

# The 4th Aerospace Innovation Workshop

## Program Overview

### February 1, Wednesday, 2012

#### Opening Addresses

**10:20-10:40**

*Mamoru Mitsuishi*, Program Leader, The University of Tokyo, Japan

*Mitsuhiro Tsue*, Head of the Department of Aeronautics and Astronautics,  
The University of Tokyo, Japan

#### Plenary Lecture 1 (Computational Fluid Dynamics)

**10:40-11:10 (PL-1)**

Multi-dimensional limiting strategies for Finite Volume and Discontinuous Galerkin  
Methods on Unstructured Grids

*Chongam Kim*, Seoul National University, Korea

**11:10-11:40 (PL-2)**

Development of Computational Fluid Dynamic Solver for Aircraft Conceptual Design

*Taro Imamura*, The University of Tokyo, Japan

**11:40-13:10**

Lunch

#### Plenary Lecture 2 (Structures)

**13:10-13:40 (PL-3)**

Structural and Kinematic Design of an Active Helicopter Rotor Blade with  
a Trailing-edge Flap

*SangJoon Shin*, Seoul National University, Korea

**13:40-14:10 (PL-4)**

Rheological properties and microstructures of nanoparticle-dispersed  
suspensions under shear conditions

*Tomohiro Yokozeki*, The University of Tokyo, Japan

**14:10-14:30**

Coffee Break

### **Plenary Lecture 3 (Propulsion)**

**14:30-15:00 (PL-5)**

A spectroscopic analysis of laser-initiated combustion of subnano-sized aluminum in air  
*Jai-ick Yoh, Seoul National University, Korea*

**15:00-15:30 (PL-6)**

Analysis on Flame Kernel Initiation in Laser Breakdown and Electrical Spark Ignition Processes for Lean Methane/Air Mixtures  
*Shinji Nakaya, The University of Tokyo, Japan*

**15:45-17:15** Lab. Tour to Department of Aeronautics & Astronautics

**17:30-19:30** Reception (Matsumoto-ro Restaurant, Bldg. No.2, 1st floor)

## **February 2, Thursday, 2012**

### **Plenary Lecture 4 (UAV & Small Satellites)**

**09:30-10:00 (PL-7)**

Recent Progress in Aerospace Systems Researches at KAIST :  
UAV and Nano-Satellites

*Hyochoon Bang, Korea Advanced Institute of Science & Technology (KAIST),  
Korea*

**10:00-10:30 (PL-8)**

R&D Activities on UAV Systems at the University of Tokyo

*Takeshi Tsuchiya, The University of Tokyo, Japan*

**10:30-11:00 (PL-9)**

Development of a Miniature and Low Power Ion Thruster for 50-kg-small spacecraft

*Hiroyuki, Koizumi, The University of Tokyo, Japan*

**11:00-11:20** Coffee Break

### **Short Oral and Poster Presentation**

**11:20-12:40** **Short Oral Presentation** (Two minutes per person)

**12:40-14:00** Lunch

**14:00-15:20** **Poster Session** (Coffee and Refreshment)  
(Exhibition Room, Bldg. No.2, 1st floor)  
See List of Poster Papers

**15:20-15:30** **Closing**

# List of Poster Papers

No.	Title	Authors	Pages
P-1	Experimental Research on Ducted Fan MAV	○Takashi Shibui, Takeshi Tsuchiya, Shinji Suzuki and Daisuke Kubo* (*JAXA)	
P-2	Is the Position Shift Constraint Really a Constraint for Aircraft Sequencing?	○Adriana Andreeva-Mori	
P-3	Collective Pulsing as a Reduced-Power Control Strategy in Unmanned Helicopters	○Miles Colman	
P-4	Reinforcement Learning Flight Control of Small UAVs	○Baku Sakaguchi	
P-5	Adaptive Failure Tolerant Control for Hexarotors	○Christopher Thomas Raabe	
P-6	Organisation of Aircraft Formations Using Polygonal Envelopes	○Takuma Hino and Takeshi Tsuchiya	
P-7	Degradation Mechanism of Microwave Discharge Neutralizer	○Wataru Ohmichi	
P-8	Development of phase equilibrium propulsion system for a small spacecraft	○Norizumi Motooka, Takayuki Yamamoto*, Osamu Mori* and Jun'ichiro Kawaguchi* (*JAXA/ISAS)	
P-9	A Design of Small Circular Halo Orbit around the L2	○Keita Tanaka	
P-10	Device-Centered Ontology Driven Information Modeling For the Easily-Serviceable Satellite	○Jiyeon Kim	
P-11	Satellite system design on the presumption that parameters are modified on orbit	○Kensuke Shimizu and Shinichi Nakasuka	
P-12	Fuel-optimal and fuel-balanced cluster flight relative geometry maintenance strategies	○Jihe Wang and Shinichi Nakasuka	
P-13	The study of the remote-sensing application using the GNSS reflected signal with the synthetic aperture RADAR technique	○Yoshinori Mikawa, Takuji Ebinuma and Shinichi Nakasuka	
P-14	Research for Safe Docking with a Tumbling Satellite	○Kun Qiao and Shinichi Nakasuka	
P-15	Cure Monitoring of Carbon/Epoxy Composite by Optical-Fiber-Based Distributed Strain/Temperature Sensing	○Yusaku Ito, Takato Obo, Shu Minakuchi, Tadahito Mizutani and Nobuo Takeda	
P-16	Development of an improved finite element domain decomposition method	○JunYoung Kwak, TaeYoung Chun, SangJoon Shin, and Olivier A. Bauchau (*Seoul National University, **University of Michigan-Shanghai Jiao Tong University Joint Institute)	
P-17	The Dynamic Buckling Under the Pulse Loading	○Kazuyuki Ide and Takahira Aoki	
P-18	Modelling of Rubber Plate	○Kazuaki Kimura and Takahira Aoki	
P-19	Effect of Circumferential Single Grooved Casing Treatment on Flow Instability of Transonic Compressor	○Yasunori Sakuma, Toshinori Watanabe and Takehiro Himeno	
P-20	Experimental Study of Microjet Injection for Supersonic Jet Noise Reduction	○Ryuichi Okada, Toshinori Watanabe, Seiji Uzawa and Takehiro Himeno	
P-21	Bio-ballistic drug delivery using pulsed laser initiated microjets	○Mi-ae Park, and Jai-ick Yoh (Seoul National University)	
P-22	Numerical Simulation for Hybrid Rocket Engine	○Mikuro Motoe and Toru Shimada* (*JAXA/ISAS)	
P-23	Hydrogen Afterburner in Pre-Cooled Turbo Jet for Hypersonic Transport Aircraft	○Shunsuke Nishida, George Ianus, Shonosuke Kita, Hideyuki Taguchi*, Osamu Imamura**, Shinji Nakaya and Mitsuhiro Tsue (* JAXA, **Nihon University)	
P-24	Numerical Simulation on Bubble Departure Behavior from Heating Surface by CIPLSM	○Yutaka Umemura, Takehiro Himeno and Toshinori Watanabe	
P-25	Design Optimization of Vortex Generator for Controlling Flows inside Subsonic S-duct	○Junsok Yi, and Chongam Kim (Seoul National University)	
P-26	Wall-modeled large-eddy simulation of transitional separated	○Kengo Asada and Soshi Kawai* (* JAXA/ISAS)	
P-27	Multi-Point Optimization Study of LH2 Supersonic Transport for the 2030-2035 time frame	○Tatsunori Yuhara and Kenichi Rinoie	
P-28	Conceptual Design Study of Multi Fuselage Transport for Greener Aircraft	○Naoki Kobayashi and Kenichi Rinoie	

Otherwise stated, all the affiliation is Department of Aeronautics and Astronautics, The University of Tokyo