

OS2: The Tenth International Symposium on Innovative Energy Research II Combustion Technology and Fundamentals

November 9, 2022

EX-2

OS2-1 **Plasma-assisted Deflagration to Detonation Transition of Dimethyl Ether in a Microchannel**
17:30-17:50

Madeline Vorenkamp (Princeton University, USA), Scott Steinmetz (Sandia National Laboratory, USA), Andrey Starikovskiy, Christopher Kliwer (Princeton University, USA), Yiguang Ju (Sandia National Laboratory, USA)

OS2-2 **Numerical Study for Reproducing Knocking Experiment in a Constant Vessel with a Single Spark Igniter**
17:50-18:10

Youhi Morii (Tohoku University, Japan), Ajit K. Dubey (Tohoku University, Japan / Indian Institute of Technology Roorkee, India), Hisashi Nakamura, Kaoru Maruta (Tohoku University, Japan)

OS2-3 **Numerical Integration Approach with Carleman Linearization for Chemical Reactions and Combustion toward Quantum Computation**
18:10-18:30

Takaki Akiba, Youhi Morii, Kaoru Maruta (Tohoku University, Japan)

November 10, 2022

EX-2

OS2-4 **Experimental Study of Di(2,2,2-trifluoroethyl) Carbonate Oxidation in a Shock Tube and Micro-Flow Reactor with a Controlled Temperature Profile**
9:00-9:20

Claire Grégoire (Texas A&M University, USA), Keisuke Kanayama (Tohoku University, Japan), Pascal Diévar (Institut Polytechnique de Paris, France), Shintaro Takahashi, Takuya Tezuka, Hisashi Nakamura (Tohoku University, Japan), Laurent Catoire (Institut Polytechnique de Paris, France), Kaoru Maruta (Tohoku University, Japan), Eric L. Petersen, Olivier Mathieu (Texas A&M University, USA)

OS2-5 **Kinetic Study on Ammonia Oxidation with H₂O Addition Using a Micro Flow Reactor with a Controlled Temperature Profile**
9:20-9:40

Kenta Tamaoki, Yuki Murakami, Keisuke Kanayama, Takuya Tezuka, Hisashi Nakamura (Tohoku University, Japan)

OS2-6 **Study on N₂O Reactions with H₂ and CH₄ Using a Micro Flow Reactor with a Controlled Temperature Profile**
9:40-10:00

Takumi Harada, Yuki Murakami, Kenta Tamaoki, Keisuke Kanayama, Takuya Tezuka, Hisashi Nakamura (Tohoku University, Japan)

OS2-7 **Internal Cathode Tubular Solid Oxide Fuel Cell Operating on Simulated Two-Stroke Internal Combustion Engine Exhaust**
10:00-10:20

Alexander R. Hartwell, Cody VanNostrand, Harrison Kayton (Syracuse University, USA), Yuki Murakami, Hisashi Nakamura (Tohoku University, Japan), Jeongmin Ahn (Syracuse University, USA)

- OS2-8 **Large Eddy Simulation of Ammonia Gas Turbine Combustor with ANN Chemistry Tabulation Model**
 10:30-10:50 Namsu Kim, Young Tae Guahk, Minjung Lee (Korea Institute of Energy Research, Korea)
- OS2-9 **Large Eddy Simulations of Turbulent Non-premixed Ammonia/Hydrogen Jet Flames at Elevated Pressure Using Flamelet-Progress Variable and Principal Component Analysis**
 10:50-11:10 Suliman Abdelwahid, Mohammad Rafi Malik, Hasan Abed Al Kader Hammoud, Francisco E. Hernández Pérez, Bernard Ghanem, Hong G. Im (King Abdullah University of Science and Technology (KAUST), Saudi Arabia)
- OS2-10 **Lewis Number Effect on Turbulent Premixed Ammonia Flame**
 11:10-11:30 Ruslan Khamedov, Wonsik Song, Mohammad Rafi Malik, Francisco E. Hernández Pérez, Hong G. Im (King Abdullah University of Science and Technology (KAUST), Saudi Arabia)
- OS2-11 **Combustion and NO_x Emission of Opposed-jet C₂H₄/N₂O Diffusion Flames**
 11:30-11:50 Chun-Wei Huang, Cheng Dong (Chang Gung University, Taiwan), Taro Hirasawa, Hsin-Yi Shih (Chubu University, Japan)
- OS2-12 **Combustion Process in NH₃ Stratified Spray Flame for Large Two-Stroke Marine Engine**
 11:50-12:10 Yasuhisa Ichikawa, Yoichi Niki, Koji Takasaki (National Institute of Maritime, Port and Aviation Technology, Japan), Hideaki Kobayashi (Tohoku University, Japan), Akihiro Miyanagi (Japan Engine Corporation, Japan)
- OS2-13 **Non-equilibrium Chemistry and Dynamics in Plasma Aided Combustion and Manufacturing (*Invited lecture*)**
 13:10-13:50 Yiguang Ju, Hongtao Zhong, Christopher Burger, Madeline Vorenkamp (Princeton University, USA)
- OS2-14 **Influence of *n*-Pentanol Blending on Soot in Spray Combustion of Kerosene**
 13:50-14:10 Rahul B. Vishwanath, Peter A. Carniglia, Jacob K. Weber, Ömer L. Gülder (University of Toronto Institute for Aerospace Studies, Canada)
- OS2-15 **Flame Propagation Regimes for Hydrogen-Air Mixtures at Cryogenic Temperatures**
 14:10-14:30 Mike Kuznetsov, Andrey Denkevits, Andreas Friedrich (Karlsruhe Institute of Technology, Germany), Anke Veser (Pro-Science, Germany)
- OS24-1 **Ammonia for gas turbine fuelling applications - FLEXnCONFU program (*Invited*)**
 14:50-15:15 Syed Mashruk (Cardiff University, UK)
- OS24-2 **The challenge to consider ammonia as fuel for transport applications (*Invited*)**
 15:15-15:40 Christine Rouselle (University of Orleans, France)

- OS2-16 **Studying NH_2^* and NH^* Chemiluminescence During NH_3 Oxidation in a Shock Tube**
 15:40-16:00 Maryam Khan-Ghauri, Claire M. Grégoire, Olivier Mathieu, Eric L. Petersen (Texas A&M University, USA)
- OS2-17 **Investigation of the Chemiluminescence Signature of Ammonia Flames**
 16:00-16:20 Alka Karan, Guillaume Dayma (CNRS-ICARE / Université d'Orléans, France),
 Christian Chauveau (CNRS-ICARE, France), Fabien Halter (CNRS-ICARE / Université d'Orléans, France)
- OS24-3 **Circular economic hydrogen production system for synthetic ammonia combustion** (*Invited*)
 16:30-16:55 Chao-Ho Lan (WSP International, LLC., Taiwan Branch, Taiwan)
- OS24-4 **How does the degradation of thermal barrier coatings change under oxidizing and reducing environments?** (*Invited*)
 16:55-17:20 Kazuhiro Ogawa (Tohoku University, Japan)
- OS2-18 **Emission Characteristics of Liquid Ammonia and Gaseous Ammonia Flames Co-fired with Gaseous Hydrogen in a Gas Turbine-like Combustor at Moderately High Pressure**
 17:20-17:40 Kapuruge Don Kunkuma Amila Somarathne, Hirofumi Yamashita, Sophie Colson, Akihiro Hayakawa, Taku Kudo, Hideaki Kobayashi (Tohoku University, Japan)
- OS2-19 **Extinction Limits of $\text{CH}_4/\text{NH}_3/\text{N}_2$ versus High-Temperature Air Nonpremixed Counterflow Flames**
 17:40-18:00 Yuki Murakami, Takuya Tezuka, Hisashi Nakamura (Tohoku University, Japan)

November 11, 2022
EX-2

- OS2-20 **Numerical Analysis of Flame Behavior Initiated from Flame Ball and Hot Spherical Zone in Counterflow Field**
 9:00-9:20 Kazutaka Sagawa, Takaki Akiba, Akira Tsunoda, Youhi Morii, Hisashi Nakamura, Kaoru Maruta (Tohoku University, Japan)
- OS2-21 **Near Lean/Rich Limits Behaviors and Local Stoichiometries of Flame Balls, Counterflow Flames, and Planar Flames in a $\text{CH}_4/\text{O}_2/\text{Xe}$ Mixture**
 9:20-9:40 Akira Tsunoda, Takaki Akiba, Hisashi Nakamura, Youhi Morii, Takuya Tezuka, Kaoru Maruta (Tohoku University, Japan)
- OS2-22 **Instability of Expanding Hydrogen/air Flames at Normal and Cryogenic Temperatures**
 9:40-10:00 Linlin Yang, Zheng Chen (Peking University, China)

- OS2-23 **Transverse Mode Dynamics in a Lean-premixed Multislit Hydrogen Combustor**
 10:00-10:20 Dohyung Park, Kyu Tae Kim (Korea Advanced Institute of Science and Technology (KAIST), Korea)
- OS2-24 **Pairing Asymmetry-induced Collective Dynamics of Lean-premixed Model Gas Turbine Combustors**
 10:40-11:00 Dahyun Bae, Kihun Moon, Kyu Tae Kim (Korea Advanced Institute of Science and Technology (KAIST), Korea)
- OS2-25 **Analysis of Ignition-to-Flame Propagation Transition Using a Flame in Front of High Temperature Wall and Counterflow Flames**
 11:00-11:20 Daiki Nakao, Keisuke Akita, Yoshiki Hirano, Takuya Tezuka, Youhi Morii, Hisashi Nakamura, Kaoru Maruta (Tohoku University, Japan)
- OS2-26 **Numerical Study on the Effect of Initial Ignition Condition on Flame Propagation of Dimethyl Ether (DME)/Air Mixture**
 11:20-11:40 Ayaka Hashimoto, Keisuke Akita, Youhi Morii, Kaoru Maruta (Tohoku University, Japan)
- OS2-27 **Numerical Simulation of Pulsating Methane Flame Characteristics under DC Electric Field**
 11:40-12:00 Haohui Li, Bisheng Wang, Chenyang Wang, Zhaoyang Ma, Ming Zhai (Harbin Institute of Technology, China)
- OS2-28 **Simplification of Ionization Reaction Mechanism for Methane Combustion**
 13:10-13:30 Chenyang Wang, Bisheng Wang, Haohui Li, Zhaoyang Ma, Ming Zhai (Harbin Institute of Technology, China), Akram Avami (Sharif University of Technology, Iran)
- OS2-29 **Generating Compact Reaction Models for Methane and Natural Gas Using Genetic Algorithms**
 13:30-13:50 Kaito Hirose, Yuki Murakami, Koji Shimoyama, Hisashi Nakamura (Tohoku University, Japan)
- OS2-30 **Combustion Analysis of CH₄/NH₃ Blended Fuels Applied in a Can Combustor for a Micro Gas Turbine**
 13:50-14:10 Sz-Pei Ho, Cheng Cheng, Hsin-Yi Shih (Chang Gung University, Taiwan)
- OS2-31 **Ammonia/Hydrogen Blend Combustion Characteristics under High Pressure**
 14:10-14:30 Chenyang Wang, Haohui Li, Bisheng Wang, Li Guo, Ming Zhai (Harbin Institute of Technology, China), Akram Avami (Sharif University of Technology, Iran)