Welcome to ISF-7

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Historical Context for Agenda/Aims for ISF-7

- 1st ISF Workshop in 2012 (Warsaw Symposium):
 - "Each workshop will compare numerical predictions with measured data from <u>target</u> <u>flames</u>, selected to be suitable for model development and validation while also being relevant to practical application."
 - Agenda structured around 3 programs: Laminar flames, Turbulent flames, Pressurised flames and sprays
- ISF-3: added topical discussion on "Soot Data Uncertainty & Standardisation"
- ISF-4: Integrated pressurized flames into two main programs; added topical discussions on "Flame series from non-sooting to sooting" (joint with TNF workshop) and "Current knowledge on PAH chemistry" (joint with Flame Chemistry workshop)
- ISF-6: added panel on "Pyrolysis and synthesis of carbon-based particles"; included invited talks from special CNF issue on soot; added PhD Poster Pitches (and contest)

Progress on Soot Predictions in Turbulent Flames during ISF Workshop Series

- f_v predictions in turbulent ethylene flames are pretty solid now
- f_v predictions in turbulent methane flames are still somewhat challenging, due to the long distance/time for <u>soot inception</u> in these flames and difficulties in accurately capturing apparent <u>oxidation rates</u>
- Despite improved availability of experimental data on soot temperature and soot particle sizes in these flames, little modeling comparison to these quantities (soot T, d_p) has been presented, which brings into question the overall fidelity of the current soot models



Aims for ISF-7

- To advance understanding of the evolution of carbonaceous particles and of the predictive modelling tools to characterise this in practical environments, including:
 - o combustion-generated environments, such as flames and fires,
 - o high-temperature hydrocarbon pyrolysis and carbon nanoparticle synthesis environments.
- To identify gaps in current understanding and coordinate research programs to address them, particularly via joint investigations in well-defined target flames or reactors purpose-designed for the development and validation of predictive models.
- To coordinate and foster the advancement of the underpinning experimental and numerical methods needed to support the above objectives.
- To establish an archive of detailed data sets of target flames and reactors with defined accuracy and provide a forum for the exchange and dissemination of these data.
- To advance understanding by establishing clear and consistent definitions and terminology.
- To foster the professional development of PhD students and emerging researchers in the field.

Overview of Agenda for ISF-7

- <u>Retain from past ISF workshops</u>
 - Turbulent Flame/Reactor program
 - Laminar Flame/Reactor program
 - panel on "Pyrolysis and synthesis of carbon-based particles" (including invited plenary talk from Murray Thomson, Chief Scientist of Aurora Hydrogen)
 - PhD Poster Pitches/Contest
 - Saturday evening dinner with posters
- <u>Revisit</u> "Advances in measurement techniques" with a special panel session
- Add new panel on "Understanding of soot evolution in fires"
- End workshop with "Open discussion on progress and challenges" and "Next focal questions & target reactors"

Agenda for ISF-7 – Saturday

Sat 08:00 - 09:00 Registration and coffee 20 th 09:00 - 09:15 Welcome, update, aims and agenda Shaddix 09:15 - 09:30 Reflections on ISF-6 and emerging trends in research drivers Nathan 9:30-9:45 Discussion Shaddix 9:45 - 10:15 Industrial speaker: Co-production of carbon black and hydrogen Prof Murray Thomson 01:15 - 10:30 Discussion Prof Murray Thomson VP & Chief Scientist, Aurora Hydrogen Chair: Geigle 10:30 - 11:00 Coffee Chair: Geigle Chair: Geigle 11:00 - 11:15 Roscoe Taylor (Orion) Chair: Faravelli / Wang Chair: Faravelli / Wang 11:15 - 11:30 Jacob Martin (Curtin) Chair: Faravelli / Wang Chair: Faravelli / Wang 11:15 - 11:30 Jacob Martin (Curtin) Chair: Faravelli / Wang Chair: Faravelli / Wang 11:15 - 11:30 Jacob Martin (Gurtin) Chair: Faravelli / Wang Stady or the secon: Chaire Scientist, Aurora Hydrogen Chaire: Faravelli / Wang 11:15 - 11:30 Jacob Martin (Curtin) Chaire: Faravelli / Wang Stady or the secon: Chaire Scientist, Marcan Chaire: Faravelli / Wang 12:30 - 12:30 Discussion with all speakers, includi	Date	Time	Торіс	Chair/Presenter
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16:00 - 16:30 (atmospheric & pressurised): Franzelli / Sun / Ferraro Summary of progress Chair: Dally / Geigle 16:30 - 18:00 Discussion Chair: Dally / Geigle		15:30 - 16:00	Coffee	with poster committee
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Summary of progress Chair: Dally / Geigle 16:30 – 18:00 Discussion Chair: Dally / Geigle Free time		16:00 - 16:30	· · · · · · · · · · · · · · ·	•
16:30 – 18:00 Discussion Chair: Dally / Geigle Free time				
		16:30 - 18:00		
19:00 - 22:00 Posters & informal diagon			Free time	
rosters & informat unifier		19:00 - 22:00	Posters & informal dinner	

Agenda for ISF-7 – Sunday

Sunday 21 st	9:00 - 10:30	Panel session: Advances in measurement techniques	Chair: Chris Shaddix / Geigle
	9:00 - 9:15	Francesca Migliorini (Milan)	
	9:15 - 9:30	Mario Commodo (Naples)	
	9:30 - 9:45	Sonu Kumar (KAUST)	
	9:45 - 10:00	Stefan Will (Erlangen-Nuernberg)	
	10:00 - 10:30	Discussion	
	10:30 - 11:00	Coffee Break	
	11:00 - 12:00	Laminar flames / reactors: Chemistry & particle formation -	Presenters: Saggese, Kelesidis, Kholghy, Camacho
		workshop and discussion	Chairs: Faravelli / Gulder
		(atmospheric and pressurised)	
	12:00 - 13:00	Discussion	Chairs: Faravelli / Gulder
	12:30 - 13:30	Lunch (with s	urvey)
	13:30 - 14:30	Open discussion on progress and challenges	Chair: Shaddix /Faravelli
	14:30 - 15:00	Discussion:	Chairs: Dally / Pitsch
		Next focal questions & target	
		reactors	
	15:00 - 15:15	Feedback & suggestions on	Geigle / Thomson
		workshop	
	15:15 - 15:30	Closing comments	Nathan
	15:30	Close	