# COMBUSTION WEBINAR

## *A Perspective on the Atomization and Combustion of Sprays*

**Speaker:** Assaad Masri, University of Sydney

**Time:** May 1st 2021

*8 am EST; 14:00 Paris; 20:00 Beijing; 10 pm Sydney*

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**Abstract:** Spray flows are widely used in engineering, medicine and agriculture, yet remain only vaguely understood particularly with respect to primary atomization and the role of instabilities in controlling the downstream formation of droplets. In turbulent combustion, sprays will continue to be highly relevant with the advent of electrofuels such that the mode of burning as well as the formation of pollutants will be directly influenced by the quality of the spray fragmentation process. The talk will provide a perspective on the following outstanding aspects of sprays flows: (i) primary atomization, with a focus on novel quantitative information about fragment shape and statistics, (ii) advances in simulating the break-up process of the liquid core, and (iii) structure of reaction zones in turbulent sprays flames as revealed by time- and space-resolved imaging of selected reactive species.

**Biography:** Professor Assaad Masri received his PhD and BE Honours with the University Medal from the University of Sydney. He is currently a Professor in the School of Aerospace, Mechanical and Mechatronic Engineering, Faculty of Engineering and Information Technologies at the University of Sydney and Chairman of the Australia and New Zealand section of the Combustion Institute. Masri has published over 180 journal papers and won many awards including the prestigious Silver Medal of Combustion Institute in 1986 and the Jurgen Warnatz Gold Medal of the Combustion Institute in 2018. He was elected Fellow of the Combustion Institute in 2017 and has served as Program Co-Chair for the 36th Symposium in Seoul, 2016. With Prof. Dally, he has led the local organization of the 38$^{th}$ Combustion Symposium in 2021. Professor Masri's research lies in the broad area of efficient energy conversion with a focus on low carbon fuels. He has led pioneering research in the turbulent combustion of gaseous fuels, dilute and dense spray flames, and atomization processes. His innovations in the design of burners that embody specific research issues such as turbulence-chemistry or droplet-turbulence interactions has advanced knowledge in these fields and continues to serve industry in the development of modern combustors. Professor Masri's most recent contribution lies in exploring increasingly dense spray flames and mixed-mode combustion of gaseous fuels. His studies of atomization have led to the identification of key fluid structures that dominate the break-up region.

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