

External Presentations

Main Submitted Theses and Oral Presentations

April 1, 2024 - March 31, 2025

The papers posted here have been published in English - language journals and in Japanese - language journals with English titles. Conference presentations have been given at international conferences and at Japanese conferences with English titles.

Organic & polymer material function design

Machine learning prediction of the mechanical properties of injection-molded polypropylene through X-ray diffraction analysis

R. Tamura*2, K. Nagata*2, K. Sodeyama*2, K. Nakamura*2,3, T. Tokuhira*2,3, S. Shibata*1,2, K. Hammura*2,4, H. Sugisawa*2,5, M. Kawamura*2,5, T. Tsurimoto*2,5, M. Naito*2, M. Demura*2, T. Nakanishi*2 (*1 Essential Chemicals Research Laboratory, *2 National Institute for Materials Science, *3 Mitsui Chemicals, Inc., *4 Asahi KASEI Corporation, *5 Mitsubishi Chemical Corporation)
Science and Technology of Advanced Materials, 25(1), (2024)

Inorganic material function design

Alumina ceramic firing efficiency in the challenging energy cost Environment

Y. Kawamura (Energy & Functional Materials Research Laboratory)
Ceramitec 2024 (Germany), April 9 - 12, 2024

Device design

Large Forward Current Operation of Vertical GaN p-n Junction Diodes Fabricated on Extra-Heavily Ge-doped GaN Substrates

T. Mishima*, H. Ohta*, T. Sato, Y. Narita, T. Kitamura, T. Fujimoto, H. Fujikura (IT-related Chemicals Research Laboratory, *Hosei University)
12th International Workshop on Nitride Semiconductors (IWN 2024) (U.S.A.), November 3 - 8, 2024

Biological Mechanism Analysis

Identification and characterization of a novel circular bacteriocin, garvicin SC, a novel garvicin ML variant, produced by *Lactococcus garvieae* ABG0038

Y. Komori, N. Ozawa, H. Kuwahara, T. Zendo*, M. Aoki (Bioscience Research Laboratory, *Kyushu University)
Journal of Bioscience and Bioengineering, 139(2), 95 (2025)

Organic synthesis

Synthesis and characterization of dicationic ionic liquids with the difluorophosphate anion

K. Kamada*1, T. Nokami*2, H. Nakajima, N. Inui*1, K. Nishimoto*1, J. Hwang*1, K. Matsumoto*1 (ICT & Mobility Solutions Research Laboratory, *1 Kyoto University, *2 Tottori University)
PRiME 2024 (U.S.A.), October 6 - 11, 2024

Inorganic synthesis

Switching of major nonradiative recombination centers (NRCs) from carbon impurities to intrinsic NRCs in GaN crystals

K. Sano*, H. Fujikura, T. Konno, S. Kaneki, S. Ichikawa*, K. Kojima* (Ibaraki Works, *Osaka University)
Applied Physics Letters, 124(23), 231101 (2024)

Recent progress in HVPE - based GaN and AlGaN growth

H. Fujikura, T. Konno, T. Fujimoto, S. Kaneki, T. Kikuchi, K. Matsuda, Y. Narita, K. Okuyama, T. Sato (IT-related Chemicals Research Laboratory)
12th International Workshop on Nitride Semiconductors (IWN 2024) (U.S.A.), November 3 - 8, 2024

Evaluation of defect density in bulk gallium nitrides by photothermal deflection spectroscopy and steady-state photocapacitance methods

M. Sumiya*¹, H. Fujikura, Y. Nakano*², S. Yashiro*^{1,3}, Y. Koide*¹, T. Honda*³ (Ibaraki Works, *¹ National Institute for Materials Science, *² Chubu University, *³ Kogakuin University)
Journal of Crystal Growth, 635, 127701 (2024)

Recent progress in HVPE-based GaN substrate fabrication

Hajime Fujikura, Taichiro Konno, Shota Kaneki, Masafumi Yokoyama, Tetsuji Fujimoto, and Takashi Sato (IT-related Chemicals Research Laboratory)
SPIE Photons West (U.S.A.), January 28 - 30, 2025

Analysis of chemical and physical properties

Investigation of molecular weight dependency of Hansen solubility parameters for poly(methyl methacrylate) using inverse gas chromatography

S. Nakamoto*^{1,2}, K. Fujie*², H. Yamamoto*² (*¹ ICT & Mobility Solutions Research Laboratory, *² Kansai University)
Industrial & Engineering Chemistry Research 64(1), 81 (2025)

Development and validation of LC/MS/MS quantification method for plantaricins in culture supernatant

Y. Komori, H. Kuwahara, M. Aoki (Bioscience Research Laboratory)
Journal of Pharmaceutical and Biomedical Analysis Open, 4, 100043 (2024)

Structural and optical properties of epitaxial ScxAl1-xN coherently grown on GaN bulk substrates by sputtering method

T. Maeda*¹, Y. Wakamoto*¹, S. Kaneki, H. Fujikura, A. Kobayashi*² (IT-related Chemicals Research Laboratory, *¹ The University of Tokyo, *² Tokyo University of Science)
Applied Physics Letters, 125, 022103 (2024)

Evaluation for in-plane distribution of quantum efficiency in low carbon concentration GaN wafer based on omnidirectional photoluminescence mapping measurements

K. Sano*, H. Fujikura, T. Konno, S. Kaneki, S. Ichikawa*, K. Kojima* (IT-related Chemicals Research Laboratory, *Osaka University)
12th International Workshop on Nitride Semiconductors (IWN 2024) (U.S.A.), November 3 – 8, 2024

Toxicological safety assessment

Comparative evaluation of trimethylated α -, β -, and γ -cyclodextrins as optimal dispersants for ready biodegradability testing of poorly water-soluble substances

Y. Takano*^{1,2}, S. Takekoshi*¹, K. Takano*¹, Y. Matoba*¹, M. Mukumoto*¹, K. Sowa*², Y. Kitazumi*², O. Shirai*² (*¹ Environmental Health Science Laboratory, *² Kyoto University)
Journal of Pesticide Science, 49(4), 210 (2024)

A suitable solvent for adsorption of poorly water-soluble substances onto silica gel in a ready biodegradability test

Y. Takano*^{1,2}, S. Takekoshi*¹, K. Takano*¹, Y. Matoba*¹, M. Mukumoto*¹, K. Sowa*², Y. Kitazumi*², O. Shirai*² (*¹ Environmental Health Science Laboratory, *² Kyoto University)
Journal of Pesticide Science, 49(4), 271 (2024)

Perinatal maternal exposure to high-dose sodium phenobarbital in the modified comparative thyroid assay: no significant reduction in thyroid hormones in pups despite notable effects in dams

H. Suto, K. Ogata, K. Minami, A. Sato*, N. Tomiyama*, T. Kosaka*, H. Hojo*, N. Takahashi*, H. Aoyama*, T. Yamada (Environmental Health Science Laboratory, *The Institute of Environmental Toxicology)
The Journal of Toxicological Sciences, 49(11), 509 (2024)

The effects of anemia on the timing of pubertal onset in female rats

M. Shimada, Y. Hosokawa, R. Ihara, K. Ogata, K. Iwashita, R. Matsuyama, H. Asano (Environmental Health Science Laboratory, *Environmental Health Division)
The Journal of Toxicological Sciences, 50(2), 83 (2025)

Optimal testing time for cerebral heterotopia formation in the rat comparative thyroid assay, a downstream indicator for perinatal thyroid hormone insufficiency

K. Ogata, H. Suto, A. Sato*, K. Maeda, K. Minami, N. Tomiyama*, T. Kosaka*, H. Hojo*, N. Takahashi*, H. Aoyama*, T. Yamada (Environmental Health Science Laboratory, *The Institute of Environmental Toxicology)
Journal of Toxicologic Pathology, 37(4), 173 (2024)

Suppression of the epithelial-mesenchymal transition and maintenance of the liver functions in primary hepatocytes through dispersion culture within a dome-shaped collagen matrix

Y. Tonooka, T. Takaku, M. Toyoshima, Y. Takahashi, S. Kitamoto (Environmental Health Science Laboratory)
Biological and Pharmaceutical Bulletin, 47(7), 1241 (2024)

Prenatal test cohort of a modified rat comparative thyroid assay adding brain thyroid hormone measurements and histology but lowering group size appears able to detect disruption by sodium phenobarbital

K. Minami, A. Sato*, N. Tomiyama*, K. Ogata, T. Kosaka*, H. Hojo*, N. Takahashi*, H. Suto, H. Aoyama*, T. Yamada (Environmental Health Science Laboratory, *The Institute of Environmental Toxicology)
Current Research in Toxicology, 6, 100168 (2024)

Hepatic enzyme induction and its potential effect on thyroid hormone metabolism in the metamorphosing tadpole of *Xenopus laevis* (African clawed frog)

K. Wada, T. Yamaguchi, H. Tanaka, T. Fujisawa (Environmental Health Science Laboratory)
Journal of Applied Toxicology, 44(11), 1773 (2024)

Fugacity model incorporating computational fluid dynamics to predict the behavior of insecticide sprayed in a room

S. Tanaka, Y. Matoba, H. Kondo*1, T. Ihara*2 (Environmental Health Science Laboratory, *1 National Institute of Advanced Industrial Science and Technology, *2 The University of Tokyo)
International Society of Indoor Air Quality and Climate, Indoor Air 2024 (U.S.A), July 7 - 11, 2024

Biotransformation assay using precision-cut tissue slice of common carp (*Cyprinus carpio*)

D. Kawaguchi, C. Miyata, T. Fujisawa (Environmental Health Science Laboratory)
SETAC North America 45th Annual Meeting (U.S.A.), October 20 - 24, 2024

Mode of action analysis for mouse lung tumors induced by permethrin: Involvement of CYP2F2 enzyme and human relevancy

K. Kawamoto, D. Hasegawa, K. Ogata, S. Fukunaga, H. Asano (Environmental Health Science Laboratory)
The SOT 64th Annual Meeting and ToxExpo (U.S.A), March 16 - 20, 2025

Evaluation of phenobarbital-induced perturbation of thyroid hormone in wild type and CAR knockout mice using micro-sampling technique

J. Yano, K. Maeda, S. Fukunaga, H. Asano (Environmental Health Science Laboratory)
The 51st Annual Meeting of the Japanese Society of Toxicology (Fukuoka, Japan), July 3 - 5, 2024

Evaluation of developmental neurotoxicity due to thyroid hormone disrupting effects of chemicals: Current status of efforts aimed at developing new evaluation methods

T. Yamada (Environmental Health Science Laboratory)
The 51st Annual Meeting of the Japanese Society of Toxicology (Fukuoka, Japan), July 3 - 5, 2024

Investigation of cytotoxicity indicators in miniaturized Ames test (Ames MPF assay)

A. Maruchi, R. Matsuyama, H. Asano (Environmental Health Science Laboratory)

The Japanese Environmental Mutagen and Genome Society (JEMS) (Okayama, Japan), December 7 - 8, 2024

Omics technology

Assessing the impact of *Lactiplantibacillus plantarum* feed additive on *Vibrio parahaemolyticus* crosstalk and the gill and gut microbiota compositions in *Penaeus vannamei*

J. P. M. D. Guzman*, S. M. Mamburi*, K. Konishi*, M. Aoki, H. Kuwahara, K. Mikata, K. Koiwai*, H. Kondo*, I. Hirono* (Bioscience Research Laboratory, *Tokyo University of Marine Science and Technology) Aquaculture, 598, 742092 (2025)

Transcriptome analyses of mRNA and circular RNAs reveal dietary supplementation with freeze-dried *Lactiplantibacillus plantarum* primes immune memory of White leg shrimp (*Penaeus vannamei*) against pathogens

J. P. M. D. Guzman*, R. Nozaki*, M. Aoki, H. Kuwahara, K. Mikata, K. Koiwai*, H. Kondo*, I. Hirono* (Bioscience Research Laboratory, *Tokyo University of Marine Science and Technology) Fish & Shellfish Immunology, 157, 110091 (2025)

Feeding inactivated *Lactiplantibacillus plantarum* strain ABG0016 improves broiler performance under necrotic enteritis challenge

H. Kondo, D. Matsui*¹, Charles Hofacre*², Matthew Jones*², S. Iino, T. Fukuda, T. Tounoue*¹, I. Shinzato*¹, M. Aoki (Bioscience Research Laboratory, *¹ Animal Nutrition Division, *² Southern Poultry Research Group) Poultry Science Association 2024 Annual meeting (U.S.A.), July 15 - 18, 2024

Food supply field

In vitro and *in planta* investigation of succinate dehydrogenase inhibitor resistance conferred by target-site amino acid substitution in *Puccinia horiana*, chrysanthemum white rust

Y. Matsuzaki, T. Harada, F. Iwahashi (Health & Crop Sciences Research Laboratory) Pest Management Science, 80(6), 2874 (2024)

Resistance profile study of SU-resistant *Sagittaria trifolia* in a comparison of seedlings and tuber-derived plants

K. Ohta*^{1,2}, Y. Sada*¹ (*¹ Health & Crop Sciences Sector, *² Kyoto University) Weed Biology and Management, 24(4), 144 (2024)

Connecting genes to whole plants in dilution effect of target-site ALS inhibitor resistance of *Schoenoplectiella juncooides* (Roxb.) Lye (Cyperaceae)

K. Ohta*^{1,2}, E. Kawamata*¹, T. Hori*¹, Y. Sada *¹ (*¹ Health & Crop Sciences Sector, *² Kyoto University) Pesticide Biochemistry and physiology 203, 105984 (2024)

Discovery of a novel anti-tubulin fungicide pyridachlometyl

M. Yamamoto, A. Manabe, Y. Matsuzaki, T. Harada, F. Iwahashi (Health & Crop Sciences Research Laboratory) ACS Fall 2024 (U.S.A.), August 18 - 22, 2024

Effects of dietary S - abscisic acid (S-ABA) supplementation on the reproductive performances of sows

I. Shinzato, D. Matsui, T. Hiraoka*, T. Tonoue (Animal Nutrition Division, *Valent BioSciences LLC) American Society of Animal Science 2025 Midwest Section Meeting (U.S.A.), March 9 - 12, 2025

Pyrethrins act as feeding deterrents by irritating the insect oral taste organs through the intrinsic neurotoxic actions

T. Kojima, S. Yamato (Health & Crop Sciences Research Laboratory)

27th International Congress of Entomology (ICE2024) (Kyoto, Japan), August 25 - 30, 2024

Health care field

Synthesis and structural confirmation of artemisidiyne A, a cytotoxic compound isolated from the white mugwort, *Artemisia lactiflora*

T. Shioda, H. Okamura*, Y. Ogura*, H. Takikawa* (Health & Crop Sciences Research Laboratory, *The University of Tokyo)

Tetrahedron 165, 134190 (2024)

Synthesis of the proposed structure for artemisidiyne A, an antitumor compound isolated from *Artemisia lactiflora*, and proposal for its structural revision

T. Shioda*1,2, H. Okamura*2, Y. Ogura*2, H. Takikawa*2 (*1 Health & Crop Sciences Research Laboratory, *2 The University of Tokyo)

Tetrahedron Letters, 140, 155020 (2024)

Enhanced sensitivity of chimeric insect olfactory co-receptors for detecting odorant molecules

T. Takaku, Y. Tonooka, Y. Takahashi, S. Kitamoto (Environmental Health Science Laboratory)

Biochemical and Biophysical Research Communications, 726, 150273 (2024)

Capsaicin preferentially inhibits slow-inactivation sodium currents in insects

M. Kamezaki, *H. Nishiwaki (Health & Crop Sciences Research Laboratory, *Ehime University)

Toxicon, 256, 108264 (2025)

HAA-based ion pair reversed phase HPLC method for more accurate gRNA purity test

T. Kano, M. Shibata, D. Furukawa, R. Takeshita, K. Ito, H. Kawai, Y. Fujii, H. Ihara, J. Yasuoka (Health & Crop Sciences Research Laboratory)

American Society of Gene + Cell Therapy (U.S.A.), May 7 - 11, 2024

Sumitomo's technology for highly pure long RNAs with chemical modifications

T. Kano, R. Takeshita, K. Ito, M. Shibata, D. Furukawa, H. Kawai, H. Ihara, J. Yasuoka (Health & Crop Sciences Research Laboratory)

TIDES USA (U.S.A.), May 14 - 17, 2024

Unveiling impurities of chemically synthesized gRNAs

H. Kawai (Health & Crop Sciences Research Laboratory)

TIDES USA (U.S.A.), May 14 - 17, 2024

A Challenge to the chemical synthesis of ultra-long RNAs up to 200 mer

Y. Tanaka (Advanced Medical Solutions Research Laboratory)

TIDES Europe 2024 (Germany), November 12 - 14, 2024

Two TAL effector-directed nuclear base editing with a single-strand DNA-specific deaminase and a novel nicking enzyme

T. Sakuma*1, N. Nishibori*2, H. Kubota, T. Yoshima (Bioscience Research Laboratory, *1 Kyoto University, *2 Hiroshima University)

IAS Frontiers in Genome Engineering Conference (Singapore), November 13 - 15, 2024

Nuclear base editing with a novel nicking enzyme and a single - strand DNA - specific deaminase fused with TAL effectors

T. Sakuma*¹, N. Nishibori*², H. Kubota, T. Yoshima (Bioscience Research Laboratory, *¹ Kyoto University, *² Hiroshima University)

17th International Symposium on Nanomedicine (Aichi, Japan), December 2 - 4, 2024

Development of precise and highly efficient gene knock-in technology using FirmCut Platinum TALE nickases

M. Akase*, T. Yoshima, T. Sakuma* (Bioscience Research Laboratory, *Kyoto University)

17th International Symposium on Nanomedicine (Aichi, Japan), December 2 - 4, 2024

A novel system for nuclear base editing with a newly developed nicking enzyme and a single-strand DNA - specific deaminase fused with TAL effectors

T. Sakuma*¹, N. Nishibori*², H. Kubota, T. Yoshima (Bioscience Research Laboratory, *¹ Kyoto University, *² Hiroshima University)

KEYSTON PRECISION GENOME ENGINEERING (Ireland), March 3 - 6, 2025

ICT related field

Fabrication of free-standing GaN substrates using electrochemically formed porous separation layers

M. Yokoyama, F. Horikiri, H. Mori, T. Konno, H. Fujikura (Ibaraki Works)

Applied Physics Express, 17(5), 055502 (2024)

Polymer color conversion materials for display panels

S. Yamauchi, K. Kohiro, T. Sato, S. Akahori, M. Yoshioka, Y. Tsubata (Advanced Materials Development Laboratory)

The 31st International Display Workshops (IDW '24) (Hokkaido, Japan), December 4 - 6, 2024

Carbon neutrality

Boosting lithium ion conduction of carboxylate-type single-ion conducting polymers through complexation with ionic liquids for lithium-ion batteries

D. Kim*, H. Nakajima, D. Inokuchi, I. Yamada*, J. Hwang*, T. Abe*, K. Matsumoto*, N. Inui* (Energy & Functional Materials Research Laboratory, *Kyoto University)

Batteries & Supercaps 2024, 7, e202400270

Synthesis and characterization of dicationic ionic liquids with the difluorophosphate anion

K. Kamada*¹, T. Nokami*², H. Nakajima, K. Nishimoto*¹, N. Inui*¹, J. Hwang*¹, K. Matsumoto*¹ (ICT & Mobility Solutions Research Laboratory, *¹ Kyoto University, *² Tottori University)

PRiME 2024 (U.S.A.), October 6 - 11, 2024

Enhancement of electrochemical properties of carboxylate-based single-Ion conducting polymers through complexation with Ionic liquids for lithium-ion batteries

D. Kim*, S. Okada*, H. Nakajima, D. Inokuchi, I. Yamada*, J. Hwang*, T. Abe*, M. Ouchi*, K. Matsumoto*, N. Inui* (ICT & Mobility Solutions Research Laboratory, *Kyoto University)

PRiME 2024 (U.S.A.), October 6 - 11, 2024

Solidification of high-concentration electrolytes with a nanosized porous zeolite faujasite zeolite

S. Hacatran*¹, K. Nakamoto*², I. Yamada*², K. Shibahara, D. Inokuchi, K. Miyazaki*¹, T. Abe*¹ (ICT & Mobility Solutions Research Laboratory, *¹ Kyoto University, *² Collaborative Laboratory for Solid - type

PRiME 2024 (U.S.A.), October 6 - 11, 2024

Development of high-capacity black phosphorus carbon composite anode material with suppressed dendrite generation and its lithium-ion batteries

N. Inui*, R. N. Nasara*, H. Hashiwaki, D. Inokuchi, I. Yamada*, C. Lee*, Y. Miyahara*, K. Miyazaki*, T. Abe*
(ICT & Mobility Solutions Research Laboratory, *Kyoto University)

PRiME 2024 (U.S.A.), October 6 - 11, 2024

Enhancing the ion conductivity of carboxylate-based single-ion conducting polymers through complexation with ionic compounds for lithium-ion batteries

D. Kim*, S. Okada*, H. Nakajima, D. Inokuchi, I. Yamada*, J. Hwang*, T. Abe*, M. Ouchi*, K. Matsumoto*,
N. Inui* (Energy & Functional Materials Research Laboratory, *Kyoto University)

ACS Spring 2025 (U.S.A.), March 23 - 27, 2025