

2024 年度第 1 回生物電気化学研究会ワークショップ

(共主催：東京理科大学 総合研究院ウォーターフロンティア研究センター，
先端エネルギー変換研究部門，東京大学生産技術研究所)

(東京理科大学野田キャンパス，7号館6階講堂)

First Bioelectrochemistry Workshop in 2024 on April 4, 2024 co-organized by Water Frontier Research Center (WaTUS) and Research Group for Advanced Energy Conversion, Research Institute for Science and Technology (RIST), Tokyo University of Science (TUS) and Institute of Industrial Science, The University of Tokyo

Tokyo University of Science Noda campus, Bldg. 7, 6th Floor Auditorium

April 4(Thu.) 9:45-12:30

9:45-10:00	Welcome drink	
10:00-10:05	Opening ceremony	Introduction of the symposium and how to proceed the discussion Prof. Isao Shitanda Tokyo University of Science
10:05-11:05	Lecture 1	Chairperson: Prof. Seiya Tsujimura
10:05-10:35	L-1	Printed biosensors and biofuel cells for novel wearable healthcare devices Isao Shitanda Tokyo University of Science

10:35-11:05	L-2	Microfluidic approach for advanced cell assay and nanoparticle manipulation Masahiro Motosuke Tokyo University of Science
11:05-11:15		Coffee break
11:15-12:30	Oral Session 1	Chairperson: Prof. Masahiro Motosuke
11:15-11:30	O-1	Structural Changes in Lactate Oxidase Using Small Angle X-ray Scattering <u>Chiaki Sawahara</u> ¹⁾ , Chika Miura ¹⁾ , Noya Loew ¹⁾ , Saki Otobe ²⁾ , Taku Ogura ^{2,3)} , Yuichi Takasaki ⁴⁾ , Hikari Watanabe ¹⁾ , *Isao Shitanda ^{1,3)} , Masayuki Itagaki ^{1,3)} ¹⁾ Tokyo University of Science (TUS), ²⁾ Nikko Chemicals Co. Ltd., ³⁾ Research Institute for Science and Technology, TUS. ⁴⁾ Anton Paar Japan K.K.
11:30-11:45	O-2	Nature-Inspired Superhydrophilic Biosponge as a Structural Beneficial Platform for Sweating Analysis Patch <u>Ding Hanlin</u> , Seiya Tsujimura University of Tsukuba
11:45-12:00	O-3	Development of wearable device for monitoring sweat rate <u>Hidefumi Yoshizawa</u> , Yuki Morishita, Yoshiyasu Ichikawa, Masahiro Motosuke Tokyo University of Science
12:00-12:15	O-4	Analysis of Biodevices by Finite Element Simulation <u>Noya Loew</u> , Isao Shitanda, Hikari Watanabe, Masayuki Itagaki Tokyo University of Science
12:15-13:15		Lunch

13:15-13:50

Lab Tour

April 4(Thu.) 14:10-15:45

14:10-16:00 Lecture 2		Chair parson: Prof. Naoji Matsuhisa and Prof. Noboru Katayama
14:10-14:40	L-3	Designing materials for wearable biosensors and biofuel cells Seiya Tsujimura University of Tsukuba
14:40-15:05	L-4	Enzyme immobilization for stable enzymatic electrodes for wearable and implantable biosensors and biofuel cells Abdelkader Zebda University Grenoble Alpes
15:05-15:35	L-5	Skin-conformable sensors and devices using stretchable electronic materials Naoji Matsuhisa The University of Tokyo
15:35-16:05	L-6	Design optimization of paper-based biofuel cells using numerical models Noboru Katayama Tokyo University of Science

Poster Presentation

April 4 (Thu.) 16:10-17:40

16:10-16:55 Poster Session 1: P-1, 3, 5, 7... (odd number)

16:55-17:40 Poster Session 2: P-2, 4, 6, 8... (even number)

No.	Title	Authors	Affiliation
P-1	Fabrication and Evaluation of Printable Stretchable Lactic Acid Sensor Using LOx/Thionine	<u>Y. Tanaka</u> ¹⁾ , N. Loew ¹⁾ , T. Mikawa ²⁾ , Hiroyuki Matsui ³⁾ , Y. Morishita ¹⁾ , M. Motosuke ¹⁾ , M. Kobayashi ¹⁾ , T. Suzuki ¹⁾ , T. Mukaimoto ¹⁾ , S. Yanagita ¹⁾ , H. Watanabe ¹⁾ , I. Shitanda ¹⁾ and M. Itagaki ¹⁾	¹⁾ Tokyo University of Science, ²⁾ RIKEN, ³⁾ Yamagata University
P-2	A Stretchable skin-like multimodal sensor based on piezoelectric and ionic composite	<u>Wang Liren</u> ^{1,2)} , Yuanyuan Zhou ^{1,2)} , Peter Zalar ³⁾ , Naoji Matsuhisa ^{1,2)}	¹⁾ The University of Tokyo, ²⁾ Keio University, ³⁾ Holst Centre
P-3	Thin-Film Stretchable Conductors Based on Self-Doped Polymers	<u>Tokihiko Shimura</u> ^{1,2)} , Minoru Ashizawa ³⁾ , Yicheng Zhu ¹⁾ , Taizo Tominaga ^{1,2)} , and Naoji Matsuhisa ^{1,2)}	¹⁾ The University of Tokyo, ²⁾ Keio University, ³⁾ Tokyo Institute of Technology
P-4	Invisible Bio-electrodes with High Stretch Conductivity	<u>Yijun Liu</u> ¹⁾ , Soutaro Ito ^{1,2)} , Liren Wang ^{1,2)} , Yuanyuan Zhou ^{1,2)} , Hinata Mitomo ^{1,2)} , Takeo Kato ²⁾ , Hidetoshi Takahashi ²⁾ , Makoto Asai ²⁾ , Naoji Matsuhisa ^{1,2)}	¹⁾ The University of Tokyo, ²⁾ Keio University
P-5	A Photo-Patternable Stretchable Gold Conductor by Electroless Plating Process	<u>Hinata Mitomo</u> ^{1,2)} , Keita Suzuki ³⁾ , Katsuya Tennichi ^{3,4)} , Yuanyuan Zhou ^{1,2)} , Naoji Matsuhisa ^{1,2)}	¹⁾ The University of Tokyo, ²⁾ Keio University, ³⁾ TANAKA Kikinzoku Kogyo K.K., ⁴⁾ EEJA Ltd.
P-6	Intrinsically stretchable thin film organic photodiodes	<u>Yuanyuan Zhou</u> ^{1,2)} , Yuto Ochiai ³⁾ , Kaita Takemoto ¹⁾ , Minoru Ashizawa ⁴⁾ , Ting-Wei Chang ⁵⁾ , Takuji Takahashi ¹⁾ , Chien-Chung Shih ⁵⁾ , Naoji Matsuhisa ^{1,2)}	¹⁾ The University of Tokyo, ²⁾ Keio University, ³⁾ RIKEN, ⁴⁾ Tokyo Institute of Technology, ⁵⁾ National Yunlin University of Science and

			Technology
P-7	Design of high-performance biocathode by enzyme cross-linking with multifunctional epoxy compound and electrode surface treatment	<u>Makiko Oyama</u> , and Seiya Tsujimura	Univ. Tsukuba
P-8	Separation of electrochemical signals by ohmic drop between electrodes arranged in a matrix configuration	<u>Xiong Jian</u> , and Seiya Tsujimura	Univ. Tsukuba
P-9	Development of new self-driving glucose biosensor using thin layer electrode	<u>Masahiro Kanno</u> , and Seiya Tsujimura	Univ. Tsukuba
P-10	Evaluation of enzyme cascade electrode reactions at nanoscale area	<u>Kotoko Ariga</u> , and Seiya Tsujimura	Univ. Tsukuba
P-11	Potential Control for Bipolar Electrochemical Systems by Closed Circuits Including Ion-Selective Electrodes	<u>Deng Yi</u> , and Seiya Tsujimura	Univ. Tsukuba
P-12	Construction of New Type Microbial Fuel Cells - Electrogenic Expression and High-salt Wastewater Application Analysis	<u>Jialei Lu</u> , and Seiya Tsujimura	Univ. Tsukuba
P-13	Unravelling the stable poly serotonin modified electrode for hydrogen peroxide reduction	<u>Shalini devi K.</u> , and Seiya Tsujimura	Univ. Tsukuba
P-14	Developing a novel redox polymer containing quinoline-5,8-dione	<u>Yutaro Sakano</u> , and Seiya Tsujimura	Univ. Tsukuba
P-15	Development of Porous Carbon Sheet for Application in Flexible devices	<u>Sho Sugimoto</u> , and Seiya Tsujimura	Univ. Tsukuba

P-16	A Novel Nest Like Structure of ZIF67-CNT-Naphthoquinone Sulfonate as Redox Active Material for Efficient and Stable Mediated FADGDH Glucose sensing	<u>Rezki Muhammad</u> , and Seiya Tsujimura	Univ. Tsukuba
P-17	Phenothiazines-grafted porous carbon materials	<u>Md Motaher Hossain</u> , and Seiya Tsujimura	Univ. Tsukuba
P-18	Printable Ethanol Sensor Using Alcohol Dehydrogenase-Modified Porous Carbon Electrode	<u>H. Jibiki</u> ¹⁾ , H. Watanabe ¹⁾ , N. Loew ¹⁾ , I. Shitanda ¹⁾ , and M. Itagaki ¹⁾	¹⁾ Tokyo University of Science
P-19	Wearable dual sensor for simultaneous determination of lactate and pH concentration in sweat during exercise	<u>Momo Chiba</u> ¹⁾ , Hikari Watanabe ¹⁾ , Isao Shitanda ¹⁾ , Masayuki Itagaki ¹⁾ Yuuro Oozone ¹⁾ , Noya Loew ¹⁾ , Tutomu Mikawa ²⁾ , Masahiro Motosuke ¹⁾ , Momoko Kobayashi ¹⁾ , Tatsuki Suzuki ¹⁾ , Hiroto Mituhara ¹⁾ , Yamato Sugita ¹⁾ , Takahiro Mukaimoto ¹⁾ , Shinya Yanagida ¹⁾	¹⁾ Tokyo University of Science, ²⁾ RIKEN
P-20	Electrochemical evaluation of polymer coating removal using nanostructured fluids (NSF)	<u>Y. Saito</u> , T. Ogura, H. Watanabe, I. Shitanda, M. Itagaki	Tokyo University of Science
P-21	Evaluation of slurries including KB and LCO by rheo-impedance measurement	<u>K. Sugaya</u> ¹⁾ L. Noya, ¹⁾ Y. Yamagata ²⁾ K. Miyamoto, ²⁾ H. Watanabe, ¹⁾ I. Shitanda, ¹⁾ M. Itagaki ¹⁾	¹⁾ Tokyo University of Science, ²⁾ Anton Paar Japan K. K.
P-22	Effect of Electrolyte on Lamellar / Vesicle Phase Transition by Rheo-Impedance Measurement	<u>Ryo Kotsubo</u> , ¹⁾ Noya Loew, ¹⁾ Taku Ogura, ¹⁾ Yoshifumi Yamagata, ²⁾ Keisuke Miyamoto, ²⁾ Hikari Watanabe, ¹⁾ Isao Shitanda, ¹⁾ and Masayuki Itagaki ¹⁾	¹⁾ Tokyo University of Science, ²⁾ Anton Paar Japan K. K.
P-23	MgO-templated grafted carbons using NHS and fabrication and evaluation of glucose sensors.	<u>Takeru Sakai</u> , ¹⁾ Takeru Samori, ¹⁾ Noya Loew, ¹⁾ Seiya Tsujimura, ²⁾ Hikari Watanabe, ¹⁾ Isao Shitanda, ¹⁾ and Masayuki Itagaki ¹⁾	¹⁾ Tokyo University of Science, ²⁾ University of Tsukuba

P-24	Monitoring of lactate in sweat using a self-driven biosensor screen-printed on paper substrate	<u>T. Samori</u> ¹⁾ , N. Loew ¹⁾ , T. Mikawa ²⁾ , M. Motosuke ¹⁾ , M. Kobayashi ¹⁾ , T. Suzuki ¹⁾ , T. Mitsuhashi ¹⁾ , Y. Sugita ¹⁾ , T. Mukaimoto ¹⁾ , S. Yanagita ¹⁾ , H. Watanabe ¹⁾ , I. Shitanda ¹⁾ , and M. Itagaki ¹⁾	¹⁾ Tokyo University of Science, ²⁾ RIKEN
P-25	Electrochemical Measurement System using Three-Electrode Sticker Device with Electrolyte Gel	<u>Yuri Okamoto</u> , ¹ Yuma Sakaeda, ¹ Loew Noya, ¹ Naoji Matsuhisa, ² Kuniaki Nagamine, ³ Hikari Watanabe, ¹ Isao Shitanda, ¹ and Masayuki Itagaki ¹	¹⁾ Tokyo University of Science, ²⁾ University of Tokyo, ³⁾ Yamagata University
P-26	Optimization of electrode shapes for paper-based biofuel cells.	<u>Eitatsu Ike</u> , Shota Senoo, Rintaro Yamanaka, Noboru Katayama, Isao Shitanda	Tokyo University of Science,
P-27	Simulation considering concentration overvoltage in paper-based biofuel cells	<u>Shota Senoo</u> , Eitatsu Ike, Rintaro Yamanaka, Noboru Katayama, Isao Shitanda	Tokyo University of Science,

17:45:19:00 懇親会@7号館6階大会議室1 (Reception @ Bldg. 7, 6th floor conference room)

主催：四反田 功（東京理科大学），松久 直司（東京大学）

共催：東京理科大学総合研究院ウォーターフロンティア研究センター，先端エネルギー変換研究部門

オーガナイザー：四反田 功（東京理科大学），松久 直司（東京大学），元祐 昌廣（東京理科大学），辻村 清也（筑波大学）

参加方法：事前登録制 参加希望の方は先端化学科 四反田(shitanda@rs.tus.ac.jp)まで、4月1日までにメールにてご連絡ください。当日の飛び入り

参加はお断りさせていただきます。