

IWMA Program for Oral Presentations

August 4

COMMON SESSION @ Dining Terrace "HAON"

10:30-10:40

Opening

10:40-11:30 (P-1)

Radio-frequency scanning tunneling spectroscopy for single-molecule spin resonance

Reinhold Koch

Institute of Semiconductor and Solid State Physics, Johannes Kepler University Linz
Altenbergerstrasse 69, A-4040 Linz, Austria

11:30-12:00 (I-1)

Imaging molecules: A journey from real to reciprocal space and back

E.S. Tautz^{1,2*}

¹Peter Grünberg Institute (PGI-3), Forschungszentrum Jülich, 52425 Jülich, Germany

² Jülich Aachen Research Alliance (JARA), Fundamentals of Future Information Technology, 52425 Jülich, Germany

12:00-14:00 **Lunch break & Poster Session**

14:00-14:40 (P-2)

Information, noise and energy dissipation: Laws, limits and applications

Laszlo B. Kish^{1*}, Claes-Göran Granqvist², Sunil P. Khatri¹, Ferdinand Peper³

¹Department of Electrical and Computer Engineering, Texas A&M University, TAMUS 3128, College Station, TX 77843-3128, USA

² Department of Engineering Sciences, The Ångström Laboratory, Uppsala University, P.O. Box 534, SE-75121 Uppsala, Sweden

³ National Institute of Information and Communications Technology, Kobe, 651-2492 Japan

14:40-15:30 (P-3)

Single molecule boolean logic gates

Christian Joachim

Nanoscience Group & MANA

Satellite 29, Rue J. Marvig BP94347 CEMES-CNRS 31055 Toulouse France

15:30-16:00 **Coffee break**

SESSION A @ Banquet Hall “HYOSETSU”

16:00-16:30 (I-2)

Highly coherent single-molecule transducer between electronic circuits and surface plasmons

Michael C. Chong¹, Gaël Reecht¹, Hervé Bulou¹, Alex Boeglin¹, Fabrice Scheurer¹,
Fabrice Mathevet², Guillaume Schull^{1*}

¹ Institut de Physique et Chimie des Matériaux de Strasbourg,

UMR 7504 (CNRS – Université de Strasbourg), 67034 Strasbourg, France

² Institut Parisien de Chimie Moléculaire, Chimie des Polymères,

UMR 8232, CNRS - Université Pierre et Marie Curie, 94200 Ivry sur Seine, France

16:30-16:50 (C-1)

Control of single organic molecular states by adsorbing 3d single atoms by STM manipulation

NaokaOhta¹, Shuhei Nakashima¹, Kohji Nakamura², Toyoko Kazu Yamada

¹Graduate School of Advanced Integration Science, Chiba University

1-33 Yayoi-cho, Inage-ku, Chiba 263-8522, Japan

²Department of Physics Engineering, Mie University

1577, Kurimamachiya-cho Tsu City, 514-8507, Mie, Japan

16:50-17:10 (C-3)

Direct visualization of solid phase of oxygen molecules physisorbed on the Ag(111) surface

Shunji Yamamoto, Yasuo Yoshida, and Yukio Hasegawa

The Institute for Solid State Physics, The University of Tokyo, Kashiwa, Chiba 277-8581, Japan

Hiroshi Imada and Yousoo Kim

RIKEN, 2-1 Hirosawa, Wako, Saitama 351-0198, Japan

17:10-17:30 (C-5)

Inelastic electron tunneling spectroscopy of Au/oligothiophene/Au molecular junctions

Ryo Yamada^{1*}, Takashi Shimomise¹, Jimmy Franchi², Tatsuhiko Ohto, Shoji Tanaka³, Hirokazu Tada¹

¹ Graduate School of Engineering Science, Osaka University

1-3 Machikaneyama, Toyonaka, Osaka, JAPAN.

² KTH Royal Institute of Technology,

Brinellvägen 8, 114 28 Stockholm, Sweden

³ Institute for Molecular Science

38 Nishigo-naka, Myodaiji, Okazaki, JAPAN

16:00-16:30 (I-3)

Hybrid molecular architectures for spintronics

Marco Affronte.

CNR-NANO-S3 and Università di Modena e Reggio Emilia,

Via Campi 213/A, 41125 Modena Italy.

16:30-16:50 (C-2)

Spin-orbit interaction in photoexcited state on Au(001)

Ryuichi Arafune^{1*}, Takeo F. Nakazawa², Maki Kawai², and Noriaki Takagi²

¹ International Center for Materials Nanoarchitectonics,

National Institute for Materials Sciences

Namiki 1-1, Tsukuba 305-0044, Japan

² Department of Advanced Materials Science, the University of Tokyo

Kashiwanoha 5-1-5-402, Kashiwa 277-8561, Japan

16:50-17:10 (C-4)

Construction of binding group terminated self-assembled monolayers (SAMs) for Multilayer formation

Toshihiro Kondo^{*}, Yurika Ishikawa, Ayumi Shokai, Mariko Hase, and Haruka Terasaki

Graduate School of Humanities and Sciences, Ochanomizu University

2-1-1, Ohtsuka, Bunkyo-ku, Tokyo 112-8610, Japan

August 5

SESSION C @ Banquet Hall "HYOSETSU"

9:30-9:50 (C-6)

New opportunities for molecular electronics using current noise and non-linearity

Yoshihiro ASAI

National Institute of Advanced Industrial Science and Technology (AIST),
Central 2, Umezono 1-1-1, Tsukuba, Ibaraki 305-8568, Japan

9:50-10:10 (C-8)

Self-consistent van der Waals density functionals study of molecular adsorption puzzles on metal and semiconductor surfaces

Yuji Hamamoto^{1*}, Fahdzi Muttaqien¹, Ikutaro Hamada², Kouji Inagaki¹ and Yoshitada Morikawa¹

¹ Department of Precision Science and Technology, Graduate School of Engineering, Osaka Univ.
2-1 Yamadaoka, Suita, Osaka 565-0871, JAPAN

² International Center for Materials Nanoarchitectonics and Global Research Center for Environment and Energy based on Nanomaterials Science, National Institute for Materials Science (NIMS)
1-1 Namiki, Tsukuba, Ibaraki 305-0044, JAPAN

10:30-11:00 (I-4)

Information processing using non-identical Coulomb-blockade nanostructures

Javier Cervera^{1*}, JoséA. Manzanares¹, JoséM. Claver², Patricio Ramírez³, Salvador Mafe¹

¹ Faculty of Physics, University of Valencia
E-46100, Burjassot (Spain)

² Department of Computer Science, University of Valencia
E-46100, Burjassot (Spain)

³ Department of Applied Physics, Polytechnic University of Valencia
E-46022, Valencia (Spain)

11:00-11:20 (C-10)

Stochastic resonance in nano-scale charge transport of DNA supramolecular networks

Takuya Matsumoto*

Department of Chemistry, Graduate School of Science, Osaka University
1-1 Machikaneyama-cho, Toyonaka, Osaka 560-0043, Japan

11:20-11:40 (C-12)

Detection and control of charge state in single molecules using a semiconductor nanowire FET

Seiya Kasai^{*}, Shinya Inoue, Syoma Okamoto, Ryota Kuroda, Masaki Sato

Research Center for Integrated Quantum Electronics and Graduate School of Information Science & Technology, Hokkaido University
North 13, West 9, Sapporo 060-8628, Japan

11:40-12:00 (C-14)

Molecular noise sources incorporated into carbon nanotube circuits aiming the emergence of collective stochastic resonance

Megumi Akai-Kasaya^{1*}, Agung Setiadi¹, Hayato Fujii¹, Seiya Kasai², Yasushi Kanai³, Kazuhiko Matsumoto³, Yuji Kuwahara¹

¹Department of Precision Science and Technology, Graduate School of Engineering, Osaka University, Suita 565-0871, Japan

² Research Center for Integrated Quantum Electronics, Hokkaido University, Sapporo 060-8628, Japan

³The Institute of Scientific and Industrial Research, Osaka University, Ibaraki 567-0047, Japan

12:00-14:00 **Lunch break & Poster Session**

14:00-14:30 (I-6)

Metal complexes in molecular electronics: from contacts to conductance

Paul J. Low^{1*}

¹ University of Western Australia

School of Chemistry and Biochemistry, 35 Stirling Highway, Crawley, WA, 6009, Australia

14:30-14:50 (C-16)

Nanoscale I-V characteristics of DNA-templated molecular networks

H. Yamaguchi, Y. Otsuka, T. Matsumoto

Department of Chemistry, Osaka University

1-1 Machikaneyama-cho, Toyonaka, Osaka 560-0043, Japan

14:50-15:10 (C-18)

First-principles calculation of the thermoelectric figure of merit for [2,2]paracyclophane-based single-molecule junctions

Marius Bürkle,¹Thomas J. Hellmuth,^{2,3}Fabian Pauly,³and Yoshihiro Asai¹

¹ Nanosystem Research Institute (NRI) 'RICS', National Institute of Advanced Industrial Science and Technology (AIST), Umezono 1-1-1, Tsukuba Central 2, Tsukuba, Ibaraki 305-8568, Japan

² Institut für Theoretische Festkörperphysik, Karlsruhe Institute of Technology, 76131 Karlsruhe, Germany

³ Department of Physics, University of Konstanz, 78457 Konstanz, Germany

15:10-15:30 (C-20)

Thermoelectric properties of pyridine and thiophene-based tripodal anchor units molecular junctions

See Kei Lee^{1*}, Yutaka Ie², Kazunari Tanaka², Aya Tashiro², Henrique Rosa Testai³, Ryo Yamada¹, Yoshio Aso², Hirokazu Tada¹

¹ Graduate School of Engineering Science, Osaka University, Toyonaka, 560-8531, Japan

² The Institute of Scientific and Industrial Research, Osaka University, Ibaraki, 567-0047, Japan

³ Institute of Mechanical Engineering, Universidade Federal de Itajubá, Minas Gerais 37500 903, Brasil

15:30-16:00 **Coffee break**

16:00-16:20 (C-22)

Ultra low power consumed molecule sensing on single crystalline nanowires

Takeshi Yanagida^{1*} and Meng Gang¹

¹ Kyusyu University

6-1 Kasuga-Koen, Kasuga, Fukuoka 816-8580, Japan

16:20-16:40 (C-24)

Atomic switch-based tug of war

Carolin Lutz¹, Toyohiro Chikyo², Song-Ju Kim², Tsuyoshi Hasegawa^{1*}

¹ Faculty of Science and Engineering, Waseda University

3-4-1 Okubo, Shinjuku-ku, Tokyo 169-8555, Japan

² National Institute for Materials Science

1-1 Namiki, Tsukuba, Ibaraki, 305-0044, Japan

16:40-17:00 (C-26)

Field induced transient current in a quasi-one-dimensional nanostructure

Tokuei Sako¹, Hiroshi Ishida^{2*}

¹ Laboratory of Physics, College of Science and Technology,

Nihon University, 7-24-1 Narashinodai, Funabashi, Chiba 274-8501, Japan

² College of Humanities and Sciences, Nihon University, 3-25-40 Sakura-josui, Tokyo 156-8550, Japan

17:00-17:20 (C-28)

Magnetic ordering of two-dimensional molecular Kondo lattice

Noriaki Takagi^{1*}

¹ Department of Advanced Materials Science, University of Tokyo

5-1-5, Kashiwanoha, Kashiwa, Chiba, Japan, 277-8561

August 5

Session D @ Conference Room "OKHOTSK"

9:30-9:50 (C-7)

Synthesis of organic/inorganic molecular composites having non-symmetric non-linear single molecule electronic properties

Takuji Ogawa,^{1*} Hirofumi Tanaka,¹ Tomoko Inose,¹ Murni Handayani,¹ Chen Zhijin,¹ Takashi Tamaki,¹ Fumiya Miyamoto,¹ Ryo Yamada,² Hirokazu Tada,²

¹ Department of Chemistry, Graduate School of Science, Osaka University

1-1 Matikaneyama, Toyonaka, Osaka 560-0043, Japan

² Division of Materials Physics, Graduate School of Engineering Science, Osaka University

1-3 Machikaneyama-cho, Toyonaka, Osaka 560-0043, Japan

9:50-10:10 (C-9)

Development of novel functional units toward molecular architectonics

Yutaka Ie*, Yoshio Aso

The Institute of Scientific and Industrial Research (ISIR), Osaka University,

8-1 Mihogaoka, Ibaraki, Osaka 567-0047, Japan

10:30-11:00 (I-5)

Open-shell singlet diradicaloids

Jishan Wu*

Department of Chemistry, National University of Singapore

3 Science Drive 3, Singapore, 117543

11:00-11:20 (C-11)

Synthesis of functionalized conductive wires

Jun Terao*, Hiroshi Masai, Akihisa Wadahama, Akitoshi Matono, Tetsuaki Fujihara, Yasushi Tsuji

Graduate School of Engineering, Kyoto University, Kyoto, Japan

11:20-11:40 (C-13)

Synthesis of highly π -conjugated molecules for molecular architectonics

Hidemitsu Uno^{1*}, Tetsuo Okujima¹, Masayoshi Takase¹, Shigeki Mori²

¹ Graduate School of Science and Engineering, Ehime University

2-5 Bunkyo-cho, Matsuyama 790-8577, Japan

² Advanced Research Support Center

2-5 Bunkyo-cho, Matsuyama 790-8577, Japan

11:40-12:00 (C-15)

Bottom-Up surface synthesis of sub-1nm graphene nanoribbons by radical-polymerized-chemical vapor deposition

Takahiro Nakae¹ and Hiroshi Sakaguchi^{1*}

¹Institute of Advanced Energy, Kyoto University
Uji, Kyoto, 611-0011, Japan

12:00-14:00 **Lunch break & Poster Session**

14:00-14:30 (I-7)

Carbon electrode-molecule junctions: a reliable platform for molecular electronics

Xuefeng Guo*

College of Chemistry and Molecular Engineering, Peking University
202 Chengfu Road, Haidian District, Beijing 100871, China

14:30-14:50 (C-17)

Self-aligned formation of sub-1-nm gaps utilizing electromigration during metal deposition

Yasuhisa Naitoh^{1*} and Takao Ishida²

¹Nanoelectronics Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Higashi 1-1-1, Tsukuba, Ibaraki 305-8562, Japan

²Nanomaterials Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Namiki 1-2-1, Tsukuba, Ibaraki 305-8562, Japan

14:50-15:10 (C-19)

Development of a novel method for Pd catalyzed arylation on hydrogen-terminated silicon wafers

Yoshinori Yamanoi* and Hiroshi Nishihara

Department of Chemistry, School of Science, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan

15:10-15:30 (C-21)

Environmental control of single-molecule junction conductance

H. Okuyama¹, Y. Kitaguchi¹, S. Habuka¹, S. Hatta¹, T. Aruga¹

¹Kyoto University, Kyoto, 606-8502, Japan

15:30-16:00 **Coffee break**

16:00-16:20 (C-23)

Development of a dendritic structure with potential gradient:outer-layer electron-rich phenylazomethine dendrimer

Ken Albrecht¹, Kimihisa Yamamoto^{1*}

¹ Chemical Resources Laboratory, Tokyo Institute of Technology
4259 Nagatsuta Midori-ku Yokohama 226-8503, Japan.

16:20-16:40 (C-25)

Improvement of appealing temperature of negative magnetoresistance in organic coexisting systems of magnetism and conductivity.

Michio M. Matsushita^{1*}, Yudai Ishii¹, Daiki Tonouchi¹, and Kunio Awaga^{1,2}

¹Department of Chemistry and ²Research Center for Materials Science, Nagoya University,
Chikusa-ku, Nagoya, Aichi 464-8602, JAPAN

16:40-17:00 (C-27)

First-principles study of carrier mobility in metal-containing insulated molecular wires

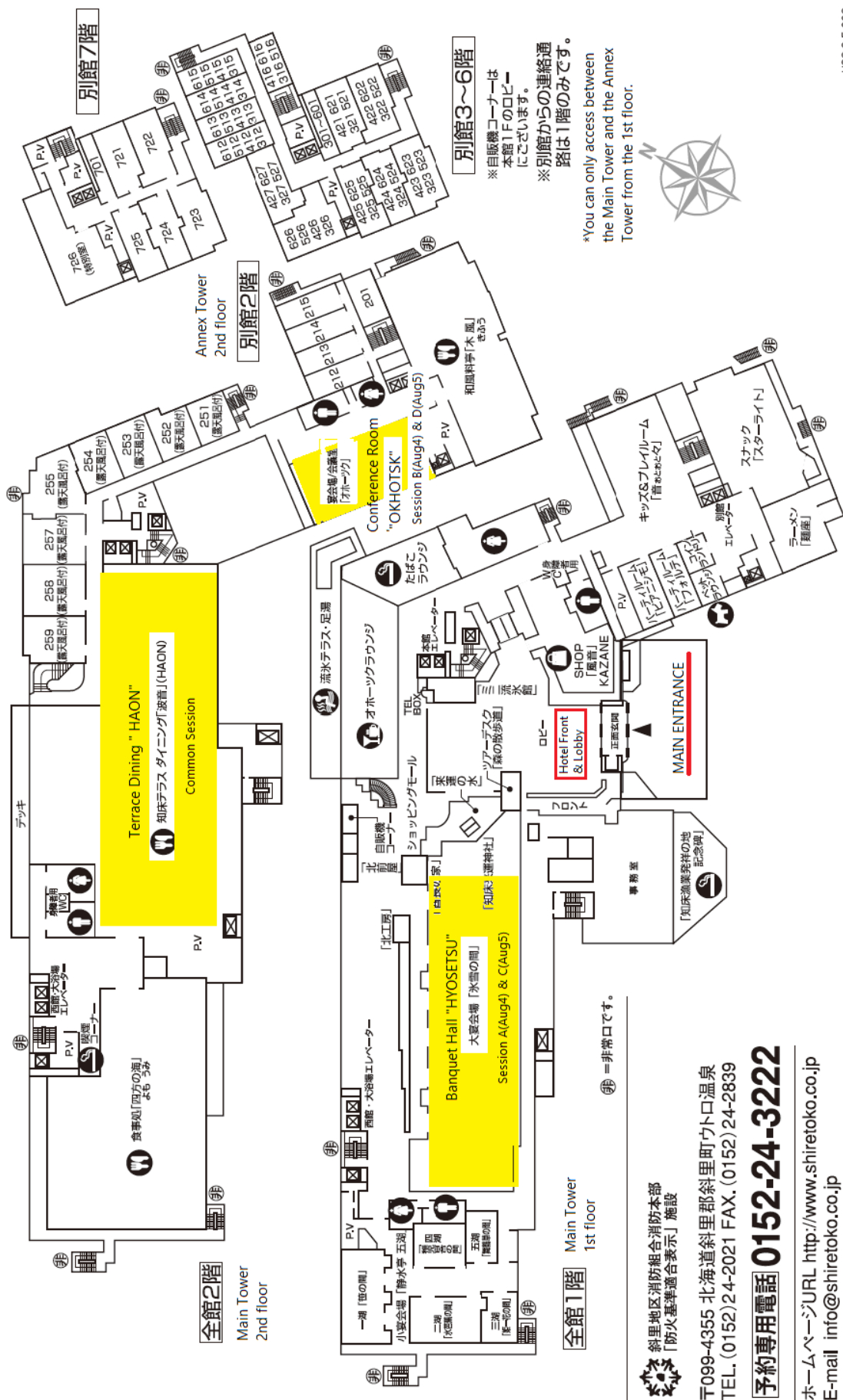
Tatsuhiko Ohto^{1*}, Hiroshi Masai², Jun Terao², Yasushi Tsuji², Hirokazu Tada¹

¹ Graduate School of Engineering Science, Osaka University

1-3 Machikaneyama, Toyonaka, Osaka, 560-8531, Japan

² Department of Energy and Hydrocarbon Chemistry, Graduate School of Engineering, Kyoto University

Nishikyo-ku, Kyoto 615-8510, Japan



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