

OS19: The 18<sup>th</sup> International Symposium on Advanced Fluid Information(AFI-2018)  
IFS Collaborative Research Forum

- CRF-1      **Optimal Wind Turbine Design with Multi-Objective Kriging-Based Optimization**  
Lavi Rizki Zuhail, Ghifari Adam Faza, Kemas Zakaria (Bandung Institute of Technology, Indonesia), Pramudita Satria Palar, Koji Shimoyama (Tohoku University, Japan)
- CRF-2      **A Data Assimilation Application to Computational Crowd Dynamics Simulations**  
Fumiya Togashi (Applied Simulations Inc., USA), Takashi Misaka (AIST, Japan), Rainald Löhner (George Mason University, USA), Shigeru Obayashi (Tohoku University, Japan)
- CRF-3      **Characteristics of Centreline Shock Reflection in Stunted Busemann Intakes**  
Hideaki Ogawa (RMIT University, Australia), Ben Shoesmith (McGill University, Canada), Sannu Mölder (Ryerson University, Canada), Evgeny Timofeev (McGill University, Canada), Georgy Shoev (Russian Academy of Sciences, Russia), Kiyonobu Ohtani (Tohoku University, Japan)
- CRF-4      **Collaborative Optimization of Vehicle Low Aerodynamic Drag and Noise Reduction**  
Chenguang Lai, Hailin Zhang, Bin Zhao, Yuting Zhou (Chongqing University of Technology, China), Shigeru Obayashi (Tohoku University, Japan)
- CRF-5      **Flowfield Reconstruction from Surface Pressure Using Data Assimilation Method**  
Junho Cho (Seoul National University, Korea), Takashi Misaka, Shigeru Obayashi (Tohoku University, Japan), Kwanjung Yee (Seoul National University, Korea), Shinkyu Jeong (Kyunghee University, Korea)
- CRF-6      **Comparison of Data Assimilation Methods in Fluid Problems**  
Takashi Misaka (AIST, Japan), Shigeru Obayashi (Tohoku University, Japan)
- CRF-7      **Aerodynamic Drag Reduction Using a Coating Material in Flapping Wing**  
Tadateru Ishide, Motoki Kimura, Ryo Fujii, Tomoharu Kaeriyama (National Institute of Technology, Kisarazu College, Japan), Koji Shimoyama, Shigeru Obayashi (Tohoku University, Japan)
- CRF-8      **Feasibility Study on a V/S-TOL Aircraft with Upper Surface Blowing**  
So Nishimura, Taiki Okumura, Kenichi Sakamoto, Seiichiro Morizawa, Hiromitsu Kawazoe (Tottori University, Japan), Shigeru Obayashi (Tohoku University, Japan)
- CRF-9      **CFD Study on a Wing Grid for Improvement of Aerodynamic Characteristics**  
Seiichiro Morizawa, Keisuke Tokura, Hiromitsu Kawazoe (Tottori University, Japan), Shigeru Obayashi (Tohoku University, Japan)
- CRF-10     **Experimental Validation of Natural Convection Flow in a Cavity with Time-Varying Thermal Boundary Conditions**  
Linjing Zhou, Steven Armfield, Nicholas Williamson, Michael Kirkpatrick (The University of Sydney, Australia), Wenxian Lin (James Cook University, Australia), Atsuki Komiya, Takuma Kogawa (Tohoku University, Japan)

- CRF-11      **Experimental and Numerical Investigation of Flow Phenomena Associated with Low-Reynolds Number Flow**  
Daisuke Sasaki, Takaya Miwa, Yuya Yamaguchi, Yuta Natsume, Tsubasa Iwafune, Ryota Fujii, Takeshi Akasaka, Masato Okamoto (Kanazawa Institute of Technology, Japan), Shun Takahashi (Tokai University, Japan), Takashi Misaka (AIST, Japan), Shigeru Obayashi, Koji Shimoyama (Tohoku University, Japan)
- CRF-12      **Fully Automatic Design Optimization System for Flyback Booster Considered From Subsonic to Hypersonic Range**  
Tsuyoshi Sumimoto, Kazuhisa Chiba (The University of Electro-Communications, Japan), Masahiro Kanazaki (Tokyo Metropolitan University, Japan), Takahiro Fujikawa, Koichi Yonemoto (Kyushu Institute of Technology, Japan), Shigeru Obayashi (Tohoku University, Japan)
- CRF-13      **Concept of Hollow Cylindrical Tether under Space Debris Impact**  
Yoshiyuki Uwamino, Michihiro Fujiwara, Kiyonobu Ohtani, Kanjuro Makihara (Tohoku University, Japan)
- CRF-14      **Aerodynamic Evaluation of Ski Jumping Suit Fabric – Effect of Different Air Permeability on Aerodynamic Performances –**  
Ryusei Maeta, Toru Takahashi, Hiroaki Hasegawa (Utsunomiya University, Japan), Kazuya Seo (Yamagata University, Japan), Shigeru Obayashi (Tohoku University, Japan)
- CRF-15      **PSP Measurements for a Badminton Shuttlecock Model**  
Yuki Fujisawa, Masaki Kobayashi, Hiroaki Hasegawa (Utsunomiya University, Japan), Hiroki Nagai (Tohoku University, Japan)
- CRF-16      **Numerical Prediction of Flow Characteristics around Moving Objects in Multiphase Flow**  
Yusuke Mizuno, Yuki Kawamoto, Shun Takahashi, Kota Fukuda (Tokai University, Japan), Shigeru Obayashi (Tohoku University, Japan)
- CRF-17      **Dynamic Simulation of Deployable Wing Mars Airplane**  
Keisuke Otsuka (Tohoku University, Japan), Yinan Wang (University of Warwick, UK), Koji Fujita, Hiroki Nagai, Kanjuro Makihara (Tohoku University, Japan)
- CRF-18      **Aerodynamic Performance Investigations around Control Surfaces of Mars Airplane Balloon Experiment Two**  
Masahiro Kanazaki, Kai Tomisawa, Hiroto Kittaka (Tokyo Metropolitan University, Japan), Koji Fujita (Tohoku University, Japan), Akira Oyama (Japan Aerospace Exploration Agency, Japan), Hiroki Nagai (Tohoku University, Japan)
- CRF-19      **Design of Control Surface for Mars Exploration Airplane**  
Shinkyu Jeong, Boyoung Won, Kitae Park, Kangkuk You (Kyung-hee University, Korea), Hiroki Nagai, Koji Fujita (Tohoku University, Japan)
- CRF-20      **Research and Development Co-Axial Rotor to Realize Mars Helicopter**  
Hiroki Nagai, Kensuke Kanou, Tsubasa Ikami, Koji Fujita (Tohoku University, Japan), Kouichi Yonezawa (Central Research Institute of Electric Power Industry, Japan)

- CRF-21 **Heat Transfer Investigation of Hydrophobic Organo-Metallic Slippery Surfaces**  
Raza Gulfam, Peng Zhang (Shanghai Jiao Tong University, China), Hiroki Nagai (Tohoku University, Japan)
- CRF-22 **Application of Two-Phase Thermo-Fluid Simulation for Accurate Design of Oscillating Heat Pipe**  
Kaoru Takemura, Shun Takahashi, Kaori Sato (Tokai University, Japan), Hiroki Nagai, Takuya Adachi (Tohoku University, Japan)
- CRF-23 **Micro-combustion of Natural Gas for Solid Oxide Fuel Cells**  
Ryan J. Milcarek (Arizona State University, USA), Mengyuan Chu (Syracuse University, USA), Hisashi Nakamura, Kaoru Maruta (Tohoku University, Japan), Jeongmin Ahn (Syracuse University, USA)
- CRF-24 **Effects of Negative Temperature Coefficient of Reactivity on End-Gas Autoignition and Pressure Wave Development during Knocking Combustion**  
Hiroshi Terashima (Hokkaido University, Japan), Hisashi Nakamura (Tohoku University, Japan)
- CRF-25 **Development of Light-Driven Microactuators for Microfluidic Devices**  
Noboru Yamada, Vuong Van Thai (Nagaoka University of Technology, Japan), Junnosuke Okajima, Atsuki Komiya (Tohoku University, Japan)
- CRF-26 **Development of Accurate Temperature Measurement Method by Infrared Camera**  
Takuma Kogawa (National Institute Technology Hachinohe College, Japan), Junnosuke Okajima, Atsuki Komiya (Tohoku University, Japan), Shigenao Maruyama (National Institute Technology Hachinohe College, Japan)
- CRF-27 **Transition of Pumping-up Flow Patterns with High Viscosity in a Centrifugal Force Field by Rotating Cones**  
Jun Kanamori, Takahiro Adachi (Akita University, Japan), Junnosuke Okajima (Tohoku University, Japan)
- CRF-28 **Effect of Ambient Pressure on Superheated Water Jet from a Fan Spray Injector**  
Rikio Watanabe, Daiki Tsuchida (Tokyo City University, Japan), Taku Kudo, Hideaki Kobayashi (Tohoku University, Japan)
- CRF-29 **The Effects of Heat Loss on the Dynamics of Hydrogen-Air Premixed Flames**  
Satoshi Kadowaki, Tsutomu Uchiyama, Toshiyuki Katsumi (Nagaoka University of Technology, Japan), Hideaki Kobayashi (Tohoku University, Japan)
- CRF-30 **Corrosion Characterization for Pipe Wall by Ultrasound Reflection**  
Hiroyuki Nakamoto (Kobe University, Japan), Philippe Guy (INSA Lyon, France), Toshiyuki Takagi (Tohoku University, Japan)
- CRF-31 **Influence of Mechanical Damage on Electromagnetic NDT Signals**  
Zhenmao Chen, Shejuan Xie, Manru He, Hong-En Chen (Xi'an Jiaotong University, China), Tetsuya Uchimoto, Toshiyuki Takagi (Tohoku University, Japan)

- CRF-32      **Estimation of Fracture Permeability by Integrating Microseismic Observational Data and Reservoir Engineering Modeling**  
Yusuke Mukuhira (Tohoku University, Japan), Jack H. Norbeck, Justin L. Rubinstein (U. S. Geological Survey, USA)
- CRF-R1      **Link between Tracer and Microseismic Analysis to Comprehensive Understanding of Hydraulic Feature of Fractured Geothermal Reservoir**  
Anna Suzuki, Yusuke Mukuhira (Tohoku University, Japan), Roland N. Horne (Stanford University, USA), Michael C. Fehler (MIT, USA), Peter K. Kang (University of Minnesota, USA)
- CRF-33      **Study on the Function of Me-DLC Nano-Composite Coatings Acting as Thermo-Sensor in the Sliding Interface**  
Minoru Goto (National Institute of Technology, Ube College, Japan), Toshiyuki Takagi (Tohoku University, Japan), Kosuke Ito (Nihon University, Japan), \_Hiroyuki Miki, Hiroyuki Kosukegawa (Tohoku University, Japan)
- CRF-34      **Nondestructive Evaluation for Carbon Fiber Composite Parts Fabricated by Prepreg with High Moldability**  
Takahiro Ishibashi, Koichi Mizukami (Ehime University, Japan), Hiroyuki Kosukegawa, Toshiyuki Takagi (Tohoku University, Japan)
- CRF-35      **Nano-Particle Dispersion Effects on the Mechanical Properties of Carbon Fiber Reinforced Plastics**  
Tetsuo Takayama (Yamagata University, Japan), Hiroyuki Kosukegawa, Toshiyuki Takagi (Tohoku University, Japan)
- CRF-36      **Seminar for Advanced Maintenance Technology of Fiber Reinforced Composites**  
Tetsuya Hisada, Keisuke Ura, Noriyuki Sato (Miyagi Prefectural Government, Japan), Hiroyuki Kosukegawa, Toshiyuki Takagi (Tohoku University, Japan)
- CRF-37      **Magnetic and Electric Properties of Diamond Like Carbon-Magnetic Metal Nano-Composite Films**  
Yiweng Zhang (Tianjin University, China), Hiroyuki Kosukegawa, Hiroyuki Miki, Toshiyuki Takagi (Tohoku University, Japan)
- CRF-38      **Internal Defect of Plastic-Fabricated Carbon Fiber Reinforced Thermo Plastics**  
Yuya Kodaira (Shinshu University, Japan), Toshiyuki Takagi, Hiroyuki Miki, Hiroyuki Kosukegawa (Tohoku University, Japan), Noboru Nakayama (Shinshu University, Japan)
- CRF-39      **Experimental Study on the Tensile Strength and Fracture Behavior of Single Abaca Fiber**  
Zahrul Fuadi, Sabri Sabri, Samsul Rizal, Hiroomi Homma (Syiah Kuala University, Indonesia), Toshiyuki Takagi, Hiroyuki Miki, Hiroyuki Kosukegawa (Tohoku University, Japan)
- CRF-40      **Methodology for Multifunctional Coating Formation by Plasma Electrolytic Oxidation**  
Aleksandra A. Gladkova, Vladimir V. Khovaylo, Aleksander G. Rakoch, Nikita A. Predein (National University of Science and Technology “MISiS”, Russia), Hiroyuki Kosukegawa, Hiroyuki Miki, Toshiyuki Takagi (Tohoku University, Japan)

- CRF-41 **Fluid Flow Analysis of an Atmospheric-Pressure Micro-plasma Ejected from a Narrow Nozzle**  
Hiroyuki Yoshiki, Kenji Otsaka (National College of Technology, Tsuruoka College, Japan), Takehiko Sato, Tomoki Nakajima, Satoshi Uehara (Tohoku University, Japan)
- CRF-42 **Development of Low-Temperature Plasma Process for Nitride and Oxide Functional Films Formation**  
Kosuke Takenaka, Giichiro Uchida, Yuichi Setsuhara (Osaka University, Japan), Takeru Okada (Tohoku University, Japan)
- CRF-43 **Electric Field Measurements in Nanosecond Pulse Discharges in Air and in Hydrogen Flame**  
Marien Simeni Simeni (Ohio State University, USA), Yong Tang (Tsinghua University, China), Kraig Frederickson, Igor Adamovich (Ohio State University, USA), Hidemasa Takana, Hideya Nishiyama (Tohoku University, Japan)
- CRF-44 **Numerical Modeling on Enhancement of CO<sub>2</sub> Absorption by Ionic Liquid Electropray**  
Hidemasa Takana, Koji Kawatani (Tohoku University, Japan), Takayasu Fujino (Tsukuba University, Japan)
- CRF-45 **Artificial Cage-Shaped Proteins for Nano-Process**  
Ichiro Yamashita (Osaka University, Japan), Naofumi Okamoto (Nara Institute of Science and Technology, Japan), Seiji Samukawa (Tohoku University, Japan)
- CRF-46 **Optical Properties of Si Nanopillar / Si<sub>0.7</sub>Ge<sub>0.3</sub> Composite Film Fabricated by Using a Neutral Beam Etching Technique**  
Naoki Matsuda, Tsubasa Nakamura (University of Miyazaki, Japan), Daisuke Ohori, Seiji Samukawa (Tohoku University, Japan), Tetsuo Ikari, Atsuhiko Fukuyama (University of Miyazaki, Japan)
- CRF-47 **Neutral Beam Treatment Improved Contact Electrification for Dramatically Enhancing Triboelectric Performance**  
Wook Kim, Hyun-Woo Park, Hee Jae Hwang (Kyung Hee University, Republic of Korea), Kwun-Bum Chung (Dongguk University, Republic of Korea), Takeru Okada, Seiji Samukawa (Tohoku University, Japan), Dukhyun Choi (Kyung Hee University, Republic of Korea)
- CRF-48 **Multilevel Memory Characteristics of Ta/Ta<sub>2</sub>O<sub>5-δ</sub> ReRAM for the Application of Neural Network**  
Yuanlin Li, Atsushi Tsurumaki-Fukuchi, Masashi Arita, Yasuo Takahashi (Hokkaido University, Japan), Hideyuki Andoh, Takashi Morie (Kyushu Institute of Technology, Japan), Seiji Samukawa (Tohoku University, Japan)
- CRF-49 **Analog Memory Devices for Time-Domain Weighted-Sum Calculation Circuits**  
Kenya Yamashita, Masataka Harada, Takashi Morie (Kyushu Institute of Technology, Japan), Atsushi Tsurumaki-Fukuchi, Masashi Arita, Yasuo Takahashi (Hokkaido University, Japan), Seiji Samukawa (Tohoku University, Japan)

- CRF-50 **Nitrogen Doping to Narrow Holes by Atmospheric-pressure Plasma Jet with Flow Induction**  
Ryuta Ichiki, Kiho Toda, Shuichi Akamine, Seiji Kanazawa (Oita University, Japan), Takeru Okada (Tohoku University, Japan)
- CRF-51 **Electronic Structure of Semiconductor Nanostructure Array for Thermoelectric Applications**  
Ming-Yi Lee, Yiming Li (National Chiao Tung University, Taiwan), Seiji Samukawa (Tohoku University, Japan)
- CRF-52 **Molecular Dynamics Simulation of a Nano Droplet in a Nm-Order Channel**  
Akinori Fukushima (University of Fukui, Japan), Nicolas Fillot (INSA-Lyon, France), Takashi Tokumasu (Tohoku University, Japan), Philippe Vergne (INSA-Lyon, France)
- CRF-53 **Analysis of Transport Phenomena of Oxygen Ion in Dual-Phase Electrolyte Material**  
Hiroki Nagashima (University of the Ryukyus, Japan), Ryan Falkenstein-Smith, Jeongmin Ahn (Syracuse University, USA), Takashi Tokumasu (Tohoku University, Japan)
- CRF-54 **Molecular Dynamics Simulation of Oxygen Diffusion on Ionomer Surface**  
Masataka Nakauchi, Takuya Mabuchi (Tohoku University, Japan), Yuta Yoshimoto, Toshihiro Kaneko, Ikuya Kinefuchi (The University of Tokyo, Japan), Hideki Takeuchi (National Institute of Technology, Kochi College, Japan), Takashi Tokumasu (Tohoku University, Japan)
- CRF-55 **Thermodynamic Property Gradients in Near-Surface Water Thin Film**  
Manish Gupta, An Zou (Syracue University, USA), Takashi Tokumasu (Tohoku University, Japan), Shalabh C. Maroo (Syracue University, USA)
- CRF-56 **In-Plane Relation between Epitaxial Magnesium Oxide Film and Silicon Substrate**  
Satoru Kaneko, Reiko Sudo (Sagamihara Surface Lab., Japan), Shigeo Yasuhara, Tamio Endo (Japan Advanced Chemicals, Japan), Manabu Yasui, Masahito Kurouchi (KISTEC, Japan), Musa Can (Istanbul University, Turkey), Shalima Shawuti (Sabanci University, Turkey), Yoshimi Nakamaru, Chiemi Kokubun, Kayoko Konda, Takashi Tokumasu (Tohoku University, Japan)
- CRF-57 **Solid Oxide Fuel Cells Replacement of a Traditional Catalytic Converter**  
Thomas S. Welles, Jeongmin Ahn (Syracuse University, USA), Hisashi Nakamura (Tohoku University, Japan)
- CRF-58 **Statistical Mechanical Evaluation of Thermophysical Properties of Oxygen-Hydrogen Mixture System Based on the Differential Hierarchy of a Complete Thermodynamic Function**  
Ryuji Takahashi, Nobuyuki Tsuboi (Kyushu Institute of Technology, Japan), Takashi Tokumasu (Tohoku University, Japan), Shin-ichi Tsuda (Kyushu University, Japan)
- CRF-59 **Probabilistic Tsunami Inundation Hazard Map via Uncertainty Quantification Approaches**  
Wataru Yamazaki, Tatsuya Kato (Nagaoka University of Technology, Japan), Koji Shimoyama, Shigeru Obayashi (Tohoku University, Japan)

- CRF-60      **Molecular Dynamics Simulation on Dispersion of hBN Nano Particles in TMP Ester Based Bio-Lubricants**  
Rizky Ruliani, Nasruddin (Universitas Indonesia, Indonesia), Takashi Tokumasu (Tohoku University, Japan)
- CRF-61      **Mechanism of Thermal Energy Transfer in Nanoscale Solid-Liquid Systems**  
Masahiko Shibahara (Osaka University, Japan), Gota Kikugawa, Taku Ohara (Tohoku University, Japan)
- CRF-R2      **Modeling of Inhomogeneous Plasma-Species Mixing in Atmospheric-Pressure Argon-Steam Arc Discharge for Broad Range of Currents and Argon Mass Flow Rates**  
Jiří Jeništa (Institute of Plasma Physics AS CR, v.v.i., Czech Republic), Hidemasa Takana, Hideya Nishiyama (Tohoku University, Japan), Miladá Bartlov, Vladimír Aubrecht (Brno University of Technology, Czech Republic), Anthony B. Murphy (CSIRO Materials Science and Engineering, Australia)
- CRF-R3      **Microchannel Burners for Energy Production on the Basis of Micro Combustion**  
Sergey Minaev (Far-Eastern Federal University, Russia), Kaoru Maruta (Tohoku University, Japan), Roman Fursenko (ITAM SB RAS, Russia), Alexander Kirdyashkin (Tomsk Scientific Center of SB RAS, Russia), Vladimir Gubernov (Lebedev Physical Institute RAS, Russia)
- CRF-62      **The Role of Signal-Aanchor Region of Type II Transmembrane Protein in Subcellular Localization**  
Kenji Etchuya (Meiji University, Japan, AIST, Japan), Tatsuki Kikegawa (Meiji University, Japan), Makoto Ohta (Tohoku University, Japan), Yuri Mukai (Meiji University, Japan)
- CRF-63      **Planning Flow-Diversion Treatment for Intracranial Aneurysms: What Role Could Fluid Dynamics Play?**  
Makoto Ohta (Tohoku University, Japan), Yi Qian, Yujie Li (Macquarie University, Australia), Mingzi Zhang (Tohoku University, Japan)
- CRF-64      **Numerical and Experimental Studies on Non-Newtonian Rheology of a Suspension**  
Misa Kawaguchi, Tomohiro Fukui (Kyoto Institute of Technology, Japan), Kenichi Funamoto, Suguru Miyauchi, Toshiyuki Hayase (Tohoku University, Japan)
- CRF-65      **The Effects of Atmospheric-Pressure Cold Plasma Generated Short-Life Species on A549 Cells**  
Hamza H. S. Hilal, Chao-Yu Chen, Po-Chien Chien (National Chiao Tung University, Taiwan), Chia-Hsing Chang (Tohoku University, Japan), Jong-Shinn Wu (National Chiao Tung University, Taiwan), Takehiko Sato (Tohoku University, Japan), Yun-Chien Cheng (National Chiao Tung University, Taiwan)
- CRF-66      **Investigation of Bioheat Transfer Characteristics of Skin Tumor During Non-Invasive Measurement of Thermal Conductivity**  
Takahiro Okabe (Hirosaki University, Japan), Taku Fujimura, Junnosuke Okajima (Tohoku University, Japan), Shigenao Maruyama (National Institute of Technology, Hachinohe College, Japan)

- CRF-67      **Estimation of Mechanical Properties of Living Tissue by Shock Wave Irradiation**  
Takahiro Sumi, Tokitada Hashimoto (Saga University, Japan), Kiyonobu Ohtani (Tohoku University, Japan)
- CRF-68      **How to Fabricate an Elastic Patient-Specific Aneurysm Model in Full-Scale**  
Gaku Tanaka, Taihei Kotani, Gaku Takizawa (Chiba University, Japan), Ryuhei Yamaguchi, Simon Tupin (Tohoku University, Japan), Kahar Osman, Nadia S. Shafii (Universiti Teknologi Malaysia, Malaysia), Hitomi Anzai, Makoto Ohta (Tohoku University, Japan)
- CRF-69      **Mechanism of Propagation of Underwater Negative Streamer**  
Ryo Kumagai (Tohoku University, Japan (Currently Olympus Corporation)), Seiji Kanazawa (Oita University, Japan), Kiyonobu Ohtani, Atsuki Komiya, Toshiro Kaneko, Tomoki Nakajima, Takehiko Sato (Tohoku University, Japan)
- CRF-70      **Clarification of the Transition Mechanism of Cavitation Instabilities**  
Donghyuk Kang (Saitama University, Japan), Pin Fu, Hirotohi Sasaki, Yuka Iga (Tohoku University, Japan)
- CRF-71      **Directional Control of Micro-Jets from Cavitation Bubbles Subject to Multiple Pressure Waves**  
Takahito Akimura, Tomoya Minami (Tohoku University, Japan), Outi Supponen (Ecole Polytechnique Federale de Lausanne, Switzerland), Tomoki Nakajima, Satoshi Uehara, Kiyonobu Ohtani, Toshiro Kaneko (Tohoku University, Japan), Mohamed Farhat (Ecole Polytechnique Federale de Lausanne, Switzerland), Takehiko Sato (Tohoku University, Japan)
- CRF-72      **Quantitative Density Measurement of Unsteady Flow Field around the Projectile**  
Ken Kurihara, Kazuki Ishikawa, Yoshiyuki Ishimoto, Takumi Nagashima, Masanori Ota (Chiba University, Japan), Tatsuro Inage (Shonan Institute of Science, Japan), Hideki Kiritani, Koji Fujita, Kiyonobu Ohtani, Hiroki Nagai (Tohoku University, Japan)
- CRF-73      **Attitude Control of a Supersonic Projectile by Pulsation of Bow Shock**  
Toshiharu Mizukaki (Tokai University, Japan), Kiyonobu Ohtani, Shigeru Obayashi (Tohoku University, Japan)
- CRF-74      **Applications of the Analysis of Turbulence Structure Using Eigenvectors of Rate-of-strain Tensor**  
Takashi Ishihara (Okayama University, Japan), Gerrit E. Elsinga (Delft University of Technology, The Netherlands), Yuji Hattori (Tohoku University, Japan)
- CRF-75      **Supersonic Drag Reduction Model Using Repetitive Pulse Laser Energy Deposition**  
Akira Iwakawa, Akihiro Sasoh (Nagoya University, Japan), Shigeru Obayashi (Tohoku University, Japan)
- CRF-76      **Attenuation and Reduction Effect of Underwater Explosion by Porous Materials**  
Kazutaka Kitagawa (Aichi Institute of Technology, Japan), Kiyonobu Ohtani, Yasufumi Konishi (Tohoku University, Japan), Atsushi Abe (ITOCHU Techno-Solutions Corporation (CTC), Japan)



- CRF-77      **Effects of CO<sub>2</sub> Concentration on Flame Propagation Characteristics of CH<sub>4</sub>/CO<sub>2</sub>/Air Laminar Premixed Flames under Various Equivalence ratios and Pressures**  
Akihiro Hayakawa, Ekenechukwu C. Okafor (Tohoku University, Japan), Willyanto Anggono (Petra Christian University, Indonesia)
- CRF-78      **Surface Pressure Measurement over Free Flight Object in Ballistic Range Facility using Pyrene based Two-Color Pressure-Sensitive Paint**  
 Daiki Kurihara, Steven Caucherty, Hiroataka Sakaue (University of Notre Dame, USA), Hideki Kiritani, Koji Fujita, Hiroki Nagai (Tohoku University, Japan)
- CRF-79      **Verification Test of Novel Fast-responding Pressure-Sensitive Paint to Resolve Small Pressure Fluctuation**  
 Yasuhiro Egami, Atsuya Hasegawa (Aichi Institute of Technology, Japan), Yu Matsuda (Waseda University, Japan), Hiroki Nagai, Koji Fujita (Tohoku University, Japan)
- CRF-80      **Molecular Imaging Technology for Surface Pressure Measurement on Projectiles**  
Daiju Numata (Tokai University, Japan), Kiyonobu Ohtani (Tohoku University, Japan)
- CRF-81      **Investigation of Carbon Nanotube TSP for Dynamic Visualization of Boundary-Layer Transition**  
Daisuke Yorita, Jonathan Lemarechal, Christian Klein (German Aerospace Center, Germany), Koji Fujita, Tsubasa Ikami, Hiroki Nagai (Tohoku University, Japan)
- CRF-82      **Characterization of High Enthalpy Flows around a Hypersonic Vehicle**  
 Gouji Yamada, Juan R. Llobet Gomez, Mizuki Kajino (Tokai University, Japan), Hiromitsu Kawazoe (Tottori University, Japan), Kiyonobu Ohtani (Tohoku University, Japan)
- CRF-83      **Interferometric Measurement of Temperature Fields in Turbulent Flows**  
Juan F. Torres (The Australian National University, Australia), Atsuki Komiya (Tohoku University, Japan), John Pye, Wojciech Lipinski (The Australian National University, Australia)
- CRF-84      **Modeling Nanoparticle Synthesis in an ICP Reactor Using QMOM**  
Maxim Van Cappellen (von Karman Institute for Fluid Dynamics, Belgium), Pierre Proulx (Université de Sherbrooke, Canada), Silvânia Lopes (von Karman Institute for Fluid Dynamics, Belgium), Hidemasa Takana (Tohoku University, Japan)
- CRF-85      **A Study on Flow Characteristics of Suspensions of Surface-Modified Nanoparticles Using Numerical Simulations**  
Shin Usune, Masaki Kubo, Eita Shoji, Atsuki Komiya, Takao Tsukada (Tohoku University, Japan)
- CRF-86      **Numerical Study on Aeolian Tone with Compressible LES**  
Hirokazu Yokoyama, Sho Iwagami (Kyushu Institute of Technology, Japan), Taizo Kobayashi (Teikyo University, Japan), Kin'ya Takahashi (Kyushu Institute of Technology, Japan), Yuji Hattori (Tohoku University, Japan)

- CRF-87      **Aeroacoustics of Low Reynolds Number Flows Via Dynamic Hybrid RANS/LES and DNS**  
 Xiao Wang, Shanti Bhushan, Edward Luke, David Thompson, Adrian Sescu (Mississippi State University, USA), Yuji Hattori (Tohoku University, Japan)
- CRF-88      **Characterization of Flow Fields with Different Gases Mixing in Passive Micromixers**  
 Ming-Xiang Yan, Yu-Chuan Wang, Chih-Yung Huang (National Tsing Hua University, Taiwan), Hiroki Nagai (Tohoku University, Japan)
- CRF-89      **DSMC Computations of 3D Flow in Textured Micro/Nano Channel**  
Pavel Vashchenkov (Institute of Theoretical and Applied Mechanics, Russia), Yoshiaki Kawagoe, Shigeru Yonemura (Tohoku University, Japan)
- CRF-90      **Rarefied Gas Simulations Using Quasiparticle Pairs and Velocity Moments**  
Vladimir Saveliev (NCSRT, Kazakhstan), Shigeru Yonemura, Clint John Otic (Tohoku University, Japan)
- CRF-91      **Fluid Dynamics and Energy/Scalar Transport in Coexisting Flow of Turbulence and Non-Turbulence**  
Yasuhiko Sakai, Yasumasa Ito, Koji Iwano (Nagoya University, Japan), Toshiyuki Hayase (Tohoku University, Japan), Zhou Yi (Nanjing University of Science and Technology, China), Soma Nagaya, Jihong Yu (Nagoya University, Japan)
- CRF-R4      **Instability and Nonlinear Dynamics of Curved Vortices**  
Yuji Hattori, Makoto Hirota (Tohoku University, Japan), Stéphane Le Dizès, Thomas Leweke (IRPHE, France), Stefan, G. Llewellyn Smith (UCSD, USA), Ivan Delbende (LIMSI, France), Maurice Rossi (Universite de Paris VI, France), Yasuhide Fukumoto (Kyushu University, Japan)
- CRF- J1      **Multiscale Flow and Interfacial Transport Phenomena at Phase and Material Boundaries**  
 Shigeru Obayashi, Seiji Samukawa, Toshiyuki Takagi (Tohoku University, Japan), Hirofumi Wada (Ritsumeikan University, Japan), Yutaka Watanabe, Mitsuo Hashimoto (Tohoku University, Japan), Takashi Iijima (AIST, Japan), Philippe Guy (INSA de Lyon, France), Lalita Udpa (Michigan State University, USA), Yuji Hattori, Hiroki Nagai, Koji Shimoyama, Makoto Hirota, Aiko Yakeno, Gota Kikugawa, Atsuki Komiya, Takeru Okada, Jun Ishimoto, Tetsuya Uchimoto, Hiroyuki Kosukegawa (Tohoku University, Japan)
- CRF- J2      **Science and Technology for Utilizations of Carbon Free Energy Carriers**  
Hideaki Kobayashi (Tohoku University, Japan)