

The 4th International Symposium on Organic Molecular Electronics

18-19 May 2006, Saitama University, Japan

The Electronics Society of IEICE



The Book of Abstracts

*The 4th International Symposium
on Organic Molecular Electronics
(ISOME2006)*

*18-19 May 2006
Saitama University, JAPAN*

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Supported by:

Electronics Society of IEICE
Group of Organic Nice Devices, The Japan Society of Applied Physics

In cooperation with:

The Japan Society of Applied Physics
Division of Molecular Electronics and Bioelectronics
, The Japan Society of Applied Physics (M & BE)
Technical Committee on Dielectric and Electrical Insulation Materials, IEEJ
The Japan Society of Applied Physics
The Society of Polymer Science, Japan
The Japanese Liquid Crystal Society

Preface

May 18, 2006

Recent progress of Organic Molecular Electronics

We are pleased to invite you to the 4th International Symposium on Organic Molecular Electronics (ISOME2006). This is the 4th in a series of the biennial conference that began in Nagoya University in 2000, continued in Riken (Saitama), Kyoto University and now Saitama University. This symposium has been provided a good opportunity traditionally for wide range of researchers to meet together since the development of organic molecular electronics has been supported by different kinds of technologies.

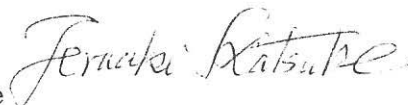
Research of organic molecular electronics has a long history and has developed through several steps of progress. For example, the idea of "molecular device" was proposed more than 20 years ago. Recently again this research field has much attention and progress opportunity under the development of micro and nano-scale technologies as well as bioelectrical and molecular electronic technologies. It is quite meaningful that this symposium is took place under these situation and time.

The symposium contains wide range of researches of organic molecular electronics of invited speakers as well as of the contributed speakers including fabrication, evaluation, bio-electronics, field effect devices, sensors, displays and so on. These researches are the most attractive and progressive topics of the recent organic molecular electronics. We expect that essential discussions are conducted in this symposium to stimulate future development of this field.

We would like to express our thanks to many organizations, such as Electronic Society of IEICE, Group of Organic Nice Devices, The Japan Soc. Of Appl. Phys, that have supported this Symposium and also to many people to have given their great effort to make this conference possible and valuable. Finally, we thank you again for attending the symposium. We hope that all of you have an enjoyable and informative time in Saitama, Japan.

General Chair

Prof. Teruaki Katsube



Division of Mathematics, Electronics and Informatics
Graduate School of Science and Engineering
Saitama University

ISOME2006 Schedule
Saitama University, Saitama, JAPAN
May 18-19,2006

	Morning	Afternoon	Evening
	8:30 - 17:00 Registration		
May 18 (Thu.)	9:00 – 9:10 Opening Talk 9:10 – 10:00 Plenary lecture 10:00 – 10:20 Coffee brake 10:20 – 12:10 Organic molecular devices I	13:10 – 14:30 Organic molecular devices II 14:30 – 15:30 Organic molecular devices III 15:30 – 15:50 Coffee Brake 15:50 – 18:00 Bioelectronics and sensors	18:15 – 19:30 Banquet
	8:30 – 17:00 Registration		
May 19 (Fri.)	9:00 – 10:10 Evaluation of organic materials I 10:10 – 10:30 Coffee Brake 10:30 – 11:50 Evaluation of organic materials II	13:00 – 14:30 Evaluation of organic materials III 14:30 – 14:50 Coffee brake 14:50 – 16:00 Fabrication of organic materials I 16:00 – 17:20 Fabrication of organic materials II	17:20-17:25 Concluding remarks

The 4th International Symposium on Organic Molecular Electronics
Program

May 18 (Thursday)

< Registration > < 8:30 - 17:00 >

< Opening remarks > < 9:00 - 9:05 >

Opening Talk

General Chair: Teruaki Katsube (Saitama University, Japan)

< Plenary lecture > < 9:05 - 9:55 >

Chairperson: Teruaki Katsube (Saitama University, Japan)

PL *Present Status and Future of Organic Light Emitting Devices*

Hiroyuki Sasabe and Chihaya Adachi* (Chitose Institute of Science and Technology,
*Kyusyu University, Japan)

< Coffee brake > (9:55 - 10:15)

< Organic molecular devices I > < 10:15 - 12:05 >

Chairperson: Takao Someya (University of Tokyo, Japan)

< 10:15 - 10:45 > (invite)

OD1 *Organic Materials for Thin Film Transistors*

Zhenan Bao (Stanford University, USA)

< 10:45 - 11:05 >

OD2 *Fabrication and Device Simulation of Single Nano-Scale Organic Static Induction Transistors*

N. Ohashi, N. Muraishi, M. Nakamura, M. Sakai and K. Kudo (Chiba University, Japan)

< 11:05 - 11:25 >

OD3 *Characteristics of organic static induction transistors and inverters*

Yasuyuki Watanabe, Hiroyuki Iechi* and Kazuhiro Kudo** (OITDA, *Ricoh Co. Ltd,
**Chiba University, Japan)

< 11:25 - 11:45 >

OD4 *Analysis of organic FET operation based on Maxwell-Wagner effect*

Ryosuke Tamura, Takaaki Manaka, Eunju Lim and Mitsumasa Iwamoto
(Tokyo Institute of Technology, Japan)

< 11:45 - 12:05 >

OD5 *Temperature dependent Mobilities in Organic P-type and N-type Field Effect Transistors*

K. Yamane, T. Ohya*, Y. Fujimoto*, H. Yanagi* ,S. Hotta**, K. Ishida and K. Matsushige (Kyoto University, *Kobe University, **Kyoto Institute of Technology, Japan)

<Lunch Time> (12:05 - 13:05)

< *Organic molecular devices II* >

< 13:05 – 14:25 >

Chairperson: ~~Hiroyuki Fujii~~ (SANYO Electric. Co., Ltd, Japan)

< 13:05 – 13:25 >

Takeshi Sano

OD6 *Flexible organic field-effect transistors based on the composites with the same backbone by wet process*

Hirotake Kajii, Hiroshi Okuya, Shohei Fukuda, Akinori Sakakibara and Yutaka Ohmori (Osaka University, Japan)

< 13:25 – 13:45 >

→
FM5
OD7 *Interfacial Characteristics of Pentacene-based Thin-Film Transistors*

Hornng-Show Koo, Xizhang Wang*, Tsuyoshi Sekitani and Takao Someya
(The University of Tokyo, *Nanjing University, China)

< 13:45 – 14:05 >

OD8 *Switching Power Supply Using Boost Converter and TV Flyback Transformer for Neon Sign Lighting*

Tanes Tanitteerapan and Bandit Yimnoi
(King Mongkut's University of Technology Thonburi, Thailand)

< 14:05 – 14:25 >

OD9 *Switching Losses Reduction by Passive Circuit Components Implementation for DC-DC Boost Converters*

Tanes Tanitteerapan and Seksan Suteabtawan
(King Mongkut's University of Technology Thonburi, Thailand)

< *Organic molecular devices III* >

< 14:25 – 15:25 >

Chairperson: Hirotake Kajii (Osaka University, Japan)

< 14:25 – 14:45 >

OD10 *Heat Treatment Effect on the Polymer Light-Emitting Device Based on Poly (9,9-dioctylfluorene) during the Maskless Dye-Diffusion Technique*

Kazuya Tada and Mitsuyoshi Onoda (University of Hyogo, Japan)

< 14:45 – 15:05 >

OD11 *Phosphorescent polymer light-emitting diodes consisting of pyridine-containing copolymers and metal complexes*

Takeshi Sano, Jian Li, Yasuko Hirayama, Taiji Tomita, Hiroyuki Fujii, Kenichiro Wakisaka and Masayuki Shouno (SANYO Electric Co., Ltd., Japan)

< 15:05 – 15:25 >

OD12 *Fabrication of Phosphorescent OLED by Deposition Polymerization*

Akira KAWAKAMI*, Hiroshi BEKKU, Rihito WADA, Hisaya SATO, Hideo TAKA**, Hiroshi KITA** and Hiroaki USUI

(Tokyo University of Agriculture and Technology, *TRADIM, **Konica Minolta Technology, Japan)

< Coffee Brake > (15:25 – 15:45)

< *Bioelectronics and Sensors I* >

< 15:45 – 16:55 >

Chairperson: Hitoshi Muguruma (Shibaura Institute of Technology, Japan)

< 15:45 – 16:15 > (invite)

BS1 *The potential of protein motors' functions for development of bio-nano- and bio-molecular devices*

K.Oiwa, Y. Shitaka, R. Kometani^{*,**}, R. Nakamori, S. Matsui^{*}, H. Suzuki and H. Sakakibara

(National Institute of Information and Communication Technology, ^{*}University of Hyogo, ^{**}Japan Society for the Promotion of Science, Japan)

< 16:15 – 16:35 >

BS2 *A Novel Formaldehyde-degrading Fungus, Trichoderma virens: Isolation and Some Properties*

Ayako SAWADA, Ryuzoh IKEDA^{*}, Eiichi TAMIYA^{*}, Taketoshi YOSHIDA^{*}, Takashi Oyabu and Hidehito NANTO^{**} (Kanazawa Seiryō University, ^{*}Advanced Institute of Science and Technology, ^{**}Kanazawa Institute of Technology, Japan)

< 16:35 – 16:55 >

BS3 *Bioelectrical Potential Responses of Plant Cells under various Light Irradiation*

Yuki Hasegawa, Soichi Kumada, Takahiro Yamanaka and Teruaki Katsube
(Saitama University, Japan)

< *Bioelectronics and Sensors II* >

< 16:55 – 17:55 >

Chairperson: Yuki Hasegawa (Saitama University, Japan)

< 16:55 – 17:15 >

BS4 *A Novel Sensing System for Glucose in a Solution Based on Cataluminescence*

Masahiro Ozaki, Tohru Okabayashi^{*}, Nobuhiko Yamashita^{**} and Masuo Nakagawa^{*}
(Sumita Clinic, ^{*}Okayama University of Science, ^{**}Okayama University, Japan)

< 17:15 – 17:35 >

BS5 *Fabrication of electrodes on overhead-transparency film toward development of chemical sensors*

S. Toyama (National Rehabilitation Center for Persons with Disabilities, Japan)

< 17:35 – 17:55 >

BS6 *Electron transfer mediated biosensor with plasma-polymerized film containing redox site*

Hitoshi Muguruma and Hideyuki Uehara (Shibaura Institute of Technology, Japan)

< Banquet > (18:10 – 19:30)

May 19 (Friday)

< Registration >

< 8:30 - 17:00 >

< Evaluation of organic materials I >

< 9:00 - 10:10 >

Chairperson: Kazunari Shinbo (Niigata University, Japan)

< 9:00 - 9:30 > (invite)

EM1 *Molecular Behavior Control of Dendrimer Monolayers and Electrical Properties Measuring by Using SPMs*

Hoon-Kyu Shin (Pohang University of Science and Technology, Korea)

< 9:30 - 9:50 >

EM2 *Orientation of Poly(di-hexyl silane) Thin Films*

Shoji Furukawa, Hidetaka Ohta and Hitoshi Arakawa (Kyushu Institute of Technology, Japan)

< 9:50 - 10:10 >

EM3 *Electrical properties of conducting polymer /CNT composite films prepared on thin titanium dioxide layer*

Eiji Itoh, Issei Suzuki, Yu Nishii and Keiichi Miyairi (Shinshu University, Japan)

< Coffee Brake > (10:10 - 10:30)

< Evaluation of organic materials II >

< 10:30 - 11:50 >

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

< 10:30 - 10:50 >

EM4 *Amplified Spontaneous Emissions from p-Conjugated Dye Doped Polymer Film and Dye Polymer Film*

Yasuaki Itakura, Atushi Fujimoto, Akihiro Tomioka and Sinji Kinoshita (Osaka Electro-Communication University, Japan)

< 10:50 - 11:10 >

EM5 *Molecular Ordering in Self-Organized Dye Particles - Near-Field and Polarized Evanescent-Field Excited Fluorescence Study -*

Sinji Kinoshita, Akihiro Tomioka, Atushi Fujimoto and Yasuaki Itakura (Osaka Electro-Communication University, Japan)

< 11:10 - 11:30 >

EM6 *Adsorption of Dye-doped Polystyrene Spheres and Surface Plasmon Emission Light Properties*

Kazunari Shinbo, Hiroshi Miura, Satoshi Takahashi, Yasuo Ohdaira, Keizo Kato and Futao Kaneko (Niigata University, Japan)

< 11:30 - 11:50 >

EM7 *Observation of a Single Electron on a Alkanethiol-Protected Au Nanodot in a Double-barrier Tunneling Structure by Noncontact Atomic-Force Spectroscopy*

Yasuo Azuma*, Masayuki Kanehara**, Toshiharuru Teranishi** and Yutaka Majima*,*** (*Tokyo Institute of Technology, **University of Tsukuba, ***Japan Science and Technology Agency, Japan)

< Lunch Time > (11:50 – 13:00)

< *Evaluation of organic materials III* >

< 13:00 – 14:30 >

Chairperson: Kazuhiro Kudo (Chiba University, Japan)

< 13:00 – 13:30 > (invite)

EM8 *Enhancement of the OTFT mobility with thermal curable polymer*

Ki-Chul Song, Gi-Heon Kim and Lee-Mi Do (Electronic and Telecommunication Research Institute, Korea)

< 13:30 – 13:50 >

EM9 *In situ observation of reduction behavior of hemoglobin molecules adsorbed on glass surface*

Masayoshi Matsui, Akiko Nakahara* and Naoki Matsuda
(AIST Kyushu, *Kyusyu Sangyo University, Japan)

< 13:50 – 14:10 >

EM10 *Spectroelectrochemical observations for the adsorption process of heptyl viologen cation radicals on ITO electrodes*

Yusuke Ayato and Naoki Matsuda (AIST Kyushu, Japan)

< 14:10 – 14:30 >

EM11 *Electrical properties of organic single molecules in ultra-narrow gold nano-gap electrodes*

Tohru Kubota, Takashi Nagase, Yutaka Noguchi, Rieko Ueda and Shinro Mashiko
(National Institute of Information and Communication Technology, Japan)

< Coffee Brake > (14:30 – 14:50)

< *Fabrication of organic materials I* >

< 14:50 – 16:00 >

Chairperson: Kazuhiro Saito (Advanced Industrial Science and Technology)

< 14:50 – 15:20 > (invite)

FM1 *Functional polymers and Organic/Inorganic Nanocomposites for Optics and Opto-Electronics*

J. Stumpe, O. Kulikovska, O. Sakhno, J. Wagner, L. Goldenberg, T. Smirnova* and S. Slusserenko* (Fraunhofer Institute for Applied Polymer Research, *NASU, Germany)

< 15:20 – 15:40 >

FM2 *Preparation and Evaluation of Aligned Naphthalene Thin Films Using Surface Plasmon Excitation*

Tohru Shimaoka, Hiroaki Kobayashi, Kazuki Yamashita, Yasuo Ohdaira, Kazunari Shinbo, Keizo Kato and Futao Kaneko (Niigata University)

< 15:40 – 16:00 >

FM3 *Non-linear optical properties of C-S-Au film prepared by co-operation process of plasma CVD and sputtering*

Shinya Kato, Shinzo Morita and Shizuyasu Ochiai*
(Nagoya University, *Aichi Institute of Technology, Japan)

< *Fabrication of organic materials II* >

< 16:00 – 17:20 >

Chairperson: Shuichi Nagamatsu (Kyusyu Institute of Technology, Japan)

< 16:00 – 16:20 >

FM4 *Physical Characteristics and Fabrication of Overcoat Resist Film for Color Filters in TFT-based LCD*

H. S. Koo**, H. C. Wu***, P. C. Pan* and T. Kawai** (*Ming-Hsin Univ. of Sci. and Tech., Taiwan, **Osaka University, ***Allied Material Technology Corp., Taiwan)

< 16:20 – 16:40 >

JD7 ← FM5 *Organic Colorant Films Prepared by Inkjet Printing Method and Its Properties*

Po-Chuan Pan, Horng-Show Koo, Mi Chen*, Feng-Mei Wu** and Shinn-Jen Chang** (*University of Tokyo, **Ming-Hsin Univ. of Sci. and Tech., Taiwan, ***Union Chemical Laboratories, Taiwan)

< 16:40 – 17:00 >

FM6 *Writing and Rewriting Memory of Composite Conducting Polymer*

Masaharu Fujii and Haruo Iori (Ehime University, Japan)

< 17:00 – 17:20 >

FM7 *Light-Induced Self-Written Serially Grafted Polymer Optical Waveguides*

Okihiko Sugihara, Shuhei Yasuda and Toshikuni Kaino (Tohoku University, Japan)

< *Concluding remarks* >

< 17:20 – 17:25 >

Closing talk

Vice-chair: Mitsuyoshi Onoda (University of Hyogo, Japan)