



Saudi Arabian Section of the Combustion Institute
12th SAS – CI Annual Conference
5th – 6th October 2022 at Abha
www.sas-ci.com

Program: Wednesday, October 5th

8.30 – 9.30	Arrival and registration	
9.30 – 9.40	Welcome – SAS-CI Chairman, Prof. Bassam Dally, KAUST	
9.40 – 10.20	Keynote Lecture – Dr. Jihad Badra, Saudi Aramco: Artificial Intelligence and Data-Driven Optimization of ICEs	
10.25 – 12.00	Session 1.1: Combustion Diagnostics and Reaction Kinetics <i>Session Chair: Binod Giri</i>	Session 1.2: Low Emission Engines and Power Generation Systems <i>Session Chair: James Turner / Emre Cenkler</i>
10.25 – 10.40	Shock-tube study of ammonia/methane oxidation using NH ₃ laser absorption for assessment of modern kinetics mechanisms <i>Sulaiman Alturaiifi, KFUPM</i>	Investigation of a supercharged gas turbine engine concept for an improved efficiency/mass/cost tradeoff for range extender engines <i>James Turner, KAUST</i>
10.40 – 10.55	Selective BTEX detection using laser absorption spectroscopy in the CH bending mode region <i>Ali Elkhazraji, KAUST</i>	Effect of N ₂ dilution on the reactivity of Aviation fuels in compression Ignition combustion <i>Basem Eraqi, KAUST</i>
10.55 – 11.10	A selective benzene, acetylene, and carbon dioxide sensor in the fingerprint region <i>Mhanna Mhanna, KAUST</i>	Flashback characteristics of steam-diluted hydrogen-methane-air combustion in a dual swirl burner <i>Neha Vishnoi, Indian Institute of Technology</i>
11.10 – 11.25	Experimental study of NO _x addition autoignition of iso-octane and methanol in pre-chamber combustion <i>Khaiyom Hakimov, KAUST</i>	Computational studies of flow and combustion characteristics in narrow-throat pre-chamber engines <i>Mickael Silva, KAUST</i>
11.25 – 11.40	Simultaneous measurements of NH ₂ and major species and temperature with a novel excitation scheme in ammonia combustion at atmospheric pressure <i>Diana Ezendeveva, KAUST</i>	Comparative study of SI and pre-chamber hydrogen fueled engine: A computational approach <i>Hammam Aljabri, KAUST</i>
11.40 – 11.55	Simultaneous PLIF measurements of NO/NH and NO/OH in ammonia-hydrogen turbulent flames <i>Guoqing Wang, KAUST</i>	Parametric study of a one-dimensional modelled polymer electrolyte membrane fuel cell <i>Faseeh Abdulrahman, KAUST</i>

12.00 – 13.00	Lunch Break	
13.00 – 14.00	Panel discussion – Combustion in 2035: Research and Applications	
14.00 – 14.10	Group Photo	
14.10 – 15.40	Session 1.3: Combustion Diagnostics and Reaction Kinetics <i>Session Chair: Binod Giri</i>	Session 1.4: Low Emission Engines and Power Generation Systems <i>Session Chair: James Turner / Emre Cenker</i>
14.10 – 14.25	Detailed kinetic modeling of OH(2Σ+) formation in premixed NH ₃ /H ₂ counterflow flames <i>Gianluca Capriolo, KAUST</i>	Effect of combining stratification with hydrogen enrichment on the stability and structure of premixed CH ₄ -air flames <i>Ahmed A.H. Abdelhafez, KFUPM</i>
14.25 – 14.40	Experimental and modelling study of syngas combustion in CO ₂ bath gas <i>Touqeer Anwar Kashif, KAUST</i>	Novel concepts for removing cold-start vehicle emissions to meet future legislations <i>Fakhar Mehmood, Aramco</i>
14.40 – 14.55	Automatic generation of detailed and lumped models for diesel surrogate fuels <i>Sirio Brunialti, KAUST</i>	Experimental investigation on combustion strategy of light duty GCI fuelled GCI fuel <i>Yasser Al Qahtani, Aramco</i>
14.55 – 15.10	Exact and approximate chemical kinetics for accelerating turbulent reacting flow simulations <i>Vijayamanikandan Vijayarangan, KAUST</i>	The contribution of intermediate-temperature heat release to octane sensitivity <i>Jonathan Peterson, KAUST</i>
15.10 – 15.25	Quantitative measurement of C ₂ H ₂ using mid-infrared laser polarization spectroscopy for combustion diagnostics <i>Wanxia Zhao, KAUST</i>	Economical assessment of strategies towards CO ₂ emission reductions in the energy matrix of Saudi Arabia <i>Harif Daniel Fontecha Sanchez, KAUST</i>
15.25 – 15.40	1D Interferometric Rayleigh scattering velocimetry and thermometry using VIPA <i>Zeinab Al Hadi, KAUST</i>	Reduced CO ₂ vehicles emission: Onboard capture and storage system using novel sorbents <i>Giuseppe Pezzella, KAUST</i>
15.40 – 15.50	Coffee Break	
15.55 – 16.55	Session 1.5: Applications of ML/AI tools <i>Session Chair: Abdul Gani Abdul Jameel</i>	Session 1.6: Low Emission Engines and Power Generation Systems <i>Session Chair: James Turner / Emre Cenker</i>
15.55 – 16.10	A novel automated machine learning framework for engine optimization <i>Balaji Mohan, Aramco</i>	The effects of gasoline composition and additive concentration on the lubricity of gasoline blends <i>Youssef Al Ashkar, KAUST</i>
16.10 – 16.25	Machine learning to predict the state of charge for hybrid vehicles <i>Juan Camilo Giraldo Delgado, KAUST</i>	Characterization of gasoline fuel spray dynamics for reduction of engine-out emissions in internal combustion engines <i>Sadique Saleemullah Khan, KFUPM</i>

16.25 – 16.40	Machine Learning models on an exclusively developed thermodynamic database for kinetic models <i>Kiran Yalamanchi, KAUST</i>	Investigation of the effects of piston and pre-chamber geometries on the combustion characteristics of an optical pre-chamber combustion engine <i>Xinlei Liu, KAUST</i>
16.40 –16.55	Multi-speciation in fuel pyrolysis using a single laser and deep neural networks <i>Mohamed Sy, KAUST</i>	<i>Identification of Intrinsic Thermoacoustic Modes in a Dual-Swirl Ammonia-Hydrogen Burner</i> <i>Daniel Vigarinho, KAUST</i>
17.00 – 17.30	Winter School Presenters	

Program: Thursday, October 6th

8.00 – 8.40	Keynote Lecture – Prof. Thibault Guibert, KAUST: Canonical and Practical ammonia-hydrogen flames	
8.45 – 10.00	Session 2.1: Gasification and CCUS <i>Session Chair: Christos Kalamaras</i>	Session 2.2: Sustainable fuels, hydrogen and ammonia: Production, Storage and Combustion <i>Session Chair: Mani Sarathy / Jihad Badra</i>
8.45 – 9.00	Techno-economics of mobile carbon capture for class 8 trucks <i>Fethi Khaled, Aramco</i>	An experimental and kinetic modeling study of ammonia-ethanol blends <i>Binod Giri, KAUST</i>
9.00 – 9.15	Stability and flame macrostructure of stratified oxy-methane flames <i>Mohammad Raghib Shakeel, KFUPM</i>	Study on lean premixed flame stability enhancement by altering fuel-air Mixture homogeneity <i>Radi Alsulami, King Abdulaziz University</i>
9.15 – 9.30	A compact cascade structure for CO ₂ separation by Thermal Diffusion <i>Raghad Alharbi, Aramco</i>	Influence of varying fuel-air premixture homogeneity with ammonia using different injection locations <i>Marwan Hassan Al-Abdullah, King Abdulaziz University</i>
9.30 – 9.45	High fidelity simulations of cryogenic carbon capture process <i>Alberto Ceschin, KAUST</i>	Direct numerical simulation of premixed ammonia flames under different turbulent conditions <i>Ruslan Khamedov, KAUST</i>
9.45 – 10.00	Development cycle time reduction using design of experiments and machine learning-based optimization framework <i>Abdullah S AlRamadan, Aramco</i>	Characterization of a hollow cone direct injection hydrogen jet in a constant pressure vessel <i>Bassam S Aljohani, KAUST</i>
10.00 – 10.10	Coffee Break	
10.15 – 11.45	Session 2.3: Fundamental combustion experiments and modeling <i>Session Chair: Awad Alqaity</i>	Session 2.4: Sustainable fuels, hydrogen and ammonia: Production, Storage and Combustion <i>Session Chair: Mani Sarathy / Jihad Badra</i>
10.15 – 10.30	Effects of adiabatic flame temperature and oxygen concentration in CH ₄ /N ₂ /O ₂ non-swirl jet flames: Experimental and numerical study <i>Mansur Aliyu, KFUPM</i>	3-D CFD simulation of NO _x emission from an industrial-scale ammonia to hydrogen reformer furnace <i>Jaeheon Sim, Aramco</i>
10.30 – 10.45	“C7” reaction mechanism and its self-imitation in the kinetic modeling of PAH formation <i>Hanfeng Jin, KAUST</i>	The effect of blending hydrogen with bio-oils and essential oils on turbulent non-premixed jet flames <i>Yilong Yin, The University of Adelaide</i>

10.45 – 11.00	Validation of hybrid OpenFOAM solver for detonation modeling with detailed chemistry <i>Vigneshwaran Sankar, KAUST</i>	Methane/hydrogen peroxide laminar diffusion opposed-flow flame <i>Jiajun Li, KAUST</i>
11.00 – 11.15	Effects of diaphragm opening process on the ignition of fuels in shock tube experiments <i>Janardhanraj Subburaj, KAUST</i>	Effect of the pilot power ratio on the flame topology and exhaust emissions of NH ₃ -CH ₄ -air combustion in a reduced-scale micro gas turbine burner <i>Cristian Avila, KAUST</i>
11.15 – 11.30	Demonstration of the improved catalytic behavior of shock-treated titania in chemical reactions <i>Mohamad Abou Daher, KAUST</i>	Bluff body stabilized ammonia/hydrogen/nitrogen non-premixed jet flames <i>Adamu Alfazazi, KAUST</i>
11.30 – 11.45	Effect of ammonia addition on cellular instability of methane, propane, and propylene flames at high pressures <i>Omar Arab, KAUST</i>	Combustion chemistry of ammonia/C1 fuels: A comprehensive kinetic modeling study <i>Xiaoyuan Zhang, KAUST</i>
11.45 – 11.50	Closing Remarks – SAS-CI Chairman, Prof. Bassam Dally, KAUST	
12.00 – 19:30	Lunch boxes + Gasification tour (optional)	

Contact Information

For any queries regarding this event, you can reach out to one of the following organizers:

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