

*The Book of Abstracts*

**The 5th International Symposium on  
Organic Molecular Electronics**



**May 22-23, 2008  
University of Hyogo  
Himeji, Japan**

### **Steering Committee**

Chairperson	Mitsuyoshi Onoda (Univ. Hyogo)
Vice-chairperson	Kazuhiro Kudo (Chiba Univ.)
Advisors	Mitsumasa Iwamoto (Tokyo Inst. Tech.) Yutaka Ohmori (Osaka Univ.) Hiroyuki Sasabe (Chitose Inst. Sci. Tech.) Teruyoshi Mizutani (Aichi Inst. Tech.) Toyosaka Moriizumi (Tokyo Inst. Tech.) Katsumi Yoshino (Shimane Inst. Industr. Tech.)
Member	Hiroaki Usui (Tokyo Univ. Agr. Tech.) Hirotake Kajii (Osaka Univ.) Kazunari Shinbo (Niigata Univ.) Okihiko Sugihara (Tohoku Univ.) Takao Someya (Univ. Tokyo) Masahiro Tawada (Meijo Univ.) Hidekazu Nagamatsu (Kyushu Inst. Tech.) Yuki Hasegawa (Saitama Univ.) Yutaka Majima (Tokyo Inst. Tech.) Yoko Matsuzawa (AIST) Naoki Matsuda (AIST) Takaaki Manaka (Tokyo Inst. Tech.) Satoshi Mikoshiba (TOSHIBA)
Account	Tohru Kubota (NICT)
Secretariat	Kazuya Tada (Univ. Hyogo)

### **Supported by**

Electronics Society of The Institute of Electronics, Information, and  
Communication Engineers  
Division of Molecular Electronics and Bioelectronics, The Japan  
Society of Applied Physics  
The Joint Technical Meeting on Nanometric Interface Controlled Electronic  
(NICE) Devices, The Japan Society of Applied Physics  
Himeji Convention & Visitors Bureau

### **In cooperation with**

Technical Committee on Dielectric and Electrical Insulation  
Materials, The Institute of Electrical Engineers of Japan  
The Society of Polymer Science, Japan  
The Japanese Liquid Crystal Society

## Preface

### *The Forefront of 21<sup>st</sup> Century Organic Molecular Electronics*

The 5<sup>th</sup> International Symposium on Organic Molecular Electronics (ISOME 2008) will be held on May 22 and 23, 2008, at Himeji Shosha Campus of University of Hyogo, Himeji, Japan. This international symposium has made a great contribution to the development of organic molecular electronics since its inception in 2000 (See special issue on Organic Molecular Electronics of IEICE Transactions in 2000, 2002, 2004, and 2006).

Much progress in the field of organic molecular electronics will be expected in 21<sup>st</sup> century. Organic optoelectronic devices such as organic electroluminescent devices, organic thin-film-transistors, organic sensors, biological systems and so on have attracted much attention. The main purpose of this symposium is to provide an opportunity for researchers, who are interested in organic molecular electronics, to come together in an informal and friendly atmosphere and exchange their technical information and experience. I am sure that this symposium is very useful and fruitful for all participants to summarize the recent progress in organic molecular electronics and prepare a new step to the next generation.

Many papers have been submitted from various countries and more than 30 papers have been accepted for presentation. All the papers accepted will be presented and some of them will be published in the special issue on Organic Molecular Electronics of IEICE Transactions.

The main topics of interest are as follows:

- Organic electronic devices
- Biomimetic systems
- Fabrication and characterization of thin films
- Molecular dynamics
- Fundamental and applied researches on organic materials *etc.*

The program of this symposium consists of Plenary Talk, Invited Talk, Oral presentations I hope all participants can be benefited from this meeting.

Then, I would like to express my sincere thanks to the organizing committee members of this symposium and thank many organizations such as by Electronics Society of the Institute of Electronics, Information and Communication Engineers (IEICE), Division of Molecular Electronics and Bioelectronics, The Japan Society of Applied Physics (M & BE), The Joint Technical Meeting on Nanometric Interfacial Controlled Electronic Devices, The Japan Society of Applied Physics (NICE) and Himeji Convention & Visitors Bureau for their financial support. Thanks are also given to Technical Committee on Dielectric and Electrical Insulation Materials of the Institute of Electrical Engineering in Japan (IEEJ), The Japan Society of Applied Physics, The Society of Polymer Science, Japan, and The Japanese Liquid Crystal Society for their cooperation. And also, many people have given their great efforts so as to make this symposium possible and valuable.

Finally, I hope that many young and active researchers joined this symposium will enjoy stimulating discussion and exchange their ideas each other at this ISOME 2008, taken place at Himeji in Japan.

May 20, 2008



ISOME 2008 Chair  
Prof. Mitsuyoshi Onoda  
University of Hyogo

**ISOME 2008 Schedule**  
**May 22-23, 2008**  
**Himeji-Shosha Campus, University of Hyogo**

May 22, Thursday	May 23, Friday
<p><b>8:50-9:00 Opening (Prof. Mitsuyoshi Onoda)</b></p> <p><b>9:00-10:40 Session 1 (Transistors)</b>  <i>Chairperson: Prof. Hiroaki Usui</i>            5 contributed talks</p> <p><b>10:40-11:00 Break</b></p> <p><b>11:00-12:40 Session 2 (Transistors)</b>  <i>Chairperson: Dr. Kazuya Tada</i>            11:00-11:40            2 contributed talks            11:40-12:40            Plenary talk (Prof. Mitsumasa Iwamoto)</p>	<p><b>9:00-10:40 Session 5 (Materials &amp; Devices)</b>  <i>Chairperson: Dr. Takaaki Manaka</i>            9:00-9:40            Invited talk (Prof. Young-Soo Kwon)            9:40-10:40            3 contributed talks</p> <p><b>10:40-11:00 Break</b></p> <p><b>11:00-12:40 Session 6 (Materials &amp; Devices)</b>  <i>Chairperson: Dr. Bansi D. Malhotra</i>            5 contributed talks</p>
<b>12:40-13:30 Lunch</b>	<b>12:40-13:30 Lunch</b>
<p><b>13:30-15:30 Session 3 (Materials &amp; Devices)</b>  <i>Chairperson: Prof. Shoji Furukawa</i>            13:30-14:10            Invited talk (Prof. Shinji Matsui)            14:10-15:30            4 contributed talks</p> <p><b>15:30-15:50 Break</b></p> <p><b>15:50-17:30 Session 4 (Materials &amp; Devices)</b>  <i>Chairperson: Prof. Shinji Matsui</i>            15:50-16:30            Invited talk (Dr. Bansi D. Malhotra)            16:30-17:30            3 contributed talks</p>	<p><b>13:30-15:30 Session 7 (Bioelectronics)</b>  <i>Chairperson: Dr. Naoki Matsuda</i>            13:30-14:10            Invited talk (Prof. Andreas Offenhäusser)            14:10-14:50            Invited talk (Prof. Ichiro Yamashita)            14:50-15:30            2 contributed talks</p> <p><b>15:30-15:50 Break</b></p> <p><b>15:50-16:50 Session 8 (Bioelectronics)</b>  <i>Chairperson: Prof. Ichiro Yamashita</i>            15:50-16:30            Invited talk (Prof. Osamu Takai)            16:30-16:50            1 contributed talk</p> <p><b>16:50-17:00 Closing (Prof. Kazuhiro Kudo)</b></p>
<p><b>18:30- Banquet</b>  <i>Chairperson: Dr. Tohru Kubota</i></p>	

## ISOME 2008 Program

**May 22, Thursday**

**Opening 8:50-9:00**

Opening Talk M. Onoda (University of Hyogo)

**Session 1(Transistors) 9:00-10:40**

Chairperson: H. Usui (Tokyo University of Agriculture and Technology)

1C-1

9:00 Direct Observation of Carrier Injection into Pentacene FET with Au and Ag Electrodes by Time-Resolved Second-Harmonic Generation Image

T. Manaka, M. Nakao, E. Lim and M. Iwamoto (Department of Physical Electronics, Tokyo Institute of Technology, Japan)

1C-2

9:20 Displacement Current and Channel Current Simultaneous Measurements in n-type Organic Thin-Film Transistors

S. Suzuki, H. Imahara and Y. Majima (Department of Physical Electronics, Tokyo Institute of Technology, Japan)

1C-3

9:40 Displacement Current and Channel Current Simultaneous Measurements in Bottom Contact Organic Thin-Film Transistors

A. Bhaswara, S. Suzuki and Y. Majima (Department of Physical Electronics, Tokyo Institute of Technology, Japan)

1C-4

10:00 Characterization of Zinc Oxide and Pentacene Thin Film Transistors for CMOS Inverters

H. Iechi<sup>\*,\*\*</sup>, Y. Watanabe<sup>\*\*\*</sup>, H. Yamauchi<sup>\*\*\*\*</sup> and K. Kudo<sup>\*\*</sup> (\*Advanced Technology R&D Center, RICOH Co., LTD., Japan, \*\*Graduate School of Engineering, Chiba University, Japan, \*\*\*Faculty of Education, Chiba University, Japan, \*\*\*\*Faculty of Engineering, Chiba University, Japan)

1C-5

10:20 Characterization of Organic Static Transistors with Nano-Gap Gate Fabricated by Electron Beam Lithography

H. Yamauchi<sup>\*</sup>, Y. Watanabe<sup>\*\*</sup>, M. Iizuka<sup>\*\*\*</sup>, M. Nakamura<sup>\*</sup> and K. Kudo<sup>\*</sup> (\*Graduate School of Engineering, Chiba University, Japan, \*\*Center of Frontier Science, Chiba University, Japan, \*\*\*Faculty of Education, Chiba University, Japan)

**Break 10:40-11:00**

**Session 2 (Transistors) 11:00-12:40**

Chairperson: K. Tada (University of Hyogo)

2C-1

11:00 Organic Field-Effect Transistors Using Conducting Polymer Gels Fabricated by Thermal Printing Method

H. Kajii, Y. Hirose, D. Kasama and Y. Ohmori (Center for Advanced Science and Technology, Osaka University, Japan)

2C-2

11:20 Control of Threshold Voltage in P3HT-FET by Post-Treatments

M. Iizuka\*, H. Yamauchi\*\* and K. Kudo\*\* (\*Faculty of Education, Chiba University, Japan, \*\* Graduate School of Engineering, Chiba University, Japan)

2PL-1

11:40 Organic Field Effect Transistors as an Element of Maxwell-Wagner Effect System: Analysis and SHG Experiments on Carrier Motion

M. Iwamoto, T. Manaka, E. Lim and R. Tamura (Department of Physical Electronics, Tokyo Institute of Technology, Japan)

**Lunch Time 12:40-13:30**

**Session 3 (Materials & Devices) 13:30-15:30**

Chairperson: S. Furukawa (Kyushu Institute of Technology)

3I-1

13:30 Present Status and Future of Nanoimprint Technology

S. Matsui (LASTI, University of Hyogo, Japan)

3C-1

14:10 Organic Photo-Detectors Using Triplet Materials Doped in Polyalkylfluorene

T. Hamasaki\*, T. Morimune\*\*, H. Kajii\* and Y. Ohmori\* (\*Center for Advanced Science and Innovation, Osaka University, Japan, \*\*Takuma National College of Technology, Japan)

3C-2

14:30 Selective Formation of Dequenched Aggregates of Rhodamines: Comparison with J- and H-Aggregates

A. Tomioka, Y. Kamiyama, A. Fujimoto and S. Kawakami (Faculty of Engineering, Osaka Electro-Communication University, Japan)

3C-3

14:50 Evanescent-Field Modulation of Amplified Spontaneous Emissions from  $\pi$ -Conjugate Polymer Film by a One Dimensional Photonic Crystal

Y. Kamiyama, A. Tomioka, T. Mizutani, M. Yamazaki and K. Morimoto (Faculty of Engineering, Osaka Electro-Communication University, Japan)

3C-4

15:10 In-Situ Measurement of the Ionization Potential of Poly(3-methylthiophene) during Electrochemical Doping Using Photoelectron Spectroscopy in Air

K. Tada, S. Takaishi, Y. Miyoshi and M. Onoda (University of Hyogo, Japan)

**Break 15:30-15:50**

**Session 4 (Materials & Devices) 15:50-17:30**

Chairperson: S. Matsui (University of Hyogo)

4I-1

15:50 Conducting Polymer Based Nucleic Acid Sensor for Environment Monitoring

B. D. Malhotra, N. Prabhakar and P. R. Solanki (Biomolecular Electronics & Conducting Polymer Research Group, National Physical Laboratory, India)

4C-1

16:30 Surface Plasmon Excitation and Emission Light Property for Otto/Kretschmann Configuration with MEH-PPV Film Prism

M. Hafuka, Y. Ohdaira, A. Baba, K. Shinbo, K. Kato and F. Kaneko (Center for Transdisciplinary Research and Graduate School of Science and Technology, Niigata University, Japan)

4C-2

16:50 Electrocatalytic Oxidation Properties of Ascorbic Acid at Poly(3,4-ethylenedioxythiophene) Films Studied by Electrochemical-Surface Plasmon Resonance Spectroscopy

Y. Sano, A. Baba, Y. Ohdaira, K. Shinbo, K. Kato and F. Kaneko (Center for Transdisciplinary Research and Graduate School of Science and Technology, Niigata University, Japan)

4C-3

17:10 A Printed Inverter Using Micro-Electromechanical Switches

T. Yokota, S. Nakano, T. Sekitani and T. Someya (School of Engineering, The University of Tokyo, Japan)

**Banquet 18:30~**

Chairperson: T. Kubota (NICT)

## **May 23, Friday**

**Session 5 (Materials & Devices) 9:00-10:40**

Chairperson: T. Manaka (Tokyo Institute of Technology)

5I-1

9:00 Application of Electronic Devices Using Organic Thin Films

D.-Y. Lee, D.-E. Kim, W.-S. Choi and Y.-S. Kwon (Department of Electrical Engineering & NTRC, Dong-A University, Korea)

5C-1

9:40 In-Situ Surface Plasmon Observation of Polypeptide Deposition Polymerization

H. Usui\*, K. Ogura\*, R. C. Advincula\*\*, H. Duran\*\*\* and W. Knoll\*\*\* (\*Tokyo University of Agriculture and Technology, Japan, \*\*Department of Chemistry, University of Houston, U.S.A., \*\*\*Max-Planck-Institute for Polymer Research, Germany)

5C-2

10:00 Novel Humidity and Gas Detector Using Langmuir-Blodgett Cellulose-Thin-Film Coated Quartz Crystal Oscillator

H. Kusano\*, T. Ikeda\*\* and M. Kitagawa\*\*\* (\*Tottori Institute of Industrial Technology, Japan, \*\*Tottori Prefecture Horticulture Experiment Station, Japan, \*\*\*Department of Electrical and Electronic

Engineering, Tottori University, Japan)

5C-3

10:20 Chemical and Bio- Sensor with Carbon Nanotube and Plasma-Polymerized Film

Y. Matsui, T. Hoshino, M. Yoshizawa and H. Muguruma (Department of Electronic Engineering, Shibaura Institute of Technology, Japan)

**Break 10:40-11:00**

**Session 6 (Materials & Devices) 11:00-12:40**

Chairperson: B. D. Malhotra (National Physical Laboratory)

6C-1

11:00 A Novel Amperometric Sensor for Chemical Imaging Using Photoconductive Organic Film

T. Hagiwara, M. Takazawa, H. Uchida, Y. Hasegawa and T. Yaji (Graduate School of Science and Engineering, Saitama University, Japan)

6C-2

11:20 Electrochromic Devices Based on Nanoparticle Ink of Prussian Blue-Type Complexes

H. Tanaka\*, S. Hara\*, A. Omura\*, H. Shiozaki\*,\*\*, T. Kawamoto\*, A. Gotoh\*\*\*, T. Satoh\*\*\*, M. Kurihara\*\*\* and M. Sakamoto\*\*\* (\*Nanotechnology Research Institute, AIST, Japan, \*\*Ibaraki University, Japan, \*\*\*Faculty of Science, Yamagata University, Japan)

6C-3

11:40 Electrochromic Thin Film of Water-Dispersible Prussian-Blue Nanoparticles

A. Omura\*, H. Shiozaki\*,\*\*, S. Hara\*, T. Kawamoto\*, H. Tanaka\*, A. Gotoh\*,\*\*\*, M. Kurihara\*,\*\*\*, M. Sakamoto\*,\*\*\* (\*Nanotechnology Research Institute, AIST, Japan, \*\*Ibaraki University, Japan, \*\*\*Yamagata University, Japan)

6C-4

12:00 Characteristics of Dye-Sensitized Solar Cells Using Dyes of Red-Cabbage and Curcumin

S. Furukawa, S. Yamauchi, H. Iino, T. Iwamoto and K. Kuwata (Graduate School of Computer Science and Systems Engineering, Kyushu Institute of Technology, Japan)

6C-5

12:20 Fabrication of Screen-Printing Pastes from TiO<sub>2</sub> Powders for Dye-Sensitized Solar Cells

Seigo Ito\*,\*\* and Michael Grätzel\*\* (\*Graduate School of Engineering, University of Hyogo, Japan, \*\*Laboratoire de Photonique et Interfaces, École Polytechnique Fédérale de Lausanne, Switzerland)

**Lunch Time 12:40-13:30**

**Session 7 (Bioelectronics) 13:30-15:30**

Chairperson: N. Matsuda (AIST)

7I-1

13:30 Neuronal and Molecular Bioelectronic Hybrid Systems

A. Offenhäuser, S. Ingebrandt, D. Mayer and S. Meffert (Institute of Bio- & Nanosystems-Bioelectronics, Forschungszentrum Jülich GmbH, Germany)



7I-2

14:10 Wet Nanotechnology : Nano-Functional-Structures Fabrication in Aqua.

I. Yamashita\*,\*\* (\*Advanced Technology Research Laboratories, Panasonic, Japan, \*\*Graduate School of Materials Science, Nara Institute of Science and Technology, Japan)

7C-1

14:50 Analysis of Relationship between Bioelectric Response and Photosynthetic Rate of Plants under Blinking Light Irradiation

K. Ando, Y. Hasegawa, H. Maekawa and T. Katsube (Graduate School of Science and Engineering, Saitama University, Japan)

7C-2

15:10 Development of Bio-Nano-Devices Based on Protein Motors' Function

Y. Shitaka\*, A. Kayasuga\*, H. Kojima\* and K. Oiwa\*,\*\* (\*Kobe Advanced ICT Research Center, National Institute of Information and Communications Technology, Japan, \*\* Graduate School of Life Science, University of Hyogo, Japan)

**Break 15:30-15:50**

**Session 8 (Bioelectronics) 15:50-16:50**

Chairperson: I. Yamashita (Nara Institute of Science and Technology)

8I-1

15:50 Biomimetic Design of Functional Surfaces for Organic Molecular Electronics

O. Takai\*,\*\* and N. Saito\*\* (\*EcoTopia Science Institute, Nagoya University, Japan, \*\* Graduate School of Engineering, Nagoya University, Japan)

8C-1

16:30 In Situ Observation of Interfacial Phenomena by Using SOWG Spectroscopy

Y. Ayato\* and N. Matsuda\*,\*\* (\*Measurement Solution Research Center, AIST, Japan, \*\*CREST, JST, Japan)

**Closing 16:50-17:00**

Closing Talk K. Kudo (Chiba University)