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(IGEC-XIV)

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Name	KAUSHIK SAHA	
Affiliation	Department of Energy Science and Engineering, Indian Institute of Technology Delhi	
Invited Keynote Lecture		
Presentation Title	Analysis of Fuel Sprays for Internal Combustion Engines	
Abstract (Approximately 200 words)	<p>Research on Engines and Unconventional Fuels is more important than ever, considering the impending IC Engine ban looming over the horizon. Contrary to popular belief, recent LCA studies are showing that 'Future is eclectic' rather than 'Future is electric'. Keeping this in mind we need better engine designs and better fuel utilization. Hence, both numerical and experimental analyses of fuel sprays are highly warranted for the operating conditions seen in modern injection systems and engine designs. The presentation will cover the numerical efforts on fuel spray modeling using IIT Delhi HPC Facility and the experimental spray diagnostics being used for gasoline direct injection (GDI) applications. Using CONVERGE CFD code we use different spray modeling approaches, such as ROI-based blob injection, one-way coupled spray simulation, and coupled nozzle flow & ELSA spray simulations. Without reliable experimental data, it is not possible to build trust in model predictions. The Engine Combustion Network (ECN), provided an excellent platform for extensive model validations. Additionally, a constant volume spray chamber is also prepared to mimic different GDI spray operating conditions and different experimental diagnostic tools being used to characterize these sprays, such as LED-based spray illumination, Nd:YAG laser-based spray imaging, etc.</p>	
Biographical Sketch (Approximately 200 words)	<p>Kaushik Saha is currently an Assistant Professor at Centre for Energy Studies, Indian Institute of Technology of Delhi in India. Dr. Kaushik Saha received his PhD in 2014 from Mechanical and Mechatronics Engineering Department at University of Waterloo, Canada. During his PhD, Dr. Saha worked on cavitation in diesel injectors, blended fuel droplet evaporation, NOx reduction systems. Dr. Saha finished his M.S. in 2009 at Mechanical Engineering Department, University of Connecticut, where he worked on numerical simulation of material processing using microwave excited plasmas. After his PhD, Dr. Saha worked as Postdoctoral Appointee at Energy Systems Division, Argonne National Laboratory, USA. At Argonne, Dr. Saha worked on gasoline direct injection (GDI) sprays, coupling of internal nozzle flow with spray atomization, diesel engine combustion and cavitation erosion. In December 2017, Dr. Saha joined Bennett University in Greater Noida, India as Assistant Professor. In June 2018 Dr. Saha joined Centre for Energy Studies (currently known as Department of Energy Science and Engineering, IIT Delhi). He is currently working on experimental and numerical studies of GDI sprays, combustion of alternative fuels. Dr. Saha received SERB (Govt. of India) Early Career Research Award in 2019.</p>	