

List of selected projects for General Collaborative Research Project 2022, IFS, Tohoku University(as 27th December, 2022)

Project Code	Project Title	Applicant	Institution	IFS responsible member or non-IFS responsible member	Institution
J22I001	Hyper-velocity collision experiment for tether satellites to remove space debris	Kanjiro Makihara	Tohoku University	Kiyonobu Ohtani	Tohoku University
J22I002	Numerical Prediction of Heat Flux of Cartesian Mesh CFD in Supersonic/Hypersonic Flows	Daisuke Sasaki	Kanazawa Institute of Technology	Koji Shimoyama	Tohoku University
J22I003	Study on MHD phenomena in Co-axial MHD Energy Conversion Device	Hirromichi Kobayashi	Keio University	Hidemasa Takana	Tohoku University
J22I004	Development of thermal barrier fire extinguishing devices	Hiroki Gonome	Yamagata University	Junnosuke Okajima	Tohoku University
J22I005	Tensile Effect by Wall Shear Stress around Stagnation Point and Flow Instability by Wall Elasticity in Full-Scale Patient-Specific Aneurysm Model	Gaku Tanaka	Chiba University	Makoto Ohta	Tohoku University
J22I006	Study on improvement of washing effect for textile using the underwater explosion	Kazutaka Kitagawa	Aichi Institute of Technology	Kiyonobu Ohtani	Tohoku University
J22I007	Sustainable Ammonia Production by Plasma method	Shiraishi Ryoya	National Institute of Technology, Yonago College	Takashi Tokumasu	Tohoku University
J22I008	Elucidation of interactive topological dynamics between vortical flow structure and bundle of vorticity lines in turbulent flow	Katsuyuki Nakayama	Aichi Institute of Technology	Yuji Hattori	Tohoku University
J22I010	Numerical Exploration of Plasma-Induced Charge and Electric Field-Induced Transport Transformations in Biological Membranes	Satoshi Uchida	Tokyo Metropolitan University	Takehiko Sato	Tohoku University
J22I012	Computational and Experimental Study of Unsteady Flowfield around Flexible-membrane Wing at Low Reynolds Number toward Mars Airplane	Daisuke Sasaki	Kanazawa Institute of Technology	Hiroki Nagai	Tohoku University
J22I013	Aeroelastic Model of Very Flexible Membrane Wings: Theory and Experiment	Keisuke Otsuka	Tohoku University	Hiroki Nagai	Tohoku University
J22I015	Simultaneous measurement of the deformation of the oscillating javelin and the dynamic aerodynamic forces	Kazuya Seo	Yamagata University	Shigeru Obayashi	Tohoku University
J22I016	Aeroacoustic simulation on wind instruments	Kin'ya Takahashi	Kyushu Institute of Technology	Yuji Hattori	Tohoku University
J22I020	Development of PSP measurement technique using structured illumination	Yu Matsuda	Waseda University	Hiroki Nagai	Tohoku University
J22I023	Evaluation of Defects In CFRP Material Based on High Frequency Eddy Current Testing Method	Chen Zhenmao	Xi'an Jiaotong University	Tetsuya Uchimoto	Tohoku University
J22I025	Effect of ultra-fine surface roughness by aircraft paint or film processing	Aiko Yakeno	Tohoku University	Masanari Hattori	Tohoku University
J22I026	Developing an interaction model of rod-like Brownian particles in a crossflow for nanocellulose mono-fiber creation using flow focusing	Yukitaka Ishimoto	Akita Prefectural University	Hidemasa Takana	Tohoku University
J22I027	Quantitative density measurement of wake region behind re-entry capsule	Masanori Ota	Chiba University	Hiroki Nagai	Tohoku University
J22I029	Elucidation of mechanisms on vascular diseases by integration of computational fluid dynamics analysis and cellular experiment	Suguru Miyauchi	University of Miyazaki	Kenichi Funamoto	Tohoku University
J22I031	Propeller-Slipstream/Main-Wing Aerodynamic Interaction for Mars Airplane	Kitamura Keiichi	Yokohama National University	Hiroki Nagai	Tohoku University
J22I034	Conductive mechanism of carbon nanotube dispersed resin based composite materials	Noboru Nakayama	Shinshu University	Sho Takeda	Tohoku University
J22I035	Efficient Robust Optimization of Fluid Dynamics Problems	Mehrdad Raisee Dehkordi	University of Tehran	Koji Shimoyama	Tohoku University
J22I036	Development of sonic boom evaluation function under real meteorological conditions	Hiroshi YAMASHITA	Deutsches Zentrum für Luft- und Raumfahrt (DLR)	Shigeru Obayashi	Tohoku University
J22I038	Simulation and Optimization of Stent Geometry Design based on Numerical Simulation	Narendra Kurnia Putra	Institut Teknologi Bandung	Hitomi Anzai	Tohoku University
J22I039	Study of shock wave-particles interaction	Kazuya Tajiri	Michigan Technological University	Aiko Yakeno	Tohoku University
J22I040	Effects of inert-gas addition on the unstable behavior of hydrogen-air premixed flames	Satoshi Kadowaki	Nagaoka University of Technology	Hideaki Kobayashi	Tohoku University
J22I042	Study on the function of Au-DLC nano-composite coatings acting as thermo-sensor in the sliding interface under severe corrosive conditions	Minoru Goto	National Institute of Technology, Ube College	Sho Takeda	Tohoku University
J22I043	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
J22I044	Study of turbulent transition and statistical properties of turbulence of destabilized helical vortex	Yuji Hattori	Tohoku University	Ivan Delbende	Sorbonne Universite
J22I046	Interpretable Machine Learning Models for Complex Aerospace Fluid Problems	Pramudita Satria Palar	Bandung Institute of Technology	Koji Shimoyama	Tohoku University
J22I047	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

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J221048	Prediction and design methodology of axisymmetric shock reflection in supersonic flow	Hideaki Ogawa	Kyushu University	Kiyonobu Ohtani	Tohoku University
J221050	High-fidelity Simulation of Boiling Phenomena	Biao Shen	University of Tsukuba	Hiroki Nagai	Tohoku University
J221051	Combined in situ & ex situ, multi-scale stress measurements in crystalline geothermal reservoirs	Xiaodong Ma	ETH Zürich	Takatoshi Ito	Tohoku University
J221052	Development and Application of Ultra-fast Response Pressure-Sensitive Paint Technology	Hiroki Nagai	Tohoku University	Shun Takahashi	Tohoku University
J221053	3D Human Blood-Brain Barrier Chip for CNS Drug Development	Masanori Tachikawa	Tokushima University	Kenichi Funamoto	Tohoku University
J221054	Scaling effect on electrohydrodynamic pump	Masahito Nishikawara	Toyohashi University of Technology	Hiroki Nagai	Tohoku University
J221055	Development of phonon propagation in quantum nano-structures by using high-sensitivity detection of the surface displacement	Atsuhiko Fukuyama	University of Miyazaki	Seiji Samukawa	Tohoku University
J221056	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 USTAOGU	Bartın University	Junnosuke Okajima	Tohoku University
J221057	Effects of pulsatile flow on endothelial permeability and cell motility.	Eugenia Corvera Poire	National Autonomus University of Mexico	Kenichi Funamoto	Tohoku University
J221059	Experimental and Chemical Kinetics Modeling Study of the combustion of components related to Lithium-ion battery electrolytes and their fire safety	Olivier Mathieu	Texas A&M University	Hisashi Nakamura	Tohoku University
J221060	A study on nano-scale interfacial phenomena between surface-modified nanoparticle and dispersed media	Masaki Kubo	Tohoku University	Atsuki Komiya	Tohoku University
J221062	Comprehensive study on two-phase thermo-fluid phenomena in cryogenic loop heat pipe	Kimihide Odagiri	Japan Aerospace Exploration Agency	Hiroki Nagai	Tohoku University
J221064	Development of pressure distribution measurement technique for free flight next-generation re-entry capsule	Hiroki Nagai	Tohoku University	Hiroataka Sakaue	University of Notre Dame
J221066	Development of pressure measurement method in laser-cavitation bubbles	Takehiko Sato	Tohoku University	Farhat Mohamed	Lab. of Hydraulic Machines, Ecole Polytechnique Federale de Lausanne (EPFL)
J221067	Data-driven modeling of flow in complex structures	Anna Suzuki	Tohoku University	James Minto	University of Strathclyde
J221068	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
J221069	Basic research for quantitative visualization of flow field around free-flight projectiles by PDI	NUMATA Daiju	Tokai University	Kiyonobu Ohtani	Tohoku University
J221070	Thermophoretic separation of electrolytes for desalination	Juan Felipe Torres	Australian National University	Atsuki Komiya	Tohoku University
J221071	Experienced-Based Scientific Meeting of Fluid Dynamics	Ippei Oshima	Tohoku University	Yasufumi Horimoto	Hokkaido University
J221073	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
J221074	Numerical Simulation of a Thermal Plasma Reactor for the Wastes to Energy	Sooseok Choi	Jeju National University	Hidemasa Takana	Tohoku University
J221075	Explore the shaping effects of arteriovenous fistula on haemodynamics in patients receiving haemodialysis	Mingzi Zhang	Macquarie University	Makoto Ohta	Tohoku University
J221076	Numerical Study for Space Navigation System with High-speed Ionized Flow	Masayuki Takahashi	Tohoku University	Hiroki Nagai	Tohoku University
J221077	Influence of Propeller wake on Aerodynamics/ Flight Dynamics Characteristics for Mars Airplane	Masahiro Kanazaki	Tokyo Metropolitan University	Hiroki Nagai	Tohoku University
J221078	Improvement of Aerodynamic Performance of Flying Object Clothed with Fabrics of Air Permeability	Hiroaki Hasegawa	Utsunomiya University	Shigeru Obayashi	Tohoku University
J221079	Application of Physics-based Machine Learning Algorithms for Estimating Properties of Organic Materials	Hari Krishna Chilukoti	National Institute of Technology, Warangal	Gota Kikugawa	Tohoku University
J221080	Exploration of Novel Combined Internal Combustion Engine and Solid Oxide Fuel System for Power Generation and Emission Control	Jeongmin Ahn	Syracuse University	Hisashi Nakamura	Tohoku University
J221084	Individual effects of plasma-generated electrical field, short-life species, especially .OH radicals, and long-life species on cell	Yun-Chien Cheng	National Chiao Tung University	Takehiko Sato	Tohoku University
J221085	Fundamental characteristics of ammonia/water vapor/hydrocarbon premixed laminar flames	Akihiro Hayakawa	Tohoku University	Okafor Ekenechukwu C.	Kyushu University
J221086	Product gas characteristics of ammonia/hydrogen fuel at high pressure conditions	Akihiro Hayakawa	Tohoku University	Valera-Medina Agustin	Cardiff University
J221087	Generation of high-speed ultrafine droplets and droplets characteristics	Takehiko Sato	Tohoku University	Kanazawa Seiji	Oita University
J221088	A comprehensive molecular dynamics study on thermal conductivity enhancement mechanism of nano biolubricants	Takashi Tokumasu	Tohoku University	Yusuf Rodjali Nasruddin	Universitas Indonesia

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J22I089	Development of sugar type discrimination in mammalian proteins using protein subcellular localization	Kerji ETCHUYA	Aoyama Gakuin University	Makoto Ohta	Tohoku University

64 selected projects

List of selected projects for International Multiple Collaborative Research Project 2022, IFS, Tohoku University

Project Code	Project Title	Applicant	Institution	IFS responsible member or non-IFS responsible member(Institution)
J22R001	Endovascular stent and vessel remodeling	Aike Qiao	Beijing University of Technology	Makoto Ohta (Tohoku University), Song Hongfang (Capital Medical University), Fu Wenyu (Beijing Union University)
J22R003	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), Rueil Yu (Asia University), Shigeo Yasuhara (Japan Advanced Chemicals), Can Musa (Istanbul University)
J22R004	Analysis of relation between oxygen ion conductivity and grain boundary in solid oxide electrolyte membrane	Takashi Tokumasu	Tohoku University	Jeongmin Ahn (Syracuse University), Hiroki Nagashima (University of the Ryukyus), Nathaniel Slabaugh (Syracuse University)

3 selected projects

List of selected project for Special International Collaborative Research Project 2022, IFS, Tohoku University

Project Code	Project Title	Applicant	Institution	IFS responsible member or non-IFS responsible member	Institution
J22T001	Development of measurement method of flow phenomena in environmental energy devices	Takehiko Sato	Tohoku University	Cotton, James S.	McMaster University

1 selected project

List of selected projects for LyC Collaborative Research Project 2022, IFS, Tohoku University

Project Code	Project Title	Applicant	Institution	IFS responsible member or non-IFS responsible member	Institution
J22Ly01	Thermal Actuation and energy harvesting using Multiphase alloys	LALLART Mickael	LGEF INSA Lyon	Sho Takeda	Tohoku University
J22Ly02	Nonlinear Bifurcation and Dynamic Mode decomposition for Taylor Vortex in Gap between Rotating Two Cylinders/Cones	Takahiro Adachi	Akita University	Atsuki Komiya	Tohoku University
J22Ly03	Monitoring eukaryotic cell functions under various hypoxic conditions with microfluidic differential oxygenators	Rieu Jean-Paul	University Claude Bernard Lyon 1	Kenichi Funamoto	Tohoku University
J22Ly04	Coupled Analysis Approach to Integrated Multiphase Energy Systems	Jun Ishimoto	Tohoku University	Thomas Elguedj	INSA-Lyon & LaMCoS Lab
J22Ly05	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
J22Ly06	Active Control of Protein Mass Transfer by Membranes with Various Pore Patterns	Atsuki Komiya	Tohoku University	Sebastien Livi	INSA Lyon
J22Ly07	Coplanar sensor as solution to detect water uptake on polymer materials	Mary Nicolas	MATEIS Lab, INSA Lyon Associate Professor	Tetsuya Uchimoto	Tohoku University
J22Ly08	Multiscale simulation of Carbon electromigration in iron	Takashi Tokumasu	Tohoku University	Patrice Chantrenne	MATEIS, INSA de Lyon
J22Ly09	Numerical modelling of the particle temperature evolution during cold-spray process	BERNARD Chrystelle	Frontier Research Institute for Interdisciplinary Sciences	Hidemasa Takana	Tohoku University
J22Ly10	Stability of jet diffusion flames cofiring with carbon-free ammonia	Colson Sophie Valerie Anne	Tohoku University	Galizzi, Cedric	INSA-Lyon
J22Ly11	Robust Shape optimization of vibro-acoustic cavity	Frédéric Gillot	Ecole Centrale de Lyon – LTDS Laboratory	Koji Shimoyama	Tohoku University
J22Ly12	MACASH (MAGnetostrictive Composites for Application in Sensing and Harvesting)	Hiroki Kurita	Tohoku University	Sho Takeda	Tohoku University
J22Ly13	Strengthening mechanism of TiC particle reinforced Al matrix composite	Hiroki Kurita	Tohoku University	Sho Takeda	Tohoku University
J22Ly14	Theory for Electrostriction of Polymeric Actuator. (TEmpuRA)	Gildas Coativy	LGEF INSA Lyon	Hidemasa Takana	Tohoku University
J22Ly15	Blood flow Simulation for Medical Applications (BOSMA)	Carole Frindel	LyC – University Tohoku / INSA Lyon	Hitomi Anzai	Tohoku University
J22Ly16	Atmospheric turbulence affecting airplane investigated by global stability analysis	Aiko Yakeno	Tohoku University	Benoit Pier	Ecole Centrale de Lyon
J22Ly17	Modal approach for extracting flow structure related to the subsonic jet noise generation	Aiko Yakeno	Tohoku University	Christophe Bogey	Ecole Centrale de Lyon
J22Ly18	Skyrmion stability under mechanical strains and material deformations	Fumitake Kato	National Institute of Technology (KOSEN), Ibaraki College	Tetsuya Uchimoto	Tohoku University
J22Ly19	Finsler geometry modeling of Turing patterns and protoplasmic streaming	Fumitake Kato	National Institute of Technology (KOSEN), Ibaraki College	Tetsuya Uchimoto	Tohoku University
J22Ly20	Corrosion characterization for pipe wall by ultrasonic wave	Hiroyuki Nakamoto	Kobe University	Tetsuya Uchimoto	Tohoku University