Séminaires @ ICARE

Towards Fundamental Understandings of, and Predictions for, Fuel-Engine Interactions

S. Scott Goldsborough
Center for Transportation Research
Argonne National Laboratory
Chicago, USA

Thursday, June 1, 2017 at 11h00
Salle de conférence, ICARE

The development and design of new internal combustion engine architectures having the capability to employ alternative combustion schemes, such as low temperature combustion, are being pursued across a variety of institutions in tandem with the formulation of new fuel blend stocks that can address increasingly stringent, legislated mandates for fuel economy and emissions, as well as issues such as energy security. Many challenges must be overcome to achieve these targets, including greater fundamental understanding of engine combustion processes and fuel-engine interactions, along with the development of new protocols for fuel specification.

This talk will discuss approaches to better quantify how fuels burn, or combust over a range of engine-representative conditions, and how these complex decomposition, oxidation and propagation behaviors influence important engine operating parameters such as combustion phasing, knock / high load limits, and cycle-to-cycle fluctuations. Additionally, new approaches to specify fuels for advanced compression ignition schemes will be highlighted. Finally, the capability to reliably predict these behaviors is still immature, especially beyond regimes where rigorous experimental data is available for model tuning / parameterization. Efforts to address this will also be covered.