Creative Uses for Optical Diagnostics

Speaker: Prof. Simone Hochgreb, University of Cambridge

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Abstract: In this talk we discuss the use of optical diagnostics for a
number of different problems in reacting flows, not necessarily in the way
they were designed for. We start with extending the use of a high speed
particle-image velocimetry (PIV) lasers for (i) cross planar 3D flame
surface measurements in turbulent flames, (ii) high frequency Raman
measurements of entropy spots and (iii) in situ measurements of
reactions in the process of synthesis of carbon nanotubes. We then turn
our attention to the role of droplets in laminar stretched flames, and how
the combined use of low speed PIV and particle image velocimetry can
lead to understanding how the reaction rate is affected by the presence
of reacting and non-reacting droplets.

Biography: Simone Hochgreb is Professor of Engineering at the University of Cambridge. Her
research involves understanding processes in combustion and reacting flows, such as those relevant
to internal combustion engines, gas turbines and furnaces. She has developed measurement methods
for reacting flows for autoignition, spray, soot, coal and turbulent combustion in a range of devices.
Her current work is in the application of optical diagnostics to understanding turbulent flames,
combustion instabilities, and flame synthesis. Prior to Cambridge she held positions at MIT and
Sandia National Labs. She holds PhD at Princeton University and a BSc from the University of São
Paulo. She received the Wolfson Merit Award, and has been elected Fellow of the Royal Aeronautical
Society.
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