

COMBUSTION WEBINAR

Flame Stabilisation Revisited

Speaker: Epaminondas Mastorakos
University of Cambridge

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Abstract: The stabilisation of flames in the wake of a bluff body or by swirl-induced recirculation is one of the oldest combustion problems, especially for premixed flames. Nevertheless, we still do not have a complete theoretical handle on the underlying processes. In the seminar, some recent work with turbulent premixed, non-premixed and spray flames of relevance to gas turbine combustors is discussed through experiments with fast diagnostics and modelling with LES and finite-rate chemistry approaches. The differences and similarities between single and interacting burners are outlined and the connection between local and global extinction is discussed.

Biography: Dr. Mastorakos is the Hopkinson & Imperial Chemical Industries Professor of Applied Thermodynamics at the University of Cambridge. His research includes computational fluid dynamics and combustion, especially in the fields of turbulent reacting flow experimentation and modelling, ignition and extinction of flames, spray flames, gas turbine and diesel engine combustion, natural gas engine ignition mechanisms, chemical mechanism reduction, and combustion in porous media. He has also worked on atmospheric chemistry, aerosols, dispersion of pollutants, and the fluid mechanics of shale oil and gas. He has over 165 archival publications, three of which are invited review papers in major journals, and an h-index of 44. He holds patents on syngas production, radiant burners, and low-emission gas turbine combustors. He is currently the Combustion Research Coordinator in the Rolls-Royce / Cambridge University Gas Turbine Partnership. His papers have received various prizes from the Combustion Institute and he has been elected Fellow of the Combustion Institute in February 2018 and Fellow of the UK Institute of Mechanical Engineers in November 2019.

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