OS2: The First International Symposium on Integrated Flow Science II
Combustion Technology and Fundamentals

November 6, 2023
EX-2 / <Satellite> EX-1

OS2-1
14:10-14:28
Propene Oxidation in a Supercritical Jet-Stirred Reactor up to 100 atm
Bowen Mei, Ziyu Wang, Aditya Dilip Lele (Princeton University, USA), Pascal Dievart (Institut Polytechnique de Paris, France), Yiguang Ju (Princeton University, USA)

OS2-2
14:28-14:46
Unraveling the Complex Oxidation Processes Occurring Under Cool Flame Conditions.
Philippe Dagaut, Zahraa Dbouk, Nesrine Belhadj, Roland Benoit, Maxence Lailliau (CNRS-INSIS, France)

OS2-3
14:46-15:04
Ammonia Oxidation by N_2O: a Shock-Tube Study
Olivier Mathieu, Claire M. Grégoire, Eric L. Petersen (Texas A&M University, USA)

OS2-4
15:04-15:22
Short-Lived Intermediates Detection in Trimethyl Phosphate Pyrolysis using Vacuum Ultraviolet Synchrotron Radiation
Keisuke Kanayama (Tohoku University, Japan / Paul Scherrer Institute, Switzerland), Hisashi Nakamura, Kaoru Maruta (Tohoku University, Japan), Andras Bodi, Patrick Hemberger (Paul Scherrer Institute, Switzerland)

OS2-5
15:22-15:40
Investigation on Ammonia Oxidation at Elevated Pressures Using a Micro Flow Reactor with a Controlled Temperature Profile
Kenta Tamaoki, Takuya Tezuka, Masahiko Izumi, Hisashi Nakamura (Tohoku University, Japan)

OS2-6
15:50-16:08
Pyrolysis and Soot Formation of Liquid Fuels in a Micro Flow Reactor
Mohammad R. Razavi, Ömer L. Gülder (University of Toronto Institute for Aerospace Studies, Canada)

OS2-7
16:08-16:26
Numerical Investigation of Soot Formation in Pressurized, Highly Turbulent Jet Flames
Erica Quadarella, Junjun Guo, Hong G. Im (King Abdullah University of Science and Technology, Saudi Arabia)

OS2-8
16:26-16:44
Characterization of Particulate Morphology Generated from Lithium-Ion Battey Combustion Processes
Samuel L. Manzello (Reax Engineering, USA), Sayaka Suzuki (Tokyo Institute of Technology, Japan), Kaoru Maruta (Tohoku University, Japan)

OS2-9
16:44-17:02
A Study on the Effect of the Discharge Frequency of Dielectric Barrier Discharge on the Ignition Characteristics in RCEM
Saurabh Agrawal, Naoto Horibe, Jun Hayashi, Hiroshi Kawanabe (Kyoto University, Japan)

OS2-10 17:02-17:20
Study on the Ignition-to-Flame Propagation Transition of Spherically Propagating Flame Initiated by Spark Discharge and Low-Temperature Heat Source
Takashi Kakizawa, Keisuke Akita, Takuya Tezuka, Youhi Morii, Hisashi Nakamura, Kaoru Maruta (Tohoku University, Japan)

OS2-11 17:30-17:48
Theoretical Studies of Supercritical Real-Fluid Oxidations of Universal Fuels by Using the Virial Equation of State
Junfeng Bai, Hao Zhao (Peking University, China)

OS2-12 17:48-18:06
Stabilities of Reaction Wave Structures in Low- to High-speed Reactive Inflow Conditions
Youhi Morii, Kaoru Maruta (Tohoku University, Japan)

OS2-13 18:06-18:24
Multiscale Modeling on Shock-Cool Flame Interaction with DME/Air Mixture
E Fan, Tianhan Zhang (Southern University of Science and Technology, China)

OS2-14 18:24-18:42
Unconfined Hydrogen Detonation: Experiments, Scaling, Modeling
Mike Kuznetsov, Aleksander Lelyakin (Karlsruhe Institute of Technology, Germany)

OS2-15 18:42-19:00
Flame Propagation and Transition to Detonation of Dimethyl Ether Mixture in a Microscale Channel
Andy Thawko, Yuanxinxin Cao, Madeline S. Vorenkamp, Yiguang Ju (Princeton University, USA)

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OS2-16 9:00-9:18
Machine Learning Tools for Accelerating Simulation-driven Engine Design and Optimization *(Invited)*
Pinaki Pal (Argonne National Laboratory, USA)

OS2-17 9:18-9:36
Unlocking the Hidden Details: New Approaches for ML-Based Super-Resolution of Turbulent Flows *(Invited)*
Matthias Ihme (Stanford University / SLAC National Accelerator Laboratory, USA), Wai Tong Chung, Bassem Akoush, Pushan Sharma (Stanford University, USA)

OS2-18 9:36-9:54
Neural Network Approach to Detailed Reaction Model Optimization, Uncertainty Minimization, and Model Reduction *(Invited)*
Yue Zhang, Kevin Dong, Laurien A. Vandewalle, Rui Xu (Stanford University, USA), Gregory P. Smith (SRI International, USA), Hai Wang (Stanford University, USA)

OS2-19 9:54-10:12
Artificial Intelligence (AI) Based Fuel Design *(Invited)*
S. Mani Sarathy, Nursulu Kuzhgaliyeva (King Abdullah University of Science and Technology, Saudi Arabia)

OS2-20 10:12-10:30
Theory and Analysis of Linear and Nonlinear Autoencoders for Stiff Chemical Systems *(Invited)*
Vijayamanikandan Vijayarangan, Harshavardhana A. Uranakara, Hong G. Im (King Abdullah University of Science and Technology, Saudi Arabia)

OS2-21 **Advancing Flame Surface Density Modelling with Machine Learning *(Invited)***
10:40-10:58 Jen Zen Ho, Mohsen Talei (The University of Melbourne, Australia), Wai Tong Chung, Davy Joao Etienne Brouzet, Pushan Sharma, Bassem Akoush (Stanford University, USA), Matthias Ihme (Stanford University / SLAC National Accelerator Laboratory, USA)

OS2-22 **Global Multiscale Sampling (GMS) Method Empowering Deep Neural Networks To**
10:58-11:16 **Solve High-dimensional Stiff ODEs In Combustion Simulation *(Invited)***
Zhi-Qin John Xu, Junjie Yao, Yuxiao Yi (Shanghai Jiao Tong University, China), Tianhan Zhang (Southern University of Science and Technology, China)

OS2-23 **Artificial Intelligent Temperature Prediction of a Porous Radiant Burner System**
11:16-11:34 **Based on Deep Learning Analyses of Thermal Infrared Images Calibrated by Thermocouples**
Hao Yu Hsieh, Shenqyang (Steven) Shy, Van Tinh Mai, Pi-Cheng Tung (National Central University, Taiwan)

OS2-24 **Artificial Intelligence Technology to Control Combustion Stability**
11:34-11:52 Shouyin Yang, Jiaxiang Huang (National Formosa University, Taiwan)

OS2-25 **Stiffness Suppression in Generating a Simplified Reaction Model for Methane using**
11:52-12:10 **Genetic Algorithms**
Kaito Hirose, Youhi Morii (Tohoku University, Japan), Koji Shimoyama (Kyushu University, Japan), Hisashi Nakamura (Tohoku University, Japan)

OS2-26 **Combustion Analysis of Novel Miniature Swiss-roll Combustors with Non-premixed**
16:30-16:48 **CH4/air Flames**
Chun-Chieh Lien, Hsin-Yi Shih (Chang Gung University, Taiwan)

OS2-27 **Experimental Study on Weak Intensity Turbulent Combustion Generated by Grids**
16:48-17:06 Wenjun Kong, Zhiwei Yuan, Ruolin Zhao (Beihang University, China)

OS2-28 **The Effect of Lewis Number on the Flame Behavior in a Sudden Expansion Channel**
17:06-17:24 Jyun-Hao Huang, Sheng-Yen Hsu (National Sun Yat-sen University, Taiwan)

OS2-29 **Auto-ignition of Pressurized Syngas Leakage**
17:24-17:42 Guowei Lyu, Xiaolong Gou (Chongqing University, China)

OS2-30 **Numerical Investigation on the Concurrent-flow Flame Spread over a Thin**
17:42-18:00 **Solid-fuel in Narrow Channels**
Kai Hsueh, Yu-Xiang Zhang, Sheng-Yen Hsu (National Sun Yat-sen University, Taiwan)

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OS2-31 **Repetitive Autoignition and Extinction Instability of Non-premixed N-dodecane**
9:00-9:18 **Spray Cool Flames Using Digital Inline Holography**
Wenbin Xu, Ziyu Wang, Bowen Mei, Martin A. Erinin, Luc Deike, Yiguang Ju (Princeton University, USA)

OS2-32 9:18-9:36
Ignition of Premixed Cool Flame in a Counterflow
Yang Wang, Yiqing Wang, Zheng Chen (Peking University, China)

OS2-33 9:36-9:54
An Updated Simplified Reaction Rate Model to Consider Chemical Reaction in Preheat Zone
Akira Tsunoda, Youhi Morii, Kaoru Maruta (Tohoku University, Japan)

OS2-34 9:54-10:12
Experimental Investigation on Laminar Flame Propagation and Two Stage auto Ignition Phenomena of n-C_7H_{16}/air Premixture under High Temperature / Pressure Conditions
Tokua Tateishi, Ryoji Tanabe (Hiroshima University, Japan), Michiharu Kawano, Yuya Honda, Takaya Hara (Mazda Motor Corporation, Japan), Masaya Nakahara (Ehime University, Japan), Akira Miyoshi (Hiroshima University, Japan), Hiroshi Terashima (Hokkaido University, Japan), Daisuke Shimokuri (Hiroshima University, Japan)

OS2-35 10:12-10:30
TOF-MS Measurement of Intermediate Species in Wall-stabilized Premixed Cool Flames
Meng Zhou, Yuji Suzuki, Minhyeok Lee (The University of Tokyo, Japan)

OS2-36 10:40-10:58
Reactivity and Extinction of n-dodecane Non-premixed Cool Flame at High Pressure
Ziyu Wang, Andy Thawko, Bowen Mei, Wenbin Xu, Chung K. Law, Yiguang Ju (Princeton University, USA)

OS2-37 10:58-11:16
Unburnt Reaction Progress Effects on Spherical Flame Dynamics under Elevated Temperature Conditions
Keisuke Akita (Tohoku University, Japan / University of Tennessee, USA), Peng Zhao (University of Tennessee, USA), Youhi Morii, Kaoru Maruta (Tohoku University, Japan)

OS2-38 11:16-11:34
Secondary Injector Configurations Impact on Combustion Instability of Axially-Staged Lean-Premixed Flames
Gyeonghyun Han, Yongseok Choi, Kyu Tae Kim (Korea Advanced Institute of Science and Technology, Korea)

OS2-39 11:34-11:52
Numerical Study of Alcohol-to-jet Fuel Pyrolysis and Oxidation
Yun-Jui Wu, Kuang C. Lin (National Tsing Hua University, Taiwan)

OS2-40 11:52-12:10
Experimental Study on the Dynamic Response of Axially-Staged Lean-Premixed Combustion System
Yongseok Choi, Kyu Tae Kim (Korea Advanced Institute of Science and Technology, Korea)

OS2-41 13:10-13:28
Turbulent Partially Cracked Ammonia/air Flames in Spherical Vessel
Seif-Eddine Zitouni, Pierre Brequigny, Christine Mounaïm-Rousselle (University of Orléans, France)

OS2-42 13:28-13:46
Experimental Study on Emission Characteristics of Ammonia Jet Diffusion Flames under Oxygen Enrichment Condition
Yu Xia, Yuxuan Shen, Kodai Sakai, Sophie Colson, Taku Kudo, Akihiro Hayakawa, Hideaki Kobayashi (Tohoku University, Japan)

OS2-43 **The Temperature Characteristics of Liquid Ammonia Spray at High Pressures**
13:46-14:04 Kapuruge Don Kunkuma Amila Somarathne, Hirofumi Yamashita, Kohei Oku, Keito Honda, Taku Kudo, Akihiro Hayakawa, Hideaki Kobayashi (Tohoku University, Japan)

OS2-44 **Unsteady Emission Characteristics of Premixed Ammonia/Hydrogen/Air Flames in a Stagnation Flow**
14:04-14:22 Takuya Tomidokoro, Hong G. Im (King Abdullah University of Science and Technology, Saudi Arabia)

OS2-45 **Numerical Investigation on the Flame and Stability Characteristics of Partially Cracked Ammonia/Air Premixtures**
14:22-14:40 Shumeng Xie, Huangwei Zhang (National University of Singapore, Singapore)

OS2-46 **Comparative Experimental and Theoretical Study of Combustion Instability between Ammonia and Methane Downward Propagating Flames in Tubes**
14:50-15:08 Jerric R. Delfin (Hokkaido University, Japan / University of the Philippines Los Baños, Philippines), Feng Guo, Nozomu Hashimoto, Osamu Fujita (Hokkaido University, Japan)

OS2-47 **Structure and Combustion Characteristics of Turbulent Hydrogen Bluff-Body Flames at Different Reynolds Numbers**
15:08-15:26 Suliman Abdelwahid, Lorenzo Angelilli, Francisco E. Hernández-Pérez, Hao Tang, Adamu Alfazazi, Gaetano Magnotti, Bassam Dally, Hong G. Im (King Abdullah University of Science and Technology, Saudi Arabia)

OS2-48 **Simulation of Ethylene/Ammonia Laminar Opposed Diffusion Flame: Two-Dimensional and Curtain Flow Effect**
15:26-15:44 Wang Zi Jia, Anurag Dahiya, Kuang C. Lin (National Tsing Hua University, Taiwan)

OS2-49 **Ammonia and Ethanol Blend as Fuel for ICE: from the Liquid Injection to the Combustion and Pollutant Emissions**
15:44-16:02 Ronan Pelé, Pierre Brequigny (University of Orléans, France), Jérôme Bellettre (Université de Nantes, France), Camille Hespel, Guillaume Dayma, Fabien Halter, Christine Mounaïm-Rousselle (University of Orléans, France)

OS2-50 **Global Quench Conditions of Downwardly-Propagating *versus* Centrally-Ignited Premixed Ammonia/Air Flames by Intensive Near-Isotropic Turbulence**
16:02-16:20 Yi-Rong Chen, Shenqyang (Steven) Shy, Hao Yu Hsieh, Van Tinh Mai (National Central University, Taiwan)

OS2-51 **Experimental Investigation of Flame Behavior and NO_x Emission Characteristics of NH_3/CH_4 Combustion with Highly Preheated Air in a Bench-scale Furnace**
16:30-16:48 Apurba Sharma, Yimin Qiao, Yuji Wakata, Vinoth Kumar Subramani (Hiroshima University, Japan), Tomohisa Miyake, Tsukasa Kishimura, Takahisa Sonoda (Sanken Sangyo Co., LTD., Japan), Akira Miyoshi, Daisuke Shimokuri (Hiroshima University, Japan)

OS2-52 **Analytical Study of Parametric Instability in Premixed Ammonia/Methane Flames**
16:48-17:06 Arvind Kumar Ahirwar, Ajit Kumar Dubey (Indian Institute of Technology, Roorkee, India)

OS2-53 17:06-17:24 **Evaluation During Hydrogen Co-firing by Transient Quasi-DNS for a Coaxial Burner with Mixing Tube**
Kazuki Abe, Youhi Morii, Kaoru Maruta (Tohoku University, Japan)

OS2-54 17:24-17:42 **Computational Study of NH_3 Addition Effects on NO_x Formation of Opposed-jet CH_4/air and H_2/air Diffusion Flames**
Yong-Yi Zhuang, Hsin-Yi Shih (Chang Gung University, Taiwan)

OS2-55 17:42-18:00 **Fundamental Combustion Characteristics of Laminar Ultra-Lean Hydrogen/Air Flames**
Nicolas Villenave, Seif Zitouni, Pierre Brequigny, Fabrice Foucher (University of Orléans, France)

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OS24-6/ OS2-56 16:00-16:20 **Ammonia Combustion with Biomass Gaseous Fuels and Hydrogen: from Fundamental Properties towards Engine Use**
Pierre Brequigny, Ricardo Rabello de Castro, Adnane Soule, Fabien Halter, Guillaume Dayma, Christine Mounaïm-Rousselle (University of Orléans, France)