6th ISF Workshop

for the

Measurement and Computation of Reacting flows with Carbon Nanoparticles

Friday 22nd – Saturday 23rd July, 2022

Pinnacle Hotel Harbourfront, Vancouver

www.adelaide.edu.au/cet/isfworkshop

Second Announcement

Registrations are open for the 6th ISF workshop which will be held face to face just before the 39th Symposium on Combustion in Vancouver. This open, biennial workshop aims to foster international collaboration between experimentalists and modellers interested in reacting flows with carbon nanoparticles. The workshop will capitalize on the ongoing collaboration between delegates prior to workshops, and seeks to review the latest progress, revise research priorities and select targets for the following meeting. The workshop addresses all aspects of the formation, oxidation and production/emission of carbon-based nano-materials and product gases within high temperature environments, including heat and mass transport, inception, growth and oxidation in simplified environments relevant to key classes of technology.

Aims of the ISF Workshop

- To advance understanding and predictive capability of flames with combustion-generated particles, including soot, to identify gaps in this understanding and to coordinate research programs to address them;
- To advance understanding and predictive capability of high temperature reacting flows (HTRF) used to produce valuable carbon-based nano-particles and other products, together with fuels, such as hydrogen, with processes such as flame synthesis and pyrolysis;
- To identify well defined target flames/HTRF and coordinate additional experiments that provide suitable data for model development and validation, spanning a variety of reactants and flow-field environments in each of the research programs;
- To establish an archive of the detailed data sets of target flames/HTRF with defined accuracy and to provide a forum for the exchange and dissemination of these data.
- To advance understanding by establishing clear and consistent definitions and terminology.

Features of the Sixth ISF Workshop

- **Industrial presentations**: Dr Enoch Dames, Manager - Reactor R&D, Monolith Corp
- **Poster prizes and short presentations**: for PhD students and Early Career Researchers
- **Panel session**: On Pyrolysis and Synthesis of carbon nano-materials
- **Invited presentations**: From Special Issue to Combustion and Flame on soot

Early Bird registration closes 27 June, 2022

Objectives and Targets for ISF-6

1) To advance understanding of the strengths and limitations of various modelling approaches for sooting flames and HTRF by detailed comparison of predictions with experimental/DNS data of the following environments:
   a) **Turbulent high temperature reacting flows:**
      i) DLR pressurised swirl flames
      ii) Sandia JP8 jet flame
      iii) Adelaide bluff body flames
   b) **Laminar high temperature reacting flows:**
      i) Laminar opposed jet flames under conditions and fuels matching turbulent target flames
      ii) Premixed flames under conditions matching turbulent target flames
      iii) Laminar flames with a series of fuels
      iv) Adelaide forced laminar flames

2) To assess the most effective options with which to advance previous work of the ISF community and to address other HTRF environments involving carbon-based nano-particles;

3) To review progress in experimental and numerical methods and coordinate programs to continue their advancement.

Participation

The 2022 workshop will be conducted face-to-face immediately before the International Symposium on Combustion. It will be held within walking distance from related workshops from the international community to facilitate participation in both forums. To contribute numerical or experimental data into either of the programs, please contact the relevant program leaders, listed below. Delegates are also invited to present a poster.

Workshop Program

The **first aim** will be met through comparison of recent data contributed by the community that compares experiments and models from across the community within the following two research programs, for which contributions are invited via the relevant Program Leaders:

- **Laminar reacting flows:** Chemical Kinetics (PAH, inception, growth and oxidation); particle dynamics (moment methods, sectional models, coalescence vs. aggregation); effect of pressure
- **Turbulent reacting flows:** jet flames, bluff body flames, swirl flames, pool fires, influence of scale, and effect of pressure.

The **second aim** will be met through special discussion panels involving invited presentations from leaders in the field, as listed in the program.

The **third aim** will be met through open discussion addressing progress and challenges, facilitated by the committees, seeking to refine current understanding of the state of the art in developing predictive capability in these challenging environments.

Organising Committee

Prof Gus Nathan, Prof Heinz Pitsch, Prof Bassam Dally, Dr Chris Shaddix, Dr Klaus-Peter Geigle, Prof Hope Michelsen, Prof Tiziano Faravelli, Prof Murray Thomson

Scientific Advisory Committee

Dr Med Colket, Prof Andrea D'Anna, Prof Ömer Gülder, Prof Peter Lindstedt, Prof Bill Roberts, Prof Christof Schulz, Prof Henning Bockhorn, Prof Angela Violi, Prof Hai Wang

Program Leaders and Co-leaders

Laminar Flames:	Prof Fabrizio Bisetti, Prof Thomas Dreier, Dr Reza Kholghy
Turbulent Flames:	Prof Michael Mueller, Dr Benedetta Franzelli, Dr Zhiwei Sun.

Process for contributing data to the Workshop

Researchers interested in presenting experimental or numerical data to the 6th ISF Workshop should contact and liaise with the relevant program coordinator, who is responsible for collating and summarising all data from participating groups. Please check website for details.

Registration

Registrations are open via the ISF web-site, with early bird rates until June 13.
www.adelaide.edu.au/cet/isfworkshop

Posters

Registration of posters via the ISF web-site. www.adelaide.edu.au/cet/isfworkshop

Inquires for posters to:
Dr Benedetta Franzelli: benedetta.franzelli@centralesupelec.fr
Dr Zhiwei Sun: Zhiwei.sun@adelaide.edu.au

We look forward to welcoming you to Vancouver!