

List of selected projects for General Collaborative Research Project 2023, IFS, Tohoku University (as 24th July, 2023)

Project Code	Project Title	Applicant	Institution	IFS responsible member or non-IFS responsible member	Institution
J23I001	A Study of Heat Stroke Dynamics by Combined Analysis of Radiation and Convection	Hiroki Gonome	Yamagata University	Junnosuke Okajima	Tohoku University
J23I002	Attenuation effect of shock environment in supersonic flow using the soft body	Kazutaka Kitagawa	Aichi Institute of Technology	Kiyonobu Ohtani	Tohoku University
J23I004	Study on micro-scale evaporation for heat transfer enhancement	Junnosuke Okajima	Tohoku University	Peter Stephan	Technical University of Darmstadt
J23I005	Hyper-velocity collision experiment for tether satellites to remove space debris	Kanjuro Makihara	Tohoku University	Kiyonobu Ohtani	Tohoku University
J23I006	A Study on the formation of Volumeless Multi-Vth in 3D Transistors	Kenzo Manabe	National Institute of Advanced Industrial Science and Technology(AIST)	Kazuhiko Endo	Tohoku University
J23I007	Numerical Exploration of Plasma-Induced Charge and Electric Field-Induced Transport Transformations in Biological Membranes	Satoshi Uchida	Tokyo Metropolitan University	Takehiko Sato	Tohoku University
J23I008	Characterization of Particulate Morphology Generated from Li-Ion Battery (LiB) Combustion Processes	Samuel L. Manzello	Reax Engineering	Kaoru Maruta	Tohoku University
J23I009	Fabrication of nanofibrous layer covered stents	Angela Jedlovszky-Hajdu	Semmelweis University	Makoto Ohta	Tohoku University
J23I010	Aeroacoustic simulation on wind instruments	Kin'ya Takahashi	Kyushu Institute of Technology	Yuji Hattori	Tohoku University
J23I011	Molecular dynamics analysis of metal/titanium oxide interface structure	Kazuhiro Gotoh	Niigata University	Takashi Tokumasu	Tohoku University
J23I012	Low-Speed Aeroelastic Buffeting of Tail Wings: Theory and Analysis	Keisuke Otsuka	Tohoku University	Yoshiaki Abe	Tohoku University
J23I013	Aeroelastic Model of Very Flexible Membrane Wings: Theory and Experiment	Keisuke Otsuka	Tohoku University	Hiroki Nagai	Tohoku University
J23I015	Propeller-Slipstream/Main-Wing Aerodynamic Interaction for Mars Airplane	Keiichi Kitamura	Yokohama National University	Hiroki Nagai	Tohoku University
J23I019	Effect of charge distribution on the plasma-induced fine bubble dynamics	Liu Siwei	Tohoku University	Supponen Outi	ETH
J23I020	Fundamental studies on turbulent energy/scalar transport in non-universal turbulences	Yasumasa Ito	Nagoya University	Yuji Hattori	Tohoku University
J23I021	Molecular Simulation of CO2 Permeation through Microalgae Lipid Membrane	Takuya Mabuchi	Tohoku University	Fayza Yulia	Pertamina University
J23I022	Numerical Study for Space Navigation System with High-speed Ionized Flow	Masayuki Takahashi	Tohoku University	Hiroki Nagai	Tohoku University
J23I024	The investigations of the length and time scales related to turbulence interaction with a long rise-time sonic boom pressure signature	Takahiro Ukai	Osaka Institute of Technology	Kiyonobu Ohtani	Tohoku University
J23I025	Experimental and Kinetics Modeling Study of Tri-Methyl-Phosphate (TMP) Combustion –Toward P-Containing Fire Suppressants for Lithium-Ion Battery Electrolytes	Olivier Mathieu	Texas A&M University	Hisashi Nakamura	Tohoku University
J23I026	On the reduction of the flow-induced noise using bio-inspired porous material with low acoustic transmission loss	Osamu Terashima	Toyama Prefectural University	Hiroki Nagai	Tohoku University
J23I029	Numerical, experimental and optimization analysis of a novel solar concentrating photovoltaic thermal (CPVT) system and investigation of phase change heat transfer on the working fluid for performance advancement	Abid USTAUGLU	Bartın University	Junnosuke Okajima	Tohoku University
J23I030	Hemodynamic management of patients with coronary artery stenosis before and after stent implantation	Xiaorui Song	Shandong First Medical University & Shandong Academy of Medical Sciences	Makoto Ohta	Tohoku University
J23I033	Improvement of the thermoregulation model by understanding the thermal response of the human body in high/low temperature and high humidity environments	Takuma Kogawa	National Institute of Technology, Hachinohe College	Junnosuke Okajima	Tohoku University
J23I034	Density and surface tension effects on vortex dynamics	Stefan Llewellyn Smith	University of California, San Diego	Yuji Hattori	Tohoku University
J23I035	Synthesis of sulfonated carbon catalysts using combination process of plasma in liquid and ultrasonic cavitation	Nozomi Takeuchi	Tokyo Institute of Technology	Hidemasa Takana	Tohoku University
J23I036	Study on conceptual design of an aircraft fueled with ammonia	Hisashi Nakamura	Tohoku University	Daisuke Shimokuri	Hiroshima University
J23I038	Study of turbulent transition and statistical properties of turbulence of destabilized helical vortex	Yuji Hattori	Tohoku University	Ivan Delbende	Sorbonne Université
J23I039	Approximation of 3D flow fields based on cerebral angiography	Shinichiro Sugiyama	Kohnan Hospital	Hitomi Anzai	Tohoku University
J23I041	Development of compressive sensing technique for complex fluid phenomena	Yu Matsuda	Waseda University	Hiroki Nagai	Tohoku University
J23I043	Explainable Machine Learning for Enhancing Multi-objective Aerodynamic Design Optimization	Pramudita Satria Palar	Bandung Institute of Technology	Shigeru Obayashi	Tohoku University
J23I044	An analysis of self-organization of three dimensional vortical structure derived from interaction between vortical flow and bundle of vorticity lines	Katsuyuki Nakayama	Aichi Institute of Technology	Yuji Hattori	Tohoku University

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J23I045	Advancement of measurement technique for oxygen enriched flame under high pressure	Akihiro Hayakawa	Tohoku University	Shinji Nakaya	The University of Tokyo
J23I046	A study on nano-scale interfacial phenomena between surface-modified nanoparticle and dispersed media	Masaki Kubo	Tohoku University	Atsuki Komiya	Tohoku University
J23I047	Design and optimization of multidirectional wings of the aero-train under the effect of static aeroelasticity	Chenguang Lai	Chongqing University of Technology	Shigeru Obayashi	Tohoku University
J23I049	Development of a "Maternal Brain-on-a-chip" mimicking the Placenta-to-Brain communication in pregnant women	Mai Inagaki	Tokushima University	Kenichi Funamoto	Tohoku University
J23I050	Study of shock wave-particles interaction	Kazuya Tajiri	Michigan Technological University	Aiko Yakeno	Tohoku University
J23I054	Research on the antibacterial effect of Ag- and Cu-containing carbon films using the self-exudation effect of contained metal components	Minoru Goto	National Institute of Technology, Ube College	Sho Takeda	Tohoku University
J23I055	Fundamental characteristics of ammonia/water vapor/hydrocarbon premixed laminar flames	Akihiro Hayakawa	Tohoku University	Okafor Ekenechukwu C.	Kyushu University
J23I056	Conductive mechanism of carbon nanotube dispersed resin based composite materials	Noboru Nakayama	Shinshu University	Sho Takeda	Tohoku University
J23I057	Hybridization of nanocellulose with silver nanoparticles for the fabrication of antibacterial filament composites by a field-assisted flow focusing method	Hidemasa Takana	Tohoku University	Anthony B. Dichiara	University of Washington
J23I058	Transient structural analysis of the interaction of stiffness and compliance between aorta and carotid arteries by performing numerical simulations	Yujie Li	Torrens University	Makoto Ohta	Tohoku University
J23I059	Analysis of aerodynamic forces and flow field on a roadable aircraft against crosswind during landing	Seiichiro Morizawa	National Institute of Technology, Okinawa College	Shigeru Obayashi	Tohoku University
J23I060	Explore the shaping effects of arteriovenous fistula on haemodynamics in patients receiving haemodialysis	Mingzi Zhang	Macquarie University	Makoto Ohta	Tohoku University
J23I061	Upscaling flow in geothermal fractured system using digital rock physics and machine-learning	Julien Maes	Heriot-Watt University	Anna Suzuki	Tohoku University
J23I062	Simulation and Optimization of Stent Geometry Design based on Numerical Simulation	Narendra Kurnia Putra	Institut Teknologi Bandung	Hitomi Anzai	Tohoku University
J23I063	Development of pressure distribution measurement technique for free flight next-generation re-entry capsule	Hiroki Nagai	Tohoku University	Hiroataka Sakaue	University of Notre Dame
J23I064	Development and Application of Ultra-fast Response Pressure-Sensitive Paint Technology	Hiroki Nagai	Tohoku University	Shun Takahashi	Tokai University
J23I065	Comprehensive study on two-phase thermo-fluid phenomena in cryogenic loop heat pipe	Kimihide Odagiri	Japan Aerospace Exploration Agency	Hiroki Nagai	Tohoku University
J23I066	High sensitivity and quantitative visualization around high-speed projectile	Toshiharu Mizukaki	Tokai University	Kiyonobu Ohtani	Tohoku University
J23I070	Sonic-boom surrogate model integration in a chemistry-climate model	Hiroshi Yamashita	Deutsches Zentrum für Luft- und Raumfahrt (DLR)	Shigeru Obayashi	Tohoku University
J23I071	Molecular Dynamics Study of Mechanical Balance at Three-Phase Interface of Nano-Bubble on Solid Surface	Hiroki Nagashima	University of the Ryukyus	Takashi Tokumasu	Tohoku University
J23I072	Development of phonon propagation in quantum nano-structures by using high-sensitivity detection of the surface displacement	Atsuhiko Fukuyama	University of Miyazaki	Daisuke Otori	Tohoku University
J23I073	Control of transonic/high-speed boundary layer flows	Yuji Hattori	Tohoku University	Adrian Sescu	Mississippi State University
J23I074	Three-dimensional density measurement of wake region behind re-entry capsule model to clarify the mechanism of its dynamic instability	Masanori Ota	Chiba University	Hiroki Nagai	Tohoku University
J23I076	Evaluation of heat and mass transfer near the gas-liquid interface during the phase change of volatile organic compounds	Yuki Kanda	Tohoku University	Yingxue Hu	Xi'an Jiaotong University
J23I077	Basic research for simultaneous measurement of flow field and surface pressure field around free-flight projectiles	Daiju Numata	Tokai University	Kiyonobu Ohtani	Tohoku University
J23I078	Product gas characteristics of ammonia/hydrogen fuel at high pressure conditions	Akihiro Hayakawa	Tohoku University	Valera-Medina Agustin	Cardiff University
J23I080	Multi-scale Analysis of Oxygen Ion Conduction Property in Solid Oxide Electrolyte Membrane	Takashi Tokumasu	Tohoku University	Jeongmin Ahn	Syracuse University
J23I081	Pathobiology-Hemodynamics Interaction in Aneurysms Genesis, Growth and Rupture	Muhammed Albadawi	Alexandria University (Egypt) and Egypt-Japan university of science and technology	Makoto Ohta	Tohoku University
J23I082	Evaluation of Wall Thinning with Thick Insulator Based on Pulsed Eddy Current Testing Method using Novel Signal Processing Way	Shejuan Xie	Xi'an Jiaotong University	Tetsuya Uchimoto	Tohoku University
J23I084	Evaluation of the Dynamics of Natural Convection Thermal Boundary Layer under High Grashof Number Condition	Atsuki Komiya	Tohoku University	Nicholas Williamson	The University of Sydney
J23I085	Generation of charged cavitation bubbles and the characteristics	Takehiko Sato	Tohoku University	Farhat Mohamed	Ecole Polytechnique Federale de Lausanne (EPFL)

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J23I086	Generation of high-speed ultrafine droplets and droplets characteristics	Takehiko Sato	Tohoku University	Seiji Kanazawa	Oita University
J23I087	Analysis of power generation from ammonia based fuel in solid oxide fuel cells	Jeongmin Ahn	Syracuse University	Hisashi Nakamura	Tohoku University
J23I088	Combination of atmospheric pressure plasma with mist generated by condensation of water vapor in pressurized air	Yun-Chien Cheng	National Yang Ming Chiao Tung University	Takehiko Sato	Tohoku University
J23I089	Thermophoretic separation of electrolytes for desalination	Juan Felipe Torres	Australian National University	Atsuki Komiya	Tohoku University
J23I091	An integrated study of quantum chemistry and molecular simulation for reactive polymer materials	Zhao Yinbo	Tongji University	Gota Kikugawa	Tohoku University

67 selected projects

**List of selected projects for International Multiple Collaborative Research Project 2023, IFS, Tohoku University**

Project Code	Project Title	Applicant	Institution	IFS responsible member or non-IFS responsible member (Institution)
J23R001	Experiment on mechanical integrity evaluation of degradable zinc wire under tensile load in flowing medium	Aike Qiao	Beijing University of Technology	Makoto Ohta(Tohoku University), Song Hongfang(Capital Medical University), Fu Wenyu(Beijing Union University)
J23R002	Theoretical simulation on growth of functioning materials	Satoru Kaneko	Kanagawa Institute of Industrial Science and Technology	Takashi Tokumasu(Tohoku University), Masahiro Yoshimura(National Cheng Kung University), Ruei-Sung Yu(Asia University, Taiwan), Shigeo Yasuhara(Japan Advanced Chemicals), Can Musa(Istanbul University)
J23R003	Prediction and optimisation of axisymmetric shock reflection in supersonic aerospace applications	Hideaki Ogawa	Kyushu University	Kiyonobu Ohtani(Tohoku University), Roderick Boswell(Australian National University), Sannu Mölder(Ryerson University), Taro Handa(Toyota Technological Institute), Yasumasa Watanabe(Toyota Technological Institute), Evgeny Timofeev(McGill University)

3 selected projects

List of selected projects for LyC Collaborative Research Project 2023, IFS, Tohoku University (as 26th May, 2023)

Project Code	Project Title	Applicant	Institution	IFS responsible member or non-IFS responsible member	Institution
J23Ly01	Active Control of Protein Mass Transfer by Membranes with Various Pore Patterns	Atsuki Komiya	Tohoku University	Sebastien Livi	INSA de Lyon
J23Ly02	Shape estimation of pipe inner corrosion based on ultrasonic reflection	Hiroyuki Nakamoto	Kobe University	Tetsuya Uchimoto	Tohoku University
J23Ly03	Investigation of a predictive therapeutic response under controlled oxygen condition in cancer patient-derived organoids	Aznar Nicolas	Cancer Research Center of Lyon	Kenichi Funamoto	Tohoku University
J23Ly04	Experimental study of new model electroactive materials (TEmpuRA)	Gildas Coativy	LGEF, INSA de Lyon	Hidemasa Takana	Tohoku University
J23Ly05	Nonlinear Bifurcation and Dynamic Mode decomposition for Taylor Vortex in Gap between Rotating Two Cylinders/Cones	Adachi Takahiro	Akita University	Atsuki Komiya	Tohoku University
J23Ly06	Monitoring eukaryotic cell functions under various hypoxic conditions with microfluidic differential oxygenators	Rieu Jean-Paul	University Claude Bernard Lyon 1	Kenichi Funamoto	Tohoku University
J23Ly07	Finsler geometry modeling of skyrmions geometrically confined in nanodots: stability and morphology under stresses	Fumitake Kato	National Institute of Technology, Ibaraki College	Tetsuya Uchimoto	Tohoku University
J23Ly08	Numerical Study on Electrical Drift and Diffusion of Ions in Polymer Strips	Joel Courbon	INSA de Lyon	Hidemasa Takana	Tohoku University
J23Ly09	Mass Transfer Enhancement and Control by using Ultrasound Induced Flow	Atsuki Komiya	Tohoku University	Valery Botton	INSA de Lyon
J23Ly10	Coupled Analysis Approach to Integrated Multiphase Energy Systems	Jun Ishimoto	Tohoku University	Thomas Elguedj	LaMCoS Lab, INSA de Lyon
J23Ly11	Multiscale simulation of Carbon electromigration in iron	Takashi Tokumasu	Tohoku University	Patrice Chantrenne	MATEIS, INSA de Lyon
J23Ly12	Recipe of polymer coating by cold spray	BERNARD Chrystelle	Frontier Research Institute for Interdisciplinary Sciences	Hidemasa Takana	Tohoku University
J23Ly13	Epoxy polymer for ammonia storage solutions	Mary Nicolas	MATEIS, INSA de Lyon	Tetsuya Uchimoto	Tohoku University
J23Ly14	Clarification of flow structures related to jet noise generation using mode analysis and high-precision jet flow simulation	Aiko Yakeno	Tohoku University	Christophe Bogey	Ecole Centrale de Lyon

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