pB-9 (I) Ultrafast Dynamics of Lightwave-Driven Currents in Topological Surface States**
U. Höfer
Philipps-Univ. of Marburg, Germany
- 17:40-18:00 30pB-10 Time-, spin- and angle-resolved photoemission spectroscopy of solids in the 10.7-eV extreme-ultraviolet at 1-MHz repetition rate**
K. Kawaguchi¹, K. Kuroda¹, Y. Fukushima¹, Z. Zhao¹, S. Tani¹, H. Tanaka¹, A. Harasawa¹,
 T. Iimori¹, R. Noguchi¹, K. Yaji², S. Shin³, F. Komori¹, Y. Kobayashi¹ and T. Kondo¹
¹Inst. for Solid State Physics, The Univ. of Tokyo, Japan, ²National Inst. for Materials Science, Japan, ³Office of Univ. Professor, The Univ. of Tokyo, Japan

Online Room C

30aC Surface and interface structures / Surface science in hydrogenomics

Chair: T. Abukawa (Tohoku Univ.)

- 9:40-10:00 30aC-1 Theoretical analysis of resonant Auger electron diffraction patterns in ferromagnets**
R. Sagehashi, G. Park and P. Krüger
Chiba Univ., Japan
- 10:00-10:20 30aC-2 RHEED intensity analysis of H on metal surfaces by enhancing H contribution**
T. Kawamura^{1,2}, Y. Fukaya³ and K. Fukutani^{1,3}
¹Univ. of Tokyo, Japan, ²Tokyo Denki Univ., Japan, ³Adv. Sci. Res. Center, JAEA, Japan
- 10:20-10:40 30aC-3 Structural stability of II-V compound ultrathin films**
 L. G. Arellano^{1,2}, T. Suga¹, M. C. -Irisson² and J. Nakamura¹
¹The Univ. of Electro-Communications (UEC Tokyo), Japan, ²Instituto Politécnico Nacional, ESIME-Culhuacán, México

30aC Surface science in hydrogenomics

Chair: A. Itakura (National Inst. for Materials Science)

- 11:00-11:40 30aC-4 (I) Adsorption and reaction of formic acid on Cu(111): The importance of the intermolecular interaction**
I. Hamada
Osaka Univ., Japan

- 11:40-12:00 30aC-5 Self-Induction of Radicals in a Self-Assembled Proton-Donor/Acceptor Bilayer on Au(111)**
H. S. Kato¹, A. Ueda², T. Fujino³, Y. Kanematsu⁴, T. Yamada¹, M. Tachikawa⁵, J. Yoshinobu³ and H. Mori³
¹Osaka Univ., Japan, ²Kumamoto Univ., Japan, ³ISSP, The Univ. of Tokyo, Japan, ⁴Hiroshima Univ., Japan, ⁵Yokohama City Univ., Japan

30pC Surface science in hydrogenomics

Chair: K. Fukutani (The Univ. of Tokyo)

- 13:00-13:40 30pC-1 (I) Effect of interfacial hydrophilicity/hydrophobicity on the fuel cell reactions**
M. Nakamura
 Chiba Univ., Japan
- 13:40-14:00 30pC-2 First-Principles Study for Quantum Diffusion of Hydrogen on Various Metal Surfaces**
Y. Kataoka, J. Haruyama, T. Kawatsu and O. Sugino
 Inst. for Solid State Physics, Japan
- 14:00-14:20 30pC-3 First-Principles Thermodynamics of Hydrogen Defects in LiCoO₂**
E. F. Arguelles¹, K. Shimizu¹, S. Kasamatsu², A. Nakanishi¹, E. Minamitani³, Y. Ando⁴, S. Kobayashi⁵, K. Nishio⁵, R. Shimizu⁵, T. Hitosugi⁵ and S. Watanabe¹
¹The Univ. of Tokyo, Japan, ²Yamagata Univ., Japan, ³Inst. of Molecular Science, Japan, ⁴National Inst. of Advanced Industrial Science and Technology, Japan, ⁵Tokyo Inst. of Technology, Japan
- 14:20-15:00 30pC-4 (I) Positive Muons in SrTiO₃: Electronic Structure of the Hydrogen-Like Defects and Their Potential Use in Depth-Resolved Detection of Oxygen Vacancies**
T. U. Ito^{1,2}, W. Higemoto^{1,2,3}, A. Koda^{2,4} and K. Shimomura^{2,4}
¹Advanced Science Research Center, Japan Atomic Energy Agency, Japan, ²Muon Science Section, MLF Division, J-PARC Center, Japan, ³Tokyo Inst. of Technology, Japan, ⁴Inst. of Materials Structure Science, High Energy Accelerator Research Organization, Japan

30pC Surface science in hydrogenomics

Chair: H. S. Kato (Osaka Univ.)

- 15:20-15:40 30pC-5 Diffusion Model of Hydrogen Permeating in Stainless Steel**
A. N. Itakura¹, Y. Murase¹, T. Yakabe¹, M. Kitajima¹, N. Miyauchi¹ and S. Aoyagi²
¹National Inst. for Materials Science, Japan, ²Seikei Univ., Japan
- 15:40-16:00 30pC-6 Measurement of Spin Polarization of Spin-Polarized Atomic Hydrogen Beam**
H. Nakatsu¹, K. Shimazaki¹, Y. Nagaya¹, H. Ueta², S. Ogura³ and K. Fukutani^{1,2}
¹The Univ. of Tokyo, Japan, ²Advanced Science Research Center, Japan Atomic Energy Agency (JAEA), Japan, ³Tokyo Denki Univ., Japan
- 16:00-16:40 30pC-7 (I) Pump-probe experiments with neutral matter: A new approach to the kinetics of surface reactions**
A. M. Wodtke^{1,2,3}
¹Inst. for Physical Chemistry, Georg-August Univ. of Goettingen, Germany, ²Max Planck Inst. for Biophysical Chemistry, Germany, ³International Center for Advanced Studies of Energy Conversion, Georg-August Univ. of Goettingen, Germany

30pC Surface chemistry

Chair: A. Nakayama (Univ. of Tokyo)

17:00-17:20 30pC-8 Real-time Observation of the Electrochemical Reaction at a Solid-liquid Interface by Fluorescence-yield Wavelength-dispersive Soft X-ray Absorption Spectroscopy

K. Sakata and K. Amemiya

High Energy Accelerator Research Organization (KEK), Japan

17:20-18:00 30pC-9 (I) Dynamic Catalysts under Operando Conditions

B. R. Cuenya

Fritz-Haber-Inst. of the Max Planck Society, Germany

Online Room D

30aD Energy and environmental science

Chair: I. Yagi (Hokkaido Univ.)

9:40-10:00 30aD-1 Distribution of water and its chemical states inside the fuel cell electrolyte membranes under transient conditions during power generation analyzed by operando time-resolved CARS spectroscopy

H. Nishiyama¹, S. W. Wakolo¹, A. Iiyama¹ and J. Inukai^{1,2}

¹Univ. of Yamanashi, Japan, ²Univ. Kebangsaan, Malaysia

10:00-10:40 30aD-2 (I) Controlling CO₂ Electrolyzer Reactivity Using Alloy and Polymer-modified Electrodes

A. A. Gewirth and X. Chen

Univ. of Illinois, USA

30aD Energy and environmental science

Chair: J. Inukai (Univ. of Yamanashi)

11:00-11:40 30aD-3 (I) Size- and Composition-Selected Cluster Catalysts and Electrocatalysts

S. L. Anderson, G. Li, T. Masubuchi, A. Cass, M. Malek and A. Fuchs

Univ. of Utah, USA

11:40-12:00 30aD-4 Hydrogen Oxidation Reaction Activity for Vacuum-prepared Ru/Ir(111) Bimetallic Alloy Surfaces

K. Hayashi, K. Kusunoki, T. Tomimori, N. Todoroki and T. Wadayama

Tohoku Univ., Japan

30pD Energy and environmental science / Surface and interface structures

Chair: Y. Hasegawa (The Univ. of Tokyo)

13:00-13:20 30pD-1 Growth of two dimensional cuprous fluoride on Cu(100)

P. Krüger¹, M. N. Petukhov², A. Oreshkin³ and D. Muzychenko³

¹Chiba Univ., Japan, ²ICB, France, ³Lomonosov Moscow State Univ., Russia

13:20-13:40 30pD-2 Nuclear Quantum Effect of Methane Adsorbed on Metal Surfaces

S. E.M. Putra¹, Y. Morikawa^{1,2,3} and I. Hamada^{1,2}

¹Department of Precision Engineering, Graduate School of Engineering, Osaka Univ., Japan, ²Elements Strategy Initiative for Catalysts and Batteries (ESICB), Kyoto Univ., Japan,

³Research Center for Precision Engineering, Graduate School of Engineering, Osaka Univ., Japan

- 13:40-14:00 30pD-3 Surface Structure of Ice-I revealed by Atomic Force Microscope**
K. Iwata, N. Kawakami, A. Shiotari and Y. Sugimoto
Univ. of Tokyo, Japan
- 14:00-14:20 30pD-4 Structure analysis of oxygen layer on Ag(111) by scanning probe microscopy**
M. Kimura and Y. Sugimoto
The Univ. of Tokyo, Japan
- 14:20-14:40 30pD-5 Alloying Process at the Interface of Au-Li Studied Using Neural Network Potential**
K. Shimizu¹, E. F. Arguelles¹, W. Li², Y. Ando², E. Minamitani³ and S. Watanabe¹
¹The Univ. of Tokyo, Japan, ²National Inst. of Advanced Industrial Science and Technology, Japan, ³Inst. for Molecular Science, Japan
- 14:40-15:00 30pD-6 Manipulation of C₆₀ molecules on Ag(111) by non-contact atomic force microscopy**
L. Feng, T. Iizuka, Y. Yasui and Y. Sugimoto
The Univ. of Tokyo, Japan

30pD Energy and environmental science / Surface and interface structures

Chair: H. Yasumatsu (Toyota Technological Inst.)

- 15:20-16:00 30pD-7 (I) Quasi non-destructive ultra-trace characterization and isotope imaging of natural and anthropogenic nanoparticles by SN MS**
C. Walther¹, H. Bosco¹, P. Hanemann¹, L. Holtmann¹, L. Leifermann¹, M. Raiwa¹, M. Weiss¹ and K. Wendt²
¹Leibniz Univ. Hannover, Germany, ²Johannes Gutenberg-Univ. Mainz, Germany
- 16:00-16:20 30pD-8 Semitransparent Ta₃N₅-nanorods Enabled Unbiased Water Splitting Efficiency of 9.1%**
Y. Pihosh¹, V. Nandal², T. Higashi¹, K. Seki² and K. Domen¹
¹The Univ. of Tokyo, Japan, ²Global Zero Emission Research Center, National Inst. of Advanced Industrial Science and Technology, Japan
- 16:20-16:40 30pD-9 Using MOF-based Photocatalysts for H₂O₂ Production in a Two-phase System**
X. Chen¹, Y. Kondo¹, Y. Kuwahara^{1,2,3}, K. Mori^{1,2} and H. Yamashita^{1,2}
¹Osaka Univ., Japan, ²ESICB, Kyoto University, Japan, ³JST, PRESTO, Japan

30pD Energy and environmental science / Surface and interface structures

Chair: T. Yokoyama (Yokohama City Univ.)

- 17:00-17:20 30pD-10 STM / UPS study of two-dimensional host-guest molecule array**
E. Nishino¹, R. Nemoto¹, C.-H. Wang², M. Horie², T. Hosokai³, Y. Hasegawa⁴, S. Kera⁴ and T. K. Yamada¹
¹Chiba Univ., Japan, ²National Tsing Hua Univ., Taiwan, ³National Inst. of Advanced Industrial Science and Technology (AIST), Japan, ⁴Inst. for Molecular Science, Japan
- 17:20-17:40 30pD-11 DFT simulations of the mechanical tuning of thermopower in single molecule junctions**
E. Montes¹, H. Cho², T. Nishino², S. Fujii² and H. Vázquez¹
¹Inst. of Physics, Czech Academy of Sciences, Czech Republic, ²Tokyo Tech, Japan
- 17:40-18:00 30pD-12 Molecular Lego for functional 2D Materials: Self-assembly and growth of ultra-stable and highly crystalline free standing two-dimensional organic networks**
M. Moradi^{1,2}, T. A. Jung^{2,3} and P. Shahgaldian¹
¹Univ. of Applied Sciences and Arts Northwestern Switzerland, Switzerland, ²Laboratory for Micro - and Nanotechnology, Paul Scherrer Inst., Switzerland, ³Univ. of Basel, Switzerland

30PS Poster Session**Surface and interface structures**

Chair: T. Shirasawa (Inst. of Advanced Industrial Science and Technology)

30PS-1* STM observation of Bi-intercalated graphene on the Cu(111) substrateT. Kasai¹, T. Yamagami¹, K. Takatsuji² and H. Hirayama¹¹Department of Physics, Tokyo Inst. of Technology, Japan, ²Department of Materials Science and Engineering, Tokyo Inst. of Technology, Japan**30PS-2* Multi-scale Simulation of Equilibrium Step Fluctuations on Cu(111) Surfaces**H. H. Halim¹, S. E. M. Putra¹, F. Muttaqien², I. Hamada^{1,3}, K. Inagaki^{1,3}, Y. Hamamoto^{1,3} and Y. Morikawa^{1,3,4}¹Department of Precision Engineering, Graduate School of Engineering, Osaka Univ., Japan, ²Faculty of Mathematic and Natural Sciences, Bandung Inst. of Technology, Indonesia, ³Elements Strategy Initiative for Catalysts and Batteries (ESICB), Kyoto Univ., Japan, ⁴Research Center for Ultra-Precision Science and Technology, Graduate School of Engineering, Osaka Univ., Japan**30PS-3 Simulated STM Images of 2, 4, 6-Tris(4-bromophenyl)-1, 3, 5-triazine on Au(111)**A. Okada¹, S. Hara², S. Hasui¹, M. Yoshimura³ and K. Kadono¹¹Kyoto Inst. of Technology, Japan, ²National Inst. of Information and Communications Technology, Japan, ³Toyota Technological Inst., Japan**30PS-4 Epitaxial growth and structure determination of borophene on Ag(111)**Y. Tsujikawa¹, M. Shoji², M. Hamada², T. Takeda², T. Iimori¹, I. Mochizuki³, F. Komori¹, I. Matsuda¹ and A. Takayama²¹Univ. of Tokyo, Japan, ²Waseda Univ., Japan, ³Inst. of Material Structure Science, KEK, Japan**30PS-5 STM observation of CuPc on Au(111)-(1x2) : from isolated monomer to periodic chains**H. Koshida, H. Okuyama, S. Hatta and T. Aruga

Kyoto Univ., Japan

30PS-6* One-dimensional chain of water molecules on Pt(533) surfaces studied by heterodyne-detected vibrational sum-frequency generation spectroscopyN. Nagatsuka, T. Muratani, N. Shibata and K. Watanabe

Kyoto Univ., Japan

30PS-7 Nucleation of ultrathin Bi(110) film on the Si(111) $\sqrt{3}\times\sqrt{3}$ -B substrate in the two step growthM. Shimura¹, R. Ushioda¹, K. Nakatsuji² and H. Hirayama¹¹Department of Physics, Tokyo Inst. of Technology, Japan, ²Department of Materials Science and Engineering, Tokyo Inst. of Technology, Japan**30PS-8* Structure of Bi(111) terraces nucleated on the Bi(110) island**N. Sasagawa¹, R. Ushioda¹, K. Nakatsuji² and H. Hirayama¹¹Department of Physics, Tokyo Inst. of Technology, Japan, ²Department of Materials Science and Engineering, Tokyo Inst. of Technology, Japan**30PS-9 Self-Assembly of HB-HBC molecules on the Si(111)-Ag surface**T. Yokoyama, J. Motojima, N. Suzuki and H. Tsukada

Yokohama City Univ., Japan

30PS-10* Interlayer distances of graphene structure on SiC studied by TRHEPDT. Takeda¹, M. Hamada¹, Y. Tsujikawa¹, I. Mochizuki², T. Hoshi^{2,3}, T. Hyodo² and A. Takayama¹¹Waseda Univ., Japan, ²Inst. of Materials Structure Science, KEK, Japan, ³Tottori Univ., Japan**30PS-11* Observation of metal-free phthalocyanine adsorbed on SiC reconstructed surface**S. Emoto¹, A. Isobe¹, K. Kawamura², S. Kuroki², M. Naitoh³ and T. Ikari¹¹National Inst. of Technology (KOSEN), Ube College, Japan, ²Hiroshima Univ., Japan, ³Kyushu Inst. of Technology, Japan

- 30PS-12*** **Surface Decomposition of Pt pre-adsorbed SiC surface studied by metastable atom induced electron spectroscopy**
S. Masuda¹, T. Watanabe², F. Yamanaka¹, Y. Yamada¹, M. Watanabe¹, M. Naitoh³ and T. Ikari¹
¹National Inst. of Technology (KOSEN), Ube College, Japan, ²Graduate School of Life Science and Systems Engineering Kyushu Inst. of Technology, Japan, ³Department of Electrical Engineering and Electronics, Kyushu Inst. of Technology, Japan
- 30PS-13** **Bias effect on surface chemical states of CH₃NH₃PbBr₃ hybrid perovskite single crystal**
I. Maeng¹, Y. M. Lee², M. Lyu³, J. -H. Yun³, L. Wang³, M. Nakamura⁴ and M.-C. Jung⁵
¹Yonsei Univ., Republic of Korea, ²POSTECH, Republic of Korea, ³The Univ. of Queensland, Australia, ⁴Nara Inst. of Science and Technology, Japan, ⁵Univ. of Tsukuba, Japan
- 30PS-14*** **Gap inhomogeneity in High-*T_c* cuprate superconductor studied by high resolution micro-ARPES**
T. Sugiyama¹, H. Iwasawa^{2,3}, S. Ozawa¹, H. Oda¹, T. Kono¹, T. Okuda³, K. Miyamoto³, S. Ishida⁴, Y. Yoshida⁴, H. Eisaki⁴ and A. Kimura¹,
¹Hiroshima Univ., Japan, ²National Inst.s for Quantum and Radiological Science and Technology, Japan, ³Hiroshima Synchrotron Radiation Center, Hiroshima Univ. Japan, ⁴National Inst. of Advanced Industrial Science and Technology, Japan
- 30PS-15*** **Surface morphologies and band alignments of NiO layers grown on β-Ga₂O₃ surfaces**
Y. Seki, A. Okada, Y. Kajita, H. Nishinaka and K. Kadono
Kyoto Inst. of Technology, Japan
- 30PS-16*** **Non-Contact Atomic Force Microscopy Observation of Charge Ordering on Reconstructed Fe₃O₄ (001) Surface**
S. Ishikawa¹, A. Subagyo¹, H. Hosoi² and K. Sueoka¹
¹Graduate School of Information Science and Technology, Japan, ²Creative Research Institution Sosei, Japan
- 30PS-17** **Nanoscale spatial distribution of strain in VO₂ structural phase transition**
Y. Ashida¹, T. Ishibe¹, J. Yang², N. Naruse³ and Y. Nakamura¹
¹Osaka Univ., Japan, ²The Inst. of Scientific and Industrial Research, Osaka Univ., Japan, ³Shiga Univ. of Medical Science, Japan
- 30PS-18** **Structural analysis of VO₂ thin films prepared on r-plane sapphire substrates by mist CVD**
H. Maeda¹, E. Nakayama¹, O. Kubo¹, Y. Matamura², M. Kimura², T. Ikenoue², H. Tabata¹ and M. Katayama¹
¹Osaka Univ., Japan, ²Kyoto Univ., Japan
- 30PS-19** **Realization of Verwey Transition in 50 nm Fe₃O₄ Ultrathin Film Grown on Atomically Smooth Substrate**
A. I. Osaka¹, D. Toh², K. Yamauchi², K. Hattori³, X. Q. Shi⁴, F. Z. Guo⁴, H. Tanaka¹ and A. N. Hattori¹
¹SANKEN, Osaka Univ., Japan, ²Graduate School of Engineering, Osaka Univ., Japan, ³Graduate School of Science and Technology, Nara Inst. of Science and Technology, Japan, ⁴Dalian Jiaotong Univ., China
- 30PS-20*** **Theoretical investigation of carrier doping of topological insulator Be₂Se₃ by surface adsorption**
C. Fan¹, K. Sakamoto² and P. Krüger¹
¹Chiba Univ., Japan, ²Osaka Univ., Japan
- 30PS-21** **Oxygen Reduction Reaction Activity and Electrochemical Structural Stability of Nb-modified Pt/Co/Pt(111) Surfaces**
H. Kasumi, T. Takano, D. Kudo, N. Todoroki and T. Wadayama
Tohoku Univ., Japan
- 30PS-22** **Microstructures and Oxygen Reduction Reaction Properties of Pt/Nb-doped-SnO₂/Pt(111) Surfaces**
Y. Chida, J. Adachi, N. Todoroki and T. Wadayama
Tohoku Univ., Japan
- 30PS-23** **Stacking effect on Oxygen Reduction Reaction of Nitrogen-doped Graphene**
T. Takashima and J. Nakamura
The Univ. of Electro-Communications (UEC Tokyo), Japan

30PS-24 Fabrication of Ferroelectric PVDF Films on Monolayer Graphene

R. Matsumoto, P. Viswanath, M. Hara and M. Yoshimura
Toyota Technological Inst., Japan

30PS-25* Boiling behaviour from surface by microwave local heating of different power

R. Yakata¹, S. Sonobe¹, Y. Asakuma¹, A. Hyde² and C. Phan²
¹Univ. of Hyogo, Japan, ²Curtin Univ., Australia

30PS-26* New approach for maintenance of interfacial modification by two-stage microwave irradiation

Y. Watanabe¹, K. Saiuchi¹, S. Sonobe¹, Y. Asakuma¹, A. Hyde² and C. Phan²
¹Univ. of Hyogo, Japan, ²Curtin Univ., Japan

30PS-27 Surface tension for emulsion of oil-in-water during and after microwave irradiation

Y. Watanabe¹, S. Ueda¹, A. Shibatani¹, Y. Asakuma¹ and C. Phan²
¹Univ. of Hyogo, Japan, ²Curtin Univ., Australia

Nanotechnology and nanomaterials

Chair: K. Ozawa (Tokyo Inst. of Technology)

30PS-28 Theoretical study on thermoelectric power of Pd-adsorbed carbon nanotubes

M. Miyabe, N. Araki and T. Yamamoto
Tokyo Univ. of Science, Japan

30PS-29 Influence of Surface Roughness on Phonon-Drag Phenomenon in Thin Si Layers

A. Yamaguchi¹, R. Kasagi¹, Y. Kato¹, K. Fauziah², Y. Ono¹, A. Ogino¹ and H. Ikeda¹
¹Shizuoka Univ., Japan, ²Agency for the Assessment and Application of Technology, Japan

30PS-30 Fabrication of a Nitrogen-Vacancy (NV) hosted diamond pillars for scanning magnetometry probes

A. Ideguchi, Y. Kainuma, K. Hayashi and T. An
Japan Advanced Inst. of Science and Technology (JAIST), Japan

30PS-31 Fine control of colloidal catalyst nanoparticles for ultra-high-density carbon nanotube forest

K. Tabata, Y. Kono, T. Nakano and Y. Inoue
Shizuoka Univ., Japan

30PS-32 Development of thermoelectric circuit simulation method for carbon nanotube film

J. Kobayashi and T. Yamamoto
Tokyo Univ. of Science, Japan

30PS-33 Ion Irradiation Induced Synthesis of Novel Amorphous Double-Thick-Walled Silicon Carbide Nanotubes

T. Taguchi¹, S. Yamamoto² and H. Ohba¹
¹National Institutes for Quantum and Radiological Science and Technology, Japan, ²National Institutes for Quantum and Radiological Science and Technology, Japan

30PS-34 In situ transmission electron microscopy of carbon nanotubes and molybdenum during laser heating

T. Egoshi, N. Uemura and T. Kizuku
Univ. of Tsukuba, Japan

30PS-35 New boride materials consisting of H, Ca, and B

H. Yoshioka¹, S. Tominaka², B. Slater³, H. Hosono^{2,4} and T. Kondo^{4,5}
¹Graduate school of Univ. of Tsukuba, Japan, ²International Center for Materials Nanoarchitectonics, NIMS, Japan, ³Univ. College London, UK, ⁴MCES, Tokyo Inst. of Technology, Japan, ⁵Faculty of Pure and Applied Sciences, Univ. of Tsukuba, Japan

30PS-36 High-resolution imaging of small peptides on HOPG using scanning tunneling microscopy

K. Fujii, Y. Shinohara, A. Matsui, N. Naruse and Y. Mera
Shiga Univ. of Medical Science, Japan

- 30PS-37 Intracellular Cargo Delivery with Au nanotube Membrane**
K. Oyama¹, B. Zhang¹, Z. Chen¹, D. Zhuhan¹, D. Pan¹, H. Ma¹ and T. Miyake^{1,2}
¹Waseda Univ. IPS, Japan, ²JST-PRESTO, Japan
- 30PS-38 Structural changes in graphite oxide during thermal annealing in air and in vacuum**
K. K. H. De Silva, K. Nishikawa, T. Shimizu and M. Yoshimura
Toyota Technological Inst., Japan
- 30PS-39 Self-folded Multilayer Graphene**
T. Goto, T. F. Teshima, K. Sakai and M. Yamaguchi
NTT Basic Research Laboratories and Bio-Medical Informatics Research Center, NTT Corporations, Japan
- 30PS-40 Direct growth of patterned Ge on insulators using graphene**
T. Tsukamoto¹, N. Hirose², A. Kasamatsu², T. Matsui² and Y. Suda³
¹The Univ. of Electro-Communications, Japan, ²National Inst. of Information and Communications Technology, Japan, ³Tokyo Univ. of Agriculture and Technology, Japan
- 30PS-41 Transient photocapacitance measurement for characterization of deep level defects in boron-doped (001) and (111) diamond films**
O. Maida, T. Kodama, D. Kanemoto and T. Hirose
Osaka Univ., Japan
- 30PS-42 Antiaromaticity as p-doping: electronic and conducting properties of antiaromatic single molecule junctions**
N. P. Arasu and H. Vázquez
Inst. of Physics, Czech Academy of Sciences, Czech Republic
- 30PS-43 Mechanically Tuned Thermopower of Single-Molecule Junctions**
S. Fujii¹, E. Montes², H. Cho¹, Y. Yue¹, M. Koike¹, M. Kiguchi¹, H. Vázquez² and T. Nishino¹
¹Tokyo Tech., Japan, ²Inst. of Physics, Czech Academy of Sciences, Czech Republic
- 30PS-44 The surface tension of nanodroplets: molecular dynamics calculations**
G. V. Kharlamov^{1,2}
¹Siberian State Univ. of Telecommunications and Information Sciences, Russia, ²Siberian Transport Univ., Russia
- 30PS-45 Adsorption site identification in single molecule junctions**
E. Montes and H. Vázquez
Inst. of Physics, Czech Academy of Sciences, Czech Republic
- 30PS-46* Electronic Structure of a Single-Molecule Junction during the Junction-Breaking Process**
Y. Isshiki¹, E. Montes², N. P. Arasu², T. Nishino¹, H. Vázquez² and S. Fujii¹
¹Tokyo Inst. of Technology, Japan, ²Inst. of Physics, Czech Academy of Sciences, Czech Republic
- 30PS-47 Development of an UHV-LT scanning magnetic imaging microscope using diamond NV-center probe**
K. Hayashi, A. Ideguchi, K. Nakashita, Y. Kainuma, T. An
Japan Advanced Inst. of Science and Technology, Japan

Surface chemistry / Surface science in hydrogenomics

Chair: Y. Nakayama (Tokyo Univ. Sci.), I. Hamada (Osaka Univ.)

- 30PS-48* A mechanism study on the incorporation of sub-nanometer vacancy defects in graphene lattice by scanning tunneling microscopy**
S. Li¹, S. Huang¹, T. V. Mohammad^{1,2}, N. Marzari² and K. V. Agrawal¹
¹Laboratory of Advanced Separations, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland, ²Theory and Simulation of Materials, National Centre for Computational Design and Discovery of Novel Materials (MARVEL), EPFL, Switzerland

- 30PS-49*** **Electronic state changes of Cu nanoparticles on rutile TiO₂(110) by O₂ and CO exposure**
K. Mitsuhashi¹, K. Ide², H. Takatani² and M. Takizawa²
¹Ritsumeikan Global Innovation Research Organization, Ritsumeikan Univ., Japan, ²Department of Physical Sciences, Faculty of Science and Engineering, Ritsumeikan Univ., Japan
- 30PS-50*** **Photocatalytic Activity and the Valence Band Structure of Edge and Terrace Sites of Natural Anatase TiO₂ Crystal**
K. Hiromori¹, Y. Aiura², K. Mase^{3,4}, N. Nakajima¹ and K. Ozawa^{3,5}
¹Hiroshima Univ., Japan, ²Research Inst. for Advanced Electronics and Photonics, National Inst. of Advanced Industrial Science and Technology (AIST), Japan, ³Inst. of Materials Structure Science, High Energy Accelerator Research Organization (KEK), Japan, ⁴SOKENDAI (The Graduate Univ. for Advanced Studies), Japan, ⁵Tokyo Inst. of Technology, Japan
- 30PS-51*** **X-ray photoelectron spectroscopy study of anatase TiO₂(001) using oxygen supersonic seeded molecular beam**
D. Katsube¹, S. Ohno², S. Takayanagi², S. Ojima³, M. Maeda³, N. Origuchi³, A. Ogawa², N. Ikeda², Y. Aoyagi², Y. Kabutoya¹, K. Kyungmin³, H. Linfeng³, L. Fengxuan³, Y. Tsuda⁴, H. Yoshida⁴, S. Nishi⁴, T. Sakamoto⁴, E. Inami⁵, A. Yoshigoe⁴ and M. Abe³
¹Nagaoka Univ. of Technology, Japan, ²Yokohama National Univ., Japan, ³Osaka Univ., Japan, ⁴Materials Sciences Research Center, Japan Atomic Energy Agency, Japan, ⁵Kochi Univ. of Technology, Japan
- 30PS-52** **First principles Investigation of electronic structure of Pd clusters on ZrO₂**
K. Nakada and T. Honma
 Japan Synchrotron Radiation Research Inst., Japan
- 30PS-53** **Molecular beams study on satellite peak observed in O1s photoelectron spectra for Si(001)2 × 1 surface oxidation at room temperature**
A. Yoshigoe¹, Y. Tsuda¹, A. Tominaga¹, T. Sakamoto¹, S. Ogawa² and Y. Takakuwa³
¹JAEA Materials Sciences Research Center, Japan, ²Tohoku Univ. SRIS, Japan, ³Tohoku Univ. μSIC, Japan
- 30PS-54** **High-order overtone-mediated dissociation mechanism of a single O₂ molecule chemisorbed on Ag(110)**
M. Lee^{1,2}, E. Kazuma¹, C. Zhang¹, M. Trenary³, J. Takeya², J. Jung⁴ and Y. Kim¹
¹Surface and Interface Science Laboratory, RIKEN, Japan, ²The Univ. of Tokyo, Japan, ³Univ. of Illinois at Chicago, USA, ⁴Univ. of Ulsan, Republic of Korea
- 30PS-55*** **A flat-lying dimer as a key intermediate in NO reduction on Cu(100)**
K. Kuroishi¹, M. R. A. Fauzan², T. N. Pham², Y. Wang², Y. Hamamoto², K. Inagaki², A. Shiotari, H. Okuyama¹, S. Hattai¹, T. Aruga¹, I. Hamada² and Y. Morikawa²
¹Kyoto Univ., Japan, ²Osaka Univ., Japan, ³Fritz-Haber Inst. of the Max-Planck Society, Germany
- 30PS-56*** **First-principles analysis of stearic acid adsorption on calcite (104) surface**
N. Machida¹, M. Misawa¹, Y. Kezuka² and K. Tsuruta¹
¹Okayama Univ., Japan, ²Shiraishi Central Laboratories Co., Ltd., Japan
- 30PS-57*** **Photochemical Processes in H₂¹⁸O-CO Ice Films: Pathways for CO₂ Formation**
A. Hirayama¹, K. Taniguchi², I. Arakawa¹ and K. Yamakawa³
¹Gakushuin Univ., Japan, ²National Astronomical Observatory, Japan, ³Japan Atomic Energy Agency, Japan
- 30PS-58** **Characterization and Control of Aluminum Oxide Thin Films Formed on Surfaces of FeCo-V Alloys**
K. Urakawa¹, M. Kasuya², T. Sato¹, T. Ebata¹ and S. Suzuki²
¹Tohoku Steel Co., Ltd., Japan, ²Tohoku Univ., Japan
- 30PS-59** **Mechanism of oxygen evolution reaction on nickel oxyhydroxides in alkaline solutions**
 R. P. Putra¹, I. B. Rachman¹, H. Horino² and I. I. Rzeznicka¹
¹Shibaura Inst. of Technology, Japan, ²Tohoku Univ., Japan
- 30PS-60*** **Composite of MgH₂ Nanoparticles and Hydrogen Boride Sheets**
K. Goto¹, S. Ito^{1,2}, H. Hosono^{2,3}, S. Orimo⁴ and T. Kondo^{1,2}
¹Univ. of Tsukuba, Japan, ²MCES, Tokyo Inst. of Technology, Japan, ³MANA, NIMS, Japan, ⁴WPI-AIMR, Tohoku Univ., Japan

- 30PS-61* Removal of Si Native Oxide by Irradiating Atomic Hydrogen**
D. Morimoto¹, A. Heya², K. Sumitomo², S. Ito², S. Suzuki¹, and Y. Haruyama¹
¹LASTI, Univ. of Hyogo, Japan, ²Grad. School of Eng., Univ. of Hyogo, Japan
- 30PS-62* Study on Self-Assembly for Functional Heterogeneous Bilayers on Au(111)**
R. Muneyasu, T. Yamada and H. S. Kato
Osaka Univ., Japan
- 30PS-63* H₂ dissociation and spillover process on Pd/Cu single atom alloy catalysts**
W. Osada, S. Tanaka, K. Mukai, M. Kawamura, T. Ozaki and J. Yoshinobu
The Univ. of Tokyo, Japan

Physics at surfaces and thin films / Breakthroughs in 2D materials

Chair: T. Uchihashi (National Inst. for Materials Science)

- 30PS-64 Photocatalytic Decomposition of Organic Molecule on Anatase TiO₂ Thin Films Epitaxially Grown on BaTiO₃(001)**
K. Ozawa^{1,2}, M. Minohara^{2,3}, H. Kumigashira^{2,4} and K. Mase^{2,5}
¹Tokyo Inst. of Technology, Japan, ²Inst. of Materials Structure Science, High Energy Accelerator Research Organization (KEK), Japan, ³Research Inst. for Advanced Electronics and Photonics, National Inst. of Advanced Industrial Science and Technology (AIST), Japan, ⁴Tohoku Univ., Japan, ⁵SOKENDAI (The Graduate Univ. for Advanced Studies), Japan
- 30PS-65* Theoretical Investigation of the Oxidative Etching of the Diamond (100) Surface for Novel Diamond Technologies**
J. I. G. Enriquez¹, F. Muttaqien², M. Michiuchi³, K. Inagaki¹, M. Geshi⁴, I. Hamada¹ and Y. Morikawa¹
¹Graduate School of Engineering, Osaka Univ., Japan, ²Institut Teknologi Bandung, Indonesia, ³Advanced Materials Laboratory, Sumitomo Electric Industries, Japan, ⁴INSD, Osaka Univ., Japan
- 30PS-66* Growth mode and electronic state analyses of Cu nanoparticles on HOPG surfaces**
H. Takatani, K. Mitsuhashi, Y. Hasegawa and M. Takizawa
Ritsumeikan Univ., Japan
- 30PS-67 STM measurements on chiral molecules adsorbed on Cu(111)**
M. Haze¹, K. Taga¹, D. Miyajima² and Y. Hasegawa¹
¹Univ. of Tokyo, Japan, ²RIKEN, Center for Emergent Matter Science (CEMS), Japan
- 30PS-68* Surface electron dynamics on clean and chemisorbed Pt(111) surfaces studied by terahertz-field-induced second harmonic light**
S. Tanaka¹, T. Fujimoto¹, Y. Murotani¹, T. Matsuda¹, N. Kanda^{1,2}, R. Matsunaga^{1,2} and J. Yoshinobu^{1,3}
¹The Univ. of Tokyo, Japan, ²PRESTO, Japan Science and Technology Agency, Japan, ³CREST, Japan Science and Technology Agency, Japan
- 30PS-69 Influence of sulfur on graphene growth on Ni(110) studied with LEEM/LEED**
M. Suzuki¹, Y. Yamauchi¹, D. Fujita¹, T. Yasue², T. Koshikawa² and E. Bauer³
¹National Inst. for Materials Science, Japan, ²Osaka Electro-Communication Univ., Japan, ³Arizona State Univ., USA
- 30PS-70 Field-driven ultrafast STM using sub-cycle mid-infrared pulses**
Y. Arashida, M. Ishikawa, A. Hatanaka, N. Umeda, H. Mogi, S. Yoshida, O. Takeuchi and H. Shigekawa
Univ. of Tsukuba, Japan
- 30PS-71* Light induced atomic desorption of Rb from Fe₃O₄ surface**
K. Asakawa^{1,2}, Y. Tani¹, T. Kawauchi², K. Fukutani^{2,3} and A. Hatakeyama¹
¹Tokyo Univ. of Agriculture of Technology, Japan, ²The Univ. of Tokyo, Japan, ³Japan Atomic Energy Agency (JAEA), Japan
- 30PS-72 Development of ultrafast laser-based time-angle-resolved photoemission system using two-dimensional time-of-flight analyzer**
Y. Sato¹, T. Kurihara¹, T. Mizuno¹, J. Itatani¹ and I. Matsuda^{1,2}
¹The Inst. for Solid State Physics, The Univ. of Tokyo, Japan, ²Trans-scale Quantum Science Inst., The Univ. of Tokyo, Japan

- 30PS-73 Metal-insulator-metal strips for infrared absorbers based on Nickel Aluminum superalloy**
T. P. Tran^{1,2}, T. D. Ngo^{1,2} and T. Nagao^{1,2}
¹International Center for Materials Nanoarchitectonics, National Inst. for Materials Science, Japan,
²Hokkaido Univ., Japan
- 30PS-74* First-principles study of anomalous Nernst Effect in Cr-doped Bi₂Se₃**
V. Saraswati¹, R. Syariati², H. Sawahata², N. Yamaguchi² and F. Ishii²
¹Graduate School of Natural Science and Technology, Kanazawa Univ., Japan, ²Nanomaterials Research Inst.,
Kanazawa Univ., Japan
- 30PS-75* Short-range ferromagnetic interaction in a monolayer VSe₂ film revealed by element-specific x-ray magnetic circular dichroism**
K. Sumida¹, Y. Takeda¹, S. Kusaka², K. Kobayashi³ and T. Hirahara²
¹Materials Sciences Research Center, Japan Atomic Energy Agency, Japan, ²Tokyo Inst. of Technology, Japan,
³Ochanomizu Univ., Japan
- 30PS-76 Spatially-modulated superconductivity due to the interplay between electronic nematicity and surface structure in FeSe_xTe_{1-x} at the nematic quantum critical point**
Y. Yoshida^{1,2}, H. H. Yang^{2,3}, K. Terao⁴, T. Kashiwagi⁴, K. Kadowaki⁴ and Y. Hasegawa²
¹Kanazawa Univ., Japan, ²Univ. of Tokyo, Japan, ³Physikalisches Institut, Karlsruhe Inst. of Technology,
Germany, ⁴Univ. of Tsukuba, Japan
- 30PS-77* Fluctuated Spin Texture of Rashba-Split Surface Bands of Low Symmetric Surface Bi/InAs(110)-(2×1)**
T. Nakamura^{1,2}, Y. Ohtsubo^{1,2,3}, K. Yaji⁴, A. Harasawa⁴, S. Shin⁴, F. Komori⁴ and S. Kimura^{1,2,5}
¹Graduate School of Frontier Biosciences, Osaka Univ., Japan, ²Department of Physics, Osaka Univ., Japan,
³Inst. for Advances Synchrotron Light Source, National Institutes for Quantum and Radiological Science and
Technology, Japan, ⁴The Univ. of Tokyo, Japan, ⁵Inst. for Molecular Science, Japan
- 30PS-78* Topological Electronic Structure of the Interface between α -Sn and InSb**
T. Nakaya¹, Y. Ohtsubo^{1,2,3}, T. Nakamura^{1,2} and S. Kimura^{1,2,4}
¹Department of Physics, Osaka Univ., Japan, ²Graduate School of Frontier Biosciences Osaka Univ., Japan,
³Inst. for Advances Synchrotron Light Source, National Institutes for Quantum and Radiological Science and
Technology, Japan, ⁴Inst. for Molecular Science, Japan
- 30PS-79 Electrical contact properties of graphene oxide thin film fabricated by electrophoretic deposition on copper substrate**
N. Ye¹, K. Hatakeyama², T. Shimizu³ and T. Kubo³
¹Research and Technology Centre, YAZAKI Corporation, Japan, ²Kumamoto Univ., Japan, ³National Inst. of
Advanced Industrial Science and Technology (AIST), Japan
- 30PS-80 Work Function of Graphene Sheets Fabricated by Chemical Vapor Deposition in Ultra High Vacuum**
S. Tanaka¹, Y. Tominari¹ and H. Suzuki²
¹Advanced ICT Research Inst., National Inst. of Information and Communications Technology, Japan,
²Hiroshima Univ., Japan
- 30PS-81* Tuning the transition temperature of atomic-layer superconductor Si(111)-($\sqrt{7} \times \sqrt{3}$)-In by organic molecular deposition**
K. Yokota^{1,2}, T. Kobayashi³, W. Qian¹, S. Inagaki³, K. Sakamoto³ and T. Uchihashi^{1,2}
¹Hokkaido Univ., Japan, ²National Inst. for Materials Science, Japan, ³Osaka Univ., Japan
- 30PS-82 Orientation-Controlled Thin Film Anodized Aluminum Oxide from Thin Smooth Al Layer on <111>-Au/Si Substrate**
P. L. Khoo, T. Nakamura and M. Izaki
Toyohashi Univ. of Technology, Japan
- 30PS-83* Edge dependence of electrical conductance of graphene nanoribbon**
C. Liu¹, J. Zhang¹, X. Zhang², M. Manoharan¹, H. Mizuta^{1,3} and Y. Oshima¹
¹Japan Advanced Inst. of Science and Technology, Japan, ²Shibaura Inst. of Technology, Japan, ³Hitachi
Cambridge Laboratory Univ., UK

30PS-84* Two-step synthesis method of exfoliated MoS₂ nanosheets with advanced properties for catalytic HER

L. Li¹, S. S. Laxman² and T. Kondo^{2,3,4}

¹Graduate school of Univ. of Tsukuba, Japan, ²Department of Materials Science, Faculty of Pure and Applied Sciences, Univ. of Tsukuba, Japan, ³MCES, Tokyo Inst. of Technology, Japan, ⁴Tsukuba Research Center for Energy Materials Science, Faculty of Pure and Applied Sciences, Univ. of Tsukuba, Japan

30PS-85* Graphene Growth on Carbon Steel by Chemical Vapor Deposition

K. Hiratochi^{1,2}, H. Suga^{1,2}, T. Shimizu², M. Okada², K. Bando², T. Yamada² and T. Kubo²

¹Chiba Tech, Japan, ²AIST, Japan

30PS-86* In-situ X-ray diffraction analysis of GaN growth on epitaxial graphene with AlN buffer layer

S. Fuke¹, T. Sasaki², Y. Kawai¹ and H. Hibino¹

¹Kwansei Gakuin Univ., Japan, ²National Institutes for Quantum and Radiological Science and Technology, Japan

30PS-87 Graphene growth using patterned copper thin films on quartz substrates

Y. Tominari¹, H. Suzuki² and S. Tanaka¹

¹Advanced ICT Research Inst., National Inst. of Information and Communications Technology, Japan, ²Hiroshima Univ., Japan

30PS-88* Raman spectroscopic studies of laser-induced structural change of epitaxial graphene layers on SiC(0001)

R. Horie¹, T. Yamana¹, J. Kanasaki¹, K. Kisoda², C. Itoh³ and K. Takahashi⁴

¹Osaka City Univ., Japan, ²Graduate School of Education, Wakayama Univ., Japan, ³Graduate School of Systems Engineering, Wakayama Univ., Japan, ⁴Synchrotron Light Application Center, Saga Univ., Japan

30PS-89* Controlling synthesis of h-BN films on c-plane and r-plane sapphire substrates

Y. Harada, Y. Kawai, R. Yagi and H. Hibino

Kwansei Gakuin Univ., Japan

Biomaterial interfaces

Chair: R. Tero (Toyohashi Univ. Tech.)

30PS-90 Development of Plasmonic Surface with Periodic Nano-Bowls for Optical Condensation of Nanoparticles

M. Kanoda^{1,2,3}, K. Hayashi^{1,2,3}, M. Tamura^{2,4}, S. Tokonami^{2,3} and T. Iida^{1,2}

¹Graduate School of Science, Osaka Prefecture Univ., Japan, ²Research Inst. for Light-induced Acceleration System (RILACS), Osaka Prefecture Univ., Japan, ³Graduate School of Engineering, Osaka Prefecture Univ., Japan, ⁴Osaka Univ., Japan

30PS-91 Rapid and sensitive detection of proteins at solid-liquid interface under light-induced assembly of photoresponsive particles in microchannel

T. Iida^{1,2}, M. Ueda^{1,2,3}, S. Hamatani^{1,2,3}, Y. Takagi^{1,2}, M. Tamura^{2,4} and S. Tokonami^{2,3}

¹Graduate School of Science, Osaka Prefecture Univ., Japan, ²Research Inst. for Light-induced Acceleration System (RILACS), Osaka Prefecture Univ., Japan, ³Graduate School of Engineering, Osaka Prefecture Univ., Japan, ⁴Osaka Univ., Japan

30PS-92 Raman spectromicroscopy of stratum corneum damaged by continuous-wave laser

T. Honda¹, Y. Kawai¹ and S. Yanagiya^{1,2}

¹Graduate School of Technology, Industrial and Social Sciences, Tokushima Univ., Japan, ²Inst. of Post-LED Photonics, Tokushima Univ., Japan

30PS-93* Selective arrangement of vesicles on artificial lipid membrane by biotin-avidin interaction

K. Hashino¹, D. Mombayashi¹, Y. Nakatani¹, A. Oshima², M. Yamaguchi², A. Heya¹ and K. Sumitomo¹

¹Univ. of Hyogo, Japan, ²NTT Basic Research Laboratories and Bio-Medical Informatics Research Center, NTT Corporation, Japan

30PS-94 Interaction between phenol derivatives with virucidal effects and murine noroviruses

V. R. Kudkyl¹, I. Matsuura², H. Hiramatsu², K. Hayashi² and T. Kawahara^{1,2}

¹Graduate School of Engineering, Chubu Univ., Japan, ²College of Life and Health Sciences, Chubu Univ., Japan

30PS-95* Photoresponse Mechanism of a free-standing lipid bilayer membrane doped with fullerene derivatives

T. Ma , X. Feng, D. Tadaki and A. H.-Iwata
Tohoku Univ., Japan

30PS-96* Single Molecule Observation of Amyloid β Aggregation on Lipid Membrane under Non-equilibrium Opened System

A. Iida and H. Nabika
Yamagata Univ., Japan

30PS-97 Distinct adsorbed states of adenine on gold nanoparticles at various pH solutions using flocculation-surface enhanced Raman scattering

T. Yoshimoto, M. Seki and M. Futamata
Saitama Univ., Japan

30PS-98* Optical condensation of living bacteria with bubble-mimetic solid-liquid interface

K. Hayashi^{1,2,3}, M. Tamura^{2,4}, S. Tokonami^{2,3} and T. Iida^{1,2}

¹Graduate School of Science, Osaka Prefecture Univ., Japan, ²Research Inst. for Light-induced Acceleration System (RILACS), Osaka Prefecture Univ., Japan, ³Graduate School of Engineering, Osaka Prefecture Univ., Japan, ⁴Osaka Univ., Japan

30PS-99* Artificial lipid bilayer system on ion image sensor for statistical ion channel measurement

F. Takeuchi , T. Horio, T. Hattori, K. Sawada and R. Tero
Toyohashi Univ. Tech., Japan

30PS-100* Controlling Efficiency of Graphene Oxide Quenching to Lipid Bilayer

J. M.Y. Lau¹, K. Kanomata², F. Hirose² and R. Tero¹
¹Toyohashi Univ. Tech., Japan, ²Yamagata Univ., Japan

30PS-101* Microdomain formation in cholesterol-containing lipid bilayers induced by polyunsaturated lipids

M. W. S. Goh and R. Tero
Toyohashi Univ. Tech., Japan

Dec.1(Wed)**Online Room A****01aA Physics at surfaces and thin films**

Chair: A. Takayama (Waseda Univ.)

- 8:40-9:00 01aA-1 Metal-insulator transition in hydrogenated RNiO₃**
I. Matsuzawa¹, Y. Nishiya¹, T. Ozawa¹, U. Sidik², A. Hattori², H. Tanaka² and K. Fukutani^{1,3}
¹The Univ. of Tokyo, Japan, ²Osaka Univ., Japan, ³Japan Atomic Energy Agency, Japan
- 9:00-9:20 01aA-2 Alkali-metal induced surface metallization of the Mott insulator Ca₂RuO₄ studied by angle-resolved photoemission spectroscopy**
M. Horio^{1,2}, D. Sutter², F. Forte³, C. G. Fatuzzo², S. Moser⁴, R. Fittipaldi³, A. Vecchione³, V. Granata³, Y. Sassa⁵, G. Gatti⁶, M. Grioni⁶, H. M. Ronnow⁶, M. Hoesch⁷,
T. K. Kim⁷, C. Jozwiak⁴, A. Bostwick⁴, E. Rotenberg⁴, M. Cuoco³ and J. Chang²
¹Univ. of Tokyo, Japan, ²Univ. of Zurich, Switzerland, ³Univ. of Salerno, Italy, ⁴Advanced Light Source, USA, ⁵Chalmers Univ. of Technology, Sweden, ⁶Swiss Federal Inst. of Technology in Lausanne, Switzerland, ⁷Diamond Light Source, UK
- 9:20-9:40 01aA-3 Mott transition in Ca₂RuO₄ driven by surface carrier doping: an x-ray photoelectron spectroscopy study**
T. Wada¹, M. Horio¹, Y. Kudo¹, V. Granata², R. Fittipaldi², A. Vecchione², J. Chang³ and I. Matsuda¹
¹The Univ. of Tokyo, Japan, ²Univ. of Salerno, Italy, ³Univ. of Zurich, Switzerland
- 9:40-10:00 01aA-4 Spatial Control of Charge Doping in n-Type Topological Insulators**
K. Sakamoto^{1,2}, H. Ishikawa², T. Wake², C. Ishimoto², J. Fujii³, H. Bentmann⁴, M. Ohtaka², K. Kuroda⁵, N. Inoue², T. Hattori⁵, T. Miyamachi⁵, F. Komori⁵, I. Yamamoto⁶, C. Fan², P. Krüger², H. Ota⁷, F. Matsui⁷, F. Reinert⁴, J. Avila⁸ and M. C. Asensio⁹
¹Osaka Univ., Japan, ²Chiba Univ., Japan, ³Istituto Officina dei Materiali (IOM)-CNR, Laboratorio TASC, Italy, ⁴Universität Würzburg, Germany, ⁵The Univ. of Tokyo, Japan, ⁶Saga Univ., Japan, ⁷Inst. for Molecular Science, Japan, ⁸Synchrotron SOLEIL, France, ⁹Materials Science Inst. of Madrid, Spain

Online Room B**01aB Surface chemistry**

Chair: H. Imada (RIKEN)

- 8:40-9:20 01aB-1 (I) Selective hydrogenation reactions over a Pd-Cu(111) single-atom alloy studied with ambient pressure infrared spectroscopy**
M. K. A.-Rahman, C. M. Kruppe, A. Islam and M. Trenary
Univ. of Illinois at Chicago, USA
- 9:20-9:40 01aB-2 Stereodirecting Interactions in Chiral Amine/ α -Ketoester Complexes on Pt(111)**
P. H. McBreen¹, Y. Zeng¹, J.-C. Lemay¹, Y. Dong¹, J. Garcia² and M. N. Groves²
¹Laval Univ., Canada, ²California State Univ. Fullerton, USA
- 9:40-10:00 01aB-3 Surface Kinetics of Catalysis for Methane Activation**
H. Nakanishi^{1,2,3}, S. M. Aspera¹, R. L. Arevalo¹ and H. Kasai¹
¹Akashi College, Japan, ²The Univ. of Tokyo, Japan, ³Osaka Univ., Japan

Online Room C

01aC Nanotechnology and nanomaterials

Chair: D. H.-Pinilla (National Inst. for Materials Science)

- 8:40-9:00 01aC-1 Stepwise conductance control via gradual crystallization in amorphized pure niobium nanocontacts by nanosecond pulse-width voltage energization**
Y. Ochiai, T. Obi, Y. Tsuruoka and T. Kizuka
Tsukuba Univ., Japan
- 9:00-9:20 01aC-2 Noble metal-based plasmonic nanostructures for visible-light driven catalytic reactions**
P. Verma¹, Y. Kuwahara^{1,2,3}, K. Mori^{1,2} and H. Yamashita^{1,2}
¹*Osaka Univ., Japan*, ²*ESICB, Kyoto Univ., Japan*, ³*JST, PRESTO, Japan*
- 9:20-10:00 01aC-3 (I) Probing the Photo-catalytic CO₂ Reduction on Low-dimensional Nano-catalysts via in situ and Operando Spectroscopies**
L.-C. Chen^{1,2}, H.-L. Wu^{1,2}, F.-Y. Fu^{1,2}, T. Billo³, Y.-F. Huang³, Y.-R. Lai^{1,2}, A. Sabbah³,
I. Shown^{3,4}, M. Hayashi^{1,2} and K.-H. Chen^{1,3}
¹*Center for Condensed Matter Sciences, National Taiwan Univ., Taiwan*, ²*Center of Atomic Initiative for New Materials, National Taiwan Univ., Taiwan*, ³*Inst. of Atomic and Molecular Sciences, Academia Sinica, Taiwan*, ⁴*Hindustan Inst. of Technology and Science, India*

Online Room D

01aD Operando surface science

Chair: M. Niibe (Univ. of Hyogo)

- 8:40-9:20 01aD-1 (I) Operando soft x-ray spectroscopy characterization of surfaces and interfaces**
J. Guo
Advanced Light Source, Lawrence Berkeley National Laboratory, USA
- 9:20-9:40 01aD-2 In situ XAFS analysis of growth process of single-walled carbon nanotubes from Co and Fe catalysts**
S. Karasawa¹, K. P. Sharma², D. Yamamoto¹, T. Saida^{1,2}, S. Naritsuka³ and T. Maruyama^{1,2}
¹*Department of Applied Chemistry, Meijo Univ., Japan*, ²*Nanomaterial Research Center, Meijo Univ., Japan*, ³*Department of Materials Science and Engineering, Meijo Univ., Japan*
- 9:40-10:00 01aD-3 Real-time Surface Potential Measurement during Evaporation of Alq₃ Film Studied by Rotary Kelvin Probe**
M. Ohara, Y. Tanaka and H. Ishii
Chiba Univ., Japan

*Candidates for "Young Researchers' Award"

01PS Poster Session (Surface and interface structures)**Surface and interface structures**

Chair: T. Abukawa (Tohoku Univ.)

- 01PS-1 Exfoliation of Interface in Carbon Fiber Reinforced Plastics by MD Simulation**
K. Suzuki¹ and T. Yamamoto²
¹Department of Electrical Engineering, Tokyo Univ. of Science, Japan, ²Department of Physics, Tokyo Univ. of Science, Japan
- 01PS-2* Electrochemically-Induced Electronic and Structural Properties of the Electrode-Monolayer-Electrolyte Interface**
R. A. Wong¹, Y. Yokota¹, M. Wakisaka², J. Inukai³ and Y. Kim¹
¹RIKEN, Japan, ²Toyama Prefectural Univ., Japan, ³Univ. of Yamanashi, Japan
- 01PS-3* Method of forming Cu dendrite crystal balls Zn-Al alloy plates**
H. Tanabe, S. Yamashita, Y. Shegemori, K. Niwa, K. Iwai, K. Yamanaka and H. Taguchi
 Chukyo Univ., Japan
- 01PS-4* Nanoscale characterization of porous organic thin films fabricated at the air/liquid interface**
K. Yamanami, K. Matsui, R. Asari and T. K. Shimizu
 Keio Univ., Japan
- 01PS-5* Air-Water Interface Structure of Saponin by Sum Frequency Generation Spectroscopy**
Y. Kagiya and T. Miyamae
 Chiba Univ., Japan
- 01PS-6 Structural analysis of VO₂ thin films prepared on r-plane sapphire substrates by mist CVD**
H. Maeda¹, E. Nakayama¹, O. Kubo¹, Y. Matamura², M. Kimura², T. Ikenoue², H. Tabata¹ and M. Katayama¹
¹Osaka Univ., Japan, ²Kyoto Univ., Japan
- 01PS-7* Lubricating Properties of Electrical Double Layer of Ionic Liquids on Friction interface**
S. Tanji¹, J. Yamada¹, S. Kawada², S. Sasaki¹ and M. Miyatake¹
¹Tokyo Univ. of Science, Japan, ²Kansai Univ., Japan
- 01PS-8* Observation of soft crystal growth and the nano-fabrication of phthalocyanine derivative by scanning tunneling microscopy**
R. Yoneda and T. Takami
 Kogakuin Univ., Japan
- 01PS-9* Evaluation of the Molecular Conformation of Surface Alkyl Groups of the Liquid-Repellent Films using SFG**
R. Mizuno¹, C. Urata², K. Watanabe², A. Hozumi² and T. Miyamae¹
¹Chiba Univ., Japan, ²National Inst. of Advanced Industrial Science and Technology (AIST), Japan
- 01PS-10* Effect of Water on Lubricating Properties of Hydrophobic Ionic Liquids and Hydrophilic Ionic Liquids**
S. Kawada^{1,2}, M. Miyatake³ and S. Sasaki³
¹Kansai Univ., Japan, ²Water Frontier Research Center of Tokyo Univ. of Science, Japan, ³Tokyo Univ. of Science, Japan
- 01PS-11 Annealing Effect of Absorbing Property for Cs or CsI in Fullerene Investigated by Synchrotron X-ray Photoelectron Spectroscopy**
T. Sekiguchi, K. Yokoyama and T. Yaita
 Japan Atomic Energy Agency, Japan

- 01PS-12 Hole depth profile in perylene multilayers detected by C K-NEXAFS**
O. Endo^{1,3}, F. Matsui², W. -J. Chun³, M. Nakamura⁴, K. Amemiya⁵ and H. Ozaki¹
¹Tokyo Univ. of Agriculture and Technology, Japan, ²UVSOR Synchrotron Facility, Inst. for Molecular Science, Japan, ³International Christian Univ., Japan, ⁴Chiba Univ., Japan, ⁵KEK-PF, IMSS, Japan
- 01PS-13 Near-IR spectroscopic observation of Mg(OH)₂ dehydration and MgO hydration**
M. Takeuchi¹, A. Kondo^{1,2}, R. Kurosawa³ and J. Ryu³
¹Osaka Prefecture Univ., Japan, ²Ube Material Industries, Ltd., Japan, ³Chiba Univ., Japan
- 01PS-14 Faster method of photoelectron intensity calculation based on multiple scattering theory**
M. Haniuda, M. Nozaki and K. Niki
Chiba Univ., Japan
- 01PS-15 Slow electrons (<100 eV) for Probing the Surface Localized Structure of TiO₂ Photocatalysts**
M. Honda, K. Goto and Y. Ichikawa
Nagoya Inst. of Technology, Japan
- 01PS-16* Analyses of Braying-induced Surface Amorphization of Titania Particles through Energy-resolved Distribution of Electron Traps**
M. Takashima^{1,2}, G. Chen² and B. Ohtani^{1,2}
¹Inst. for Catalysis, Hokkaido Univ., Japan, ²Graduate School of Environmental Science, Hokkaido Univ., Japan
- 01PS-17 pH modulation in adhesive cells with a protonic biotransducer**
M. Cui¹, Y. Chen¹, B. Liu¹, D. Chen¹ and T. Miyake^{1,2}
¹Waseda Univ., Japan, ²PRESTO, Japan Science and Technology Agency, Japan
- 01PS-18 Area and Depth Analysis of Nanoparticle Coating Layer on Stainless Steel Surface**
K. Kawaguchi¹, T. Segawa¹, K. Omi¹, K. Ishii¹ and H. Satone²
¹Japan Atomic Energy Agency, Japan, ²Univ. of Hyogo, Japan
- 01PS-19* Dissociation Kinetics of Hydrogen Trapped in High-Dose Hydrocarbon-Molecular-Ion-Implanted Region during Rapid Thermal Annealing**
T. Kadono^{1,2}, R. Okuyama¹, R. Hirose¹, K. Kobayashi¹, A. Masada¹, A. Suzuki¹, Y. Koga¹, A. Fukuyama² and K. Kurita¹
¹SUMCO Corporation, Japan, ²Univ. of Miyazaki, Japan
- 01PS-20 Development of variable-magnification imaging technique using soft x-ray reflectivity**
M. S.-Sakamaki¹ and K. Amemiya^{2,3}
¹Gunma Univ., Japan, ²High Energy Accelerator Research Organization, Japan, ³SOKENDAI(The Graduate Univ. for Advanced Studies), Japan
- 01PS-21 Study on Local Thermophysical Property of PMMA/PVDF Blends Using Atomic Force Microscopy**
A. Naruke^{1,2}, X. Liang¹ and K. Nakajima¹
¹Tokyo Inst. of Technology, Japan, ²KONICA MINOLTA, INC., Japan
- 01PS-22* Reversible and Efficient Rough Plasmonic Probes by Exploiting Oxidation and Reduction Processes for Tip-Enhanced Raman Spectroscopy**
V. K. Rao and M. Yoshimura
Surface Science Laboratory, Toyota Technological Inst., Japan

Nanotechnology and nanomaterials

Chair: T. Nagao (National Inst. for Materials Science)

- 01PS-23* Study on mutarotation of glucose during microwave irradiation**
T. Maeda and Y. Asakuma
Univ. of Hyogo, Japan
- 01PS-24* Improvement of nano-particle synthesis process by two-stage microwave irradiation and surfactant addition**
T. Takai, A. Shibatani and Y. Asakuma
Univ. of Hyogo, Japan

- 01PS-25 Highly-stable Polymer Coating on Metallic Nanoparticles for Plasmonic Fluorescence Enhancement**
M. Uesugi¹, Y. Komatsu¹, F. Okamoto¹, R. Kato², T. Tanaka², T. Yano² and F. Kitawaki¹
¹PHC Corporation, Japan, ²Tokushima Univ., Japan
- 01PS-26* Critical shear stress of gold nanocontact measured by TEM combined with a quartz resonator**
J. Liu¹, J. Zhang¹, T. Arai², M. Tomitori¹ and Y. Oshima¹
¹School of Materials Science, Japan Advanced Inst. of Science and Technology, Japan, ²Kanazawa Univ., Japan
- 01PS-27* Synthesis of Platinum-Nickel Alloy Nanowires with Different Compositions as Oxygen Reduction Reaction Catalysts**
Y. Zhuang¹, M. Kato^{1,2} and I. Yagi^{1,2}
¹Graduate School of Environmental Science, Hokkaido Univ., Japan, ²Faculty of Environmental Earth Science, Hokkaido Univ., Japan
- 01PS-28* Mechanical properties of Pt atomic chains measured by TEM coupled with a quartz resonator**
J. Zhang¹, M. Tomitori¹, T. Arai², K. Hongo¹, R. Maezono¹ and Y. Oshima¹
¹Japan Advanced Inst. of Science and Technology, Japan, ²Kanazawa Univ., Japan
- 01PS-29* Surface-segregation-induced chemical ordering in Pt@Co core-shell nanoparticles**
K. Aso¹, S. Yoshimaru², H. Kobayashi³, M. Yamauchi^{2,4}, H. Kitagawa³, S. Matsumura^{2,5} and Y. Oshima¹
¹Japan Advanced Inst. of Science and Technology, Japan, ²Kyushu Univ., Japan, ³Kyoto Univ., Japan, ⁴International Inst. for Carbon-Neutral Energy Research, Japan, ⁵The Ultramicroscopy Research Center, Japan
- 01PS-30 Cross-sectional Observation of Micro- and Nanobubbles Formed In-situ in a Scanning Electron Microscope**
K. Takahara and S. Suzuki
Univ. of Hyogo, Japan
- 01PS-31 First-principles evaluation on magnetic anisotropy in antiferromagnetic Mn alloys**
D. Takagi¹, D. Yoshikawa¹, I. Pardede^{1,2}, M. Obata^{1,3} and T. Oda^{1,3}
¹Grad. Sch. of Nat. Sci. and Technol., Kanazawa Univ., Japan, ²Institut Teknologi Sumatera (ITERA), Indonesia, ³Inst. of Science and Engineering, Kanazawa Univ., Japan
- 01PS-32 Development of Solvent-free Lipid Bilayer Microarray for Parallel Recordings of Transmembrane hERG Channel Activities**
R. Miyata¹, D. Taadaki¹, D. Yamaura¹, S. Araki¹, M. Sato¹, M. Komiya¹, T. Ma¹, H. Yamamoto¹, M. Niwano² and A. H.-Iwata¹
¹Tohoku Univ., Japan, ²Tohoku Fukushi Univ., Japan
- 01PS-33 Imaging of a magnetic card using a scanning diamond NV center probe**
C. Tachioka¹, P. Kumar¹, A. Ideguchi¹, S.-W. Kim², K. Koyama², K. Hayashi¹, Y. Kainuma¹ and T. An¹
¹Japan Advanced Inst. of Science and Technology (JAIST), Japan, ²Adamant Namiki Precision Jewel Co., Ltd., Japan
- 01PS-34 I-V Characteristics of TTF-TCNQ Mixed Complex and Their Derivatives (Times New Roman, 14pt, bold)**
M. Yamamoto, M. Tomiya and S. Sakamoto
Seikei Univ., Japan
- 01PS-35 Impact of Doping on Electrical Conduction Characteristics of Group 4 Transition-metal Dichalcogenides**
T. Sagara, M. Tomiya and S. Sakamoto
Seikei Univ., Japan
- 01PS-36 Development of a scanning diamond NV center probe working in liquid phase**
K. Noda, C. Tachioka, A. Ideguchi, Y. Kainuma, K. Hayashi and T. An
Japan Advanced Inst. of Science and Technology, Japan

01PS-37* Toward *Operando* Observation of Li-Ion Battery by Scanning Transmission Electron Microscopy

Y. Takagi¹, K. Aso¹, H. Ito², M. Hirayama², R. Kanno² and Y. Oshima¹

¹Japan Advanced Inst. of Science and Technology, Japan, ²Tokyo Inst. of Technology, Japan

01PS-38 Visible-Light-Driven Photocatalytic Hydrogen Evolution Using Ti-Based MOFs with Linker Defects

Y. Horiuchi¹, K. Tatewaki¹, S. Mine² and M. Matsuoka¹

¹Osaka Prefecture Univ., Japan, ²Hokkaido Univ., Japan

01PS-39 Dependence of Ge Nanowire Height Selectively-Grown by Vapor-Liquid-Solid on Au Catalyst Diameter Periodically-Located on Si (111) Surface

D. Goto¹, M. Makino¹, R. Horiguchi¹, W. Jevasuwan², N. Fukata² and S. Hara¹

¹Hokkaido Univ., Japan, ²National Inst. for Materials Science, Japan

01PS-40 Fabrication of graphene aerogel with controllable structural properties for efficient dye absorption

T. Shimizu, K. K. H. De Silva, M. Hara and M. Yoshimura

Toyota Technological Inst., Japan

01PS-41 Improving Oxygen Evolution Reaction Performance and Durability using Rhombic Dodecahedral Pt₃(Ni, X) Nanoparticles with Metal Oxide Supports

C. A. Tadjell, M. Kato and I. Yagi

Hokkaido Univ., Japan

01PS-42 Effect of Missing-Linker Defects in Zirconium-Based Metal-Organic Framework on Photocatalytic Hydrogen Peroxide Production

Y. Kondo¹, Y. Kuwahara^{1,2,3}, K. Mori^{1,2} and H. Yamashita^{1,2}

¹Osaka Univ., Japan, ²Elements Strategy Initiative for Catalysts and Batteries (ESICB), Kyoto Univ., Japan,

³PRESTO, Japan Science and Technology Agency (JST), Japan

Surface chemistr

Chair: Y. Nakayama (Tokyo Univ. Sci.)

01PS-43* Controlling the N-doping Sites in Carbon Dot (CD) for Direct White Light Emission (WLE)

B. K. Barman¹ and T. Nagao^{1,2}

¹International Center for Materials Nanoarchitectonics (MANA), National Inst. for Materials Science (NIMS), Japan, ²Hokkaido Univ., Japan

01PS-44 HAXPES study on chemical states of reaction films formed on metal surfaces by zinc dialkyldithiophosphate and molybdenum dialkyldithiocarbamate

Y. Iwanami¹, N. Kimura¹, K. Tagawa¹ and S. Yasuno²

¹ENEOS Corporation, Japan, ²Japan Synchrotron Radiation Research Inst., Japan

01PS-45* Chemical state analysis of diamond surface polished by Ultraviolet-Ray Aided Machining

D. Yamasaki¹, Y. Hasegawa¹, K. Mitsuhashi¹, M. Takizawa¹ and T. Tanaka²

¹Department of Physical Sciences, Faculty of Science and Engineering, Ritsumeikan Univ., Japan, ²Research Organization of Science and Technology, Ritsumeikan Univ., Japan

01PS-46* In-situ Vibrational Observation of a Superconcentrated Electrolyte/Electrode Interface

M. Nagasaka, K. Ikeda and K. Motobayashi

Nagoya Inst. of Technology, Japan

01PS-47* Ultrafast spectral diffusion of excitons in thin films of molecular aggregates

T. Yoshida and K. Watanabe

Kyoto Univ., Japan

01PS-48* Self-assembly mechanism of tetrapod-shaped molecules on a surface for constructing three-dimensional interfacial architecture

S. Tanaka and H. Asakawa

Kanazawa Univ., Japan

- 01PS-49 Electronic structures of Transition metal phosphide (TMP) thin films on TMP substrates**
N. Maejima^{1,2}, T. Yoshida¹, Y. Shimato¹ and K. Edamoto^{1,2}
¹*Coll. Sci., Rikkyo Univ., Japan*, ²*Research Center for Smart Molecules, Rikkyo Univ., Japan*
- 01PS-50* STM Visualization of Frontier Molecular Orbital Separation of a Single TADF Emitter**
I. Zoh^{1,2}, M. I.-Imada¹, J. Bae³, H. Imada^{1,4}, Y. Tsuchiya³, C. Adachi³ and Y. Kim¹
¹*SISL, RIKEN, Japan*, ²*Seoul National Univ., Republic of Korea*, ³*Kyushu Univ., Japan*, ⁴*PRESTO, JST, Japan*
- 01PS-51 The Behavior of Wetting Properties of Tin Solder Exposed to Indoor Condition**
H. Saito
Tokyo Denki Univ., Japan
- 01PS-52 Canceled**
- 01PS-53* In-situ Nanoscale Analysis of Corrosion Mechanism of Carbon Steel by In-Liquid Potential Distribution Measurement Technique**
S. Yamamoto, K. Hirata, D. Mizushima and T. Fukuma
Kanazawa Univ., Japan
- 01PS-54 Oxygen Reduction Reaction Durability Enhancement of Pt-Ni(111) Single Crystal Surfaces by Ir**
K. Kimura, S. Miyake, K. Kusunoki, N. Todoroki and T. Wadayama
Tohoku Univ., Japan
- 01PS-55 Application of Metal Organic Frameworks-in fluoride sensors for drinking water**
E. H. Ota¹, M. L. Kim¹ and M. Kimura^{1,2,3}
¹*Department of Chemistry and Materials, Faculty of Textile Science and Technology, Shinshu Univ., Japan*,
²*COI Aqua-Innovation Center, Shinshu Univ., Japan*, ³*Research Initiative for Supra-Materials, Shinshu Univ., Japan*

Physics at surfaces and thin films

Chair: Y. Yoshida (Kanazawa Univ.)

- 01PS-56 Lateral force microscopy utilizing bimodal qPlus AFM with a long probe**
Y. Yamada¹, T. Ichii¹, T. Utsunomiya¹, K. Kimura², K. Kobayashi², H. Yamada² and H. Sugimura¹
¹*Dept. of Mater. Sci. & Eng., Kyoto Univ., Japan*, ²*Dept. of Electronic Sci. & Eng., Kyoto Univ., Japan*
- 01PS-57* Thickness Dependent Metal-Insulator Transition in Ru Nanosheets Probed by Low-Energy Inverse Photoelectron Spectroscopy**
K. Kawamura¹, D. Ootsuki², T. Ishida², T. Yoshida², M. Morita³, K. Fukuda³ and H. Yoshida^{1,4}
¹*Grad. Sch. of Eng., Chiba Univ., Japan*, ²*Grad. Sch. of Human and Environ. studies, Kyoto Univ., Japan*,
³*Office of Society-Academia Collab. for Innovation, Kyoto Univ., Japan*, ⁴*Molecular Chirality Research Center, Chiba Univ., Japan*
- 01PS-58* Development of LaB₆-based metasurface for infrared applications**
T. D. Ngo^{1,2}, T. P. Tran^{1,2}, D. H. Ngo^{1,2} and T. Nagao^{1,2}
¹*International Center for Materials Nanoarchitectonics, NIMS, Japan*, ²*Hokkaido Univ., Japan*
- 01PS-59 Effect of Atomic Hydrogen Exposure on Hydrogenated Amorphous Carbon Films**
Y. Haruyama¹, D. Morimoto¹, A. Heya², K. Sumitomo², S. Ito², K. Yokota³ and M. Tagawa³
¹*LASTI, Univ. of Hyogo, Japan*, ²*Grad. School of Eng., Univ. of Hyogo, Japan*, ³*Kobe Univ., Japan*
- 01PS-60* Formation of Si-hydroxide surface during Si-water reaction**
S. Nishimura¹, M. Nakaura², Y. Hasegawa¹, K. Mitsuhashi¹, M. Takizawa¹ and E. Yamasue²
¹*Department of Physical Sciences, Faculty of Science and Engineering, Ritsumeikan Univ., Japan*,
²*Department of Mechanical Engineering, Faculty of Science and Engineering, Ritsumeikan Univ., Japan*
- 01PS-61 Canceled**

- 01PS-62*** **STM Observation of Rectangular-like Superstructure in Nanographene on Graphite Surface**
J. Li¹, S. Li, K. Kawai, K. Inagaki, K. Yamamura and K. Arima
Osaka Univ., Japan
- 01PS-63** **How do Macroscopic Objects Begin to Slide? - Relation between Precursor Slip and Friction Coefficient -**
W. Iwashita¹, H. Matsukawa² and M. Otsuki¹
¹*Osaka Univ., Japan*, ²*Aoyama Gakuin Univ., Japan*
- 01PS-64** **Wavelength Selective Transmission Thin Film using β -FeSi₂ for Infrared heating**
X. Zhang, S. Kumar, K. Namura and M. Suzuki
Kyoto Univ., Japan
- 01PS-65** **Resistance minimum due to Kondo effect and Anderson localization in PdH_x ultrathin films**
T. Ozawa¹, R. Shimizu², T. Hitosugi² and K. Fukutani^{1,3}
¹*The Univ. of Tokyo, Japan*, ²*Tokyo Inst. of Technology, Japan*, ³*Japan Atomic Energy Agency, Japan*
- 01PS-66*** **Determining Fundamental Losses in Ta₃N₅-nanorods Photoanodes for Efficient Solar Water Oxidation**
V. Nandal¹, Y. Pihosh², T. Higashi², K. Seki¹ and K. Domen²
¹*Global Zero Emission Research Center, National Inst. of Advanced Industrial Science and Technology, Japan*,
²*The Univ. of Tokyo, Japan*
- 01PS-67*** **Molecular dynamics simulations of load dependence of sliding friction on monolayer sumanene adsorbed onto Au surface**
R. Minowa¹, R. Matsuyama¹, H. Sakurai² and N. Sasaki¹
¹*The Univ. of Electro-Communications, Japan*, ²*Osaka Univ., Japan*
- 01PS-68*** **Development of an in-situ Electrical Transport Measurement System Combined with UHV Scanning Tunneling Microscope at Low Temperatures in High-Magnetic Fields**
E. T. Man¹, W. Inagaki¹, N. Denda¹, T. Schweizer^{1,2}, K. Shimamura¹ and Y. Yoshida¹
¹*Kanazawa Univ., Japan*, ²*Univ. of Stuttgart, Germany*
- 01PS-69** **Spatially-modulated superconductivity due to the interplay between electronic nematicity and surface structure in FeSe_xTe_{1-x} at the nematic quantum critical point**
Y. Yoshida^{1,2}, H. H. Yang^{2,3}, K. Terao⁴, T. Kashiwagi⁴, K. Kadowaki⁴ and Y. Hasegawa²
¹*Kanazawa Univ., Japan*, ²*Univ. of Tokyo, Japan*, ³*Physikalisches Institut, Karlsruhe Inst. of Technology, Japan*, ⁴*Univ. of Tsukuba, Japan*
- 01PS-70** **Lubrication and Related Dynamics at Nanoscale Incommensurate Interfaces**
T. Kawaguchi
Toho Univ., Japan

Data-driven surface science

Chair: M. Shiga (Gifu Univ.), T. Mizoguchi (The Univ. of Tokyo)

- 01PS-71** **High-throughput electronic structure analysis of Fe-Ti-O ternary system using photoemission electron microscopy**
K. Kobayashi¹, M. Yamamoto¹, R. Seni¹, D. Nanasawa¹, A. L. Foggiatto¹, T. Ohkochi² and M. Kotsugi¹
¹*Tokyo Univ. of Science, Japan*, ²*JASRI, Japan*
- 01PS-72** **Prediction of unknown peptide TOF-SIMS spectra by machine learning of small peptide data set**
S. Aoyagi, K. Kamochi, T. Yoshinari and K. Hasegawa
Seikei Univ., Japan
- 01PS-73*** **Study of ultrafast demagnetization in the Gd₂₃Fe₆₇Co₁₀ crystal by Landau-Lifshitz-Gilbert simulation**
T. Senoo¹, T. Sumi¹, M. Horio¹, S. EL MOUSSAOUI¹, A. Tsukamoto² and I. Matsuda¹
¹*The Univ. of Tokyo, Japan*, ²*Nihon Univ., Japan*

01PS-74* Development of analysis method for DFT/plane-wave calculations of surfaces with open-shell electronic structures

K. Tada¹, H. Ozaki¹, K. Fujimaru², Y. Kitagawa², T. Kawakami^{2,3} and M. Okumura²

¹National Inst. of Advanced Industrial Science and Technology (AIST), Japan, ²Osaka Univ., Japan, ³Riken Center for Computational Science, Japan

Advanced surface engineering and characterization / Vacuum technology / Operando surface science

Chair: Y. Sugimoto (The Univ. of Tokyo), J. Kamiya (Japan Atomic Energy Agency), I. Matsuda (The Univ. of Tokyo)

01PS-75 Suppression of Charging Effect of Insulating Materials in Hard X-ray photoelectron spectroscopy

S. Yasuno, O. Seo and L. Kumara

Japan Synchrotron Radiation Research Inst., Japan

01PS-76* Comparison of two types of piezoelectric force sensors using a home-build scanning probe microscope

M. Shibuya, Y. Shoji and T. K. Shimizu

Keio Univ., Japan

01PS-77* Constant Final State Photoelectron Yield Spectroscopy to Observe Valence and In-Gap States of Organic Semiconductor Films

K. Watanabe¹, S. Kimata¹, Y. Tanaka^{1,2} and H. Ishii^{1,2,3}

¹Graduate School of Science and Engineering, Chiba Univ., Japan, ²Center for Frontier Science, Chiba Univ., Japan, ³Molecular Chirality Research Center, Chiba Univ., Japan

01PS-78 Soft X-ray L-emission spectra of S, Cl and K elements obtained by high energy resolution spectrometer

M. Niibe and T. Tokushima^{1,2}

¹LASTI, Univ. of Hyogo, Japan, ²MAX IV laboratory, Lund Univ., Sweden

01PS-79 Elimination of the Charging Effect in Near-Ambient-Pressure Hard X-ray Photoelectron Spectroscopy

K. Takenaka¹, K. Adachi¹, K. Takahara², H. Sumida³ and S. Suzuki²

¹Graduate School of Science, Univ. of Hyogo, Japan, ²LASTI, Univ. of Hyogo, Japan, ³Mazda Motor Corp., Japan

01PS-80 Synthesis and evaluation of aromatic polyamide-silica composite particles

Y. Yoshioka and T. Ehiro

Osaka Research Inst. of Industrial Science and Technology, Japan

01PS-81* Nano-Groove Formation on Si (111) Surfaces by Metal Induced Etching by Ag Nanowires

Z. Ma, S. Masumoto, K. Kawai, K. Yamamura and K. Arima

Osaka Univ., Japan

01PS-82* Glucose detection with CuO NP based printable electrochemical electrodes

K. Shibata and A. Nakamura

Shizuoka Univ., Japan

01PS-83* Laboratory Diffracted X-ray Blinking to Monitor Molecular Dynamics on Polymer

R. Inamasu¹, T. Arai^{2,3}, H. Yamaguchi¹, D. Sasaki², A. S.-Tomita⁴, H. Sekiguchi⁵, K. Mio³, S. Tsuda^{3,6,7}, M. Kuramochi^{2,3} and Y. C. Sasaki^{2,3,5}

¹Technology and Innovation Center, Daikin Industries, Ltd., Japan, ²The Univ. of Tokyo, Japan, ³AIST U Tokyo Advanced Operando Measurement Technology Open Innovation Laboratory, National Inst. of Advanced Industrial Science and Technology, Japan, ⁴Jichi Medical Univ., Japan, ⁵Center for Synchrotron Radiation Research, Japan Synchrotron Radiation Research Inst., Japan, ⁶Bioproduction Research Inst., National Inst. of Advanced Industrial Science and Technology, Japan, ⁷Hokkaido Univ., Japan

01PS-84* Fabrication and nanoscale properties of zigzag graphene nanoribbon

T. Yokosawa¹, T. Ochi¹, Y. Koga², R. Takehara², M. Kamada¹, M. Hara^{3,4} and T. Matsui¹

¹Advanced Research Laboratory, Anritsu corporation, Japan, ²Graduate School of Science and Technology, Kumamoto Univ., Japan, ³Faculty of Advanced Science and Technology, Kumamoto Univ., Japan, ⁴Inst. of Industrial Nanomaterials, Kumamoto Univ., Japan

01PS-85 Evaluation of oxygen-free silver/palladium/titanium (Ag/Pd/Ti) nonevaporable getter (NEG) coating

T. Kikuchi¹, Y. Masuda², M. Ono³, Y. Sato⁴, Y. Nakayama², K. Yoshioka³, I. Yoshikawa³, S. Ohno⁴ and K. Mase^{1,5}

¹Inst. of Materials Structure Science, KEK, Japan, ²Tokyo Univ. of Science, Japan, ³Univ. of Tokyo, Japan, ⁴Yokohama National Univ., Japan, ⁵SOKENDAI (The Graduate Univ. for Advanced Studies), Japan

01PS-86 Dynamics of Surface chemistry of Beyond 5G devices under operation conditions

H. Fukidome

Tohoku Univ., Japan

01PS-87* Angular dependence of multi-atom resonance X-ray Raman scattering

J. Kogo, R. Sato and K. Niki

Chiba Univ., Japan

01PS-88 Nanoscale observation of operating SiC planar type MOSFET using AFM/KFM/SCFM

A. Doi, N. Satoh, and H. Yamamoto

Chiba Inst. of Technology, Japan

Energy and environmental science

Chair: H. Yasumatsu (Toyota Technological Inst.)

01PS-89 Electrocatalytic activity and volatile product selectivity for nitrate reduction at tin-modified Pt(100), Pd(100) and Pt-Pd(100) single crystalline electrodes in acidic media

I. Yagi, Y. Unuma, M. Okui and M. Kato

Hokkaido Univ., Japan

01PS-90 First-Principles Analysis on Band alignment of LiTi₂O₄ and SrTiO₃ to Understand Ion Diffusion Modulation via Substrate Choice

A. Nakanishi¹, K. Nishio², S. Ichinokura², K. Shimizu¹, Y. Kobayashi², N. Nakamura², D. Imazeki², R. Shimizu^{2,3}, T. Hirahara², T. Hitosugi² and S. Watanabe¹

¹The Univ. of Tokyo, Japan, ²Tokyo Inst. of Technology, Japan, ³PRESTO, Japan Science and Technology Agency, Japan

01PS-91 Formation of Iridium Oxide Nanoparticles on CVD Graphene studied by AFM

M. Hara¹, S. Ogawa¹, S. Suzuki^{1,2}, P. Joshi¹ and M. Yoshimura¹

¹Toyota Technological Inst., Japan, ²International Center for Young Scientists (ICYS), National Inst. for Materials Science (NIMS), Japan

01PS-92 Lithium map by Auger spectral-imaging method for all-solid-state lithium ion batteries

A. Tanaka¹, K. Ikita¹, T. Omoto¹, Y. Watase¹, Y. Eto¹, Y. Sasaki¹, K. Tsutsumi¹, R. Matsuda², K. Hikima² and A. Matsuda²

¹JEOL Ltd., Japan, ²Toyohashi Univ. of Technology, Japan

01PS-93 Evaluation of Photothermal Conversion of Nano-sized Black Carbons by Raman Spectroscopy

M. Yamamoto, M. Furusawa, M. Kaneda, Y. Homma and T. Yamamoto

Tokyo Univ. of Science, Japan

01PS-94 Soft X-ray Absorption, Emission and Photoelectron Spectroscopy of Ammonia Borane (NH₃BH₃)

M. Niibe¹, Y. Haruyama¹ and S. Ito²

¹LASTI, Univ. of Hyogo, Japan, ²Grad. School of Eng., Univ. of Hyogo, Japan

- 01PS-95 Collision-induced Etching of Polyimide in Sub-low Earth Orbit Space Environment: Verification through Ground-based Experiments**
M. Tagawa, W. Ide, A. Fujita, S. Horimoto and K. Yokota
Kobe Univ., Japan
- 01PS-96 Collision-induced Etching of Polyimide in Sub-low Earth Orbit Space Environment: SLATS data implication**
K. Yokota¹, W. Ide¹, A. Fujita¹, S. Horimoto¹, Y. Kimoto², Y. Tsuchiya², A. Goto², K. Yukumatsu², E. Miyazaki² and M. Tagawa¹
¹*Kobe Univ., Japan*, ²*Japan Aerospace Exploration Agency, Japan*
- 01PS-97* Investigation of the influence of a surface functional group against barnacle settlements using the 3D printed new experimental setup**
K. Mikami¹, J. Watanabe¹, T. Murosaki², Y. Nogata³, M. Shimomura¹ and Y. Hirai¹
¹*Chitose Inst. of Science and Technology, Japan*, ²*Asahikawa Medical Univ., Japan*, ³*Central Research Inst. of Electric Power Industry, Japan*
- 01PS-98* Selectivity for surface functional groups in larvae of barnacles**
J. Watanabe¹, K. Mikami¹, T. Murosaki², Y. Nogata³, M. Shimomura¹ and Y. Hirai¹
¹*Chitose Inst. of Science and Technology, Japan*, ²*Asahikawa Medical Univ., Japan*, ³*Central Research Inst. of Electric power Industry, Japan*
- 01PS-99 Mass-Production of Nanoscale Zero-valent Copper in a Rotating Packed Bed with Blade Packings**
C.-C. Lin^{1,2} and Y. Zhong¹
¹*Chang Gung Univ., Taiwan*, ²*Chang Gung Memorial Hospital, Taiwan*

01pA Physics at surfaces and thin films

Chair: S. Yoshizawa (National Inst. for Materials Science)

- 13:00-13:20 01pA-1 Scaling law for the Rashba-type spin splitting in Ag/Au(111) quantum well films**
R. Noguchi^{1,2,3}, K. Kuroda¹, M. Kawamura¹, K. Yaji⁴, A. Harasawa¹, T. Iimori¹, F. Komori¹,
 S. Shin¹, T. Ozaki¹ and T. Kondo¹
¹The Univ. of Tokyo, Japan, ²Inst. for Basic Science, Republic of Korea, ³Seoul National Univ.,
 Republic of Korea, ⁴National Inst. for Materials Science, Japan
- 13:20-13:40 01pA-2 Electronic states of topological surface in Sb/Bi(111) interface studied by angle-resolved photoemission spectroscopy**
H. Abe¹, M. Imamura², K. Takahashi² and A. Takayama¹
¹Waseda Univ., Japan, ²Synchrotron Light Application Center, Saga Univ., Japan
- 13:40-14:00 01pA-3 Electronic structure of monolayer Cu₂Si on Si(111) studied by ARPES**
 M. Sakamoto¹, Y. Tsujikawa¹, M. Imamura², K. Takahashi² and A. Takayama¹
¹Waseda Univ., Japan, ²Synchrotron Light Application Center, Saga Univ., Japan
- 14:00-14:20 01pA-4 Origin of two-step photon absorption in GaAs thin film by first-principles spin-orbit calculations and STM/STS measurements**
M. C. Escaño¹, M. H. Balgos^{2,3}, T. Q. Nguyen⁴, E. A. Prieto^{5,6}, E. Estacio⁵, A. Salvador⁵,
 A. Somintac⁵, R. Jaculbia³, N. Hayazawa^{3,5}, Y. Kim^{3,5} and M. Tani¹
¹Univ. of Fukui, Japan, ²Innovative Photon Manipulation Research Team, RIKEN Center
 for Advanced Photonics, Japan, ³Surface and Interface Science Laboratory, RIKEN, Japan,
⁴Osaka Univ., Japan, ⁵National Inst. of Physics, Univ. of the Philippines, Republic of the
 Philippines, ⁶Materials Science and Engineering Program, Univ. of the Philippines, Republic of
 the Philippines
- 14:20-14:40 01pA-5 Monolayer Heavy-Fermion Compound CePt₆/Pt(111)**
 K. Ienaga^{1,2}, S. Kim^{1,3}, T. Miyamachi^{1,4} and F. Komori^{1,5}
¹Inst. for Solid State Physics, Univ. of Tokyo, Japan, ²Tokyo Inst. of Technology, Japan, ³Korea
 Adv. Inst. of Sci. and Tech. Republic of Korea, ⁴Nagoya Univ., Japan, ⁵Inst. of Industrial
 Science, Univ. of Tokyo, Japan
- 14:40-15:00 01pA-6 First-principles study of In double layers on Si(111)- $\sqrt{3} \times \sqrt{3}$ -B substrates**
I. Seo¹, K. Nakatsuji¹, H. Hirayama² and Y. Gohda¹
¹Department of Materials Science and Engineering, Tokyo Tech, Japan, ²Department of
 Physics, Tokyo Tech, Japan

01pA Physics at surfaces and thin films

Chair: F. Komori (The Univ. of Tokyo)

- 15:20-15:40 01pA-7 Role of steps on superconductor-insulator transition in mono-atomic-layer metal films grown on semiconducting substrates**
Y. Sato¹, M. Haze¹, S. Yoshizawa², T. Uchihashi³ and Y. Hasegawa¹,
¹The Inst. for Solid State Physics, The Univ. of Tokyo, Japan, ²Research Center for Advanced
 Measurement and Characterization, National Inst. for Materials Science, Japan, ³International
 Center for Materials Nanoarchitectonics, National Inst. for Material Science, Japan
- 15:40-16:00 01pA-8 Electron Standing Waves of Si(111)-($\sqrt{7} \times \sqrt{3}$)-In Imaged by Scanning Tunneling Microscopy**
S. Yoshizawa and K. Sagisaka
 National Inst. for Materials Science, Japan
- 16:00-16:40 01pA-9 (I) Quantum excitations and forces explored by scanning probe methods**
J. Kröger
 Technische Universität Ilmenau, Germany

Online Room B

01pB Surface chemistry

Chair: H. Kondoh (Keio Univ.)

- 13:00-13:20 01pB-1 Development of Fluorescence-yield Wavelength-dispersive Soft X-ray Absorption Spectroscopy for Real-time Observation of Surface Chemical Reaction**
K. Amemiya¹, K. Sakata¹ and M. S.-Sakamaki²
¹High Energy Accelerator Research Organization, Japan, ²Gunma Univ., Japan
- 13:20-13:40 01pB-2 Changes of rate-limiting reactions with progress of the reduction process on oxidized Ni(111)**
S. Ogawa^{1,2}, R. Taga², R. Yusa², Y. Tsuda³, T. Sakamoto³, A. Yoshigoe³, Y. Takakuwa⁴ and T. Abukawa^{1,2}
¹SRIS, Tohoku Univ., Japan, ²IMRAM, Tohoku Univ., Japan, ³Japan Atomic Energy Agency, Japan, ⁴ μ SIC, Tohoku Univ., Japan
- 13:40-14:00 01pB-3 Detection of unstable intermediates for CO₂ conversion into methanol on a Cu(111) model catalyst**
K. Takeyasu^{1,2}, Y. Sawaki³, R. Kojima³, T. Imabayashi³, J. Quan⁴, T. Kondo^{1,2}, T. Fujitani⁵ and J. Nakamura^{1,2}
¹Department of Materials Science, Faculty of Pure and Applied Sciences, Univ. of Tsukuba, Japan, ²Tsukuba Research Center for Energy Materials Science, Univ. of Tsukuba, Japan, ³Graduate School of Science and Technology, Univ. of Tsukuba, Japan, ⁴Department of Dynamics at Surfaces, Max Planck Inst. for Biophysical Chemistry, Germany, ⁵National Inst. of Advanced Industrial Science and Technology, Japan
- Chair: A. Itakura (National Inst. for Materials Science)
- 14:00-14:20 01pB-4 A role of rotational energy transfer in H₂ ortho-para conversion**
H. Ueta¹ and K. Fukutani^{1,2}
¹Advanced Science Research Center, Japan Atomic Energy Agency, Japan, ²Inst. of Industrial Science, The Univ. of Tokyo, Japan
- 14:20-14:40 01pB-5 Microelectrode-based Transient Amperometry of O₂ Evolution on a SrTiO₃ Photocatalyst Excited under Water**
T. Kosaka¹, Y. Zhou², T. Hisatomi^{3,4}, H. Nishiyama⁵, K. Domen^{3,5}, Y. Takahashi^{2,4} and H. Onishi¹
¹Kobe Univ., Japan, ²Kanazawa Univ., Japan, ³Shinshu Univ., Japan, ⁴Japan Science and Technology Agency, Japan, ⁵The Univ. of Tokyo, Japan
- 14:40-15:00 01pB-6 Electrochemical ATR ultraviolet-visible spectroscopy applied for organic semiconductor/ionic liquid interface**
I. Tanabe¹, I. Imoto¹, D. Okaue¹, M. Imai¹, S. Kumagai², T. Makita², M. Mitani², T. Okamoto², J. Takeya² and K. Fukui^{1,3}
¹Osaka Univ., Japan, ²The Univ. of Tokyo, Japan, ³Inst. of Molecular Science, Japan

01pB Surface chemistry

Chair: T. Kumagai (Fritz Haber Inst.)

- 15:20-15:40 01pB-7 Direct Observation of Local Corrosion around the Al-Fe Intermetallic Particle in the Al Alloy by In-liquid Open-loop Electric Potential Microscopy**
K. Hirata¹, T. Okamoto¹, T. Kitagawa¹, T. Ozawa² and T. Fukuma¹
¹Kanazawa Univ., Japan, ²KOBE STEEL, LTD., Japan
- 15:40-16:00 01pB-8 Characterization of nitric oxide molecules on copper nitride using scanning probe microscopy**
R. Zhang¹, M. Fukuda², T. Ozaki² and Y. Sugimoto¹
¹The Univ. of Tokyo, Japan, ²Inst. for Solid State Physics, The Univ. of Tokyo, Japan

- 16:00-16:20 01pB-9** **Gap mode induced catalytic reactions of substituted thiophenol adsorbed on silver**
M. Futamata, K. Tabei and K. Akai
Saitama Univ., Japan
- 16:20-16:40 01pB-10** **Nanomechanical control of helicity inversion of helicene-terminated graphene nanoribbons by atomic force microscopy**
A. Shiotari^{1,2}, A. Ishii¹ and Y. Sugimoto¹
¹*The Univ. of Tokyo, Japan*, ²*Fritz-Haber Inst. of the Max-Planck Society, Germany*

Online Room C
01pC Nanotechnology and nanomaterials / Physics at surfaces and thin films

Chair: T. Nagao (National Inst. for Materials Science)

- 13:00-13:20 01pC-1** **Mechanism of anisotropy of nano-scale friction based on mathematical definition of nano-scale contact**
K. Hirao and N. Sasaki
Univ. Electro-Commun, Japan
- 13:20-13:40 01pC-2** **Role of intermolecular interactions in NO chemisorption on Cu(111)**
T. N. Pham¹, Y. Hamamoto^{1,2}, K. Inagaki^{1,2}, I. Hamada^{1,2} and Y. Morikawa^{1,2,3}
¹*Department of Precision Engineering, Osaka Univ., Japan*, ²*Elements Strategy Initiative for Catalysts and Batteries (ESICB), Kyoto Univ., Japan*, ³*Research Center for Precision Engineering, Graduate School of Engineering, Osaka Univ., Japan*
- 13:40-14:00 01pC-3** **Emission enhancement mechanism of surface plasmon resonance of Ag nanoparticles on GaN-based semiconductors**
S. Kaito¹, T. Matsuyama¹, K. Wada¹, M. Funato², Y. Kawakami² and K. Okamoto¹
¹*Osaka Prefecture Univ., Japan*, ²*Kyoto Univ., Japan*
- 14:00-14:20 01pC-4** **High-resolution imaging of optical property of pentacene thin-film by photo-induced force microscopy using gap-mode plasmon**
T. Yamamoto, K. Fukuzawa and Y. Sugawara
Osaka Univ., Japan
- 14:20-15:00 01pC-5 (R)** **Atomic-Scale Optical Spectroscopy in Plasmonic Scanning Tunneling Microscope Junctions**
T. Kumagai^{1,2}
¹*Center for Mesoscopic Sciences, Inst. for Molecular Science, Japan*, ²*Fritz-Haber Inst. of the Max-Planck Society, Germany*

01pC Nanotechnology and nanomaterials / Physics at surfaces and thin films

Chair: S. Ichinokura (Tokyo Inst. of Technology)

- 15:20-15:40 01pC-6** **A scanning NV center magnetometry probe using high purity diamond fabricated by FIB**
Y. Kainuma, A. Ideguchi and T. An
Japan Advanced Inst. of Science and Technology, Japan
- 15:40-16:00 01pC-7** **Soft-magnetic skyrmions induced by surface-state coupling in a sandwich structure with an intrinsic ferromagnetic topological insulator**
T. Takashiro¹, R. Akiyama¹, I. A. Kibirev², A. V. Matetskiy², R. Nakanishi¹, S. Sato¹, T. Fukasawa³, T. Sasaki⁴, H. Toyama¹, K. L. Hiwatari¹, A. V. Zotov², A. A. Saranin², T. Hirahara³ and S. Hasegawa¹
¹*The Univ. of Tokyo, Japan*, ²*Inst. of Automation and Control Processes, Russia*, ³*Tokyo Inst. of Technology, Japan*, ⁴*National Inst. for Materials Science (NIMS), Japan*

16:00-16:20 01pC-8 Visualization of Magnetic Structures without Spin Sensitivity in the Skyrmion Magnet GdRu₂Si

Y. Yasui^{1,2}, C. J. Butler², N. D. Khanh^{2,3}, S. Hayami⁴, T. Nomoto⁴, T. Hanaguri², Y. Motome⁴, R. Arita^{2,4}, T. Arima^{1,2}, Y. Tokura^{2,4} and S. Seki⁴

¹Department of Advanced Materials Science, The Univ. of Tokyo Japan, ²RIKEN Center for Emergent Matter Science Japan, ³Inst. for Solid State Physics, The Univ. of Tokyo Japan,

⁴Department of Applied Physics, The Univ. of Tokyo, Japan

Online Room D

01pD Operando surface science

Chair: O. Endo (Tokyo Univ. of Agriculture and Technology)

13:00-13:40 01pD-1 (I) Dynamically visualizing battery reactions by operando Kelvin probe force microscopy

N. Ishida

National Inst. for Materials Science, Japan

13:40-14:00 01pD-2 Ionic-Liquid-Originated Carrier Trapping Dynamics for the Electric Double-Layer Organic FET Revealed by Operando Interfacial Analyses

D. Okaue¹, I. Tanabe¹, S. Ono¹, K. Sakamoto¹, T. Sato¹, A. Imanishi¹, Y. Morikawa², J. Takeya³ and K. Fukui^{1,4}

¹Grad.Sch. Engineer. Sci., Osaka Univ., Japan, ²Grad.Sch. Engineer., Osaka Univ., Japan,

³The Univ. Tokyo, Japan, ⁴Inst. for Molecular Science, Japan

14:00-14:20 01pD-3 Development of Tip-Enhanced Raman Spectroscopy as an Analytical Tool for Electrochemical Interfaces

Y. Yokota^{1,2}, M. Hong¹, N. Hayazawa¹, E. Kazuma^{1,2} and Y. Kim¹

¹RIKEN, Japan, ²JST PRESTO, Japan

14:20-14:40 01pD-4 Elucidation of Reactive Electrons in Photocatalytic Steam-methane Reforming by Operando IR Spectroscopy Synchronized with Chopped Illumination

H. Sato^{1,2} and T. Sugimoto^{1,2,3}

¹Inst. for Molecular Science, Japan, ²The Graduate Univ. for Advanced Studies, SOKENDAI, Japan, ³Precursory Research for Embryonic Science and Technology (PRESTO), Japan

Science and Technology Agency (JST), Japan

14:40-15:00 01pD-5 Crystal plane dependent ethanol gas sensing of ZnO studied by low-energy He⁺ ion scattering combined with pulsed jet technique

T. T. Suzuki, Y. Adachi, T. Ohgaki and I. Sakaguchi

National Inst. for Materials Science, Japan

01pD Operando surface science

Chair: A. Yoshigoe (Japan Atomic Energy Agency)

15:20-15:40 01pD-6 Influence of Local Structure of Ionic Liquid on Diffusion Behavior of Metal Ions Close to Electrode

A. Imanishi¹, S. Koyama¹, K. Yoshimoto¹ and K. Fukui^{1,2}

¹Osaka Univ., Japan, ²Inst. for Molecular Science, Japan

15:40-16:00 01pD-7 Operando- Photoelectron Yield Spectroscopy of Organic Field Effect Transistors to Investigate Negative Carrier States

H. Ishii^{1,2,3}, T. Maruyama¹, K. Ikegami¹, R. Kaimori¹ and Y. Tanaka^{1,2}

¹Graduate School of Science and Engineering, Chiba Univ. Japan, ²Center for Frontier Science, Chiba Univ., Japan, ³Molecular Chirality Research Center, Chiba Univ., Japan

16:00-16:40 01pD-8 (I) Catalytic Reactions Explored by the High Pressure X-ray Photoelectron Spectroscopy (HPXPS) Endstation POLARIS

P. Amann and A. Nilsson

AlbaNova Univ. Center; Stockholm Univ., Sweden

Online Room A, B, C, D

01pA The Heinrich Rohrer Medal Lecture (Grand medal)

Chair: I. Matsuda (The Univ. of Tokyo)

17:00-18:00 01pA-R Investigating the Quantum Magnetism of Atoms on Surfaces with Scanning Tunneling Microscopy

A. Heinrich^{1,2}

¹*IBS Center for Quantum Nanoscience, Republic of Korea,* ²*Ewha Womans Univ., Republic of Korea*