

Japanese-German Workshop

Berlin, 9-11 January 2013

Program

Wednesday 9 January 2013

9:00-9:20 **Registration**

9:40-9:50 **Opening Remarks**

Prof. Martin Wolf and Prof. Maki Kawai

9:50-11:50 **Session I: Observation, Measurement and Theory of Interfaces**

Chair: A. Saito

I-O1 Local Structures of Ionic Liquid / Solid Substrate Interfaces Revealed by Frequency Modulation AFM and Photoemission Spectroscopy

Ken-ichi Fukui, *Osaka University, Japan*

I-O2 On the Importance of Spin-orbit Interaction for Magnetic Ordering Phenomena

Matthias Bode, *Universität Würzburg, Germany*

I-O3 Quantification of Electron Transfer between Single Molecules

Tomoaki Nishino, Phuc Tan Bui, *Osaka Prefecture University, Japan*

I-O4 Probing Surface Chemistry using ‘Operando’ and ‘Ultrafast’ X-ray Spectroscopies

Hirohito Ogasawara, Anders Nilsson, *SLAC National Accelerator Laboratory, USA*

11:50-13:00 Group Picture and Lunch Break

13:00-14:30 **Session-III: Interfaces of Living Organisms**

Chair: S. Nomura

III-O1 Bioactivation versus Morphology: A Systematic Comparison on Primary Human Immune Cell Response to Biomaterials and Immunomodulatory Effects

Karl-Heinz Heffels, Matthias Bartneck, Yu Pan, Gabriele Zwadlo-Klarwasser and Jürgen Groll, *University of Würzburg, Germany, RWTH-Aachen, Germany, RWTH Aachen University, Germany*

III-O2 Development of Novel Therapeutic Techniques using Photothermal Effect of Gold Nanorods

Takuro Niidome, *Kumamoto University, Japan*

III-O3 Probing the Functionality of a Membrane Protein Monolayer by Surface-Enhanced Infrared Absorption Spectroscopy (SEIRAS)

Kenichi Ataka, *Joachim Heberle, Freie Universität Berlin, Germany*

14:30-14:50 Coffee Break

14:50-16:20 **Session-III: Interfaces of Living Organisms**

Chair: J. Heberle

III-O4 Design of Drug Delivery Nano-Carriers Using Artificial 3D-Human Tissue Models

Michiya Matsusaki, Mitsuru Akashi, *Osaka University, Japan*

III-O5 Engineering BioAdhesion for Cartilage Tissue Engineering

Marcy Zenobi-Wong, Christopher Millan, Yuan Yang, *Thomas Groth, ETH Zürich, Switzerland, Martin Luther University Halle-Wittenberg, Germany*

III-O6 A New NanofiberProtein which Immobilizes Gram-Negative Bacteria onto Various Material Surfaces

Masahito Ishikawaa, Hajime Nakatania, KazukiShigemorib, Shogo Yoshimotoa, AtsuoSuzukia, Katsutoshi Horia, *Nagoya University, Nagoya Institute of Technology, Japan*

16:20-17:00 Bus Transfer to the Fritz-Haber-Institute

17:20-18:20 Lab visits at Fritz-Haber-Institute

18:30-20:00 Reception at Fritz-Haber-Institute

Thursday 10 January 2013

9:00-10:30 **Session-II: Research and Development of Surface Materials, Devices, and Detection Systems**

Chair: M. Kohda

II-O1 Emergent Magnetism at PerovskiteHeterointerfaces

Harold Y. Hwang, *Stanford University and SLAC National Accelerator Laboratory, USA*

II-O2 GaN Nanowires – Growth, Surface-Related Properties and the Route towards LED Applications

Henning Riechert, *Paul-Drude-Institut für Festkörperelektronik, Germany*

II-O3 Semiconductor Spintronics Based on Ferromagnetic-Semiconductor Quantum Heterostructures

Shinobu Ohya, Masaaki Tanaka, *The University of Tokyo, Japan*

10:30-11:00 Coffee Break

11:00-12:30 **Session-II: Research and Development of Surface Materials, Devices, and Detection Systems**

Chair: N. Koch

II-O4 Plasmonics and Optoelectronics at Surfaces

Joachim R. Krenn, A. Hohenau, H. Ditlbacher, A. Leitner, *University of Graz, Austria*

II-O5 Intermolecular Electronic Coherence in Organic Single-Crystal Transistors and High-Speed Organic Electronics

Jun Takeya, *Osaka University, Japan*

II-O6 Charge Transport in Functional Networks of Gold Nanoparticles and Organic Molecules

S. J. van der Molen, E. J. Devid, J.-F. Dayen, M. Kamalakar, D. Golubev, C. M. Guédon, V. Faramarzi, B. Doudin, *Leiden University, The Netherlands, University of Strasbourg, France, Karlsruhe Institute of Technology, Germany*

12:30-13:30 Lunch Break

13:30-15:00 **Session I: Observation, Measurement and Theory of Interfaces**

Chair: H. Ogasawara

I-O5 Scanning Probe Spectroscopy of Individual Molecules on Thin Insulating

Films

N. Pavliček, F. Albrecht, M. Neu, J. Niedenführ, C. Quest, T. Sonnleitner, I. Swart, J. Repp, *University of Regensburg, Germany, Westfälische Wilhelms-Universität, Germany, Utrecht University, The Netherlands*

I-O6 DFT-MD Analysis of Redox Reactions at TiO₂/Solution Interfaces in Photocatalysis and Dye-Sensitized Solar Cell

Yoshitaka Tateyama, Masato Sumita, Koharu Aikawa, Ryota Jono, Keitaro Sodeyama, *National Institute for Materials Science, PRESTO & CREST, Japan Science and Technology Agency, Elements Strategy Initiative for Catalysts & Batteries, Kyoto University, Japan*

I-O7 Ab Initio Simulations of Wet and Dry Interfaces

Angelos Michaelides, *University College London, UK*

15:00-15:40 **Short poster presentations (2 min/poster)**

Chair: T. Niidome

P1 Surface Enhanced Infrared Absorption Spectroscopy as a Tool for Study of Biological Process

Kenichi Ataka, Joachim Heberle, *Freie Universität Berlin, Germany*

P2 Structural and Dynamical Heterogeneity of the Air/D₂O Interface

Yujin Tong, Ana Vila Verde, R. Kramer Campen, *Fritz Haber Institute of the Max Planck Society, Germany, Max Planck Institute of Colloids and Interfaces, Germany*

P3 Manipulation and Assembly of Single Functional Molecules on Surfaces

Micol Alemani, Carlo Dri, Matthias Koch, Takashi Kumagai, Leif Lafferentz, Johannes Mielke, Christophe Nacci, Alex Saywell, Leonhard Grill, *Fritz-Haber-Institute of the Max-Planck-Society, Germany*

P4 Quantum-Dot Applications to Terahertz Science

Kenji Ikushima, Yosuke Miyamoto, Kouki Kobayashi, Atsushi Ito, Shun Okano, *Tokyo University of A&T, Japan*

P5 Resistive Read-out of Nuclear Spin Polarization in a Single Semiconductor Quantum Dot

Minoru Kawamura, Daniel Gottwald, Keiji Ono, Tomoki Machida, Kimitoshi Kono, *RIKEN Advanced Science Institute, Japan, University of Tokyo, Japan*

P6 Electron Dynamics at Alkali-Water Clusters Adsorbed on a Metal Surface

Michael Meyer, Amilcare Iacomino, Alejandro Paz, Uwe Bovensiepen, Angel Rubio, Martin Wolf, *Fritz-Haber-Institut der Max-Planck-Gesellschaft, Germany, Centro de Física de Materiales, Donostia-San Sebastian, Spain, University Duisburg-Essen, Germany*

P7 Kinetic Analysis for Alternative Elongation of Glycosaminoglycans Catalyzed by Glycosyltransferase using QCM and AFM

Toshiaki Mori, Atsushi Hirose, Masanori Ohtsuka, Tatsuya Hagiwara, Yoshimitsu, Kakuta, Nobuo Sugiura, Koji Kimata, Yoshio Okahata, *Tokyo Institute of Technology, Japan, Precursory Research for Embryonic Science and Technology, Japan Science and Technology Agency, Japan, Kyushu University, Japan, Aichi Medical University, Japan*

P8 Artificial Cell-models consist of Giant Liposome equipping Membrane Proteins

Shin-ichiro M. Nomura, *Tohoku University, Japan, Precursory Research for Embryonic Science and Technology, Japan Science and Technology Agency, Japan*

P9 Interface Structures of Metal Nanoparticles on TiO₂ Surfaces

Naoya Shibata, *The University of Tokyo, Japan, Precursory Research for Embryonic Science and Technology, Japan Science and Technology Agency, Japan*

P10 Real Time Observation of KcsA Channel Gating with Mechanical Stimulus
Hiroyuki Tanaka, *Osaka University, Japan*

P11 Polarization Engineering at Oxide Heterointerface by Molecular Beam Epitaxy
Atsushi Tsukazaki, *University of Tokyo, Japan, Precursory Research for Embryonic Science and Technology, Japan Science and Technology Agency, Japan*

P12 PLA2-Catalyzed Hydrolysis of the Supported Lipid Bilayers Probed by SFG and AFM
Shen Ye, *Hokkaido University, Japan*

15:40-16:00 Coffee Break

16:00-18:00 **Poster Session**

19:00-20:00 Conference Dinner (in Restaurant Weihenstephaner)

Friday 11 January 2013

9:00-10:30 **Session-II: Research and Development of Surface Materials, Devices, and Detection Systems**
Chair: J. Krenn

II-07 Towards Si-Based High-Efficiency Thin-Film Solar Cells Using Semiconducting BaSi₂
Takashi Suemasu, Weijie Du, Kaoru Toko, Kosuke O Hara, Noritaka Usami, Takashi Sekiguchi, *University of Tsukuba, Japan, CREST, JST, Japan, Tohoku University, Japan, NIMS, Japan*

II-08 Metallic Molecular Monolayers through Surface-Induced Conjugation
G. Heimel, S. Duhm, A. Gerlach, A. Strozecka, C. Bürker, T. Hosokai, I. Fernandez-Torrente, G. Schulze, A. Vollmer, S. Kera, K. J. Franke, N. Ueno, J. I. Pascual, F. Schreiber, N. Koch, *Humboldt-Universität zu Berlin, Germany, Soochow University, China, Universität Tübingen, Germany, Freie Universität Berlin, Germany, Helmholtz Zentrum Berlin für Materialien und Energie GmbH, Germany, Chiba University, Japan*

II-09 Spin Orbit Induced Electronic Spin Polarization in Semiconductor Nanostructures
Makoto Kohda, Suji Nakamura, Yoshitaka Nishihara, Kensuke Kobayashi, Teruo Ono, Jun-ichiro Ohe, Yasuhiro Tokura, Taiki Mineno, Junsaku Nitta, *Tohoku University, Japan, Kyoto University, Japan, Toho University, Japan, NTT Corporation, Japan*

10:30-11:00 Coffee Break

11:00-12:30 **Session I: Observation, Measurement and Theory of Interfaces**
Chair: N. Shibata

I-08 Interface Potentials in Ceramics Studied by Inline Electron Holography and Impedance Spectroscopy
Christoph T. Koch, *Ulm University, Germany*

I-09 Direct Observation of Electron or Mass Transport in Nano-Materials
Yoshifumi Oshima, *Osaka University, Japan*

I-O10 The Potential of Valence Electron Energy-Loss Spectroscopy to Probe Local Optical Properties and Band Structure Information in Scanning Transmission Electron Microscopy

Rolf Erni, *Swiss Federal Laboratories for Materials Science and Technology, Switzerland*

12:30-13:30 Lunch Break

13:30-14:30 **Session-III: Interfaces of Living Organisms**

Chair: M. Wolf

III-O7 Structure and Dynamics of Interfacial Water

Mischa Bonn, *Max Planck Institute for Polymer Research, Germany*

III-O8 DNA Nanotechnology: Functional Nanostructures Made from DNA

Friedrich C. Simmel, *Technische Universität München, Germany*

14:30-15:30 **Session I: Observation, Measurement and Theory of Interfaces**

Chair: K. Fukui

I-O11 Applications of Photon-Matter Interaction in Interdisciplinary Fields: ~ from 1 nm Scale Elemental Analysis to the Mystery of the Butterfly's Blue ~.

Akira Saito, *Osaka University, Japan, RIKEN SPring-8 center, Japan*

I-O12 Electron Transport through Single Molecules of Aromatic Stacks Enclosed in Self-assembled Cages

Manabu Kiguchi, *Tokyo Institute of Technology, Japan*

15:30-15:40

Closing Remarks

Prof. Martin Wolf and Prof. Maki Kawai