

OS9: International Symposium on Innovative Energy Research

TACHIBANA

November 25, 2013

Session 1-1 Combustion I

Chair: Kaoru Maruta (IER, IFS, Tohoku University, Japan)

- 13:00-13:10 **Opening**
Kaoru Maruta (IER, IFS, Tohoku University, Japan)
- OS9-1 **On the Path to Effective Energy Production by Heat and Mass Return Combustion Technologies (*Invited*)**
13:10-13:35 Sergey Minaev (Far-Eastern Federal University, Russia), Kaoru Maruta (Tohoku University, Japan)
- OS9-2 **Modelling Hydrogen-Air Flames With Reduced Two-Step Kinetic Mechanisms (*Invited*)**
13:35-14:00 Vladimir Gubernov (P. N. Lebedev Physical Institute of the Russian Academy of Sciences, Russia)
- OS9-3 **Experimental and Numerical Investigation of CH₄/CO₂/O₂ Laminar Inverse Diffusion Flames (*Invited*)**
14:00-14:25 Nichiki Okada, Shuhei Yoneyama, Tomohiro Yamanaka, Toshihisa Ueda and Takeshi Yokomori (Keio University, Japan)
- 14:30-14:40 BREAK

Session 1-2 Combustion II

Chair: Hisashi Nakamura (IER, IFS, Tohoku University, Japan)

- OS9-4 **SHS Materials Radiative Porous Burners (*Invited*)**
14:40-15:05 Alexander Kirdyashkin, Anatoly Maznoy, Alexander Gushin (Tomsk Scientific Center SB RAS, Russia) and Sergey Minaev (Far-Eastern Federal University, Russia)
- OS9-5 **Flame Stabilization In A Mesoscale Bluff Body Combustor (*Invited*)**
15:05-15:30 Aiwu Fan, Jianlong Wan, Hong Yao and Wei Liu (Huazhong University of Science and Technology, China)
- OS9-6 **Formation of Spinning Flames in Stepped Tube Combustors (*Invited*)**
15:30-15:55 Upendra W. Taywade, Anil A Deshpande and Sudarshan Kumar (Indina Institute of Technology Bombay Powai, India)
- 16:10-16:20 BREAK

Session 2-1 Innovative Energy Research I

Chair: Takeshi Yokomori (Keio University, Japan)

- OS9-7 **Numerical Study of Methanol Reformation from a Single Channel with Cavities Integrated with a Micro-combustor**
16:20-16:40 Prashant Nehe, Sudarshan Kumar (Indian Institute of Technology Bombay, India)
- OS9-8 **Multiphase High Density Hydrogen Energy and its Risk Assessment (*Invited*)**
16:40-17:05 Jun Ishimoto (Tohoku University, Japan)

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Session 2-2 Innovative Energy Research II

Chair: Jun Ishimoto (IER, IFS, Tohoku University, Japan)

OS9-9 **On-wafer Monitoring Technique for Highly Efficient Fabrication Process of Nano Energy Devices (*Invited*)**

9:00-9:25

Tomohiro Kubota, Seiji Samukawa (Tohoku University, Japan)

OS9-10 **Basic Study on Flow Control by Using DC Corona Discharge**

9:25-9:50

Yoshinori Mizuno, Marius Blajan and Shimizu Kazuo (Shizuoka University, Japan)

OS9-11 **Investigation of Applying Laminar Flow-based Microfluidic Microbial Fuel Cell on The Screening of Carbon Sources for Electricity Generation**

9:50-10:15

Cheng-Hsun Lin, Hsiang-Yu Wang (National Cheng Kung University, Taiwan)

10:30-10:40 BREAK

Session 3 Energy Nano-Devices

(Solar cell, secondary battery, fuel cell, and optimum energy system)

10:40-10:50 **Session Opening**

Activity of Core Technology Consortium for Advanced Energy Devices in Tohoku University

Seiji Samukawa (IFS and WPI-AIMR, Tohoku University, Japan)

Energy Nano-Devices 1 – Fuel Cell

Chair: Takeo Ohno (WPI-AIMR, Tohoku University, Japan)

OS9-12 **Complex Hydrides for Hydrogen- and Electrochemical-Energy Storage (*Invited*)**

10:50-11:20

Shin-ichi Orimo (Tohoku University, Japan)

OS9-13 **Molecular Scale Analyses of Transport Phenomena in Polymer Electrolyte Fuel Cell (*Invited*)**

11:20-11:50

Takashi Tokumasu, Akinori Fukushima, Hironori Sakai, Takuya Mabuchi and Yuta Sugaya (Tohoku University, Japan)

Energy Device 2 – Analysis and Secondary Battery

Chair: Akio Higo (WPI-AIMR, Tohoku University, Japan)

OS9-14 **In Situ Analysis of Materials and Reactions in Solid Oxide Fuel Cells (*Invited*)**

13:10-13:40

Koji Amezawa, Takashi Nakamura, Keiji Yashiro, Tatsuya Kawada (Tohoku University, Japan), Yuki Orikasa and Yoshiharu Uchimoto (Kyoto University, Japan)

OS9-15 **All-solid-state Li-ion Battery Research using Epitaxial Thin Films (*Invited*)**

13:40-14:10

Taro Hitosugi, Masakazu Haruta and Susumu Shiraki (Tohoku University, Japan)

OS9-16 **A novel nanomaterial design for high energy density lithium ion batteries (*Invited*)**

14:10-14:40

Itaru HONMA (Tohoku University, Japan)

14:40-14:50 BREAK

Energy Device 3 – Solar Cell and Optimization Method

Chair: Takeru Okada (IFS, Tohoku University, Japan)

OS9-17 **High Efficiency Silicon QD Solar Cells Using Bio-template Ultimate Top-down Processes (*Invited*)**

14:50-15:20 Seiji Samukawa (Tohoku University / CREST, Japan)

OS9-18 **Integration of nanostructures in crystalline silicon solar cells (*Invited*)**

15:20-15:50 Noritaka Usami, Yusuke Hoshi (Nagoya University, Japan) and Takeshi Tayagaki (Kyoto University, Japan)

OS9-19 **Multi-Objective Design Exploration and Energy Strategy (*Invited*)**

15:50-16:20 Shigeru Obayashi (Tohoku University, Japan)

Joint Session with First International Symposium on Smart Layered Materials and Structures for Energy Saving

Chair: Jinhao Qiu (Nanjing University of Aeronautics & Astronautics, China)

OS8-1 **Smart Microdevices Based on Ferromagnetic Shape Memory Alloys (*Invited*)**

16:30-17:00 Manfred Kohl, Marcel Gueltig (Karlsruhe Institute of Technology, Germany), Makoto Ohtsuka, Hiroyuki Miki (Tohoku University, Japan) and Ruizhi Yin (Karlsruhe Institute of Technology, Germany)

OS8-2 **Fatigue Monitoring of CFRP in the VHCF Regime**

17:00-17:30 Gerd Dobmann, Christian Boller (Fraunhofer-IZFP, Germany) and Dietmar Eifler (Technical University, Germany)

OS8-3 **Quantitative Detection of Fatigue Damage in Holed Composite Laminates using an Embedded FBG Sensor**

17:30-18:00 Tomonaga Okabe (Tohoku University, Japan) and Shigeki Yashiro (Shizuoka University, Japan)