

A Virtual Scrapbook of the 13th IAFSS Symposium

LET'S LOOK BACK AT THE WEEK!



Margaret & Beth, what a team!



Waterloo Base

Lund Base

Plenaries, Events & Panels!

Monday April 26th, 1:30 - 2:00 PM BST

Credits: 50.0

Events



Standalone Player



The opening ceremony will begin in a few minutes



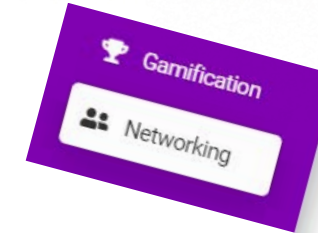
Many thanks to all for making this happen!

Opening Ceremony - Welcome to the 13th IAFSS Symposium!

Monday April 26th, 1:30 - 2:00 PM BST

Credits: 50.0

Events



Virtual Inferno Pub

4 Live

Panel Session 2: Flammability

Monday April 26th, 3:30 - 4:00 PM BST

Credits: 50.0

Room A

Papers

Panel Discussion



Standalone Player

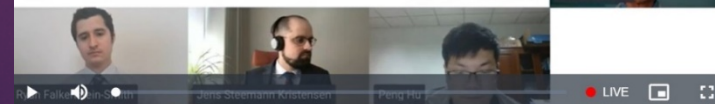
Chemical structure of medium-scale liquid pool fires

Flame structure measurements

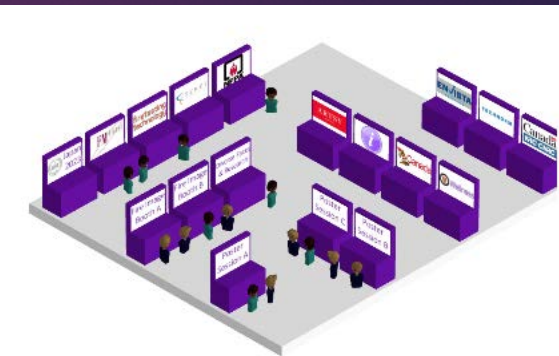
- Temperature, gas species, and soot measurements of steadily burning methanol, ethanol, and acetone 30 cm pool fires are reported
- All gas species measurements are obtained using extractive sampling, then analyzed using a gas chromatograph equipped with a mass spectrometer detector

Analysis

- Flame structures of each pool fire are observed to be in agreement with previous work
- Gas species measurements are verified using various schemes
- Carbon-containing species are shown to be less than the state relations in fuel-rich regions due to the presence of CO and soot



LIVE



UNIVERSITY OF WATERLOO

Plenaries, Events & Panels!

Fundamental concepts

Type of Class B foams

- Protein (P) and fluoroprotein (FP) rarely used today
- Fluorine free foams (FFreeF), Class B foams that typically do not form films and do not contain fluorosurfactants; subject of intense research; main area of innovation in the last two decades
- Legacy C₈ AFFF** – old AFFF formulations (pre-2015) based either on fluorosurfactants that contain perfluorinated chain that is 8 carbon in length or longer
- (Modern) C₈ AFFF – modern formulations of AFFF based on perfluorinated chains that are no longer than 6 carbon atoms in length
- Legacy PFOS** – mainly 3M foams that contained significant amounts of potassium perfluorooctane sulfonate (C₈F₁₇SO₃K); most of the foams covered today are in this category
- AFFF** – a group that contains all film-forming foams; such as, legacy C₈, modern C₈, legacy PFOS and some FFreeF that form films on aviation fuels
- PFAS foams** - a recent term denoting all foams that contains per- and polyfluoroalkyl substances.

The term "PFAS foam" is used, for example, in: Mical, L., Kneib, C., Kraybill, R., Whiting, B., Matulis, A., Ryan, S., Wilson, M., Condit, L., Schipani, M., Wilson, M., Pichler, A., Warming, M., Lauen, L., (2020) *The Use of PFAS and Fluorine-Free Alternatives in Firefighting Foams*, Mineral Commission & Technology Solutions (UK, 2020). (Shagun, S. J., Kennedy, I. M., Schaefer, J. J. and Vittal, J. J., What properties matter in fire fighting foams?, 27th AFFF Symposium, Tokyo, 1-3 Oct. 2020 (Primary presentation))

Bogdan Dlugogorski

Event Admin

IAFSS Helper
50 Points

Lobby

Backstage

Voting Booth

Sessions

Speakers

Exhibit Hall

Poster Hall

Gamification

Networking

Account

Help

Panel Session 6: Materials Behaviour 2

Angela Solarte, Izabella Vermesi, Juan Cuevas, Kaiyuan Li, Nan Zhu, Xuanze He, Yujie Lin, Yuxin Zhang

APR 27 2:30 - 3:00 PM

Panel Discussion

On the Development of a Transparent Enclosure for 360° Video Cameras to Observe Severe Fires In Situ

Matthew Hoobler

APR 28 7:00 - 7:30 AM

Panel Session 16: Risk Analysis and Design 1

Brittje Messerschmidt, Bjorn Karlsson, Franchine Armon, Martina Manes, Ragni Fjellgaard Miksdalen, Simeon Hovellike, Wei Cheung (Andy) Tam, Claude Pagnon Eriksson, Harry Mitchell

APR 28 10:00 - 10:30 PM

Panel Discussion

Details

Meet & Stream

Broadcast

Stream

Configuration Settings

Direct RTMP

Test Mode

Broadcast Status: Active

10 Second Offset

Read the Meet & Stream Guide

Public Session Chat

Hi Kai

Kaiyuan Li
Wuhan University of Technology

Hi Frank

Felix Wiesner
The University of Queensland

Angela: Did you observe smouldering in your bamboo tests after you completed the flammability assessments?

Kaiyuan Li
Wuhan University of Technology

Hi Kevin, was busy working on the screen

Chat here ...

Live Fitness Class: Yoga

Monday April 26th, 11:30 - 12:30 PM EDT

University of Waterloo

My Linh Würzburger

Raguel Weston-Davies

Unmute

Start Video

Participants

Share Screen

More

Edwin Galea

Rita Fahy

Silvia Arias

Arturo Cuesta

Axel Mossberg

13th International Symposium on Fire Safety Science

PAPER 1: Effect of Reduced Ambient Pressure and Opposed Air flows on Flame Spread Rate and Dripping of LDPE-Insulated Copper Wires

Lauren Gagnon¹, J. L. Urban², C. Fernandez-Pello³, V. P. Carey¹, Y. Konno³, O. Fujita³

¹Mechanical Engineering, University of California, Berkeley

²Fire Protection Engineering, Worcester Polytechnic University

³Mechanical and Space Engineering, Hokkaido University

Sarah Scott

Dong Zeng

Lauren Gagnon

Khalid Moinuddin

Plenaries, Events & Panels!

Diversity and Inclusivity Event (1)

Tuesday April 27th, 2:00 - 3:00 PM BST

Credits: 50.0

Room B

Events



Standalone Player

Motivation

Liquid pool fire accidents



Industrial storage or handling



Transport of liquid fuels

The heat release rate (HRR) can be calculated based on the mass loss rate according to the following equation: $\dot{Q} = \chi_o \dot{m}'' A_p \Delta H_c$ χ_o : combustion efficiency

\dot{m}'' : mass loss rate per unit area (MLRPUA) A_p : pool surface area ΔH_c : heat of combustion

Yongzheng Yao



LIVE

PAPER 2: Measurements and models to characterise flame radiation from multi-scale kerosene fires

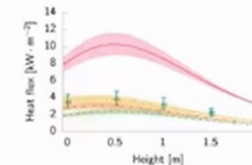


Experimental data

- Opacimetry and spectrometry to gather radiative properties
- An equivalent medium describes well soot radiation
- Image processing to gather flame geometries
- A simple shape can be used to fit the data
- Heat fluxes at numerous locations to evaluate the results

Numerical models

- Four simplified models to evaluate common assumptions
- Two of them should only be used in extreme cases
- The other two show better results despite the simplifications



Jean-Louis Consalvi

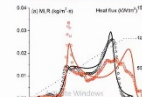
My Linh Würzburger

Alex Krisman

Giacomo Erez

PAPER 1: Validation of Pyrolysis Model in Transient Heating Scenarios and Diverse Spectral Boundary Conditions

- Pyrolysis model-effective properties**
 - Obtained from well-controlled bench-scale experiments
 - Inverse modeling and optimization
 - Require validation for fire-relevant scenarios
- FireFOAM pyrolysis model validation**
 - Optimized material properties from bench-scale experiments
 - Validated optimized properties and model against scenarios
 - Transient heating and diverse spectral boundary conditions
 - Model and optimized properties can be applied to fire-relevant scenarios



Predicting linear heating response for MDF and Plywood

Thomas Rogeaume

Dong Zeng

Gaurav Agarwal

Dushyant M. Chaudhari

David Morriset

Mohamed Ahmed

Georgios Maragkos

Rodrigo Demarco

Oluwayemisi ("Luwi") ...

Felipe Centeno



Plenaries, Events & Panels!

The screenshot shows the ISFSE website with a sidebar menu on the left containing links like 'Lobby', 'Backstage', 'Voting Booth', 'Sessions', 'Speakers', 'Exhibit Hall', 'Poster Hall', 'Gamification', 'Networking', 'Account', 'Help', and 'Logout'. The main content area displays 'Panel Session 11: Fire Chemistry' for Tuesday April 27th, 8:00 - 8:30 PM EDT. It includes a 'Credits: 50.0' badge and buttons for 'Papers' and 'Panel Discussion'. A video player shows a presentation slide titled 'PAPER 1: Thermal decomposition of ammonium nitrate on rust surface: Risk of low-temperature fire'. The slide includes a summary of the study and a list of speakers: James Urban, Haiguo Guo, and Zhe Zeng. A public session chat is visible on the right.

Panel Session 13: Human Behavior/Evacuation 1

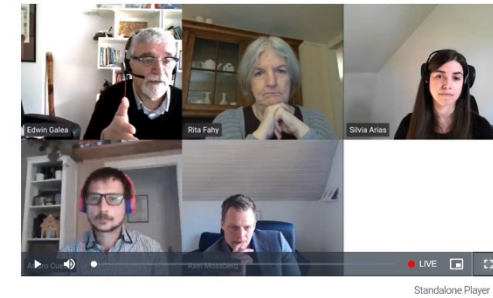
Wednesday April 28th, 7:30 - 8:00 AM BST

Credits: 50.0

Room A

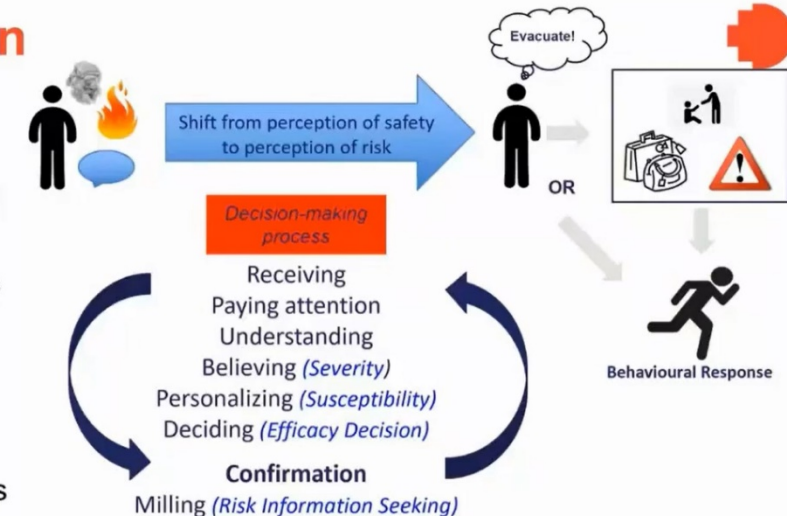
Papers

Panel Discussion



Trip generation

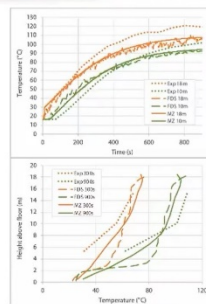
- **Protective Action Decision Model** (Lindell and Perry 2012) – individuals engage in a decision-making process before deciding to evacuate
- Information seeking behaviours occur during the decision-making process and protective actions after a decision is made



Sutton and Kuligowski NOAA presentation:
<https://www.youtube.com/watch?v=MH3uBclHezE>

PAPER 1: Evaluation of a Zone Model for Fire Safety Engineering in Large Spaces

- The work includes a presentation of the multi-zone modelling concept and its usefulness in fire safety engineering.
- In contrast to two-zone models, where each enclosure consists of two zones, each enclosure is divided into typically 50-200 zones.
- The benefit of this is that properties like gas temperature can be calculated at many locations, and consequently the temperature distribution (horizontally as well as vertically) in the hot gas layer can be found.
- In the paper, model results are compared to results from FDS as well as experimental data.
- The results indicate that the multi-zone model gives reasonable estimates of gas temperatures in well-ventilated large spaces.



Plenaries, Events & Panels!

13th International Symposium on Fire Safety Science

PAPER 1
An Evacuation Model Validation Data-Set for High-Rise Construction Sites

Steven Deere, Xie Hui, Edwin R. Galea, David Cooney, Peter J. Lawrence
Fire Safety Engineering Group,
University of Greenwich, UK

Daniel Nilsson

Yoshikazu Minegishi

Edwin Galea

Ruggiero Lovreglio

Steve Gwynne

18 Filter

Event Admin

IAFSS Helper 100 Points

Lobby

Backstage

Voting Booth

Sessions

Speakers

Exhibit Hall

Poster Hall

Gamification

Networking

Account

Logout

POWERED BY PHEEDLOOP

Panel Session 18: Human Behavior/Evacuation 3
Enrico Ronchi, Honglu Li, Hung-Chieh Chung, Kousuke Fuji, Minko Imanishi, Tsutomu Sano, Mohammad Mortada Ahmed, Vasil Iordanov
APR 28 7:00 - 7:30 PM
Panel Discussion

Meet & Stream

Stream

Configuration Settings

Direct RTMP

Test Mode

Broadcast Status: Active
10 Second Offset

Read the Meet & Stream Guide

Public Session Chat

Event Admin

IAFSS Helper
University of Waterloo

The session will start in 10 minutes.

Chat here...

IAFSS Helper

Sara McAllister

Tara McGee

Me

Private Chats

13th International Symposium on Fire Safety Science

Panel Session 19: Risk Analysis and Design

Chairs:
Brian Meacham, Meacham Associates
Colleen Wade, Fire Research Group

Assisted by:
George Cao, University of Waterloo
Jacques De Beer, University of Maryland

Panelist:
Cecilia Lam, National Research Council of Canada
Mohd Zahirasri Mohd Tohir, Uni. Putra Malaysia
Jason Floyd, Jensen Hughes
Dingli Liu, Central South University of China

Dingli Liu

Colleen Wade

Brian Meacham

Cecilia Lam

Mohd Zahirasri Mohd Tohir

Jason Floyd

University of Waterloo 400 Points

Lobby

Backstage

Voting Booth

Sessions

Speakers

Exhibit Hall

Poster Hall

Gamification

Networking

Account

Help

Logout

POWERED BY PHEEDLOOP

LIVE

Plenary Lecture: Evacuating First Nations during Wildfires in Canada
Sara McAllister, Tara McGee, Mohammad Mortada Ahmed, Vasil Iordanov
APR 28 6:00 - 7:00 PM
Keynote Plenary and Award Presentations
Keynote Lecture

FM Global

Search

Live Now

Hide All

Twitter

LinkedIn

Facebook

Instagram

Add to Calendar

Private Chats

firetesting technology

104

Public Session Chat

Speaker

Sara McAllister
USDA Forest Service

Feel free to start typing in questions here!

Allie Gilks
LMCC Building Code Consultants Ltd.

Such important research! You mentioned how there was a lack of media coverage on main stream media. Was there coverage on more specific networks such as APITV? Also, could you elaborate on how main stream coverage would be beneficial?

Ewa Rydgrenski
BMT University

Great presentation, Tara! Thank you for presenting on this. How did the partnership originally get established? Did community members reach out to you and other researchers?

Chat here...



Plenaries, Events & Panels!

Early Career Researchers' Event (1)

Thursday April 29th, 6:00 - 7:00 AM BST

Credits: 50.0

Room B

Events


MAFSS Virtual symposium April 29th 2021

TEACHING AND RESEARCH BALANCE...IN AN IDEAL WORLD!

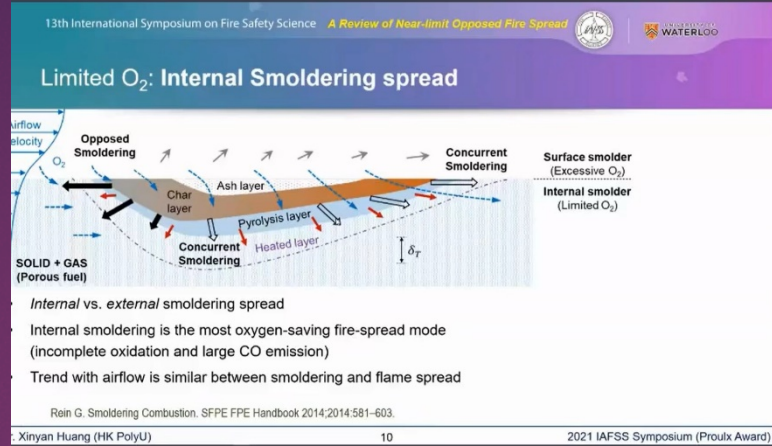
TIPS FOR BALANCING YOUR TEACHING AND RESEARCH TO SUCCEED AND PROGRESS AS AN ACADEMIC

1. Combine your research and teaching
2. Learn to say "no"
3. Start with an effective plan
4. Dedicate your time efficiently
5. Collaborate with students and colleagues
6. Seek support

Top 10 Tips for Balancing your Teaching and Research



Elsa Pastor



Press Esc to exit full screen

THE PAPER / PROPOSAL

- Make clear already in the abstract what is the research question you address and how you address it.
- Do even more so in the conclusions.
- Repeat the above two bullets for novelty and added value.
- Explain why you care about the research question and why the reader should care about it as well.

Bart Mercier

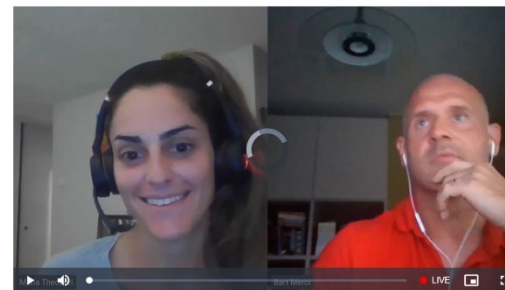
Early Career Researchers' Event (1)

Thursday April 29th, 6:00 - 7:00 AM BST

Credits: 50.0

Room B

Events



Press Esc to exit full screen

13th International Symposium on Fire Safety Science


A Review of Near-limit Opposed Fire Spread

Proulx Early Career Award Lecturer
<https://doi.org/10.1016/j.firefail.2020.103141>


Xinyan Huang
Research Centre for Fire Safety Engineering, Hong Kong Polytechnic University

Jian Gao
Qingdao Institute of Bioenergy and Bioprocess Technology, Chinese Academy of Sciences

Dr. Xinyan Huang (HK PolyU) xy.huang@polyu.edu.hk 29 April 2021

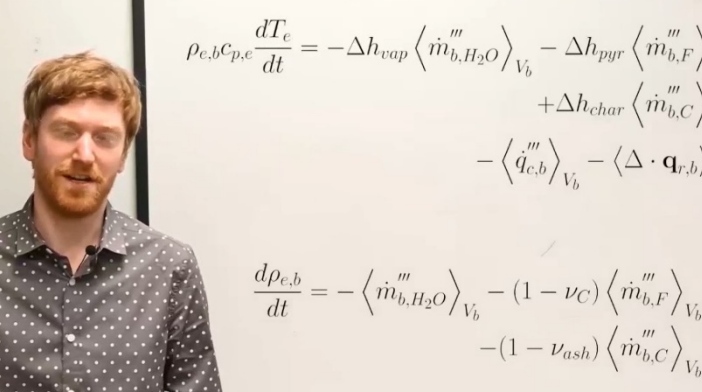


Michael Gollner

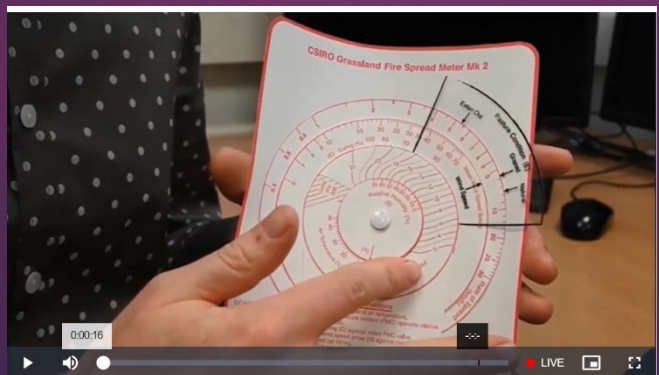


Xinyan Huang

100



$$\rho_{e,b} c_{p,e} \frac{dT_e}{dt} = -\Delta h_{vap} \left\langle \dot{m}_{b,H_2O}''' \right\rangle_{V_b} - \Delta h_{pyr} \left\langle \dot{m}_{b,F}''' \right\rangle_{V_b} + \Delta h_{char} \left\langle \dot{m}_{b,C}''' \right\rangle_{V_b} - \left\langle \dot{q}_{c,b}''' \right\rangle_{V_b} - \left\langle \Delta \cdot \mathbf{q}_{r,b} \right\rangle_{V_b}$$

$$\frac{d\rho_{e,b}}{dt} = - \left\langle \dot{m}_{b,H_2O}''' \right\rangle_{V_b} - (1 - \nu_C) \left\langle \dot{m}_{b,F}''' \right\rangle_{V_b} - (1 - \nu_{ash}) \left\langle \dot{m}_{b,C}''' \right\rangle_{V_b}$$


Plenaries, Events & Panels!

Press **Esc** to exit full screen

13th International Symposium on Fire Safety Science

PAPER 1

Experimental Investigation on Maximum Ceiling Jet Temperature Generated by a Vertically Spreading Cable Fire

Xianjia Huang, Zhibiao Li*, Yuhong Wang†, Zhaoying Ren‡, Anthony C.H. Cheng‡, W.K. Chow‡^

*Inst. of Industry Tech. Guangzhou & Chinese Academy of Sciences, China
†China Nuclear Power Engineering Co. Ltd., China
‡The Hong Kong Polytechnic University, Hong Kong, China
^Professor Emeritus, Architectural Sciences & Fire Engineering

WATERLOO WATERLOO

Xiao Chen

Ian Pope

Huaxian Wan

Simo Hostikka

Jie Ji

Xianjia Huang

Panel Session 23: Wildland Fires 2

Thursday April 29th, 3:30 - 4:00 PM BST

Credits: 50.0

Room A

Papers

Panel Discussion

13th International Symposium on Fire Safety Science

PAPER 3: Ignition Of Wildland Fuels By Idealized Firebrands

- We designed a test method replicating the ignition of various fuels by idealized firebrands.
- We carried out extensive ignition tests on pine needle bundles.
- We developed an analytical model considering in-depth absorption of radiation.
- A correlation was obtained to produce a simplified expression for the ignition times.
- The analytical predictions show a good match with the experimental results.

Nieves Fernandez Anez

Zhenxiang Tao

Albert Simeoni

13th International Symposium on Fire Safety Science

PAPER 1: Conceptual framework for quantifying fire resilience
- A new perspective on fire safety performance of buildings -

- **Fire resilience**
 - Traditionally, major focus of fire safety design has been on prevention of life and property losses directly caused by fire
 - Existing measures were not suitable for evaluating fire safety performance of buildings whose functional continuity is required even after a fire
 - The concept of functional continuity (fire resilience) was introduced to represent the advanced fire safety performance of buildings
- **Development of evaluation framework**
 - Evaluation of damage ratio based on the fire behavior simulation using a multi-layer zone model
 - Damage ratio further converted to fire resilience using statistical data on fire incidents and building refurbishment

Distribution warehouse fire, Saitama, Japan (Mainichi Shimbun, 2017)

Functionality $P(\%)$

Recovery time t_R

Damage ratio D

Occurrence of fire t_i

Time t_L

Richard Walls

Susan Lamont

Keisuke Himoto

Tomoaki Nishino

Charles Fleischmann

Natalia Flores Quiroz

David Rush

Thank you to our amazing IAFSS Helper Team!



Thank you to our amazing IAFSS Helper Team!



Thank you to our amazing IAFSS Helper Team!



Special Thank You to...



Dr. Ran Tu, thank you for designing the beautiful graphic design used for banners & presentations throughout the platform and conference.



Hannah Carton



Bronwyn Forrest

Hannah and Bronwyn were volunteer local hosts who worked hard over the last four months to help organize the conference!

Thank you once again to the entire Symposium Committee, Sub-Committees, reviewers, panel chairs, plenary speakers, guest speakers & volunteers!

THANK YOU to all of the delegates for attending & participating!! We hope you enjoyed the 2021 IAFSS Symposium!