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39th International Symposium on Combustion Distinguished Papers Announced

We are pleased to announce the complete list of Distinguished Papers from the 39th International Symposium on Combustion. These papers will be available for free download on Science Direct through the end of 2023. We appreciate the continued support of Elsevier in this effort to make these papers accessible to all our members. To view the video presentation of these papers, please visit the Presentations & Videos on The Combustion Institute website. The Silver Medal Selection Committee will now have the difficult task of selecting one paper to receive the Silver Medal. The announcement of their selection will be made at the 40th Symposium in Milan, Italy in 2024. Congratulations to all the authors!

Listing of papers follows:

1. Low Emission Combustion Technologies

Combustion of lean ammonia-hydrogen fuel blends in a porous media burner
Guillaume Vignat, Bassem Akoush, Edna Rebeca Toro Garza, Emeric Boigné, Matthias Ihme
Department of Mechanical Engineering, Stanford University, United States

2. Gas-Phase Reaction Kinetics

Theoretical kinetics of HO_2 + C_5H_5: A missing piece in cyclopentadienyl radical oxidation reactions
Luna Pratali Maffei, Matteo Pelucchi, Tiziano Faravelli, Carlo Cavallotti
CRECK Modelling Lab, Department of Chemistry, Materials and Chemical Engineering "G. Natta", Politecnico di Milano, Italy

3. Diagnostics

Water vapor in hydrogen flames measured by time-resolved collisional dephasing of the pure rotational N_2 CARS signal
Leonardo Castellanos[a], Francesco Mazza[a], Alexis Bohlin[a,b]
[a]*Propulsion and Power Laboratory, Faculty of Aerospace Engineering, Delft University of Technology, The Netherlands*
[b]*Space Propulsion Laboratory, Department of Computer Science, Electrical and Space Engineering, Luleå University of Technology, Sweden*

4. Laminar Flames

Effects of low-temperature chemical reactions on ignition kernel development and flame propagation in a DME-air mixing layer
Yiqing Wang[a], Wang Han[b], Thorsten Zirwes[c,d], Feichi Zhang[c], Henning Bockhorn[c], Zheng Chen[a]
[a]*SKLTCS, CAPT, BIC-ESAT, College of Engineering, Peking University, China*
[b]*School of Engineering, The University of Edinburgh, United Kingdom*
[c]*Engler-Bunte-Institute, Karlsruhe Institute of Technology, Germany*
[d]*Steinbuch Centre for Computing (SCC), Karlsruhe Institute of Technology, Germany*

5. Turbulent Flames

Effects of differential diffusion on hydrogen flame kernel development under engine conditions

Hongchao Chu, Lukas Berger, Temistocle Grenga, Zhao Wu, Heinz Pitsch
Institute for Combustion Technology, RWTH Aachen University, Germany

6. Spray, Droplet, and Supercritical Combustion

Studies of low and intermediate temperature oxidation of propane up to 100 atm in a supercritical-pressure jet-stirred reactor

Hao Zhao, Chao Yan, Guohui Song, Ziyu Wang, Yiguang Ju
Department of Mechanical and Aerospace Engineering, Princeton University, United States

7. Detonation, Explosion, and Supersonic Combustion

Statistical analysis of detonation wave structure

Mark D. Frederick[a], Rohan M. Gejji[a], Joseph E. Shepherd[b], Carson D. Slabaugh[a]
[a]*Purdue University, United States*
[b]*California Institute of Technology, United States*

8. Solid Fuel Combustion

Resolved simulations of single iron particle combustion and the release of nano-particles

Leon C. Thijs, C.E.A.G. van Gool, W.J.S. Ramaekers, Jeroen A. van Oijen, L.P.H. de Goey
Mechanical Engineering, Eindhoven University of Technology, The Netherlands

9. Fire Research

Experimental study on downward/opposed flame spread and extinction over electric wires in partial gravity environments

Yusuke Konno[a], Yutao Li[b], Jean-Marie Citerne[b], Guillaume Legros[b,c], Augustin Guibaud[d], Nozomu Hashimoto[a], Osamu Fujita[a]
[a]*Hokkaido University, Japan*
[b]*Sorbonne Université, CNRS, France*
[c]*CNRS-ICARE, France*
[d]*University College London, United Kingdom*

10. Propulsion

Suppression of self-excited thermoacoustic instabilities by convective-acoustic interference

Eirik Æsøy, Girish K. Jankee, Srikar Yadala, Nicholas A. Worth, James R. Dawson
Department of Energy and Process Engineering, Norwegian University of Science and Technology, Norway

11. Soot, Nanomaterials, and Large Molecules

Prenucleation chemistry of aromatics: A two-ring precursor?

Michael Frenklach[a], Alexander M. Mebel[b]
[a]*Department of Mechanical Engineering, University of California, Berkeley, United States*
[b]*Department of Chemistry and Biochemistry, Florida International University, United States*

12. Numerical Combustion

Manifold-informed state vector subset for reduced-order modeling

Kamila Zdybał[a,b], James C. Sutherland[c], Alessandro Parente[a]
[a]*Universite´ Libre de Bruxelles, École polytechnique de Bruxelles, Aero-Thermo-Mechanics Laboratory, Belgium*
[b]*Universite´ Libre de Bruxelles and Vrije Universiteit Brussel, Combustion and Robust Optimization Group (BURN), Belgium*
[c]*Department of Chemical Engineering, University of Utah, United States*

13. Multi-Physics Phenomena

Modelling a detailed kinetic mechanism for electrocatalytic reduction of CO2

Simon Rihm[a,b,c], Jethro Akroyd[a,b], Markus Kraft[a,b,d,e]

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