

# Program

Tuesday, June 25, 2019

## *Noh Theatre*

### **12:00 - 12:10 Opening Remarks I**

*Conference Chair*

Hiroaki Usui (Tokyo University of Agriculture and Technology, Japan)

### **12:10 - 12:30 Opening Remarks II**

*Conference Chair of The First International Conference on Molecular Electronics and Bio-Electronics (M&BE1)*

Kazumi Matsushige (Shikoku University, Japan)

### **12:30 - 13:10 Plenary Session**

Chairperson: Hiroaki Usui (Tokyo University of Agriculture and Technology, Japan)

#### **PL-01 (Plenary Lecture)**

12:30 - 13:10 High Performance Electropolymerized-Molecularly Imprinted Polymer (E-MIP) Sensors and Biosensors

Rigoberto Advincula (Case Western Reserve University, U.S.A.)

### **13:10 - 13:20 Break**

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## *Noh Theatre*

### **13:20 - 15:40 Session F (Organic Photovoltaics and Energy Harvesting)**

Chairperson: Kazuhiro Marumoto (University of Tsukuba, Japan) and Tetsuhiko Miyadera (National Institute of Advanced Industrial Science and Technology, Japan)

#### **FO-01**

13:20 - 13:35 Effects on p-type buffer layers for semitransparent organic photovoltaics using IZO transparent electrode

Kohei Kuwano (Tokyo University of Science, Japan)

#### **FO-02**

13:35 - 13:50 Photoelectrochemical application of thiadiazolobenzotriazole and bis(thienothiophenyl)ethylene based donor-acceptor conjugated polymers

Sultan Oteпов (Tokyo Institute of Technology, Japan)

#### **FO-03**

13:50 - 14:05 Controlling Donor/Acceptor Interfacial Structures in Organic Solar Cells

Seiichiro Izawa (Institute for Molecular Science, Japan)

#### **FO-04**

14:05 - 14:20 First-Principles Investigation of Interfacial Charge-Transfer States at the Pentacene/C60 Heterojunctions

Takatoshi Fujita (Institute for Molecular Science, Japan)

### **14:20 - 14:40 Break & Exhibitor Presentation at Reception Hall 1**

**FI-01** (Invited Lecture)

14:40 - 15:10 Response of Perovskite Solar Cells on Timescales of Milliseconds to Days  
Wolfgang Tress (École Polytechnique Fédérale de Lausanne (EPFL), Switzerland)

**FO-05**

15:10 - 15:25 Pure Phase, Single-Crystalline TiO<sub>2</sub> Nanoparticle Electron Transport layer for Highly Efficient Planar Perovskite Solar Cells  
Md. Shahiduzzaman (Kanazawa University, Japan)

**FO-06**

15:25 - 15:40 Suppressing surface recombination in tin-based perovskite solar cells  
Muhammad Akmal Kamarudin (The University of Electro-Communications, Japan)

**15:40 - 16:00 Break & Exhibitor Presentation at Reception Hall 1**

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***Noh Theatre***

**16:00 - 17:30 Session C (Organic Devices and Applications)**

Chairperson: Takafumi Uemura (Osaka University, Japan) and Hirotake Kajii (Osaka University, Japan)

**CI-01** (Invited Lecture)

16:00 - 16:30 Flexible Printed Organic Electronics and their IoT Sensor Applications  
Shizuo Tokito (Yamagata University, Japan)

**CO-01**

16:30 - 16:45 A microfluidic system with an extended-gate type organic field-effect transistor for real-time glucose monitoring  
Pierre Didier (The University of Tokyo, Japan)

**CO-02**

16:45 - 17:00 Low-noise electrocardiogram recording with flexible organic differential amplifier  
Masahiro Sugiyama (Osaka University, Japan)

**CO-03**

17:00 - 17:15 Single electron transistor based on benzene  
Genki Ohkatsu (Tokyo Institute of Technology, Japan)

**CO-04**

17:15 - 17:30 Proton conduction of self-doped polyaniline network  
Yuki Usami (Osaka University, Japan)

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## ***Reception Hall 1***

### **13:20 - 15:40 Session A (Fabrications and Characterization)**

Chairperson: Hiroyuki Hasegawa (Shimane University, Japan) and Hitoshi Suzuki (Hiroshima University, Japan)

#### **AO-01**

13:20 - 13:35 Nanosheets of detonation nanodiamonds fabricated at the air/water interface  
Yasuhiro F. Miura (Hamamatsu University School of Medicine, Japan)

#### **AO-02**

13:35 - 13:50 Ferromagnetic Co50Pt50 Asymmetric Nanogap Electrodes with a 10 nm Scale Gap Separation  
Ryo Toyama (Tokyo Institute of Technology, Japan)

#### **AI-01 (Invited Lecture)**

13:50 - 14:20 Crystalline Molecular Electronic Materials Based on Supramolecular Structures  
Takayoshi Nakamura (Hokkaido University, Japan)

### **14:20 - 14:40 Break & Exhibitor Presentation at Reception Hall 1**

#### **AO-03**

14:40 - 14:55 Fabrication by Vaporized Film Deposition and In-situ FET Measurements of Polycrystalline Thiophene/Phenylene Co-Oligomer Films  
Pananus Potisat (Nara Institute of Science and Technology, Japan)

#### **AO-04**

14:55 - 15:10 Ion Permeability of Nanoporous SiO<sub>2</sub> Films  
Yuya Ishizaki (Tohoku University, Japan)

#### **AO-05**

15:10 - 15:25 Effect of Stereoregularity on Carrier Transport in Poly(N-vinylcarbazole) Thin Film  
WooJin Kim (Osaka University, Japan)

#### **AO-06**

15:25 - 15:40 Effect of surface treatment on photo-induced charge accumulation at Au-nanoparticle/TiO<sub>2</sub> interface  
Tomoki Misaka (Osaka university, Japan)

### **15:40 - 16:00 Break & Exhibitor Presentation at Reception Hall 1**

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## ***Room 1&2***

### **16:00 - 17:30 Session D (Nanobiotechnology and Biomedical)**

Chairperson: Shinji Watanabe (Kanazawa University, Japan)

#### **DO-01**

16:00 - 16:15 Ultrasensitive assays for epithelial tight junction formation by monitoring proton leaks using ISFET  
Hiroaki Hatano (Tokyo Medical and Dental University, Japan)

**DO-02**

16:15 - 16:30 Interfacing Plants and Bacteria via Organic Bioelectronics  
Gábor Méhes (Linköping University, Sweden)

**DI-01** (Invited Lecture)

16:30 - 17:00 Pretreatment-free platforms for the fluorescence detection of intact exosomes fabricated by molecular imprinting and post-imprinting modifications  
Toshifumi Takeuchi (Kobe University, Japan)

**DO-03**

17:00 - 17:15 Induced Forward and Reverse Flow in a Centrifugal Chip Device Utilized for Efficient Single Cell Preparation  
Wilfred Espulgar (Osaka University, Japan)

**DO-04**

17:15 - 17:30 Computer simulation study of inter-digitated electrode geometry for non-invasive living cell monitoring using impedance method  
Pooja Kenchetty (Ritsumeikan University, Japan)

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***Reception Hall 1 and Room 3&4***

**17:30 - 19:00 Poster Session I**

17:30 - 18:15 Presentation with odd number posters  
18:15 - 19:00 Presentation with even number posters

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***Noh Theatre***

**19:00 - 19:30 Cultural program: Japanese court music**

Wednesday, June 26, 2019

## *Noh Theatre*

### **9:00 - 11:45 Session C (Organic Devices and Applications)**

Chairperson: Takafumi Uemura (Osaka University, Japan) and Hirohiko Fukagawa (NHK STRL, Japan)

#### **CI-02** (Invited Lecture)

9:00 - 9:30 Development of High Performance Organic Transistors and Printable novel Semiconductors  
Yong-Young Noh (Pohang University of Science and Technology, Republic of Korea)

#### **CO-05**

9:30 - 9:45 Phytol-derived alkyl side chains for  $\pi$ -conjugated semiconducting polymers  
Fanji Wang (The University of Tokyo, Japan)

#### **CO-06**

9:45 - 10:00 Alignment-induced hole mobility enhancement of pBTTT organic field-effect transistors by hydrophobic nano-grooved gate dielectric surfaces  
Kirill Dmitrievich Bulgarevich (University of Tsukuba and National Institute for Materials Science, Japan)

#### **10:00 - 10:15 Break**

#### **CO-07**

10:15 - 10:30 High-performance low-cost OFETs with silver electrodes on organic semiconductor Ph-BTBT-10 in top contact geometry  
Sabina Kang (Tokyo Institute of Technology, Japan)

#### **CO-08**

10:30 - 10:45 Near Infra-Red Organic Photodetectors Based on a Liquid Crystalline Phthalocyanine Derivative for Medical Imaging Purpose  
Shahriar Kabir (Tokyo Institute of Technology, Japan)

#### **CI-03** (Invited Lecture)

10:45 - 11:15 High Efficiency Exciplex-Based OLEDs  
Ken-Tsung Wong (National Taiwan University, Taiwan)

#### **CO-09**

11:15 - 11:30 Characteristics of Solution-Processed Distributed Bragg Reflectors Utilizing Inorganic Copper(I) Thiocyanate and Polymer for Organic Electroluminescent Devices  
Hirotake Kajii (Osaka University, Japan)

#### **CO-10**

11:30 - 11:45 Exciton and carrier dynamics at organic donor-acceptor interface studied by in-situ time-resolved optical second-harmonic generation measurements  
Takaaki Manaka (Tokyo Institute of Technology, Japan)

#### **11:45 - 12:00 Group photo and Break**

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## ***Reception Hall 1***

### **9:00 - 11:45 Session B (Functional Materials (LC, polymer, soft material, photonic material etc.))**

Chairperson: Masaki Murata (SONY Corporation, Japan), Naoki Yoshimoto (Hitachi, Ltd., Japan) and Kazuaki Furukawa (Meisei University, Japan)

#### **BO-01**

9:00 - 9:15 Enhancement Effect of photoluminescence in PbBr-based perovskite by partial replacement with divalent cations  
Masanao Era (Saga University, Japan)

#### **BO-02**

9:15 - 9:30 Iron-powder-doped Self-propelled Ion Gel  
Kazuaki Furukawa (Meisei University, Japan)

#### **BI-01** (Invited Lecture)

9:30 - 10:00 Confinement- & Interface-Induced Novel Structures & Properties in MOFs  
Hiroshi Kitagawa (Kyoto University, Japan)

#### **10:00 - 10:15 Break**

#### **BI-02** (Invited Lecture)

10:15 - 10:45 Responsive Soft Materials with Dynamic Crosslinks for Medical and Environmental Applications  
Takashi Miyata (Kansai University, Japan)

#### **BO-03**

10:45 - 11:00 Development of Blue Thermally Activated Delayed Fluorescence Molecules Containing Boronate- and Borinate-Based  $\pi$ -Systems  
Kyohei Matsuo (Nara Institute of Science and Technology, Japan)

#### **BO-04**

11:00 - 11:15 Removal of air pollutants by photocatalytically active multicomponent nanoparticles  
Jarkko J Saarinen (University of Eastern, Finland)

#### **BI-03** (Invited Lecture)

11:15 - 11:45 High mobility organic functional materials  
Wenping Hu (Tianjin University, China)

#### **11:45 - 12:00 Group photo and Break**

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## ***Reception Hall 1 and Room3&4***

**12:00 - 12:30 Lunch and Exhibitor Presentation at Reception Hall 1**

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## ***Reception Hall 1 and Room 3&4***

### **12:30 - 14:00 Poster Session II**

12:30 - 13:15 Presentation with odd number posters  
13:15 - 14:00 Presentation with even number posters

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## ***Noh Theatre***

### **14:00 - 16:45 Session E (Sensors and Actuators)**

Chairperson: Makusu Tsutsui (Osaka University, Japan) and Koji Toma (Tokyo Medical and Dental University, Japan)

#### **EI-01 (Invited Lecture)**

14:00 - 14:30 “Hard” Metal Oxide Nanowire Surface Discriminates “Soft” Molecules  
Takeshi Yanagida (Kyushu University, Japan)

#### **EO-01**

14:30 - 14:45 Single-molecule Discrimination of monoamine neurotransmitters with MCBJ method  
Yuki Komoto (Osaka University, Japan)

#### **EO-02**

14:45 - 15:00 A Pair of aptamer-based Portable Electrochemical Biosensor using a Mini-Potentiostat  
Cheul Min Joe (Korea University, Republic of Korea)

#### **EO-03**

15:00 - 15:15 Enhanced piezoelectric sensing behaviors of P(VDF-TrFE) copolymers blended with ammonium-modified graphite flakes  
Tzu-Chuan Yang (Chang Gung University, Taiwan)

#### **EO-04**

15:15 - 15:30 Development of Miniature Surface Plasmon Resonance Systems  
Akira Baba (Niigata University, Japan)

### **15:30 - 15:45 Break**

#### **EI-02 (Invited Lecture)**

15:45 - 16:15 Functional Zwitterionic Assemblies for Biomedical Applications  
Chun-Jen Huang (National Central University, Taiwan)

#### **EO-05**

16:15 - 16:30 Size effect of metal nanodome arrays on sensitivity of plasmonic biosensor  
Mana Toma (Tokyo Institute Technology, Japan)

#### **EO-06**

16:30 - 16:45 Controlling the luminescence of gold quantum dots by the plasmonic effect of silver nanoprisms  
Chutiparn Lertvachirapaiboon (Niigata University, Japan)

### **16:45 - 17:00 Break**

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## ***Reception Hall 1***

### **14:00 - 15:30 Session A (Fabrications and Characterization)**

Chairperson: Yasuhiro F. Miura (Hamamatsu University School of Medicine, Japan) and Hiroyuki Hasegawa (Shimane University, Japan)

#### **AO-07**

14:00 - 14:15 Fast scanning thermal noise microscopy for visualization of buried nanostructures in a polymer matrix  
Hiroshi Tono (Kyoto University, Japan)

#### **AO-08**

14:15 - 14:30 Charge tracking in organic thin films by time-resolved electrostatic force microscopy  
Kentaro Kajimoto (Osaka university, Japan)

#### **AO-09**

14:30 - 14:45 Significant THz-wave absorption property from defect structure in organohalide perovskite thin film fabricated by sequential vacuum evaporation  
Min-Cherl Jung (Nara Institute of Science and Technology, Japan)

#### **AO-10**

14:45 - 15:00 Raman study on crystalline fractions of polymer semiconductors  
Yukio Furukawa (Waseda University, Japan)

#### **AI-02 (Invited Lecture)**

15:00 - 15:30 Two-Dimensional Assembly of Propeller-Bladed Molecules Exhibiting Anisotropic and Dynamic Properties  
Yoshiaki Shoji (Tokyo Institute of Technology, Japan)

**15:30 - 15:45 Break**

Wednesday, June 26, 2019

## ***Reception Hall 1***

### **15:45 - 16:45 Session F (Organic Photovoltaics and Energy Harvesting)**

Chairperson: Senku Tanaka (Kindai University, Japan)

#### **FO-07**

15:45 - 16:00 Application of polar molecules with spontaneous orientation polarization to vibration-based electret generator for energy harvesting  
Yuya Tanaka (Chiba University, Japan)

#### **FO-08**

16:00 - 16:15 Aging effects in mixed composition metal halide perovskites characterized by electrical impedance  
Richard Murdey (Kyoto University, Japan)

#### **FI-02 (Invited Lecture)**

16:15 - 16:45 Machine Learning and Ultrafast Experimental Screening of Polymer Solar Cells  
Akinori Saeki (Osaka University, Japan)

**16:45 - 17:00 Break**



Wednesday, June 26, 2019

***Noh Theatre***

**17:00 - 17:40 Plenary Session**

Chairperson: Akira Baba (Niigata University, Japan)

**PL-02 (Plenary Lecture)**

17:00 - 17:40 Towards High Yield Functional Molecular Electronic Devices  
Takhee Lee (Seoul National University, Republic of Korea)

**17:40 - 18:30 Break and transfer to Hotel Nikko Nara**

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***Hiten Room in Hotel Nikko Nara***

**18:30 - 21:00 Banquet with special lecture**

**19:00 - 20:00 Plenary Session**

Chairperson: Atsushi Kubono (Shizuoka University, Japan)

**PL-03 (Plenary Lecture)**

19:00 - 20:00 The Earliest Days of Molecular Electronics and Bioelectronics in Japan  
Kiyoshi Yase (National Institute of Advanced Industrial Science and Technology, Japan)

Thursday June 27, 2019

*Noh Theatre*

**9:00 - 9:40 Plenary Session**

Chairperson: Ayumi Hirano-Iwata (Tohoku University, Japan)

**PL-04** (Plenary Lecture)

9:00 - 9:40 Symbiosis of biology and nanodevices, a new BNP challenge  
Ichiro Yamashita (Osaka University, Japan)

**9:40 - 9:50 Break**

Thursday June 27, 2019

*Noh Theatre*

**9:50 - 12:30 Session D (Nanobiotechnology and Biomedical)**

Chairperson: Patrick Wagner (KU Leuven, Belgium), Atsushi Miura (Hokkaido University, Japan)  
and Ayumi Hirano-Iwata (Tohoku University, Japan)

**DI-02** (Invited Lecture)

9:50 - 10:20 Selective detection of microorganisms by combining synthetic SIP receptors with label-free detection techniques  
Patrick Wagner (KU Leuven, Belgium)

**DO-05**

10:20 - 10:35 Band-Pass Emission Filter Combined with Fiber Coupled Laser for High-Performance Implantable Fluorescent Imager  
Erus Rustami (Nara Institute of Science and Technology, Japan)

**DO-06**

10:35 - 10:50 Development of Influenza Virus-Recognizable Conducting Polymers for Bioelectronic Applications  
Tatsuro Goda (Tokyo Medical and Dental University, Japan)

**DO-07**

10:50 - 11:05 In-situ evaluation of the recovery process of epithelial cell layer  
Ko-ichiro Miyamoto (Tohoku University, Japan)

**DO-08**

11:05 - 11:20 Single-Molecule Electrical Identification Method Toward Biopolymer Sequencing  
Takahito Ohshiro (Osaka University, Japan)

**11:20 - 11:30 Break**

**DO-09**

11:30 - 11:45 Protein Folding Acceleration by Redox-Active Molecules  
Takahiro Muraoka (Tokyo University of Agriculture and Technology, Japan)

**DO-10**

11:45 - 12:00 Evaluating substrate-induced electric potential using supported lipid bilayer containing voltage-sensitive dye  
Ryugo Tero (Toyohashi University of Technology, Japan)

**DI-03** (Invited Lecture)

12:00 - 12:30 High-speed ion conductance microscopy for probing nanoscale surface properties of live cells  
Shinji Watanabe (Kanazawa University, Japan)

Thursday June 27, 2019

***Reception Hall 1***

**9:50 - 11:20 Session E (Sensors and Actuators)**

Chairperson: Makusu Tsutsui (Osaka University, Japan)

**EO-07**

9:50 - 10:05 Precipitate-Enhanced Surface Acoustic Wave Immunosensor for On-Site Monitoring System of Mite Allergen  
Koji Toma (Tokyo Medical and Dental University, Japan)

**EO-08**

10:05 - 10:20 L-fucose biosensor based on the direct electrochemistry for cancer screening in urine  
Kouta Takeda (Tokyo University of Agriculture and Technology, Japan)

**EI-03** (Invited Lecture)

10:20 - 10:50 Development of a Micro-Machined Cochlea Using MEMS Technologies  
Satoyuki Kawano (Osaka University, Japan)

**EO-09**

10:50 - 11:05 Stress-induced absorption of a birefringence-reduced polymer optical fiber with doped core  
Keigo Uzawa (The University of Electro-Communications, Japan)

**EO-10**

11:05 - 11:20 Simple and sensitive detection of dichlorvos pesticide in a solution by using luminescent probes of Eu(III)  $\beta$ -diketonates  
Hiroki Iwanaga (Toshiba Corporation, Japan)

**11:20 - 11:30 Break**

Thursday June 27, 2019

***Reception Hall 1***

**11:30 - 12:30 Session F (Organic Photovoltaics and Energy Harvesting)**

Chairperson: Seiichiro Izawa (Institute for Molecular Science, Japan)

**FI-03** (Invited Lecture)

11:30 - 12:00 Photocarrier Generation in Single-Component Organic Solar Cells  
Ken-ichi Nakayama (Osaka University, Japan)

**FO-09**

12:00 - 12:15 Substrate Temperature Dependence During Deposition of Organic Thin Films Using Electrospray  
Yoshiyuki Seike (Aichi Institute of Technology, Japan)

**FO-10**

12:15 - 12:30 Real-time X-ray Diffraction Analysis for the Vacuum Deposition Process of CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3</sub> perovskite  
Tetsuhiko Miyadera (National Institute of Advanced Industrial Science and Technology, Japan)

Thursday June 27, 2019

***Noh Theatre***

**12:30 - 13:00 Closing Remarks**

Hiroaki Usui (Tokyo University of Agriculture and Technology, Japan)

Awards ceremony