

IFS Collaborative Research Forum

TACHIBANA

November 2, 2017

Chair: Makoto Hirota (Tohoku University, Japan)

9:00-10:30 **Short Oral Presentation**

(2.5 min for Short Oral Presentation)

- CRF-1 **Development of Bubble Measurement Method Using Pressure Wave**
Takehiko Sato, Yohei Nagasawa, Tomoki Nakajima, Kiyonobu Ohtani (Tohoku University, Japan), Takashi Miyahara (Shizuoka University, Japan), Tatsuyuki Nakatani (Okayama University of Science, Japan)
- CRF-2 **Large Scale Numerical Analysis of Reactive Oxygen Species Behavior at Plasma-Biological Interface**
Ryota Imai, Satoshi Uchida, Fumiyoshi Tochikubo (Tokyo Metropolitan University, Japan), Takehiko Sato (Tohoku University, Japan)
- CRF-3 **Visualization of Pressure Field of Negative Discharge in Water**
Ryo Kumagai (Tohoku University, Japan), Seiji Kanazawa (Oita University, Japan), Kiyonobu Ohtani, Atsuki Komiya, Toshiro Kaneko, Tomoki Nakajima, Takehiko Sato (Tohoku University, Japan)
- CRF-4 **Pressure Measurement of Traveling Pressure Waves for Cavitation Bubble Generation**
Takahito Akimura, Tomoya Minami, Tomoki Nakajima, Kiyonobu Ohtani, Toshiro Kaneko (Tohoku University, Japan), Outi Supponen, Mohamed Farhat (Ecole Polytechnique Federale de Lausanne, Switzerland), Takehiko Sato (Tohoku University, Japan)
- CRF-5 **Fundamental Mechanism of Fluid-Acoustic Interaction in Edge Tone**
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-6 **Effects of CO₂ Concentration on Flame Propagation Characteristics of CH₄/CO₂/Air Laminar Premixed Flames under Various Pressures**
Akihiro Hayakawa, Ekenechukwu C. Okafor (Tohoku University, Japan), Willyanto Anggono (Petra Christian University, Indonesia)
- CRF-7 **Quantitative Measurements of Temperature Using Laser Induced Thermal Grating Spectroscopy with Resonant Excitation of Nitric Oxide**
Akihiro Hayakawa (Tohoku University, Japan), Steven Lowe (University of Cambridge, UK), Tomohisa Yamagami, Taku Kudo (Tohoku University, Japan), Yi Gao (Shanghai Jiao Tong University, China), Simone Hochgreb (University of Cambridge, UK)

- CRF-8 **Fractional Order Derivative for Magnetic Hysteresis Dynamics and Interpretation of Non-Destructive Testing Techniques**
Gael Sebald (ELyTMaX, Japan), Benjamin Ducharne (Universit de Lyon/ INSA-Lyon, France), Bhaawan Gupta (ELyTMaX/ Tohoku University, Japan/ Universit de Lyon/ INSA-Lyon, France), Tetsuya Uchimoto, Toshiyuki Takagi (ELyTMaX/ Tohoku University, Japan)
- CRF-9 **Experimental Testing of Pseudo-Villari Effect in Magnetorheological Elastomers**
Gael Sebald (ELyTMaX, Japan), Masami Nakano (ELyTMaX/ Tohoku University, Japan), Mickal Lallart (Universit de Lyon/ INSA-Lyon, France), Tongfei Tian (Tohoku University, Japan), Gildas Diguët, Jean-Yves Cavaille (ELyTMaX, Japan)
- CRF-10 **A Data Assimilation Application to Pedestrian Flows**
Fumiya Togashi (Applied Simulations Inc., USA), Takashi Misaka (Tohoku University, Japan), Rainald Löhner (George Mason University, USA)
- CRF-11 **Tsunami Inundation Flow Simulation Considering Bathymetric Uncertainties**
Wataru Yamazaki, Tsubasa Homma, Tatsuya Kato (Nagaoka University of Technology, Japan), Koji Shimoyama, Shigeru Obayashi (Tohoku University,
- CRF-12 **Effectiveness of Flexible Wing in a Flapping Flight**
Tadateru Ishide, Koudai Nakano, Ryo Fujii, Tomoharu Kaeriyama (National Institute of Technology, Kisarazu College, Japan), Koji Shimoyama, Shigeru Obayashi (Tohoku University, Japan)
- CRF-13 **Aerodynamic Improvement of a Delta Wing by Using in Combination of Leading Edge Flaps**
Tadateru Ishide, Mao Itazawa (National Institute of Technology, Kisarazu College), Takashi Misaka, Koji Shimoyama, (Tohoku University, Japan)
- CRF-14 **Multi-Objective Optimization and Data Mining of Transonic Compressor Blade**
Lavi Rizki Zuhail, Cahya Amalinadhi (Bandung Institute of Technology, Indonesia), Pramudita Satria Palar (Bandung Institute of Technology, Indonesia/ Tohoku University, Japan), Koji Shimoyama (Tohoku University, Japan)
- CRF-15 **Numerical and Experimental Flow Visualizations on a Shrouded Rotor**
Taiki Kunishio, Takeshi Akasaka, Masato Okamoto, Daisuke Sasaki (Kanazawa Institute of Technology, Japan), Shun Takahashi (Tokai University, Japan), Hikaru Otsuka, Keiji Nagatani, Takashi Misaka, Koji Shimoyama, Shigeru Obayashi (Tohoku University, Japan)
- CRF-16 **Reaction Rate of Thermal Pyrolysis for Thermally-Thick Wood Biomass**
Ryosuke Sasaki, Gentaro Hirabayashi, Yasuhiro Ogami, Tadafumi Daitoku (Akita Prefectural University, Japan), Hisashi Nakamura (Tohoku University, Japan)
- CRF-17 **Application of Two-Phase Thermo-Fluid Simulation for Accurate Design of Oscillating Heat Pipe**
Takuya Inoue, Shun Takahashi, Shuta Ide (Tokai University, Japan), Hiroki Nagai (Tohoku University, Japan)

- CRF-18 **Mars Airplane Design for the Next Balloon Experiment and Its Aerodynamic Characteristics Using CFD**
Kai Tomisawa (Tokyo Metropolitan University, Japan), Koji Fujita, Akira Oyama (Institute of Space and Astronautical Science/ Japan Aerospace Exploration Agency, Japan), Hiroki Nagai (Tohoku University, Japan), Masahiro Kanazaki (Tokyo Metropolitan University, Japan)
- CRF-19 **Identification of Air-Leakage Region by Space-Debris Impact Utilizing Photoluminescent Substance**
Kazumasa Sasahara, Yoshiyuki Uwamino (Tohoku University, Japan), Miki Hasegawa (Aoyama Gakuin University, Japan), Kiyonobu Ohtani, Kanjuro Makihara (Tohoku University, Japan)
- CRF-20 **Comparison of Aerodynamic Performance of Lighter-Than-Air Vehicles for a Tethered High-Altitude Platform System**
Ryosuke Nishikawa, Masataka Sawahara, Kazuhisa Chiba (The University of Electro-Communications, Japan), Hiroki Yanagida, Shin Satori (Happy Science University, Japan), Shigeru Obayashi (Tohoku University, Japan)
- CRF-21 **Kinetic Modeling of High-Pressure Surface Ionization Waves Generated by Ns Pulse Discharges**
 Marien Simeni Simeni (Ohio State University, USA), Edmond Baratte (Ecole Centrale, France), Cheng Zhang (Chinese Academy of Sciences, China), Kraig Frederickson, Igor Adamovich (Ohio State University, USA), Hidemasa Takana, Hideya Nishiyama (Tohoku University, Japan)
- CRF-22 **Effects of YSZ Film on Inner Wall of Vortex Flow Creation Nozzle on Thermal Efficiency Improvement in Vortex Plasma Spray Gun**
Ifeanacho Anyadiegwu, Alabi Kelvin Oluwafunmilade, Yasutaka Ando (Ashikaga Institute of Technology, Japan), Hideya Nishiyama, Tomoki Nakajima, Satoshi Uehara (Tohoku University, Japan), Oleg P. Solonenko (ITAM SB RAS, Russia)
- CRF-23 **Development of Hydrogen Production Process by MHD Mixing**
Yuhiro Iwamoto, Haoran Mi, Yasushi Ido (Nagoya Institute of Technology, Japan), Hidemasa Takana (Tohoku University, Japan)
- CRF-24 **Quantum Confinement Effect in Lateral Direction of GaAs Nanodisk Fabricated by Neutral Beam Etching**
Anri Iwamoto (University of Miyazaki, Japan), Daisuke Ohori (Tohoku University, Japan), Cedric Thomas, Seiji Samukawa (Tohoku University, Japan), Tetsuo Ikari, Atsuhiko Fukuyama (University of Miyazaki, Japan)
- CRF-25 **Realization of Analog Memory Using Ta₂O₅ Based ReRAM for the Application of Neural Network**
Yuanlin Li, Reon Katsumura, Mika Kristian Gronroos, Atsushi Tsurumaki-Fukuchi, Masashi Arita (Hokkaido University, Japan), Hideyuki Andoh, Takashi Morie (Kyushu Institute of Technology, Japan), Yasuo Takahashi (Hokkaido University, Japan), Seiji Samukawa (Tohoku University, Japan)

- CRF-26 **Development of 2D Etching Mask by Artificially Modified Cage-Shaped Proteins**
Ichiro Yamashita (Osaka University, Japan), Naofumi Okamoto (Nara Institute of Science and Technology, Japan), Seiji Samukawa (Tohoku University, Japan)
- CRF-27 **Analysis of Positive Materials and Effect of Electric Double Layers in Triboelectric Nanogenerator**
Hee Jae Hwang, Hyunwoo Park (Kyung Hee University, Korea), Jang-Yeon Kwon (Yonsei University, Korea), Hojin Lee (Soongsil University, Korea), Seiji Samukawa (Tohoku University, Japan), Dukhyun Choi (Kyung Hee University, Korea)
- CRF-28 **Study on Improvements of New Material Nano Devices by the Neutral Beam Process**
Kazuhiko Endo (National Institute of Advanced Industrial Science and Technology/ Tohoku University, Japan), Wataru Mizubayashi (National Institute of Advanced Industrial Science and Technology, Japan), Shu-ichi Noda, Takuya Ozaki (Tohoku University, Japan), Seiji Samukawa (National Institute of Advanced Industrial Science and Technology/ Tohoku University, Japan)
- CRF-29 **Spin Relaxation in Si Nanoclusters Embedded in Free-Standing SiGe Nanocolumns**
Natalia Stepina, Aigul Zinovieva, Anatolii Dvurechenskii (Institute of Semiconductor Physics, Russia), Shuichi Noda, Md. Zaman Molla, Daisuke Ohori, Seiji Samukawa (Tohoku University, Japan)
- CRF-30 **Analog Memory Operation of Parallel Connected Resistance Change Memory Devices**
Masataka Harada, Hideyuki Ando, Takashi Morie (Kyushu Institute of Technology, Japan), Atsushi Tsurumaki-Fukuchi, Masashi Arita, Yasuo Takahashi (Hokkaido University, Japan), Seiji Samukawa (Tohoku University, Japan)
- CRF-31 **Numerical Simulation of Silicon/Silicon Carbide Quantum Dot Superlattice Solar Cells**
Yi-Chia Tsai, Ming-Yi Lee, Yiming Li (National Chiao Tung University, Taiwan), Seiji Samukawa (Tohoku University, Japan)
- CRF-R1 **Investigation on Behaviour and Characteristics of Centreline Shock Reflection in Supersonic Flow**
Hideaki Ogawa (RMIT University, Australia), Georgy Shoev (Russian Academy of Sciences, Russia), Sannu Mölder (Ryerson University, Canada), Ben Shoesmith (McGill University, Canada), Nicolas Téa (French Air Force Academy, France), Ramandeep Kaur (RMIT University, Australia), Evgeny Timofeev (McGill University, Canada), Yevgeniy Bondar (Russian Academy of Sciences, Russia), Kiyonobu Ohtani, Shigeru Obayashi (Tohoku University, Japan)

10:30-10:40 Break

Chair: Suguru Miyauchi (Tohoku University, Japan)

10:40-12:10 **Short Oral Presentation**

(2.5 min for Short Oral Presentation)

- CRF-32 **Evaluation of Flow Field in Closed Cavity under Temporally Variable Thermal Condition**
Linjing Zhou, Steven Armfield, Nicholas Williamson, Michael Kirkpatrick, Wenxian Lin (The University of Sydney, Australia), Atsuki Komiya (Tohoku University, Japan)
- CRF-33 **Automatic Differentiation Based Discrete Adjoint Method for Aviation Safety**
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-34 **Improvement and Micro-Channel Flow Evaluation of Electro-Rheological Nano-Suspensions**
Katsufumi Tanaka, Arata Ichikawa, Midori Takasaki, Haruki Kobayashi (Kyoto Institute of Technology, Japan), Masami Nakano, Atsushi Totsuka (Tohoku University, Japan)
- CRF-35 **Miniaturized Micro-Motor with EAP Composite Rotor Rotating in Dielectric Liquid under DC Electric Field**
Masami Nakano (Tohoku University, Japan), Miklos Zrinyi (Semmelweis University, Hungary)
- CRF-36 **Mechanism of Thermal Energy Transfer in Nanoscale Solid-Liquid Systems**
Masahiko Shibahara (Osaka University, Japan), Gota Kikugawa, Taku Ohara (Tohoku University, Japan)
- CRF-37 **Micro Square Pyramid Shape Molding on Titanium Thin Plate formed by Compression Shearing Method at Room Temperature**
Hayato Inoue, Noboru Nakayama, Yuya Kodaira (Shinshu University, Japan), Hiroyuki Kosukegawa, Toshiyuki Takagi, Hiroyuki Miki (Tohoku University, Japan), Hiroyuku Takeishi (Chiba Institute of Technology, Japan)
- CRF-38 **Estimation of Viscosity Profiles of Semidilute Suspensions by Computational and Experimental Studies**
Misa Kawaguchi, Tomohiro Fukui (Kyoto Institute of Technology, Japan), Kenichi Funamoto, Toshiyuki Hayase (Tohoku University, Japan)
- CRF-39 **Development of Program for Surveying Stent Strut Position (Second report)**
Makoto Ohta, Kazuhiro Watanabe, Mingzi, Zhang (Tohoku University, Japan), Bastien Chopard (University of Geneva, Switzerland), Hitomi Anzai (Tohoku University, Japan)
- CRF-40 **Research of High-Speed Contact with Medical Devices**
Yuta Muramoto (Tohoku University, Japan/ Universit de Lyon/ Ecole Centrale de Lyon, France), Gaëtan Bouvard, Vincent Fridrici, Philippe Kapsa (Universit de Lyon/ Ecole Centrale de Lyon, France), Fredrik Lundell (KTH Mechanics, Sweden), Makoto Ohta (Tohoku University, Japan)

- CRF-41 **Computational Fluid Dynamics Simulation of Intracranial Aneurysms Treated by Pipeline Flow Diverter Embolization Device**
Shintaro Nakajima (Juntendo University, Japan), Shin-ichiro Sugiyama, Makoto Ohta (Tohoku University, Japan), Kenji Yatomi, Munetaka Yamamoto, Hidenori Ohishi (Juntendo University, Japan)
- CRF-42 **A Novel Structure Design of the Biodegradable Zinc Alloy Stent**
Aike Qiao, Kun Peng (Beijing University of Technology, China), Makoto Ohta, Koji Shimoyama, Hitomi Anzai, Narendra Kurnia Putra (Tohoku University, Japan)
- CRF-43 **Characteristics of Flow Behavior in Elastic Cerebral Aneurysm Model**
Ryuhei Yamaguchi, Gaku Tanaka, Taihei Kotani (Chiba University, Japan), Hitomi Anzai, Makoto Ohta (Tohoku University, Japan), Kahar Osman, Nadia S. Shafii (Universiti Teknologi Malaysia, Malaysia)
- CRF-44 **Influence of Bivalent Alloying Elements of Alloys on Tribological Properties of Protective Coatings Formed on Functional Materials by Plasma Electrolytic Oxidation**
Aleksandra A.Gladkova, Vladimir V. Khovaylo, Aleksander G.Rakoch, Nikita A. Predein, Phan Van Truong (National University of Science and Technology “MISiS”, Russia), Hiroyuki Kosukegawa, Hiroyuki Miki, Toshiyuki Takagi (Tohoku University, Japan)
- CRF-45 **Simultaneous Evaluation of Plastic Deformation and Residual Stress with ENDE Methods**
Zhenmao Chen, Shejuan Xie, Manru He, Hong-En Chen (Xi'an Jiaotong University, China), Tetsuya Uchimoto, Toshiyuki Takagi (Tohoku University, Japan)
- CRF-46 **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-47 **FEM Simulation Method for Electromagnetic Ultrasonic Testing and Its Application**
Toshihiro Yamamoto (Japan Power Engineering and Inspection Corporation, Japan), Ryoichi Urayama, Tetsuya Uchimoto, Toshiyuki Takagi (Tohoku University, Japan)
- CRF-48 **Coupled Analysis of High-Density Hydrogen Safety Management**
Jun Ishimoto (Tohoku University, Japan), Alain Combescure (INSA de Lyon, France)
- CRF-49 **Validation of Classical Mixing Rule in Van Der Waals Type Equation of State Applied to a Non-Ideal Binary Mixture Fluid**
Ryuji Takahashi, Nobuyuki Tsuboi (Kyushu Institute of Technology, Japan), Takashi Tokumasu (Tohoku University, Japan), Shin-ichi Tsuda (Kyushu University, Japan)

- CRF-50 **Theoretical Optimization of Epitaxial Magnesium Oxide Film on Silicon Substrate**
Satoru Kaneko (Kanagawa Institute of Industrial Science and Technology/
Sagamihara Surface Laboratory, Japan), Rieko Sudo (Sagamihara Surface
Laboratory, Japan), Shigeo Yasuhara (Japan Advanced Chemicals, Japan), Manabu
Yasui, Masahito Kurouchi (Kanagawa Institute of Industrial Science and Technology,
Japan), Takashi Tokumasu (Tohoku University, Japan)
- CRF-51 **Numerical Analysis of Scattering Behavior and Surface Diffusion of Oxygen
Molecules on Ionomer Surface**
Masataka Nakauchi, Takuya Mabuchi (Tohoku University, Japan), Takuma Hori,
Yuta Yoshimoto, Ikuya Kinefuchi (The University of Tokyo, Japan), Hideki Takeuchi
(National Institute of Technology, Kochi College, Japan), Takashi Tokumasu (Tohoku
University, Japan)
- CRF-52 **Molecular Dynamics of Nano Droplet Shearing**
Akinori Fukushima (University of Fukui, Japan), Nicolas Fillot (INSA de Lyon,
France), Takashi Tokumasu (Tohoku University), Philippe Vergne (INSA de Lyon,
France)
- CRF-53 **Characterization of Transport Phenomena of Oxygen Ion in Electrolyte of Solid Oxide
Fuel Cell**
Hiroki Nagashima (University of the Ryukyus, Japan), Ryan Falkenstein-Smith
(Syracuse University, USA), Takashi Tokumasu (Tohoku University, Japan),
Jeongmin Ahn (Syracuse University, USA)
- CRF-54 **Microcombustion for Micro-Tubular Flame-Assisted Fuel Cell Cogeneration**
Ryan James Milcarek (Syracuse University, USA), Hisashi Nakamura, Kaoru
Maruta (Tohoku University, Japan), Jeongmin Ahn (Syracuse University, USA)
- CRF-55 **Numerical Study on the Intrinsic Instability of Premixed Flames Based on the One-
Step and Detail Chemical Reaction Models**
Satoshi Kadowaki, Ryosuke Ohki, Tomoyasu Takahashi, Thwe Thwe Aung,
Toshiyuki Katsumi (Nagaoka University of Technology, Japan), Hideaki Kobayashi
(Tohoku University, Japan)
- CRF-56 **Numerical Investigation of 3D Flow in Textured Micro-/Nanoscale Channel by the
DSMC Method**
Pavel Vashchenkov, Yevgeniy Bondar (ITAM SB RAS, Russia), Yoshiaki Kawagoe,
Shigeru Yonemura (Tohoku University, Japan)
- CRF-57 **Theoretical Consideration on Mechanical Properties of Nanoparticle Dispersed
Carbon Fiber Reinforced Plastic**
Tetsuo Takayama (Yamagata University, Japan), Hiroyuki Kosukegawa, Toshiyuki
Takagi (Tohoku University, Japan)
- CRF-58 **Thermodynamic Effect on Tip Leakage Vortex Cavitation**
Donghyuk Kang (Aoyama Gakuin University, Japan), Yuka Iga (Tohoku University,
Japan)

- CRF-59 **2017 Maintenance Science Summer School in Sendai**
Tetsuya Uchimoto, Toshiyuki Takagi (Tohoku University, Japan), Christian Boller (Saarland University, Germany)
- CRF-60 **Experimental Study on Y250 Vortex of Formula 1 Racing**
 Zhongzheng Fu, Chenguang Lai, Yuting Zhou (Chongqing University of Technology, China), Shigeru Obayashi (Tohoku University, Japan)
- CRF-R2 **Link between Tracer and Microseismic Analysis to Comprehensive Understanding of Hydraulic Feature of Fractured Geothermal Reservoir**
Anna Suzuki (Tohoku University, Japan), Yusuke Mukuhira (Massachusetts Institute of Technology, USA), Roland N. Horne (Stanford University, USA), Michael C. Fehler (Massachusetts Institute of Technology, USA)
- CRF-R3 **Filtrational Gas Combustion in Porous Media and Microcombustion**
Sergey Minaev (Far-Eastern Federal University, Russia), Kaoru Maruta (Tohoku University, Japan), Roman Fursenko (ITAM SB RAS, Russia), Alexander Kirdyashkin (TSC SB RAS, Russia), Vladimir Gubernov (Lebedev Physical Institute, Russia), Andrey Shmakov (ICKC SB RAS, Russia)
- 12:10-13:10 **Lunch and Poster Session** (CRF-1 to 60, CRF-R1 to R3)
- Chair: Junnosuke Okajima (Tohoku University, Japan)
- 13:10-14:40 **Short Oral Presentation**
 (2.5 min for Short Oral Presentation)
- CRF-61 **Mechanism of Shock Wave Propagation within the Cell: Experimental Model**
 Atsuhiko Nakagawa, Kiyonobu Ohtani, Teiji Tominaga (Tohoku University, Japan)
- CRF-62 **Attenuation and Reduction Effect of Underwater Explosion by Porous Materials**
Kazutaka Kitagawa (Aichi Institute of Technology, Japan), Daiki Nagahiro (INOAC Corporation, Japan), Kiyonobu Ohtani, Yasufumi Konishi (Tohoku University, Japan), Atsushi Abe (ITOCHU Techno-Solutions Corporation (CTC), Japan)
- CRF-63 **Experimental Study on High-Speed Flow Control Using Small-Sized Oscillatory Jet**
Miho Takemura, Akira Urita, Taro Handa (Toyota Technological Institute, Japan), Kiyonobu Ohtani (Tohoku University, Japan), Yu Matsuda (Nagoya University, Japan), Yasuhiro Egami (Aichi Institute of Technology, Japan)
- CRF-64 **Development of Molecular Imaging Technology for Investigation of Projectile Aerodynamics**
Daiju Numata (Tokai University, Japan), Kiyonobu Ohtani (Tohoku University, Japan)
- CRF-65 **Investigation of Non-Equilibrium Turbulence and Its Application to Flow Control (Cases of Inhomogeneous, Anisotropic and Compressible Turbulence)**
Yasuhiko Sakai, Yasumasa Ito, Koji Nagata, Koji Iwano, Tomoaki Watanabe (Nagoya University, Japan), Toshiyuki Hayase (Tohoku University, Japan), Kotaro Takamura, Kento Tanaka, Soma Nagaya (Nagoya University, Japan)

- CRF-66 **Three-Dimensional Numerical Analysis for an Erythrocyte Behavior near a Wall in a Fluid under an Inclined Centrifugal Force: The Effect of Bending Stiffness of an Erythrocyte on the Deformation**
Suguru Miyauchi, Toshiyuki Hayase (Tohoku University, Japan), Arash Alizad Banaei, Jean-Christophe Loiseau, Luca Brandt (KTH Mechanics, Sweden)
- CRF-67 **Attitude Control of a Supersonic Projectile by Pulsation of Bow Shock**
Toshiharu Mizukaki (Tokai University, Japan), Kiyonobu Ohtani, Shigeru Obayashi (Tohoku University, Japan)
- CRF-68 **Study for Accurate Prediction of Unsteady Aerodynamic Characteristics around Moving Objects**
Yusuke Mizuno, Yuki Hamagata, Yoshiki Goda, Shun Takahashi, Kota Fukuda (Tokai University, Japan), Shigeru Obayashi (Tohoku University, Japan)
- CRF-69 **Study of Ski Jumping Suit of Different Air Permeability on Aerodynamic Characteristics**
Ryusei Maeta, Yosuke Kawabata, Hiroaki Hasegawa (Utsunomiya University, Japan), Kazuya Seo (Yamagata University, Japan), Shigeru Obayashi (Tohoku University, Japan)
- CRF-70 **Badminton Shuttlecock as an Airborne Projectile**
Yuki Fujisawa, Daizen Oki, Hiroaki Hasegawa (Utsunomiya University, Japan), Hiroki Nagai (Tohoku University, Japan)
- CRF-71 **Application and Low-Temperature Sensitive Fast Response PSP on Low-Speed Unsteady Flow and Its Validation**
Yasuhiro Egami, Hiroya Ogura (Aichi Institute of Technology, Japan), Yu Matsuda (Nagoya University, Japan), Hiroki Nagai (Tohoku University, Japan)
- CRF-72 **The Development and Applications of Pressure-Sensitive Paint on the Investigations of Gases Mixing in T-Type Micromixers**
Chih-Yung Huang, Yu-Hsiang Hu (National Tsing Hua University, Taiwan), Hiroki Nagai (Tohoku University, Japan)
- CRF-73 **Quantitative Density Measurement of Unsteady Flow Field around the Projectile**
Ken Kurihara, Kazuma Yoshida, Kazuki Ishikawa, Kiichi Shida, Masanori Ota (Chiba University, Japan), Tatsuro Inage (Shonan Institute of Technology, Japan), Hiroki Nagai (Tohoku University, Japan)
- CRF-74 **Application of Carbon Nanotubes and Temperature-Sensitive Paint for the Detection of Boundary Layer Transition under Low-Speed Flow**
Daisuke Yorita, Jonathan Ost, Ulrich Henne, Christian Klein (German Aerospace Center, Germany), Vladimir Ondrus, Uwe Beifuss (University of Hohenheim, Germany), Hiroki Nagai (Tohoku University, Japan)
- CRF-75 **Surface Pressure Measurement over Free Flight Object in Ballistic Range Facility**
Daiki Kurihara, Alfredo Duarte, Steven Claucherty, Hiroataka Sakaue (University of Notre Dame, USA), Masayuki Nomura, Hiroki Nagai (Tohoku University, Japan)

- CRF-76 **Application of Nanostructured Surfaces to Enhance the Thermal Performance of a Heat Pipe**
Peng Zhang, Fengyong Lv (Shanghai Jiao Tong University, China), Hiroki Nagai (Tohoku University, Japan)
- CRF-77 **Deployable Wing Simulation Using Flexible Multibody Dynamics**
Keisuke Otsuka, Kanjuro Makihara, Hiroki Nagai (Tohoku University, Japan)
- CRF-78 **Computation of Weakly Ionized Flows around Re-Entry Bodies at Orbital Velocity**
Georgy Shoev, Yevgeniy Bondar, Pavel Vashchenkov (ITAM SB RAS/ Novosibirsk State University, Russia), Shigeru Yonemura (Tohoku University, Japan)
- CRF-79 **Pairs of Quasiparticles in the Kinetic Theory Problems with Spherical Symmetry**
Vladimir Saveliev (Institute of Ionosphere, Kazakhstan), Shigeru Yonemura, Yoshiaki Kawagoe (Tohoku University, Japan)
- CRF-80 **Development of Light-Driven Micro/Nano Fluidic Devices**
Noboru Yamada, Vuong Van Thai (Nagaoka University of Technology, Japan), Junnosuke Okajima, Atsuki Komiya (Tohoku University, Japan), Shigenao Maruyama (National Institute of Technology, Hachinohe College, Japan)
- CRF-81 **A Study on Flow Characteristics of High Concentration Nanofluids Using a Coupled Particle-Fluid Flow Simulation**
Shin Usune, Masaki Kubo, Eita Shoji, Atsuki Komiya, Takao Tsukada (Tohoku University, Japan)
- CRF-82 **Effect of Viscosity on Pumping-up of Newtonian Fluid Driven by Rotating Cone**
Yutaro Takahashi, Takahiro Adachi, Takeshi Akinaga (Akita University, Japan), Junnosuke Okajima (Tohoku University, Japan)
- CRF-83 **Three-Dimensional Coupled Photon and Bioheat Transport Simulation for Laser Induced Photothermal Therapy**
Soma Taniguchi, Yousuke Nakamura (Niigata University, Japan), Takuma Kogawa, Junnosuke Okajima, Atsuki Komiya, (Tohoku University, Japan), Shigenao Maruyama (National Institute of Technology, Hachinohe College, Japan), Atsushi Sakurai (Niigata University, Japan)
- CRF-84 **Spray Characteristics of High-Temperature Water Jet Injected from a Fan Spray Nozzle**
Rikio Watanabe, Daiki Tsuchida, Takamasa Tanaka (Tokyo City University, Japan), Hideaki Kobayashi (Tohoku University, Japan)
- CRF-85 **Field Observation and Flow Analysis of a Rotating Pipe in Flight**
Kouhei Miyahara, Yusuke Naito, Tatsuya Inoue (Doshisha University, Japan), Hirochika Tanigawa (Maizuru National College of Technology, Japan), Masami Nakano (Tohoku University, Japan), Katsuya Hirata (Doshisha University, Japan)
- CRF-86 **Theoretical and Experimental Study of Flow Stability, Flow Controllability, and Trapped Acoustic Modes in Cylindrical Expansion Chamber-Pipe Systems**
Mikael A. Langthjem (Yamagata University, Japan), Masami Nakano (Tohoku University, Japan)

- CRF-87 **A Smart-Passive Nonlinearly Broadband Magnetorheological Elastomer Vibration Energy Harvester**
Shuaishuai Sun, Tanju Yildirim, Weihua Li (University of Wollongong, Australia), Masami Nakano (Tohoku University, Japan)
- CRF-88 **Investigation of Nozzle Flows at Low Reynolds Numbers**
Kaoru Maruta (Tohoku University, Japan), Yevgeniy Bondar, Alexey Kudryavtsev, Anton Shershnev (ITAM SB RAS, Russia)
- CRF-89 **Search for High L/D Wing Based on Flying Animals**
Seiichiro Morizawa, So Nishimura, Akihiro Yasuda, Kenichi Sakamoto, Hiromitsu Kawazoe (Tottori University, Japan), Shigeru Obayashi (Tohoku University, Japan)
- CRF-90 **Spectroscopic Evaluation of High Enthalpy Plasma Flows for Heat Shield Material Testing**
Gouji Yamada, Shouhei Yanai (Tokai University, Japan), Hiromitsu Kawazoe (Tottori University, Japan), Shigeru Obayashi (Tohoku University, Japan)
- CRF-91 **Experimental Study of the Effect of Microbubble Diameter on Fragmentation of Thin Resin Plate by Underwater Explosion**
Taketoshi Koita (Saitama Institute of Technology, Japan), Sun Mingyu (Tohoku University, Japan), Takahiro Koike, Masaya Numata (Saitama Institute of Technology, Japan)
- CRF-92 **Aeroacoustics of Low Reynolds Number Flows Via Dynamic Hybrid RANS/LES and Stochastic Modeling**
Joshua Blake, Xiao Wang (Mississippi State University, USA.), Bukhari Manshoor (Tohoku University, Japan), Shanti Bhushan, David Thompson, Adrian Sescu (Mississippi State University, USA.), Yuji Hattori (Tohoku 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), Yasuhide Fukumoto (Kyushu University, Japan)
- CRF-R5 **Effect of Inhomogeneous Mixing of Plasma Species on the Properties of Argon–Steam Arc Discharge**
Jiří Jeništa (Institute of Plasma Physics AS CR, v.v.i., Czech Republic), Hidemasa Takana, Satoshi Uehara, Hideya Nishiyama (Tohoku University, Japan), Anthony B. Murphy (CSIRO Materials Science and Engineering, Australia), Milada Bartlová, Vladimír Aubrecht (Brno University of Technology, Czech Republic)
- 14:40-14:50 Break
- 14:50-16:20 **Poster Session** (CRF-61 to 92, CRF-R4, R5)

Fluid Science Research Award Lectures

TACHIBANA

November 2, 2017

Chair: Shigeru Obayashi (Tohoku University, Japan)

16:30- **Development of the High Enthalpy Shock Tunnel HEST**

16:55 Katsuhiro Ito (Institute of Space and Astronautical Science/ Japan Aerospace Exploration Agency, Japan)

17:00- **Turbulent Diffusion, Reacting Flow Phenomena and Application of Stochastic Simulation Methods**

17:25 Yasuhiko Sakai (Nagoya University, Japan)

17:30- **Investigations of Reacting Flow Phenomena under Extreme Environmental Conditions**

17:55 Hideaki Kobayashi (Tohoku University, Japan)