

5-1. Papers Published by IROAST

Director

Kazuki TAKASHIMA

K. Kwak, Y. Mine, S. Morito, T. Ohmura, K. Takashima, "Correlation between strength and hardness for substructures of lath martensite in low- and medium-carbon steels," *Materials Science and Engineering: A*, 856, 144007, 2022.

Y. Tampa, K. Takagi, S. Ueki, M. Ohta, Y. Mine, K. Takashima, "Comparative Study of Shear Fracture between Fe-based Amorphous and Ultrafine-grained Alloys Using Micro-tensile Testing," *ISIJ International*, 62, 1741-1749, 2022.

K. Kwak, Y. Okamura, Y. Mine, K. Takashima, S. Koseki, S. Ando, K. Kuwabara, "Micro-mechanical characterisation of slip behaviour and precipitation strengthening in CoCrFeNiTiMo alloy additively manufactured by laser powder bed fusion," *Materials Science and Engineering: A*, 840, 142970, 2022.

Vice Director

Kei TODA

Ganjar Fadillah, Kei Toda, Shin-Ichi Ohira, "One-stage chiral enrichment process by continuous flow electrodialysis with molecularly imprinted membrane," *Separation and Purification Technology*, 305, 122492, 2023.

Md. Aminul Haque, Kei Toda, and Shin-Ichi Ohira, "Electrodialytic Universal Synthesis of Highly Pure and Mixed Ionic Liquids," *ACS Omega*, 7, 25, 21925–21931, 2022.

Elisabeth S. M. Deschaseaux, Hilton B. Swan, Damien T. Maher, Graham B. Jones, Kai G. Schulz, Edwin P. Koveke, Kei Toda and Bradley D. Eyre, "The Interplay Between Dimethyl Sulfide (DMS) and Methane (CH₄) in a Coral Reef Ecosystem," *Frontiers in Marine Science*, 9, 910441, 2022.

Distinguished Professors

U. Rajendra ACHARYA

Anjan Gudigar, U. Raghavendra, Tejaswi N. Rao, Jyothi Samanth, Venkatesan Rajinikanth, Suresh Chandra Satapathy, Edward J. Ciaccio, Chan Wai Yee, U. Rajendra Acharya, "FFCAEs: An efficient feature fusion framework using cascaded autoencoders for the identification of gliomas," *International Journal of Imaging Systems and Technology*, 33 (2), 483-494, 2023.

V. Jahmunah, Joel En Wei Koh, Vidya K. Sudarshan, U. Raghavendra, Anjan Gudigar, Shu Lih Oh, Hui Wen Loh, Oliver Faust, Prabal Datta Barua, Edward J Ciaccio, U. Rajendra Acharya, "Endoscopy, video capsule endoscopy, and biopsy for automated celiac disease detection: A review," *Biocybernetics and Biomedical Engineering*, 43, 1, 82-108, 2023.

Hui Wen Loh, Chui Ping Ooi, Silvia Seoni, Prabal Datta Barua, Filippo Molinari, U. Rajendra Acharya, "Application of explainable artificial intelligence for healthcare: A systematic review of the last decade (2011–2022)," *Computer Methods Programs in Biomedicine*, 226, 107161, 2022.

Hui Wen Loh, Chui Ping Ooi, Prabal Datta Barua, Palmer, Elizabeth Emma, Filippo Molinari, U.

Rajendra Acharya, "Automated detection of ADHD: Current trends and future perspective," Computers in Biology and Medicine, 146, 105525, 2022.

Vidya K. Sudarshan, U. Raghavendra, Anjan Gudigar, Edward J. Ciaccio, Anushya Vijayanathan, Ramesh Sahathevan, U. Rajendra Acharya, "Assessment of CT for the categorization of hemorrhagic stroke (HS) and cerebral amyloid angiopathy hemorrhage (CAAH): A review," Biocybernetics and Biomedical Engineering, 42 (3), 888-901, 2022.

Anjan Gudigar, Raghavendra U, Jyothi Samanth, Akhila Vasudeva, Ashwal A. J., Krishnananda Nayak, Ru-San Tan, Edward J. Ciaccio, Chui Ping Ooi, Prabal Datta Barua, Filippo Molinari, U. Rajendra Acharya, "Role of Four-Chamber Heart Ultrasound Images in Automatic Assessment of Fetal Heart: A Systematic Understanding," Informatics, 9 (2), 34, 2022

Anjan Gudigar, U Raghavendra, Jyothi Samanth, Chinmay Dharmik, Mokshagna Rohit Gangavarapu, Krishnananda Nayak, Edward J Ciaccio, Ru-San Tan, Filippo Molinari, U. Rajendra Acharya, "Novel Hypertrophic Cardiomyopathy Diagnosis Index Using Deep Features and Local Directional Pattern Techniques," J Imaging, 8 (4), 102, 2022.

Hui Wen Loh, Shuting Xu, Oliver Faust, Chui Ping Ooi, Prabal Datta Barua, Subrata Chakraborty, Ru-San Tan, Filippo Molinari, U. Rajendra Acharya, "Application of photoplethysmography signals for healthcare systems: An in-depth review," Computer Methods Programs in Biomedicine, 216, 106677, 2022.

Dmitri Aleks MOLODOV

Konstantin D. Molodov, Talal Al-Samman*, Dmitri A. Molodov, "Effect of gadolinium on the deformation and recrystallization behavior of magnesium crystals," Acta Materialia, 240, 118312, 2022.

László PUSZTAI

Bakó I., Pusztai L., Pothoczki S., "Topological descriptors and Laplace spectra in simple hydrogen bonded systems," Journal of Molecular Liquids, 363, 119860, 2022.

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Yufeng ZHENG

Guo Bao, Kun Wang, Lijun Yang, Jialing He, Bin He, Xiaoxue Xu, Yufeng Zheng, "Feasibility evaluation of a Zn-Cu alloy for intrauterine devices: In vitro and in vivo studies," Acta

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Tenue-track Faculty members

Mitsuhiro AIDA

Temman H, Sakamoto T, Ueda M, Sugimoto K, Migihashi M, Yamamoto K, Tsujimoto-Inui Y, Sato H, Shibuta MK, Nishino N, Nakamura T, Shimada H, Taniguchi YY, Takeda S, Aida M, Suzuki T, Seki M, Matsunaga S., “Histone deacetylation regulates de novo shoot regeneration,” PNAS Nexus 2, 2, pgad002, 2023.

Takeda S, Hamamura Y, Sakamoto T, Kimura S, Aida M, Higashiyama T. “Non-cell-autonomous regulation of petal initiation in Arabidopsis thaliana,” Development 149, 17, 2022

Gaochuang CAI

Su, Q., Cai, G.*, Hani, M., Si Larbi, A., & Tsavdaridis, K. D., “Damage control of the masonry infills in RC frames under cyclic loads: a full-scale test study and numerical analyses,” Bulletin of Earthquake Engineering, 21(2), 1017-1045, 2023.

Zhao, F., Xiong, F., Cai, G.*, Yan, H., Liu, Y., & Larbi, A. S., “Performance and numerical modelling of full-scale demountable bolted PC wall panels subjected to cyclic loading,” Journal of Building Engineering, 63, 105556, 2023.

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Hiroki MATSUO

Hiroki Matsuo*, Masashi Utsunomiya, Yuji Noguchi*, “Utilizing ferrorestorable polarization in energy-storage ceramic capacitors,” NPG Asia Materials 14(1) 8, 2022.

Yuji Noguchi* and Hiroki Matsuo, “Origin of Ferroelectricity in BiFeO₃-Based Solid Solutions,” Nanomaterials 12(23) 4163, 2022.

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Hiroki Matsuo* and Yuji Noguchi, “High Photocurrent Anisotropy in Domain-Engineered Ferroelectrics for Visible-Light Polarization Detection,” Advanced Optical Materials 10(21) 2201280, 2022.

Hiroki Matsuo* and Yuji Noguchi, “High-quality ferroelectric B_{0.5}K_{0.5}TiO₃–BiFeO₃ solid-solution single crystals grown under high-pressure oxygen atmosphere,” Applied Physics Express 15(8) 081002, 2022.

Postdoctoral Researchers

Jonas Karl N. AGUTAYA

Kam, Y. L.; Agutaya, J. K. C. N.; Quitain, A. T.; Ogasawara, Y.; Sasaki, M.; Lam, M. K.; Yusup,

S.; Assabumrungrat, S.; Kida, T. “In-Situ Transesterification of Microalgae Using Carbon-Based Catalyst under Pulsed Microwave Irradiation,” *Biomass and Bioenergy*, 168, 106662, 2023.

International Joint Research Faculty Members

Takumi HIGAKI

Takatsuka H, Higaki T, “Ito MAt the nexus between cytoskeleton and vacuole: How plant cytoskeletons govern the dynamics of large vacuoles,” *Int J Mol Sci*, 24, 4143, 2023.

Morotomi-Yano K, Hiromoto Y, Higaki T, Yano KI, “Disease-associated H58Y mutation affects the nuclear dynamics of human DNA topoisomerase I β ,” *Sci Rep*, 12, 20627, 2022.

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Takahiro HOSONO

Basak, A., Rahman, A.T.M.S., Das, J., Hosono, T., Kisi, O., “Drought forecasting using the Prophet model in a semi-arid climate region of western India,” *Hydrological Sciences Journal*, 67(9), 1397-1417, 2022.

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Ruda LEE

Woojin Lee, Leehyung Kim, Ruda Lee. “Strategic Review of Germany's LULUCF Policy Development Process: Implications for Korea,” *Journal of Wetlands Research*, 24, 102-114, 2022.

Yuta NAKASHIMA

Seitaro Kumamoto, Souichiro Fukuyama, Seiya Nagano, Keiichiro Yasuda, Yusuke Kitamura, Masaaki Iwatsuki, Hideo Baba, Toshihiro Ihara, Yoshitaka Nakanishi, Yuta Nakashima*, “Fabrication of Three-Dimensionally Deformable Metal Structures Using Precision Electroforming,” *Micromachines*, 13(7), 1046, 2022.

Yoichi Saito, Yukio Fujiwara, Yusuke Shinci, Remi Mito, Yuji Miura, Tomoya Yamaguchi, Koei Ikeda, Shinji Urakami, Yuta Nakashima, Takuro Sakagami, Makoto Suzuki, Yasuhiko Tabata, Yoshihiro Komohara, “Classification of PD-L1 expression in various cancers and macrophages based on immunohistocytological analysis,” *Cancer Science*, 113(9), 3255-3266, 2022.

Wataru Iwasaki, Hiroki Toda, Nobutomo Morita, Taisei Motomura, Yuki Fujio, Kenshin Takemura, Yoshitaka Nakanishi, Yuta Nakashima, “A thermoresponsive valve to control fluid flow in microfluidic paper-based devices,” *Microfluidics and Nanofluidics*, 26, 47, 2022.

Tsugumasa Toma, Hiroshi Tateishi, Kensaku Kawakami, Taha F. S. Ali, Masahiro Kamo, Kazuaki Monde, Yuta Nakashima, Mikako Fujita, and Masami Otsuka, “Novel Inhibitor for Downstream Targeting of Transforming Growth Factor- β Signaling to Suppress Epithelial to Mesenchymal Transition and Cell Migration,” *International Journal of Molecular Sciences*, 23(9), 5047, 2022.

Hiroki Toda, Wataru Iwasaki, Nobutomo Morita, Taisei Motomura, Kenshin Takemura, Masaya Nagano, Yoshitaka Nakanishi and Yuta Nakashima, “Reversible Thermo-Responsive Valve for Microfluidic Paper-Based Analytical Devices,” *Micromachines*, 13(5), 690, 2022.

Shin-Ichi OHIRA

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Atsushi SAINOKI

Wael R. Abdellah*, Chiaki Hirohama, Atsushi Sainoki, Ahmed Rushdy Towfeek, and Mahrous A. M. Ali, “Estimating the Optimal Overall Slope Angle of Open-Pit Mines with Probabilistic Analysis,” *Appl. Sci.*, 12(9), 4746, 2022.

Mitsuru SASAKI

Masayo Nishizono, Cinthya Soreli Castro Issasi, Jonas Karl Christopher N. Agtaya, Mitsuru Sasaki*, Hiroyuki Mizukami, “Production of dried tomato powder with a high concentration of functional components and nutrients”, *Journal of Antioxidant Activity*, 2(4), 1-21, 2023.

Mitsuru Sasaki*, Hiras Tumegas Manalu, Ramma Kamogawa, Cinthya Soreli Castro Issasi, Armando T. Quitain, Tetsuya Kida, “Fast and selective production of quercetin and saccharides from rutin using microwave-assisted hydrothermal treatment in the presence of graphene oxide”, *Food Chemistry*, 405, 134808, 2023.

YikLam Kam, Jonas Karl Christopher N. Agutaya, Armando T. Quitain, Yuri Ogasawara, Mitsuru Sasaki, ManKee Lam, Suzana Yusup, Suttichai Assabumrungrat, Tetsuya Kida, “In-situ

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Keitaro TAKAHASHI

Yohsuke Takamori, Atsushi Naruko, Yusuke Sakurai, Keitaro Takahashi, Daisuke Yamauchi, and Chul-Moon Yoo, “Testing the non-circularity of the spacetime around Sagittarius A* with orbiting pulsars,” *Publications of the Astronomical Society of Japan*, 75, Supplement_1, S217-S231, 2023.

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Pratik Tarafdar, Nobleson K., Prerna Rana, Jaikhomba Singha, M. A. Krishnakumar, Bhal Chandra Joshi, Avinash Kumar Paladi, Neel Kolhe, Neelam Dhanda Batra, Nikita Agarwal, Adarsh Bathula, Subhajit Dandapat, Shantanu Desai, Lankeswar Dey, Shinnosuke Hisano, Prathamesh Ingale, Ryo Kato, Divyansh Kharbanda, Tomonosuke Kikunaga, Piyush Marmat, B. Arul Pandian, T. Prabu, Aman Srivastava, Mayuresh Surnis, Sai Chaitanya Susarla, Abhimanyu Susobhanan, Keitaro Takahashi, P. Arumugam, Manjari Bagchi, Sarmistha Banik, Kishalay De, Raghav Girgaonkar, A. Gopakumar, Yashwant Gupta, Yogesh Maan, P. K. Manoharan, Arun Naidu, Dhruv Pathak, “The Indian Pulsar Timing Array: First data release,” *Publications of the Astronomical Society of Australia*, 39, e053, 2022.

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Shinnosuke Hisano, Fronefield Crawford, Victoria Bonidie, Md F. Alam, Keitaro Takahashi,

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IROAST Visiting Professor

Bruno FAVERY

Oota, M., Toyoda, S., Kotake, T., Wada, N., Hashiguchi, M., Akashi, R., Ishikawa, H., Favery, B., Tsai, A., Yi-Lun, and Sawa, S., “Rhamnogalacturonan-I as a nematode chemoattractant from *Lotus corniculatus* L. Super-growing Root culture.” *Frontiers in Plant Science*, 13, 1008725, 2022.

Recipients of "Young Faculty Members Support Program"

Muhammad Sohail AHMAD

Muhammad Sohail Ahmad, Yusuke Inomata, and Tetsuya Kida, “Heterogenized manganese catalyst for C-, and N-alkylation of ketones and amines with alcohols by pyrolysis of molecularly defined complexes,” *Molecular Catalysis*, 526, 112390, 2022.

Yusuke INOMATA

Muhammad Sohail Ahmad, Yusuke Inomata, and Tetsuya Kida, "Heterogenized manganese catalyst for C-, and N-alkylation of ketones and amines with alcohols by pyrolysis of molecularly defined complexes." *Molecular Catalysis*, 526, 112390, 2022.

Akira UEDA

Taro Suemune, Keita Sonoda, Shuichi Suzuki, Hiroyasu Sato, Tetsuro Kusamoto, Akira Ueda*, “Partially Oxidized Purely Organic Zwitterionic Neutral Radical Conductor: Multi-step Phase Transitions and Crossover Caused by Intra- and Intermolecular Electronic Interactions,” *Journal of the American Chemical Society*, 144, 21980–21991, 2022.

Recipients of IROAST Start-up Program for Formulation of Joint Research Hub by Crossing Departments 2021

Tetsuya KIDA & Armando T. QUITAIN

Kam, Y. L., Agutaya, J. K. C. N., Quitain, A. T., Ogasawara, Y., Sasaki, M., Lam, M. K., Yusup, S., Assabumrungrat, S., Kida, T., “In-Situ Transesterification of Microalgae Using Carbon-Based Catalyst under Pulsed Microwave Irradiation”, *Biomass and Bioenergy*, 168, 106662, 2023.

IROAST Research Cluster members

Carolina ESCOBAR, Shinichiro SAWA & Reika SUZUKI

Suzuki, R., Kanno, Y., Abril-Urias, P, Seo, M., Escobar, C., Tsai, A., Yi-Lun, and Sawa, S., “Local Auxin Synthesis Mediated by YUCCA4 Induced during Root-knot Nematode Infection Positively Regulates Gall Growth and Nematode Development,” *Frontiers in Plant Science*, 13:1019427, 2022.

Tetsuya KIDA

Shinkai, K. Masumoto, M. Iwai, Y. Inomata, T. Kida, “Study on Sensing Mechanism of Volatile Organic Compounds Using Pt-Loaded ZnO Nanocrystals,” *Sensors*, 22, 6277, 2022.

Tetsuya KIDA & Armando T. QUITAIN & Yusuke INOMATA

S.A. Fauzi, N.L. Hamidah, S. Kitamura, T. Kodama, K. Sonda, G.K. Putri, T. Shinkai, M. S. Ahmad, Y. Inomata, A. T. Quitain, T. Kida. “Electrochemical Detection of Ethanol in Air Using Graphene Oxide Nanosheets Combined with Au-WO₃,” *Sensors*, 22, 3194, 2022.

Shinichiro SAWA

Satoru Nakagami, Tsuyoshi Aoyama, Yoshikatsu Sato, Taiki Kajiwara, Takashi Ishida, Shinichiro Sawa, “CLE3 and its homologs share overlapping functions in the modulation of lateral root formation through CLV1 and BAM1 in *Arabidopsis thaliana*,” *The Plant Journal*, 113,6, 1176-1191, 2023.

Makoto TAKAFUJI and Yutaka KUWAHARA

C. Olivier, N. Nagatomo, T. Mori, N. McClenaghan, G. Jonusauskas, B. Kauffmann, Y. Kuwahara, M. Takafuji, H. Ihara, Y. Ferrand, “A π -extended phenanthrene-fused aza[7]helicenium as a novel chiroptically-active architecture in organic and aqueous media,” *Organic Chemistry Frontiers*, 10, 752-758, 2022.

IROAST former tenure-track faculty members

Takashi ISHIDA

Satoru Nakagami, Tsuyoshi Aoyama, Yoshikatsu Sato, Taiki Kajiwara, Takashi Ishida, Shinichiro Sawa, “CLE3 and its homologs share overlapping functions in the modulation of lateral root formation through CLV1 and BAM1 in *Arabidopsis thaliana*,” *The Plant Journal*, 113,6, 1176-1191, 2023.

Jingke Kang, Xuening Wang, Takashi Ishida, Etienne Grienberger, Qian Zheng, Jing Wang, Yonghong Zhang, Wenqiang Chen, Mengmeng Chen, Xiu-Fen Song, Chengyun Wu, Zhubing Hu, Lingyu Jia, Chen Li, Chun-Ming Liu, Jennifer C. Fletcher, Shinichiro Sawa, Guodong Wang, “A group of CLE peptides regulates de novo shoot regeneration in *Arabidopsis thaliana*,” *New Phytologist*, 235, 6, 2300-2312, 2022.

Yi Zhang, Shuya Tan, Yuhan Gao, Chengcheng Kan, Hou-Ling Wang, Qi Yang, Xinli Xia, Takashi Ishida, Shinichiro Sawa, Hongwei Guo, Zhonghai Li, “CLE42 delays leaf senescence by antagonizing ethylene pathway in *Arabidopsis*,” *New Phytologist*, 235, 2, 550-562, 2022.

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5-2. Internationally Collaborated Papers by IROAST Young Internship Researchers and their Host Professors

Woojin LEE & Ruda LEE

Woojin Lee, Leehyung Kim, Ruda Lee., “Strategic Review of Germany's LULUCF Policy Development Process: Implications for Korea,” *Journal of Wetlands Research*, 24, 102-114, 2022.

Farzan ZARE & Hamid HOSANO

Farzan Zare, Negareh Ghasemi, Nidhi Bansal, Hamid Hosano, “Advances in pulsed electric stimuli as a physical method for treating liquid foods,” *Physics of Life Reviews* 44, 207-266, 2023.

Fuchao ZHAO & Gaochunag CAI

Zhao, F., Xiong, F., Cai, G.*, Yan, H., Liu, Y., & Larbi, A. S., “Performance and numerical modelling of full-scale demountable bolted PC wall panels subjected to cyclic loading,” *Journal of Building Engineering*, 63, A, 105556, 2023.

5-3. Internationally Collaborated Papers by IROAST Visiting Professors and their Host Professors

Suttichai ASSABUMRUNGRAT & Tetsuya KIDA

Y.L. Kam, J.K.C.N. Agutaya, A.T. Quitain, Y. Ogasawara, M. Sasaki, M.K. Lam, S. Yusup, S. Assabumrungrat, T. Kida, “In-situ transesterification of microalgae using carbon-based catalyst under pulsed microwave irradiation,” *Biomass and Bioenergy* 168, 106662 (2023).

Carolina ESCOBAR & Shinichiro SAWA

Suzuki, R., Kanno, Y., Abril-Urias, P, Seo, M., Escobar, C., Tsai, A., Yi-Lun, and Sawa, S., “Local Auxin Synthesis Mediated by YUCCA4 Induced during Root-knot Nematode Infection Positively Regulates Gall Growth and Nematode Development,” *Frontiers in Plant Science*, 13:1019427, 2022.

Bruno FAVERY & Shinichiro SAWA

Oota, M., Toyoda, S., Kotake, T., Wada, N., Hashiguchi, M., Akashi, R., Ishikawa, H., Favery, B., Tsai, A., Yi-Lun, and Sawa, S., “Rhamnogalacturonan-I as a nematode chemoattractant from *Lotus corniculatus* L. Super-growing Root culture.” *Frontiers in Plant Science*, 13:1008725, 2022.

Bo LIU & Takumi HIGAKI

Hotta T, Lee YR, Higaki T, Hashimoto T, Liu B, “Two Kinesin-14A motors oligomerize to drive poleward microtubule convergence for acentrosomal spindle morphogenesis in *Arabidopsis thaliana*,” *Front Cell Dev Biol.* 10:949345 (2022)

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