COMBUSTION WEBINAR

Carbonaceous nanoparticle formation in flames

Speaker: Prof. Markus Kraft, University of Cambridge
Time: *August 29, 2020*
10 am EST; 4 pm Paris; 10 pm Beijing.
Meeting: *Zoom*

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Biography: Prof Markus Kraft is a Fellow of Churchill College Cambridge and Professor in the Department of Chemical Engineering and Biotechnology. He is the director of CARES, the Singapore-Cambridge CREATE Research Centre, and Principle Investigator of C4T the "Cambridge Centre for Carbon Reduction in Chemical Technology", which is a CARES research programme. Professor Kraft obtained the academic degree 'Diplom Technomathematiker' at the University of Kaiserslautern in 1992 and completed his Doctor rerum naturalium in Chemistry at the same University in 1997. Subsequently, he worked at the University of Karlsruhe and the Weierstrass Institute for Applied Analysis and Stochastics in Berlin. In 1999 he became a lecturer in the Department of Chemical Engineering, University of Cambridge. In 2012 he obtained a ScD form the same University. He has a strong interest in the area of computational modelling and optimisation targeted towards developing CO_2 abatement and emissions reduction technologies for the automotive, power and chemical industries. More recently he takes interest in the application of dynamic knowledge graphs to above mentioned areas.

Abstract: Carbonaceous nanoparticles formed in flames play an important role in materials synthesis as carbon blacks. They also pose risks as unwanted combustion emissions in the form of soot. Understanding and modelling the formation and evolution of these nanoparticles is still a major challenge. Significant advances in experimental techniques in the last decade have allowed the gas phase precursors and the transformation from molecule to nanoparticle to be observed. With the assistance of computational techniques, various mechanisms can now be compared and explored. Questions remain surrounding the various mechanisms that lead to nanoparticle formation and the internal structure of these particles is still not fully understood. In this talk, some recent findings and computational techniques in this exciting area will be presented.