

# Young Researchers Society for Flexible and Stretchable Electronics

4th event on July 14-15, 2022

*Yamagata University, Yonezawa Campus, Bldg. 11, 2F, Mirai-Hall*

## July 14 (Thu.) 13:00-18:25

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13:00-13:05	Opening	<b>Introduction of FSE and how to proceed the discussion</b> Prof. Hiroyuki Matsui <i>Yamagata University</i>
13:05-14:05	<b>Keynote Lecture 1</b>	Chairperson: Prof. Hiroyuki Matsui <b>My journey so far across 5 countries, 11 institutions: from bee eye sensor and LCD TV parts engineering, through OLEDs and photosynthetic harvesting, to electroactive bacteria and flexible hybrid electronics</b> Dr. Gábor Méhes <i>Waseda University</i>
14:05-14:35	<b>Oral Session 1(J)</b>	Chairperson: Takashi Sato
14:05-14:20	O-1J	<b>Development of Naphthalene-diimide-based n-Type Semiconducting Polymers with Precicely-designed Thioether-based Stress Relaxation Units</b> Megumi Matsuda <sup>1</sup> , Chia-Yu Lin <sup>2</sup> , Yan-Cheng Lin <sup>2</sup> , Wen-Chang Chen <sup>2</sup> , Tomoya Higashihara <sup>1</sup> <i>1. Department of Organic Materials Science, Yamagata University, 2. National Taiwan University</i>
14:20-14:35	O-2J	<b>Synthesis of novel sequential and branched semiconducting polymers using chain-end-functionalized poly(3-hexylthiophene) with hetero-functional groups at <math>\alpha</math>, <math>\omega</math> chain-ends</b> Shin Inagaki <sup>1</sup> , Yan-Cheng Lin <sup>2</sup> , Wen-Chang Chen <sup>2</sup> and Tomoya Higashihara <sup>1</sup> <i>1. Yamagata University, 2. National Taiwan University</i>
14:35-14:45	Break	

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<b>14:45-15:30</b>	<b>Oral Session 2(E)</b>	Chairperson: Masahito Takakuwa
14:45-15:00	O-1E	<b>Ultrathin and gas-permeable polymer thermistors</b> Chihiro Okutani <sup>1,2</sup> , Tomoyuki Yokota <sup>1</sup> , Takao Someya <sup>1</sup> <i>1. The University of Tokyo, 2. Shinshu University</i>
15:00-15:15	O-2E	<b>Revealing effects of illumination wavelength on the dark current increase of organic photodiodes with ZnO electron transport layer</b> Theodorus Jonathan Wijaya <sup>1</sup> , Tomoyuki Yokota <sup>1</sup> , Sunghoon Lee <sup>1</sup> , Ryo Okano <sup>1</sup> , Masaki Kobayashi <sup>1</sup> , and Takao Someya <sup>1</sup> <i>1. EEIS, The University of Tokyo</i>
15:15-15:30	O-3E	<b>Development of photostable organic photodiode with ZnO nanoparticle</b> Yutaro Kato <sup>1</sup> , Takao Someya <sup>1</sup> , Tomoyuki Yokota <sup>1</sup> <i>1. The University of Tokyo</i>
<b>15:30-16:15</b>	<b>Oral Session 3(J)</b>	Chairperson: Megumi Matsuda
15:30-15:45	O-3J	<b>Fabrication and Evaluation of Printable Gas Biosensor for Determination of ppb Levels of Acetaldehyde in Skin Gases</b> T. Oshimoto <sup>1</sup> , H. Watanabe <sup>1</sup> , N. Loew <sup>1</sup> , M. Motosuke <sup>2</sup> , T. Mikawa <sup>3</sup> , I. Shitanda <sup>1</sup> , and M. Itagaki <sup>1</sup> <i>1. Faculty of Science and Technology of TUS, 2. Faculty of Engineering of TUS, 3. RIKEN</i>
15:45-16:00	O-4J	<b>Development of a Transfer-Printed Chloride Ion Sensor and Ion Monitoring in Human Sweat</b> Naoki Muramatsu <sup>1</sup> , Hikari Watanabe <sup>1</sup> , Noya Loew <sup>1</sup> , Isao Shitanda <sup>1,2</sup> , Masahiro Motosuke <sup>1</sup> , Takahiro Mukaimoto <sup>1</sup> , Momoko Kobayashi <sup>1</sup> , Kensuke Matsuo <sup>1</sup> , Shinya Yanagita <sup>1</sup> , Tatsunori Suzuki <sup>1</sup> , and Masayuki Itagaki <sup>1,2</sup> <i>1. Tokyo university of science, 2. Research Institute for Science and Technology, TUS</i>
16:00-16:15	O-5J	<b>Development of a lactate sensor with microfluidic channels for real-time monitoring of lactate in sweat</b> Y. Ozone <sup>1</sup> , N. Loew <sup>1</sup> , T. Mikawa <sup>2</sup> , M. Motosuke <sup>1</sup> , M. Kobayashi <sup>1</sup> , T. Suzuki <sup>1</sup> , K. Matsuo <sup>1</sup> , T. Mukaimoto <sup>1</sup> , S. Yanagita <sup>1</sup> , H. Watanabe <sup>1</sup> , I. Shitanda <sup>1</sup> , M. Itagaki <sup>1</sup> <i>1. Tokyo University of Science, 2. RIKEN</i>
16:15-16:25	Break	
<b>16:25-17:25</b>	<b>Poster Session 1</b>	P-2, 4, 6, 8... (even number)
<b>17:25-18:25</b>	<b>Poster Session 2</b>	P-1, 3, 5, 7... (odd number)

## July 15(Fri) 8:30-11:50

8:30-9:15	Oral Session 4(J)	Chairperson: Masato Saito
8:30-8:45	O-6J	<b>Precise Synthesis of <math>\alpha</math>, <math>\omega</math>-Chain-End-Functionalized Poly(dimethylsiloxane) with Bromoaryl Groups for Incorporation in Naphthalene-Diimide-Based n-type Semiconducting Polymers</b> Kei-ichiro Sato <sup>1</sup> , Yudai Hemmi <sup>1</sup> , Hiroyuki Matsui <sup>1</sup> , Keita Fuchise <sup>2</sup> , Tomoya Higashihara <sup>1</sup> <i>1. Grad. Org. Mater. Sci., Yamagata Univ. 2. IRC3, AIST</i>
8:45-9:00	O-7J	<b>Study on Measurement Method of Contact Resistance between Galinstan and Copper Electrodes</b> Takashi Sato, Eiji Iwase <i>Waseda University</i>
9:00-9:15	O-8J	<b>Low dark current of ultra-flexible organic photodiode with thick active layer using applicator</b> Kazuma Mori, Takao Someya, Tomoyuki Yokota <i>The University of Tokyo</i>
9:15-10:00	Oral Session 5(E)	Chairperson: Stephen O'Neill
9:15-9:30	O-4E	<b>Flow-induced directed self-assembly strategies for high-resolution freeform soft electronics</b> Lingying Li <sup>1</sup> , Wanli Li <sup>2</sup> , Mizuki Tenjimbayashi <sup>1</sup> , Tomonobu Nakayama <sup>1</sup> , Takeo Minari <sup>1</sup> <i>1. National Institute for Materials Science, 2. Jiangnan University</i>
9:30-9:45	O-5E	<b>Porous carbon-mediator hybrid material by grafting technique enhances the long-term activity of enzyme electrode</b> Md Motaher Hossain, Seiya Tsujimura <i>University of Tsukuba</i>
9:45-10:00	O-6E	<b>Electrochemical SMBG sensor with low sample volume that generates high power from an enzyme-based biofuel cell.</b> Jannatul Morshed, Seiya Tsujimura <i>University of Tsukuba</i>
10:00-10:15	Break	

<b>10:15-10:45</b>	<b>Oral Session 6(J)</b>	Chairperson: Kei-ichiro Sato
10:15-10:30	O-9J	<b>Printable Organic Integrated Circuits for Biosensor Applications</b> Yuki Hommura, Rei Shiwaku, Kuniaki Nagamine, Shizuo Tokito, Hiroyuki Matsui <i>Yamagata University</i>
10:30-10:45	O-10J	<b>Rapid Optimization of Printing Conditions for OFET by Combinatorial Experiments and Bayesian Optimization</b> Ryota Kobayashi, Hiroyuki Matsui, Yudai Hemmi, Yuji Ikeda <i>Yamagata University</i>
<b>10:45-11:45</b>	<b>Keynote Lecture 2</b>	Chairperson: Prof. Tomoya Higashihara
		<b>Breakthrough in Creative Soft Machine Development</b> Dr. Jun Ogawa <i>Yamagata University</i>
<b>11:45-11:50</b>	<b>Closing</b>	<b>Announcement of awards</b> Prof. Tomoya Higashihara, <i>Yamagata University</i>
<b>11:50-12:50</b>	<b>Lab Tour</b>	

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## Poster Presentation

**July 14 (Thu.) 16:25-18:25**

**16:25-17:25 Poster Session 1:** P-2, 4, 6, 8... (even number)

**17:25-18:25 Poster Session 2:** P-1, 3, 5, 7... (odd number)

No.	Title	Authors	Affiliation
P-1J	Hyper Localized Photodynamic Therapy using Thin-Film Light-Emitting Devices	Masato Saito, Takahiro Nomoto, Yasufumi Yokoshiki, Takashi Tokuda, and Toshinori Fujie	Tokyo Institute of Technology
P-2J	Improved stability of printed temperature sensors using polymer semiconductors	Seiga Shinmura, Ryota Kobayashi, Koki Ozawa, Yudai Hemmi, Hiroyuki Matsui	ROEL, Yamagata University
P-3J	Development of capable capacitance synaptic device using organic semiconductor	Hajime Kitami, Kodai Watanabe, Hiroyuki Matsui	ROEL, Yamagata university
P-4J	Exploration of Crystalline Host-Guest Organic Semiconductor Materials by High-Throughput Calculation	Nobuhiro Matsushita, Hiroyuki Matsui	Yamagata university
P-5J	Advanced AI-Assisted Molecular Design System	Ren Sasaki, Tomoharu Okada, Yuki Mochizuki, Hiroyuki Matsui	Yamagata university
P-6J	Intracellular Substance Delivery and Functional Control by Nano-processing Injector	Yuiko Mizuguchi, Yukun Chen, Bowen Zhang, Cui Mingyin, Oyama Kazuhiro, Liu Bingfu, Ma Qiwen, Takeo Miyake	School of Fundamental Science and Engineering, Electronic and Physical Systems, Waseda University
P-7J	Synthesis and OFET characterization of multiblock copolymers comprised of polyisobutene and naphthalene-diimide-based n-type semiconducting polymer segments	Naoki Matsuda <sup>1</sup> , Megumi Matsuda <sup>1</sup> , Yudai Hemmi <sup>1</sup> , Rin Kobayashi <sup>2</sup> , Hiroyuki Matsui <sup>1</sup> , Tomoya Higashihara <sup>1</sup>	1. Graduate School of Organic Science, Yamagata University, 2. Faculty of Engineering, Yamagata University

P-8J	Development of semiconducting polymers with twisted stress relaxation units in their main chains for the application to organic field-effect transistors using stretched thin films	Tomoya Yahagi <sup>1</sup> , Yuto Ochiai <sup>2</sup> , Tomoya Higashihara <sup>1</sup>	1. Graduate school of Organic Materials Science, Yamagata University. 2. Institute of Physical and Chemical Research.
P-9J	Artificial neurons using multiple-input floating-gate organic transistors	Kodai Watanabe, Keita Kawakami, Hajime Kitami, Hiroyuki Matsui	ROEL, Yamagata University
P-10J	Development and characterization of stretchable acceleration sensor	Keita Ito, Yoshinori Shouji, Yasunori Takeda, Yi-Fei Wang, Tomohito Sekine	Yamagata university
P-11J	Development of soft actuator with functional polymeric materials	Yoshinori Shouji, Keita Ito, Yasunori Takeda, Yi-Fei Wang, Tomohito Sekine	Yamagata university
P-12J	Development of the wearable sensor for monitoring sweat ammonium ion	T. Ozawa, K. Nagamine and H. Matsui	Graduate School of Organic Materials Science, Yamagata University
P-13J	Development of the electrochemical DNA sensor using DNA nano-tweezers	Kotaro Kato <sup>1</sup> , Naoki Narisawa <sup>1</sup> , Hisakage Funabashi <sup>2</sup> and Kuniaki Nagamine <sup>1</sup>	1. Grad. Sch. Org. Mat. Sci., Yamagata Univ., 2. Hiroshima Univ.
P-14J	Development of the electrical stimulation control system for Bacillus subtilis membrane potential using conductive polymer-modified electrodes	Daiki Makino, Aoba Ueki, Kuniaki Nagamine	Grad. Sch. Org. Mat. Sci., Yamagata Univ.
P-15J	Fabrication of Organic Thin-Film Transistors on Nanofilm	Chika Okuda, Sunghoon Lee, Takao Someya, Tomoyuki Yokota	Graduate School of Engineering, The University of Tokyo
P-16J	On-skin stealth sensors by ultra-thin and stretchable electronics	Yuanyuan Zhou <sup>1</sup> , Soutaro Ito <sup>1</sup> , Hinata Mitomo <sup>1</sup> , Riku Nakagawa <sup>1</sup> , Takeo Kato <sup>1</sup> , Naoji Matsuhisa <sup>2</sup>	1. Keio University, 2. The University of Tokyo

P-1E	Flexible Solution-Processed Electron-Transport Layer-free Organic Photovoltaics for Indoor Application	Jiachen Wang <sup>1,2</sup> , Kenjiro Fukuda <sup>2</sup> , Takao Someya <sup>1,2</sup>	1. The University of Tokyo, 2. RIKEN
P-2E	Interfacial toughening towards mechanical reliable organic solar cells	Baocai Du <sup>1,2</sup> , Kenjiro Fukuda <sup>2,3</sup> , and Takao Someya <sup>1,2,3</sup>	1. The University of Tokyo, 2. Center for Emergent Matter Science, RIKEN, 3. Thin-Film Device Laboratory, RIKEN
P-3E	Development of Parylene Direct Bonding with Low-temperature via Plasticizer Effects of Water	Masahito Takakuwa <sup>1,2</sup> , Daishi Inoue <sup>2</sup> , Kenjiro Fukuda <sup>2</sup> , Tomoyuki Yokota <sup>3</sup> , Shinjiro Umezu <sup>1</sup> , Takao Someya <sup>2,3</sup>	1. Waseda univ., 2. RIKEN, 3. University of Tokyo
P-4E	Universal Assembly of Liquid Metal Particles in Polymers Enabled Elastic PCB Technology	Wonbeom Lee <sup>1</sup> , Hyunjun Kim <sup>1</sup> , Jiheong Kang <sup>1</sup>	Korea Advanced Institute of Science and Technology
P-5E	Supramolecularly Polymerizable Photopolymer for Tough 3D Architecture	Hae-Seung Lee, Jiyun Kim, Hyunchang Park and Jiheong Kang	Korea Advanced Institute of Science and Technology
P-6E	Static Electricity Imaging by Extended-Gate Organic FET Array	Yudai Hemmi, Itsuki Shoji, Kodai Uto, Hideki Wada, Hiroyuki Matsui	Dept. of Organic Materials Science, Yamagata University
P-7E	Electrically and Ionically Conductive Supramolecular Hydrogels for Bioelectronic Applications	Stephen J.K. O'Neill, Zehuan Huang, Jade A. McCune, George G. Malliaras, Oren A. Scherman	The University of Cambridge, The University of Tokyo