List of selected projects for General Collaborative Research Project 2012, IFS, Tohoku University

№	Project Title	Applicant	Institution	IFS responsiblemember or non-IFS responsiblemember	Institution
1	Instability of high-temperature premixed flames	Kadowaki Satoshi	Nagaoka University of Technology	Kobayashi Hideaki	Tohoku University
2	Increment in Lift on an Airfoil Installed Active Boundary Layer Control System Using Vortex Generator Jets	Hasegawa Hiroaki	Akita University	Obayashi Shigeru	Tohoku University
3	Shuttlecock aerodynamics and dynamic behavior at the instant of impact	Hasegawa Hiroaki	Akita University	Obayashi Shigeru	Tohoku University
4	Study on the electronic states in high-density and regularly-arrayed quantum dot systems fabricated by neutral beam etching	Saiki Toshiharu	Keio University	Samukawa Seiji	Tohoku University
5	Alternating field characteristics of complex flow in magnet-ferrofluid system	Sudo Seiichi	Akita Prefectural University	Nishiyama Hideya	Tohoku University
6	Investigation of a novel magnetorheological shear thickening fluid	Li Weihua	University of Wollongong	Nakano Masami	Tohoku University
7	Low damage fabrication of Si Photonic devices by Neutral Beam Technology	Wada Kazumi	The University of Tokyo	Samukawa Seiji	Tohoku University
8	The Mechanism and the Control of the Unsteady Three-dimensional Wake Structure of Road Vehicle	Lai Chenguang	Chongqing University of Technology	Obayashi Shigeru	Tohoku University
9	Development and Micro-Cahnnel Flow Evaluation of Electro-Rheological Nano-Suspensions	Tanaka Katsufumi	Kyoto Institute of Technology	Nakano Masami	Tohoku University
10	Study on the advanced MOS transistor of the neutral beam process	Endo Kazuhiko	National Institute of Advanced	Samukawa Seiji	Tohoku University
11	Fabrication of Quantum Dot Superlattice Using Precise Beam Flux-control Technique	Kita Takashi	Kobe University	Samukawa Seiji	Tohoku University
12	Breakthrough in Quantum Nanostructure Fabrication by combining top-down and bottom-up technologies and Novel Device Innovation	Kita Takashi	Kobe University	Samukawa Seiji	Tohoku University
13	Experimental study on aerodynamic characteristics of a silent supersonic aircraft in supersonic flight	Obayashi Shigeru	Tohoku University	Sasoh Akihiro	Nagoya University
14	Research on detection method of calcification in soft tissue	Ogasawara Masafumi	GE Helthcare Japan	Funamoto Kenichi	Tohoku University
15	A numerical study of the effect of large deformations of a trailing vortex on its breakdown	Takahashi Naoya	Tokyo Denki University	Hattori Yuji	Tohoku University
16	Effects of External Disturbances on Spatially Developing Turbulence and Its Application to Control of Thermo-Fluid Dynamics	Sakai Yasuhiko	Nagoya University	Hayase Toshiyuki	Tohoku University
17	Intelligent information processing circuits using nanodisk array structure	Morie Takashi	Kyushu Institute of Technology	Samukawa Seiji	Tohoku University
18	Sustainable integrated study of atomization and interfacial phenomena	Ishimoto Jun	Tohoku University	Saito Kozo	University of Kentucky
19	Nano-device cleaning by using reactive multiphase flow	Ishimoto Jun	Tohoku University	Jin-Goo Park	Hanyang University
20	Development of frontier energy using reactive multiphase flow	Ishimoto Jun	Tohoku University	Jin-Goo Park	Hanyang University
21	Generation mechanism of rising film flow along the rotating conical outer surface and the subsequent atomization chracteristics.	Adachi Takahiro	Akita University	Okajima Junnosuke	Tohoku University

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22	Development of Vertical Take-Off and Landing Vehicle for Exploration of Disaster Area	Obayashi Shigeru	Tohoku University	Takahashi Shun	Tokyo University of Agriculture
23	Improvement of reality of CG motion pictures by hydrodynamic effects	Ishihara Takashi	Nagoya University	Hattori Yuji	TohokuUniversity
24	High Frequency Operation of Single-Electron Tunneling Devices Consisting of Nanodots	Takahashi Yasuo	Hokkaido University	Samukawa Seiji	Tohoku University
25	Designing of microfluidic device to temporally and spatially control oxygen tension for cellular experiment	Funamoto Kenichi	Tohoku University	Roger D. Kamm	Massachusetts Institute of Technology
26	Rheological analysis of the mechanism of fetal brain hemorrhage	Funamoto Kenichi	Tohoku University	Ito Takuya	Tohoku University
27	Particle structural formations of colloidal MR fluid and their influences on magnetic rheological	Abe Hiroya	Osaka University	Nakano, Masami	Tohoku University
28	Non-destructive detection of cracks using electromagnetic phenomena	Qiu Jinhao	Nanjing University of Aeronautics and Astronautics	Takagi Toshiyuki	Tohoku University
29	Development of a field effect transistor with channel surface covered by probe-biomolecules with a newly developed aptamer.	Yamashita Ichiro	NAIST	Samukawa Seiji	Tohoku University
30	Development of high performance strained-Ge channel device utilizing neutral-beam oxidized film	Sawano Kentarou	Tokyo City University	Samukawa Seiji	Tohoku University
31	Parallel computations on the base of GPU for modeling of gas combustion processes	Fursenko Roman	SB RAS	Maruta Kaoru	Tohoku University
32	Investigations of sporadic regimes of gas combustion	Minaev Sergey	SB RAS	Maruta Kaoru	Tohoku University
33	Visualization, “real time” algorithms and parallel computations of reacting flows	Mazurok Boris	SB RAS	Maruta Kaoru	Tohoku University
34	Development of the heat transfer surface with micro-pits to enhance the critical heat flux in nucleate boiling	Miyata Kazushi	Tohoku University	Mori Hideo	Kyusyu University
35	Investigation of shock waves propagation on microscales	Ivanov Mikhail	Siberian Branch of Russian Academy of Science	Maruta Kaoru	Tohoku University
36	Development of High Efficient Ship Design Technique	Jeong Shinkyu	Tohoku University	Kim Hyunyul	George Mason University
37	Development of High reliability Numerical Simulation Code for Next Generation Low Noise Rotor Design	Jeong Shinkyu	Tohoku University	Yee Kwanjung	Pusan National University
38	Clarification of bubble generation and flow dynamics in the vicinity of an electrode by water plasma	Sato Takehiko	Tohoku University	Nakatani Tatsuyuki	Toyo Advanced Technologie
39	New exact solutions for vortex rings with swirl and magnetic field	Llewellyn Smith Stefan	University of California, San Diego	Hattori Yuji	Tohoku University
40	Flow instabilities of boiling nitrogen in a horizontal pipe.	Ohira Katsuhide	Tohoku University	Kobayashi Hiroaki	JAXA

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41	Evaluation and Analysis of Atmospheric Radiative Energy Transfer	Maruyama Shigenao	Tohoku University	Yamada Noboru	Nagaoka University of Technology
42	Measurement of Radiative Properties Controlled-Film	Maruyama Shigenao	Tohoku University	Vaillon Rodolphe	INSA Lyon
43	Analysis of the Combined Mode Heat Transfer in Complex Materials	Maruyama Shigenao	Tohoku University	Mishra Subhash Chandra	IIT
44	A study of light transport and heat transfer in biological tissue using radiation element method	Maruyama Shigenao	Tohoku University	Sakurai Atsushi	Niitagata University
45	Nonlinear dynamics of flame front instability in two-dimensional radial microchannels	Gotoda Hiroshi	Ritsumeikan University	Maruta Kaoru	Tohoku University
46	Global flow visualization around supersonic projectiles using background-oriented schlieren method	Mizukaki Toshiharu	Tokai University	Obayashi Shigeru	Tohoku University
47	Temperature measurement of unsteady supersonic flows using laser-induced thermal acoustics	Mizukaki Toshiharu	Tokai University	Obayashi Shigeru	Tohoku University
48	Researches on the suppression control of hole tone phenomena	Nakano Masami	Tohoku University	Matsuura Kazuo	Tohoku University
49	Study on the biological actuation with the magnetic stimulation.	Mori Hitoshi	IFG Co.,Ltd.	Takagi Toshiyuki	Tohoku University
50	Numerical studies of rarefied chemically reacting flows about space vehicles	Ivanov Mikhail	Siberian Branch of Russian Academy of Science	Yonemura Shigeru	Tohoku University
51	Evaluation of intracranial aneurysm rupture by MR-measurement-integrated simulation	Sugiyama Shinichiro	Kohnan Hospital	Funamoto Kenichi	Tohoku University
52	Database of intracranial aneurysms with hemodynamic analysis	Sugiyama Shinichiro	Kohnan Hospital	Ohta Makoto	Tohoku University
53	Development of a micro-motor for MEMS utilizing smart polymer fabricated by photolithography.	Nakano Masami	Tohoku University	Zrinyi Mikols	Semmelweis University
54	Metal-containing DLC: toward a smart coating	Fontaine Julien	Ecole Centrale de Lyon	Takagi Toshiyuki	Tohoku University
55	Inactivation of virus by a plasma flow at atmospheric pressure	Sato Takehiko	Tohoku University	Oshitani Hitoshi	Tohoku University
56	Thermal resistance between nano-structured surfaces and liquids	Ohara Taku	Tohoku University	Shibahara Masahiko	Osaka University
57	Observation of hypoxia cellular response by using microfluidic devices	Fukushima Shuichiro	Osaka University	Funamoto Kenichi	Tohoku University
58	Fabrication of Ti/Al composite material by compression shearing method at room temperature	Nakayama Noboru	Shinshu University	Miki Hiroyuki	Tohoku University
59	Mechanism on thermodynamic effects in micro-bubble cavitation	Niiyama Kazuki	Kanazawa Institute of Technology	Iga Yuka	Tohoku University
60	Effects of swirl on the stability of vortices	Hattori Yuji	Tohoku University	Fukumoto Yasuhide	Kyusyu University

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61	Study of contact alignment for the slider specimen of tribometer.	Goto Minoru	UBE National College of Technology	Miki Hiroyuki	Tohoku University
62	Entropy flow in magnetically ordered Heusler alloys under influence of temperature or magnetic field	Khovaylo Vladimir	National University of Science and Technology "MISiS"	Miki Hiroyuki	Tohoku University
63	Investigation of subsonic-supersonic hybrid-stabilized argon-water electric arc with inhomogeneous mixing of plasma species	Jenista Jiri	Institute of Plasma Physics ASCR, v.v.i.	Nishiyama Hideya	Tohoku University
64	Instability Analysis of Natural Convection in Closed Cavity Configuration	Komiya Atsuki	Tohoku University	Daniel Henry	Ecole Centorale Lyon
65	CO2 Absorption Process and Mass Transfer in Micro Channel of Diatoms	Komiya Atsuki	Tohoku University	Gary Rosengarten	RMIT University
66	Mechanism of blast-induced traumatic brain injury	Nakagawa Atsuhiro	Tohoku University	Hayase Toshiyuki	Tohoku University
67	Integrated Analysis by Kinetic Model and Fluid Model for Innovative Plasma Applications	LI He-Ping	Tsinghua University	Takana Hidemasa	Tohoku University
68	Seminar for next generation sensors for super-high temperature environment	Takagi Toshiyuki	Tohoku University	Shouji Kazuo	IntelligentCosmosResearchInstitute
69	Development of force balance and its application to a silent supersonic biplane model in the low speed wind tunnel	Kawazoe Hiromitsu	Tottori University	Obayashi Shigeru	Tohoku University
70	Effect of Electron Behavior in front of Shock Wave on Thermo-Chemical Process Behind the Shock Wave	Kawazoe Hiromitsu	Tottori University	Obayashi Shigeru	Tohoku University
71	Analyses of nano-scale surface damages generated during plasma etching processes	Hamaguchi Satoshi	Osaka University	Samukawa Seiji	Tohoku University
72	Anti-bacterial effect of a glow discharge plasma against biofilm-producing gram negative bacilli	Fujimura Shigeru	Tohoku University	Sato Takehiko	Tohoku University
73	Analysis of plasma flow at gas-liquid interface for biological interaction	Sato Takehiko	Tohoku University	Morfill Gregor	Max-Planck-Institute for Extraterrestrial Physics
74	Cavity formation mechanism in a cavitation process	Sato Takehiko	Tohoku University	Farhat Mohamed	Ecole Polytechnique Federale de Lausanne (EPFL)
75	Mechanism of plasma thermo-fluid dynamics in water	Sato Takehiko	Tohoku University	Kanazawa Seiji	Oita University
76	Development of new energetic materials using Design Exploration	Jeong Shinkyu	Tohoku University	Togashi Fumiya	SAIC
77	Improvement of Numerical Scheme and Theory for Kinetic Force Method	Saveliev Vladimir	National Center of Space	Yonemura Shigeru	Tohoku University
78	An analysis of effect of quantum nature on the thermodynamic/transport properties of liquid hydrogen using molecular dynamics method	Tokumasu Takashi	Tohoku University	Tsuboi Nobuyuki	JAXA

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79	Construction of interaction model for dissipative particle dynamics method based on molecular dynamics simulation	Tokumasu Takashi	Tohoku University	Kinefuchi Ikuya	Tokyo University
80	Molentum Transport Phenomena in a Liquid Bridge under Shear	Tokumasu Takashi	Tohoku University	Vergne Philippe	INSA-Lyon
81	Optimization of stent design based on Blood flow analysis using LBM method	Ohta Makoto	Tohoku University	Bastien Chopard	Geneva University
82	Development of Biomodel for Blood cell	Ohta Makoto	Tohoku University	Liviu Movileanu	Syracuse University
83	Research of Friction and Drilling on bio-composite model	Ohta Makoto	Tohoku University	Kapsa Philippe	ECL
84	Reconstruction of Wall thinning from Pulsed ECT Signals	Chen Zhenmao	Xi'an Jiaotong University	Takagi Toshiyuki	Tohoku University
85	Simulation analysis on grain boundaries thought relation between Cr depletion distribution and local magnetic properties	Yamaguchi Katsuhiko	Fukushima University	Takagi Toshiyuki	Tohoku University

Selected project for Transdisciplinary Collaborative Research Project 2012, IFS, Tohoku University

№	Project Title	Applicant	Institution
1	Frontier Science of Next Generation Reactive Fluid	Ishimoto Jun	Tohoku University