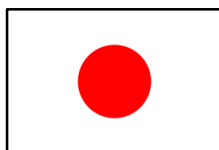


# Program and Abstracts



## 7th Japanese-German Joint Seminar – Molecular Imaging Technology for Interdisciplinary Research –



September 17th – 19th, 2019

MC030, Materials Engineering and Chemistry Building,  
Hokkaido University,  
North 13, West 8, Kita-ku, Sapporo, Hokkaido 060-8628, Japan

**Sponsored by**  
Hokkaido University

**Supported by**  
The Visualization Society of Japan



# Organizing Committee

Prof. Dr. Keisuke Asai (Tohoku University, Japan)  
Mr. Kazuyuki Nakakita (JAXA, Japan)  
Prof. Dr. Hiroki Nagai (Tohoku University, Japan)  
Dr. Satoshi Someya (AIST, Japan)  
Prof. Dr. Yasuhiro Egami (Aichi Institute of Technology, Japan)  
Prof. Dr. Taro Handa (Toyota Technological Institute, Japan)  
Dr. Yu Matsuda (Waseda University, Japan)  
Prof. Dr. Uwe Beifuß (Universität Hohenheim, Germany)  
Dr. Christian Klein (DLR, Germany)

## Local Organizing Committee

Prof. Yasuchika Hasegawa (Hokkaido University, Japan)  
Dr. Yuichi Kitagawa (Hokkaido University, Japan)  
Dr. Sunao Shoji (Hokkaido University, Japan)

## Contact

Prof. Dr. Yasuchika Hasegawa  
Division of Applied Chemistry, Faculty of Engineering, Hokkaido University, N13 W8, Kita-ku,  
Sapporo, Hokkaido 060-8628, Japan.  
E-Mail: [hasegaway@eng.hokudai.ac.jp](mailto:hasegaway@eng.hokudai.ac.jp)

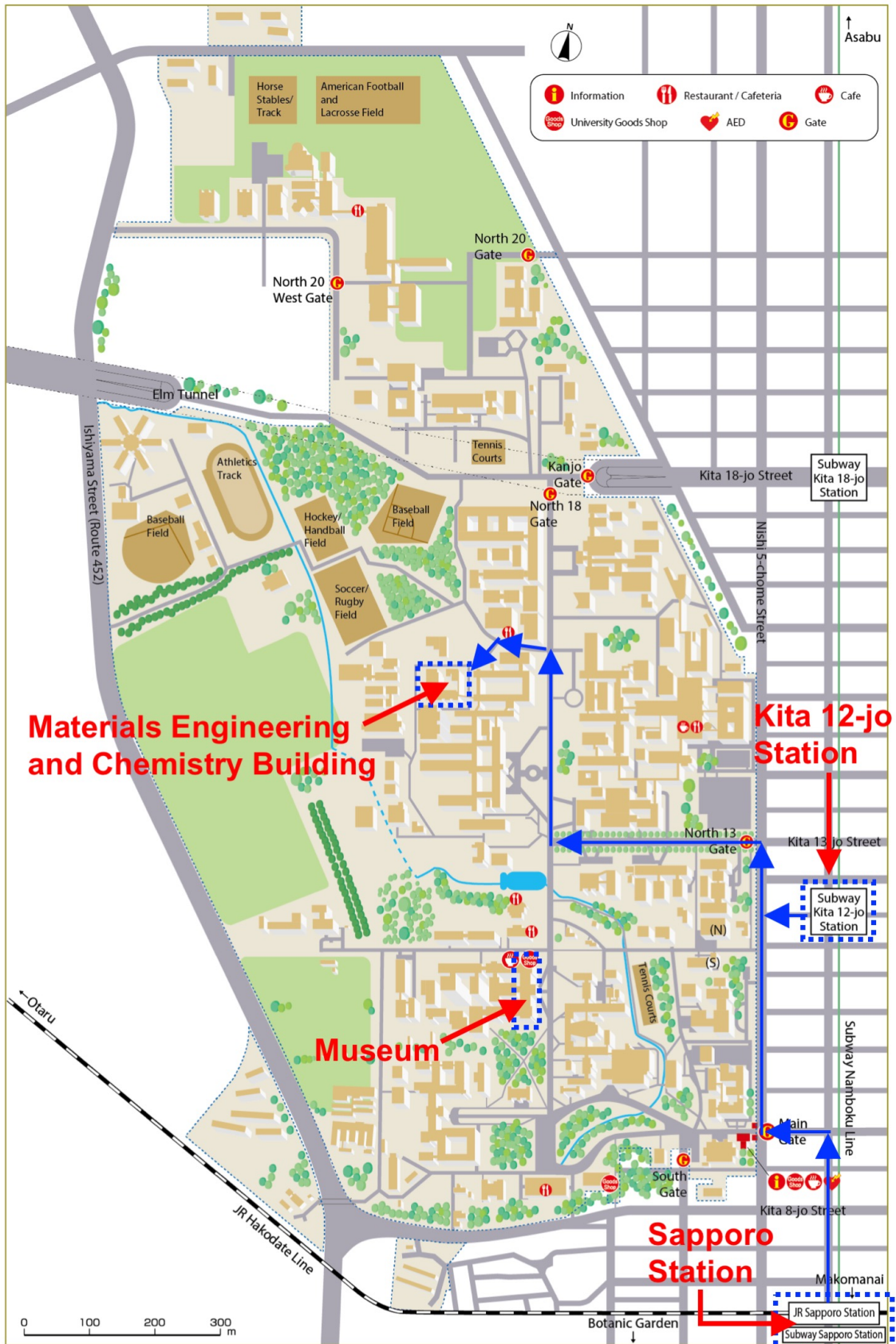
Mr. Kazuyuki Nakakita  
Aerodynamics Research Unit, Aeronautical Technology Directorate, Japan Aerospace Exploration  
Agency (JAXA), 7-44-1, Jindaiji-higashi, Chofu, Tokyo 182-8522, Japan.  
E-mail: [nakakita@chofu.jaxa.jp](mailto:nakakita@chofu.jaxa.jp)

Prof. Dr. Uwe Beifuß  
Department of Chemistry, University of Hohenheim, Garbenstr. 30, D-70599 Stuttgart, Germany.  
E-Mail: [ubeifuss@uni-hohenheim.de](mailto:ubeifuss@uni-hohenheim.de)

Dr. Christian Klein  
German Aerospace Center (DLR), Institute of Aerodynamics and Flow Technology, Experimental  
Methods, Bunsenstr. 10, D-37073 Göttingen, Germany.  
E-Mail: [christian.klein@dlr.de](mailto:christian.klein@dlr.de)

# Map

Map of Sapporo Campus



**MC030 (Third floor)**  
**Materials Engineering and Chemistry Building**



**Registration Fee**

General: 6,000 JPY

Student: 4,000 JPY

**Banquet Fee**

General: 2,000 JPY

Student: 1,000 JPY

**7th Japanese-German Joint Seminar**  
**Molecular Imaging Technology for**  
**Interdisciplinary Research**  
**~PSPTSP Workshop, The Visualization Society of Japan~**

**September 17<sup>th</sup>(Tue) - 19<sup>th</sup>(Thu), 2019**  
**Hokkaido University, Sapporo, Hokkaido, JAPAN**

**Monday (September 16th, 2019)**

17:00 – Welcome Reception

**Tuesday (September 17th, 2019)**

8:30 – 9:20 Registration  
9:20 – 9:30 Opening Remarks  
9:30 – 10:15 Keynote Lecture 1  
10:15 – 11:15 Session I Lifetime PSP  
11:15 – 11:45 Coffee Break  
11:45 – 12:45 Poster Flash Talk  
12:45 – 15:00 Poster Presentation & Lunch & Group Photo  
15:00 – 16:20 Session III Sensors I  
16:20 – 16:45 Coffee Break  
16:45 – 17:30 Session IV Sensors II

**Wednesday (September 18th, 2019)**

9:00 – 9:45 Keynote Lecture 2  
9:45 – 10:45 Session V Unsteady PSP  
10:45 – 10:55 Session VI Cutting edge high-speed camera  
10:55 – 11:25 Coffee Break  
11:25 – 12:25 Session VII High-speed TSP  
12:25 – 13:30 Lunch Break  
13:30 – 14:20 Session VIII Students  
14:20 – 15:00 Session IX Prof. Niimi memorial session  
15:00 – 15:15 Coffee Break  
15:15 – 16:00 Session X Round table discussion  
16:00 – 16:05 Closing Remarks  
16:05 – 17:00 Campus walk & Visit to Hasegawa Lab.  
18:00 – Banquet

**Thursday (September 19th, 2019)**

Networking with PSP/TSP researchers ~Tour of PSP/TSP molecular imaging laboratories ~

8:30 – 8:50 Meeting Time  
9:00 – 17:30 Laboratories tour

# Program

## Monday (September 16th, 2019)

17:00                      Welcome Reception

## Tuesday (September 17th, 2019)

8:30 – 9:20                Registration

9:20 – 9:30                Opening Remarks  
Yasuchika Hasegawa (Hokkaido University, Japan)

9:30 – 10:15              Keynote Lecture 1  
Chairman: Kazuyuki Nakakita (JAXA, Japan)

**KL-1**                      Yosuke Sugioka,<sup>1,2</sup> Kazuyuki Nakakita,<sup>2</sup> Tsutomu Nakajima,<sup>2</sup> Kazuo Arakida,<sup>1</sup>  
Hitomi Sato,<sup>1</sup> Taku Nomura,<sup>1</sup> Keisuke Asai<sup>1</sup>  
*<sup>1</sup>Department of Aerospace Engineering, Graduate School of Engineering,  
Tohoku University, <sup>2</sup>Aeronautical Technology Directorate, Japan Aerospace  
Exploration Agency (JAXA)*  
**Application of advanced pressure-sensitive paint techniques to wind-  
tunnel and flight testing for aerodynamics studies**

### Session I                Lifetime PSP

Chairman: Keisuke Asai (Tohoku University, Japan)

10:15 – 10:45              Kazuyuki Nakakita,<sup>1</sup> Kenichi Saitoh,<sup>1</sup> Hiroki Iwamoto,<sup>1</sup> Tsutomu Nakajima<sup>1</sup>  
**O-01**                      *<sup>1</sup>Aeronautical Technology Directorate, Japan Aerospace Exploration Agency  
(JAXA)*

**Simultaneous unsteady aerodynamics and structural measurement for  
flutter phenomena using unsteady lifetime-PSP and MDM measurement**

10:45 – 11:15              Daisuke Yorita,<sup>1</sup> Mizue Muneata,<sup>2</sup> Hitomi Sato,<sup>3</sup> Ulrich Henne,<sup>1</sup> Christian  
**O-02**                      Klein<sup>1</sup>

*<sup>1</sup>Institute of Aerodynamics and Flow Technology, German Aerospace Center  
(DLR), <sup>2</sup>Department of Mechanical and Mathematical Engineering, Kumamoto  
University, <sup>3</sup>Department of Aerospace Engineering, Tohoku University*

**Investigation of frequency-domain lifetime imaging technique (FLIM-  
PSP/TSP) in DLR**

11:15 – 11:45              Coffee Break



## Session II      Poster session

Chairman: Hiroki Nagai (Tohoku University, Japan)

11:45 – 12:45

**Poster Flash Talk**

Each presentation is 2 minutes.

12:45 – 15:00

**Poster Presentation & Lunch & Group Photo**

## Session III      Sensors I

Chairman: Yasuhiro Egami (Aichi Institute of Technology, Japan)

15:00 – 15:20

O-03

Yutaka Amao<sup>1,2,3</sup>

<sup>1</sup>*Advanced Research Institute for Natural Science and Technology, Osaka City University,* <sup>2</sup>*Research Center for Artificial Photosynthesis, Osaka City University,* <sup>3</sup>*Graduate School of Science, Osaka City University*

**Optical sensing technology for CO<sub>2</sub> visualization**

15:20 – 15:50

O-04

Uwe Beifuß<sup>1</sup>

<sup>1</sup>*Universität Hohenheim*

**Sensors based on europium complexes**

15:50 – 16:20

O-05

Masaya Mitsuishi,<sup>1</sup> Weijie Ma,<sup>1</sup> Shunsuke Yamamoto,<sup>1</sup> Tokuji Miyashita<sup>1</sup>

<sup>1</sup>*Institute of Multidisciplinary Research for Advanced Materials, Tohoku University*

**Luminescence properties of tetraphenylethylene polymer nanosheet assemblies**

16:20 – 16:45

**Coffee Break**

## Session IV      Sensors II

Chairman: Uwe Beifuß (Universität Hohenheim, Germany)

16:45 – 17:10

O-06

Makoto Obata,<sup>1</sup> Yasuhiro Egami<sup>2</sup>

<sup>1</sup>*Interdisciplinary Graduate School of Medicine and Engineering, University of Yamanashi,* <sup>2</sup>*Department of Mechanical Engineering, Aichi Institute of Technology*

**Developments of new polymeric materials for PC-PSP**

17:10 – 17:30

O-07

Yasuhiro Egami,<sup>1</sup> Shogo Yamaguchi,<sup>1</sup> Aritoshi Suzuki,<sup>1</sup> Yuya Yamazaki<sup>1</sup>

<sup>1</sup>*Department of Mechanical Engineering, Faculty of Engineering, Aichi Institute of Technology*

**Investigation of binder structure of sprayable fast-responding PSP**



## Wednesday (September 18th, 2019)

9:00 – 9:45

### Keynote Lecture 2

Chairman: Christian Klein (DLR, Germany)

KL-2

Michael Hilfer,<sup>1</sup> Thomas Ahlefeldt,<sup>1</sup> Jan Gößling<sup>2</sup>

<sup>1</sup>*Institute of Aerodynamics and Flow Technology, German Aerospace Center (DLR)*, <sup>2</sup>*Leibniz University of Hannover, Institute of Turbomachinery and Fluid Dynamics*

**High speed pressure-sensitive paint for acoustic applications**

## Session V                      Unsteady PSP

Chairman: Daisuke Yorita (DLR, Germany)

9:45 – 10:15

O-08

Christian Klein,<sup>1</sup> Daisuke Yorita,<sup>1</sup> Ulrich Henne,<sup>1</sup> Stefan Koch<sup>1</sup>

<sup>1</sup>*German Aerospace Center (DLR)*

**Unsteady pressure measurements by means of PSP (PtTFPP in polyTMSP) in cryogenic conditions**

10:15 – 10:45

O-09

Martin Bitter,<sup>1</sup> Reinhard Niehuis<sup>1</sup>

<sup>1</sup>*Institute of Jet Propulsion, Faculty of Aerospace Engineering, Bundeswehr University Munich*

**Estimation of pressure amplitude and phase on a low-pressure turbine blade under periodic inflow by using PC-PSP**

## Session VI                      Cutting edge high-speed camera

Chairman: Kazuyuki Nakakita (JAXA, Japan)

10:45 – 10:55

O-10

Takeharu Goji Etoh,<sup>1,2</sup> Yasuhide Takano,<sup>2</sup> Tomoo Okinaka,<sup>2</sup> Kohsei Takehara,<sup>2</sup> Nguyen Ngo,<sup>1</sup> Taeko Ando,<sup>1</sup> Kazuhiro Shimonomura<sup>1</sup>

<sup>1</sup>*School of Science and Engineering, Ritsumeikan University*, <sup>2</sup>*School of Science and Engineering, Kindai University*

**Beyond single-shot imaging of flying light with a silicon image sensor**

10:55 – 11:25

**Coffee Break**

## Session VII      High-speed TSP

Chairman: Hiroki Nagai (Tohoku University, Japan)

- 11:25 – 11:55**  
**O-11**      Hiroshi Ozawa,<sup>1</sup> Alexander Wagner,<sup>2</sup> Jan Martinez Schramm,<sup>2</sup> Klaus Hannemann<sup>2</sup>  
*<sup>1</sup>Department of Aeronautics and Astronautics, Faculty of Systems Design, Tokyo Metropolitan University, <sup>2</sup>Spacecraft Department, Institute of Aerodynamics and Flow Technology, German Aerospace Center (DLR)*  
**Aerothermodynamic experiments using TSP in high-speed and complex flows**
- 11:55 – 12:25**  
**O-12**      Michael Hilfer,<sup>1</sup> Jan Martinez-Schramm,<sup>1</sup> Leonard Isberner<sup>2</sup>  
*<sup>1</sup>Institute of Aerodynamics and Flow Technology, German Aerospace Center (DLR), <sup>2</sup>Institute for Theoretical Physics, University of Giessen*  
**Time response calibration of ultra-fast temperature sensitive paints for the application in high temperature hypersonic flows**
- 12:25 – 13:30**      **Lunch Break**

## Session VIII      Students

Chairman: Taro Handa (Toyota Technological Institute, Japan)

- 13:30 – 13:55**  
**O-13**      Teppei Kuwata,<sup>1</sup> Akira Kotani,<sup>2</sup> Hirotaka Sakaue,<sup>3</sup> Minoru Sasaki,<sup>1</sup> Taro Handa<sup>1</sup>  
*<sup>1</sup>Department of Advanced Science and Technology, Toyota Technological Institute, <sup>2</sup>Department of Mechanical Engineering, National Institute of Technology, Toyota College, <sup>3</sup>Department of Aerospace and Mechanical Engineering, University of Notre Dame*  
**Application of PSP to high-speed unsteady flows -Correction of response delay and enhancement of luminescence-**
- 13:55 – 14:20**  
**O-14**      Yuta Ozawa,<sup>1</sup> Taku Nonomura,<sup>1</sup> Bertrand Mercier,<sup>2</sup> Thomas Castelain,<sup>2</sup> Christophe Bailly,<sup>2</sup> Keisuke Asai<sup>1</sup>  
*<sup>1</sup>Department of Aerospace Engineering, Graduate School of Engineering, Tohoku University, <sup>2</sup>Université de Lyon*  
**Cross-spectral analysis of unsteady PSP images for estimation of surface pressure spectra corrupted by the shot noise**

## Session IX      Prof. Niimi memorial session

Chairman: Yu Matsuda (Waseda University, Japan)

- 14:20 – 15:00**      Hideo Mori (Kyushu University, Japan)
- 15:00 – 15:15**      **Coffee Break**

## **Session X          Round table discussion**

<b>15:15 – 16:00</b>	Navigators: Keisuke Asai (Tohoku University, Japan) Christian Klein (DLR, Germany)  Yasuchika Hasegawa (Hokkaido University, Japan) Uwe Beifuß (Universität Hohenheim, Germany)
<b>16:00 – 16:05</b>	<b>Closing Remarks</b> Yasuchika Hasegawa (Hokkaido University, Japan)
<b>16:05 – 17:00</b>	<b>Campus walk &amp; Visit to Hasegawa Lab.</b>
<b>18:00 –</b>	<b>Banquet</b>

## **Thursday (September 19th, 2019)**

### **Networking with PSP/TSP researchers**

~~Tour of PSP/TSP molecular imaging laboratories ~~

<b>8:30 – 8:50</b>	<b>Meeting Time</b>
<b>9:00 – 10:00</b>	<b>Tour of Laboratory of Space Systems, Nagata Lab.</b>
<b>10:00 – 11:00</b>	<b>Tour of Hokkaido University Museum</b>
<b>11:00 – 11:30</b>	<b>Lunch @ University Cafeteria</b>
<b>11:30 – 13:00</b>	<b>Travel by bus</b>
<b>13:00 – 15:30</b>	<b>Tour of Chitose Test Center, Acquisition, Technology &amp; Logistics Agency</b>
<b>16:00 –</b>	<b>New Chitose Airport</b>
<b>17:30 –</b>	<b>Meeting for Future TSP/PSP in Otaru</b>

# Poster Session Program

## 1. Poster Flash Talk 11:45-12:45

Presentation time is 2 min.

Use the PC in the conference room. Don't use your own.

Schedule is below.

## 2. Poster Session 12:45-15:00

### P-01. Thermo-sensible seven-coordinated Tb(III) complexes with intense luminescence

Pedro Paulo Ferreira da Rosa,<sup>1</sup> Yuichi Kitagawa,<sup>2,3</sup> Koji Fushimi,<sup>2</sup> Yasuchika Hasegawa<sup>2,3</sup>

<sup>1</sup>Graduate School of Chemical Sciences and Engineering, <sup>2</sup>Division of Applied Chemistry, Faculty of Engineering, <sup>3</sup>Institute for Chemical Reaction Design and Discovery (WPI-ICReDD), Hokkaido University

### P-02. Luminescence properties of Eu(III) complexes including chiral phosphine oxide ligands

Makoto Tsurui,<sup>1</sup> Yuichi Kitagawa,<sup>2,3</sup> Koji Fushimi,<sup>2</sup> Masayuki Gon,<sup>4</sup> Kazuo Tanaka,<sup>4</sup> Yasuchika Hasegawa<sup>2,3</sup>

<sup>1</sup>Graduate School of Chemical Sciences and Engineering, <sup>2</sup>Division of Applied Chemistry, Faculty of Engineering, <sup>3</sup>Institute for Chemical Reaction Design and Discovery (WPI-ICReDD), Hokkaido University, <sup>4</sup>Graduate School of Engineering, Kyoto University

### P-03. Circularly polarized luminescence of lanthanide complex containing perylene frameworks

Ayu Naito,<sup>1</sup> Yuichi Kitagawa,<sup>2,3</sup> Koji Fushimi,<sup>2</sup> Masayuki Gon,<sup>4</sup> Kazuo Tanaka,<sup>4</sup> Yasuchika Hasegawa<sup>2,3</sup>

<sup>1</sup>Graduate School of Chemical Sciences and Engineering, <sup>2</sup>Division of Applied Chemistry, Faculty of Engineering, <sup>3</sup>Institute for Chemical Reaction Design and Discovery (WPI-ICReDD), Hokkaido University, <sup>4</sup>Graduate School of Engineering, Kyoto University

### P-04. Luminescence properties of Tb(III) coordination polymer with methyl group in linker ligands

Ryoma Moriake,<sup>1</sup> Yuichi Kitagawa,<sup>2,3</sup> Koji Fushimi,<sup>2</sup> Yasuchika Hasegawa<sup>2,3</sup>

<sup>1</sup>Graduate School of Chemical Sciences and Engineering, <sup>2</sup>Division of Applied Chemistry, Faculty of Engineering, <sup>3</sup>Institute for Chemical Reaction Design and Discovery (WPI-ICReDD), Hokkaido University

- P-05. Parametric investigations for frequency-domain lifetime PSP technique (FLIM)**  
Hitomi Sato,<sup>1</sup> Daisuke Yorita,<sup>2</sup> Ulrich Henne,<sup>2</sup> Christian Klein,<sup>2</sup> Yuji Saito,<sup>1</sup> Taku Nonomura,<sup>1</sup> Keisuke Asai<sup>1</sup>  
*<sup>1</sup>Department of Aerospace Engineering, Tohoku University, <sup>2</sup>Department Experimental Methods, Institute of Aerodynamics and Flow Technology, German Aerospace Center (DLR)*
- P-06. Characteristic evaluation of pressure sensitive paints toward low-pressure wind tunnel tests**  
Miku Kasai,<sup>1</sup> Takayuki Nagata,<sup>1</sup> Tomohiro Okudera,<sup>1</sup> Yuji Saito,<sup>1</sup> Taku Nonomura,<sup>1</sup> Keisuke Asai<sup>1</sup>  
*<sup>1</sup>Department of Aerospace Engineering, Graduate School of Engineering, Tohoku University*
- P-07. Effect of oxygen concentration on characteristics of Pressure Sensitive Paint**  
Tomohiro Okudera,<sup>1</sup> Miku Kasai,<sup>1</sup> Takayuki Nagata,<sup>1</sup> Yuji Saito,<sup>1</sup> Taku Nonomura,<sup>1</sup> Keisuke Asai<sup>1</sup>  
*<sup>1</sup>Department of Aerospace Engineering, Graduate School of Engineering, Tohoku University*
- P-08. Camera calibration in photogrammetry toward model deformation measurement**  
Kento Akama,<sup>1</sup> Taku Nonomura,<sup>1</sup> Yuji Saito,<sup>1</sup> Keisuke Asai<sup>1</sup>  
*<sup>1</sup>Department of Aerospace Engineering, Graduate School of Engineering, Tohoku University*
- P-09. Global luminescent oil film (GLOF) skin-friction field measurement on supercritical airfoil model VA-2**  
Taekjin Lee,<sup>1</sup> Marco Costantini,<sup>2</sup> Keisuke Asai,<sup>1</sup> Christian Klein<sup>2</sup>  
*<sup>1</sup>Department of Aerospace Engineering, Graduate School of Engineering, Tohoku University, <sup>2</sup>Institute of Aerodynamics and Flow Technology, German Aerospace Center (DLR)*
- P-10. Evaluation of cntTSP for boundary layer transition detection in low speed flow**  
Tsubasa Ikami,<sup>1,2</sup> Koji Fujita,<sup>1</sup> Hiroki Nagai,<sup>1</sup> Daisuke Yorita,<sup>3</sup> Christian Klein<sup>3</sup>  
*<sup>1</sup>Institute of Fluid Science, Tohoku University, <sup>2</sup>Department of Aerospace Engineering, Tohoku University, <sup>3</sup>Institute of Aerodynamics and Flow Technology, German Aerospace Center (DLR)*
- P-11. Surface pressure measurement of free-flight sphere using motion-capturing PSP method**  
Naoki Tanaka,<sup>1,2</sup> Hiroki Nagai,<sup>1</sup> Hideki Kiritani,<sup>1,2</sup> Daiki Kurihara,<sup>3</sup> P. Joe Gonzales,<sup>3</sup> Hirotaka Sakaue<sup>3</sup>  
*<sup>1</sup>Institute of Fluid Science, Tohoku University, <sup>2</sup>Department of Aerospace Engineering, Tohoku University, <sup>3</sup>Department of Aerospace and Mechanical Engineering, University of Norte Dame*

- P-12. A surface pressure measurement method of dynamic deforming body by PSP**  
Masato Imai,<sup>1</sup> Masaharu Kameda,<sup>1</sup> Kazuyuki Nakakita<sup>2</sup>  
<sup>1</sup>Department of Mechanical Systems Engineering, Tokyo University of Agriculture and Technology, <sup>2</sup>Aerodynamics Research Unit, Japan Aerospace Exploration Agency (JAXA)
- P-13. Measurement by intensity-based temperature sensitive paint coupling with digital image correlation on a deforming panel**  
Masato Taguchi,<sup>1</sup> Masashi Kashitani,<sup>1</sup> Koichi Mori<sup>2</sup>  
<sup>1</sup>Department of Aerospace Engineering, National Defense Academy, <sup>2</sup>Department of Aerospace Engineering, Nagoya University
- P-14. Investigation of non-uniformity of luminescence lifetime of fast-responding PSP**  
Yuya Yamazaki,<sup>1</sup> Naoto Hori,<sup>1</sup> Kazuyuki Nakakita,<sup>2</sup> Yosuke Sugioka,<sup>2</sup> Keisuke Asai,<sup>3</sup> Yasuhiro Egami<sup>1</sup>  
<sup>1</sup>Department of Mechanical Engineering, Faculty of Engineering, Aichi Institute of Technology, <sup>2</sup>Japan Aerospace Exploration Agency (JAXA), <sup>3</sup>Department of Aerospace Engineering, Faculty of Engineering, Tohoku University
- P-15. Effect of surface-treated TiO<sub>2</sub> on binder structure of fast-PSP**  
Aritoshi Suzuki,<sup>1</sup> Shogo Yamaguchi,<sup>1</sup> Yasuhiro Egami<sup>1</sup>  
<sup>1</sup>Department of Mechanical Engineering, Faculty of Engineering, Aichi Institute of Technology
- P-16. Image alignment method for pressure-sensitive paint measurements**  
Yu Matsuda,<sup>1,2</sup> Satoshi Katayama<sup>1</sup>  
<sup>1</sup>Department of Modern Mechanical Engineering, Waseda University, <sup>2</sup>JST-PRESTO
- P-17. Pressure field measurement on the surface of supersonic free-flight spheres using ultrafast-response bi-luminophore PSP**  
Daiju Numata,<sup>1</sup> Kiyonobu Ohtani<sup>2</sup>  
<sup>1</sup>Department of Aeronautics and Astronautics Aerospace, Tokai University, <sup>2</sup>Institute of Fluid Science, Tohoku University
- P-18. Non-intrusive fluid thermometry using thermographic particles by two-gated method and future works**  
Kosuke Fujiwara,<sup>1,2</sup> Konstantinos Kontis,<sup>1</sup> Takeomi Ideta<sup>2</sup>  
<sup>1</sup>School of Engineering, University of Glasgow, <sup>2</sup>IHI Corporation
- P-19. Intensity-based and lifetime-based dual-layer PSP/TSP for low-speed flow fields**  
Hideo Mori,<sup>1</sup> Kil-Ju Moon,<sup>1</sup> Yutaro Koura<sup>1</sup>  
<sup>1</sup>Department of Mechanical Engineering, Kyushu University
- P-20. Investigation for simultaneous measurement of pressure and temperature using frequency-domain lifetime imaging technique**  
Mizue Munekata,<sup>1</sup> Daisuke Yorita,<sup>2</sup> Ulrich Henne,<sup>2</sup> Christian Klein,<sup>2</sup> Isaku Fujita,<sup>1</sup> Takuma Moriya,<sup>1</sup> Hiroyuki Yoshikawa<sup>1</sup>  
<sup>1</sup>Department of Mechanical System Engineering, Kumamoto University, <sup>2</sup>Institute of Aerodynamics and Flow Technology, German Aerospace Center (DLR)

- P-21. Temperature measurement of air flow using ultra-fine fluorescent wires**  
Shumpei Funatani,<sup>1</sup> Eiji Shibata<sup>1</sup>  
<sup>1</sup>*Department of Mechanical Engineering, University of Yamanashi*
- P-22. Long term monitoring of marine environments in Sanriku region, Northeastern Japan part II – comparison between continental slope and submarine canyon**  
Kazumasa Oguri,<sup>1</sup> Shuichi Watanabe,<sup>1,2</sup> Masahide Wakita,<sup>1,2</sup> Yoshihiro Fujiwara,<sup>1</sup> Shinji Tsuchida,<sup>1</sup> Masaru Kawato,<sup>1</sup> Katsunori Fujikura,<sup>1</sup> Hiroshi Kitazato<sup>1,3</sup>  
<sup>1</sup>*Tohoku Ecosystem-Associated Marine Sciences, Japan Agency for Marine–Earth Science and Technology*, <sup>2</sup>*Mutsu Institute for Oceanography, Japan Agency for Marine–Earth Science and Technology*, <sup>3</sup>*Tokyo University of Marine Science and Technology*
- P-23. Comparison of state of the art cameras for PSP/TSP measurements**  
Tudor V. Venenciuc,<sup>1</sup> Sven Scharnowski,<sup>1</sup> Rainer Hain,<sup>1</sup> Christian J Kähler<sup>1</sup>  
<sup>1</sup>*Institute of Fluid Mechanics and Aerodynamics, Bundeswehr University Munich*
- P-24. Carbon Nanotube TSP technique in a pitch-sweep wind tunnel test**  
Daisuke Yorita,<sup>1</sup> Jonathan Lemarechal,<sup>1</sup> Christian Klein,<sup>1</sup> Tsubasa Ikami,<sup>2</sup> Koji Fujita,<sup>2</sup> Hiroki Nagai<sup>2</sup>  
<sup>1</sup>*Institute of Aerodynamics and Flow Technology, German Aerospace Center (DLR)*,  
<sup>2</sup>*Institute of Fluid Science, Tohoku University*