International Association for Fire Safety Science
A charity registered in England and Wales no 800306

Fire Safety Science News

http://www.iafss.org

November 2025, Issue No. 54

Editors:
Nils Johansson, Lund University
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IAFSS was founded in 1985 with the primary objective of encouraging research into the science of preventing and mitigating the adverse effects of fires and of providing a forum for presenting the results of such research

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The contributors to this newsletter are acknowledged in alongside their specific contributions.

Our Aims

Fire Safety Science News aims to be a platform for spreading the work of IAFSS members, and to be the place where fire safety scientists can read what is not readily found elsewhere, thus favoring news and trending research. A digital archive of previous issues can be found online.

IF YOU HAVE NEWS OR OPEN POSITIONS TO POST TO THE WEBSITE:

The newsletter only comes out twice a year, but the IAFSS website is always available for current association news and information. If you have information that you would like posted on the website, contact the team of webmasters at webmaster@iafss.org and they will help you out. The IAFSS website and its social media will regularly update job postings form universities research institutes.

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LETTER FROM THE CHAIR

It is my pleasure to share this update as Chair of the International Association for Fire Safety Science (IAFSS), as preparations for the 15th International Symposium on Fire Safety Science are moving steadily forward. The symposium will be held June 8–12, 2026, in La Rochelle, France (www.iafss2026.com).

The Symposium Planning Committee, co-chaired by Prof. Yuji Nakamura (Toyohashi University of Technology) and Dr. Yi Wang (FM Global), together with various subcommittees, has been working tirelessly to ensure a successful event. The paper submission through the Editorial Manager system closed on September 24, 2025, and we are pleased to report a submission volume comparable to previous symposia. The Program Scientific Committee, co-chaired by Prof. Eulalia Planas (Universitat Politècnica de Catalunya) and Prof. Stanislav Stoliarov (University of Maryland), is now overseeing the review and evaluation process. We extend our sincere thanks to all authors, reviewers, and editorial teams for their contributions in maintaining the high academic standards of our community.

Discussions on the technical session framework are ongoing, and once finalized, details will be shared via the symposium website and social media channels.

The Award Committee co-chaired by Prof. Carlos Fernández-Pello (UC Berkeley), Dr. Tuula Hakkarainen (VTT Technical Research Center), and Prof. Erica Kuligowski (RMIT University) has completed the selection of several major awards, with others still in progress. Congratulations to the 2026 awardees and plenary lecturers for their outstanding contributions to fire safety science:

- Howard W. Emmons Invited Plenary Lectureship Award: Prof. Bert Merci, Ghent University, Belgium
- Plenary Lecturers:
    - Prof. Serge Bourbigot, Université de Lille – Centrale Lille Institut, France
    - Prof. Simo Hostikka, Aalto University, Finland
    - Prof. Jie Ji, University of Science and Technology of China, China
    - Dr. Sara McAllister, USDA Forest Service, USA
    - Dr. Yi Wang, FM Global, USA
- Kunio Kawagoe Gold Medal: Dr. Brian Meacham, Crux Consulting, USA
- Proulx Award: Prof. Felix Wiesner, University of British Columbia, Canada
- Magnusson Award: Prof. Negar Elhami-Khorasani, University at Buffalo, USA

The registration site is now open, with the early-bird member rate of €850 available until March 14, 2026. We encourage everyone to register early to secure discounted rates. Sponsorship opportunities are still open and details can be found on the symposium website.

The Workshop Committee, co-chaired by Prof. Rory Hadden (University of Edinburgh), Dr. Randy McDermott (NIST), and Prof. Maria Thomsen (Universidad Adolfo Ibáñez), is organizing a two-day pre-symposium workshop (June 7–8, 2026) at the same venue. Sessions will include MaCFP, HBiF, LOF&BE, AI/ML, and Energy Systems. Fees are €170 (Saturday, with lunch) and €80 (Sunday, without lunch). A poster and networking session with refreshments will take place on Saturday evening to encourage informal scientific exchange.

Please note: Notifications of paper acceptance/rejection (after rebuttal) will be sent on January 8, 2026, with accepted papers proceeding to publication in *Fire Safety Journal* by June 1, 2026. Authors whose papers are not accepted for presentation are encouraged to participate in the poster or image competitions (submission deadline: February 6, 2026).

Beyond symposium preparation, the Membership Advisory Council (MAC) and Trustees have been actively advancing several important initiatives. The MAC met on May 29, 2025, and proposed the formation of a standing Awards Committee, which was subsequently approved by the Trustees. Prof. Naian Liu will serve as the liaison between the Trustees and the new committee, which will be formally established beginning with the 16th Symposium. The Trustees also approved the Education Committee's procedure for applying for summer school sponsorships, developed by Prof. Arnaud Trouvé in collaboration with the Education and Early Career Researchers & Professionals Committees.

In August, the Education and Early Career Committees jointly reviewed four applications for IAFSS summer school sponsorships, recommending support for Lund University's Battery Safety program (€5,000) and the FDS Modelling School from Jülich (€2,500).

The DEI Committee conducted a membership survey in April 2025, with 154 responses. The results highlighted interest in childcare, mentoring, accessible accommodation, and virtual participation options for the upcoming

symposium. Importantly, the survey indicated a need to increase awareness of the IAFSS Code of Conduct and its compliance process—actions are underway to strengthen this communication.

I would like to express my deepest appreciation to all committees, volunteers, and members for their continuous commitment and collaboration. The collective effort of our global community ensures that IAFSS remains a driving force in advancing fire safety science.

I look forward to seeing you all in La Rochelle next June for what promises to be another inspiring and impactful symposium.

Warm regards,

Naian Liu

Chair, International Association for Fire Safety Science (IAFSS)

Professor, University of Science and Technology of China

Director, State Key Laboratory of Fire Science

MEMBERSHIP REGISTRATION

Both current and new members can easily register online at www.iafss.org. *Current members: please sign-in before registering to maintain your account!*

Next year, when we ask you to renew your membership in IAFSS, you will see that the fees have increased from £25 to £50 per year. We recognize this will seem to be a very large increase; however, the need for higher membership dues is being driven by a number of factors.

First, look at all the benefits that you get for your membership fee! These include:

- Free online access to the Fire Safety Journal – the official journal of IAFSS (the new dues approximately equal the cost for two FSJ articles)
- Free access to all prior IAFSS Symposium Proceedings with full papers online
- Discounted registration fees for the IAFSS Symposium (the discount is more than the cost of yearly membership)
- Up-to-date job postings, PhD and post-doc opportunities, and latest news in fire safety science
- Access to, and participation in, working groups with international colleagues such as HBiF, LOF&BE, and MaCFP, including the growing webinar series.
- IAFSS Newsletters, where you can share your institution's activities and learn about others.
- Access to FRS fire research notes
- A vote in Association affairs
- Opportunities to network with colleagues

Looking forward, we want to do even more! We are currently exploring support for PhD Summer Schools (such as that recently held at the University of Maryland), support for new workshops or webinars, developing and expanding mentoring/networking opportunities for early career researchers, exploring partnerships at other fire related conferences, expanded student travel support to IAFSS symposia and more. Additional suggestions from you, our members, are always welcome. Per our mandate, supported activities will remain those that are beneficial to fire science and fire safety.

As you would guess, providing all that we do, and trying to do more, requires a sound financial footing and increased funding for the organization. A membership fee increase will help significantly with this. The fees for membership in IAFSS have not been changed in over 12 years. At the same time, we have expanded member benefits, upgraded our website, and our fixed expenses continue to rise due to inflation. Coupled to this, IAFSS re-registered with the UK Charity Commission as a Charitable Incorporated Organisation (CIO), which provides us protections over our past form of organization, enhances our ability to accept donations, and brings us into compliance with UK regulations. As a result of becoming a CIO, the organization will incur new, on-going costs associated with ensuring we comply with important regulations around such things as safeguarding members, diversity, equity and inclusion, data privacy and ensuring accessibility of our website.

At present, the reality is that dues cover only a fraction of the organization's expenses. For the remaining costs, IAFSS relies on income from investments and profit from our symposia, which as we learned with COVID-19, can be impacted by unforeseen events. Reliance on these two uncertain revenue streams for fixed expenses is not a best practice, nor does it leave any room for undertaking the many new initiatives that have been suggested by our membership. We hope you understand and are willing and able to help us continue to do more for you - our members - by continuing your membership next year and beyond, and continuing to volunteer your time for our association and to fire safety science and engineering more broadly. Thank you!

Please contact office@iafss.org with any questions about membership or how to register.

NEWS ON SUMMER SCHOOLS

In 2024-25, the Education Committee (EC) and Early Career Researchers and Professionals Committee (ECRPC) of the IAFSS have developed new guidelines for applications to IAFSS funding of Summer Schools (see https://iafss.org/summer-schools/). A call for applications to funding in 2026 was also announced through an email to the IAFSS membership with an application deadline of June 20, 2025. Four applications were received by the IAFSS secretariat.

After an evaluation of the applications, the selection committee composed of the Co-Chairs of the EC and ECRPC (Bronwyn Forrest, Eric Guillaume, David Lange, Enrico Ronchi, Arnaud Trouvé, Yu Wang) decided to recommend to the Trustees funding for the following two proposals:

- A proposal for a Summer School on Battery Safety proposed by Lund University and led by Marcus Runefors
- A proposal for a Summer School on Fire Dynamics Modelling proposed by the Research Center in Jülich and led by Lukas Arnold

This financial support is important for the broader engagement of the IAFSS.

The recommendations by the selection committee were approved by the Trustees.

Congratulations to Marcus Runefors and Lukas Arnold for their successful applications. We invite IAFSS members to stay tuned for upcoming announcements on these Summer Schools and to consider attending them!

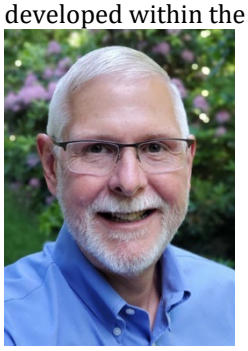
A similar call for applications to funding in 2027 will be announced in May 2026.

Bronwyn Forrest
Eric Guillaume
David Lange
Enrico Ronchi
Arnaud Trouvé
Yu Wang

AWARDS TO BE PRESENTED AT THE 15TH INTERNATIONAL SYMPOSIUM ON FIRE SAFETY SCIENCE

Several IAFSS Awards will be presented at the 15th IAFSS Symposium in La Rochelle, France, in June 2026.

The **2026 Howard Emmons Invited Plenary Lectureship** at the 15th IAFSS Symposium will be delivered by Professor Bart Merci of Ghent University, Belgium. The Emmons Lectureship is a prestigious recognition of distinguished career achievement in fire science and engineering. Professor Bart Merci's research interests have been broad and recognized for their innovation and significance. His research interests are CFD simulations of diffusion flames and compartment fires (e.g., in nuclear facilities, tunnels and atria) including smoke dynamics, flame spread and pyrolysis, and fire suppression. Also, Prof. Merci is the co-creator and academic leader of the International Master of Science in Fire Safety Engineering (IMFSE), which he developed within the EU Erasmus+ framework.



The **2026 Kunio Kawagoe Gold Medal** will be awarded to Dr. Brian Meacham of Crux Consulting, USA. This distinguished honor recognizes Dr. Meacham's lifelong contributions and outstanding career achievements in the field of fire science and engineering. His pioneering work has significantly shaped the development and global adoption of performance-based fire safety design, particularly through the integration of risk-informed approaches. Dr. Meacham has played a vital role in advancing fire safety regulations, and has been a dedicated educator, mentor, and supervisor to students in the field. His leadership extends to active participation in international standards and professional organizations, including ISO TC92, SFPE, and IAFSS, where he has helped influence the direction of fire safety science and practice worldwide.

The **2026 Philip Thomas Medal of Excellence** is awarded to the author(s) of the best paper presented at a previous IAFSS Symposium. The awardees of the 2026 Philip Thomas Medal of Excellence are Tianwei Chu, Liming Jiang and Asif Usmani, from The Hong Kong Polytechnic University, for their paper "Introducing an active opening strategy to mitigate large open-plan compartment fire development".

Prof. Asif Sohail Usmani

Dr. Liming Jiang

Dr. Tianwei Chu

The **2026 Proulx and Magnusson Early Career Awards** recognize meritorious achievement by members of the IAFSS who are early in their careers and have contributed a body of work that is of significance to any area of fire safety science. The 15th IAFSS awardees are Assistant Professor Felix Wiesner (The University of British Columbia, Canada) for the Proulx Award, and Associate Professor Negar Elhami-Khorasani (University at Buffalo, US) for the Magnusson Award.

The **2026 IAFSS Best Thesis Award** "Excellence in Research" recognizes the best research thesis at the PhD and master's levels, in all fields related to fire safety science and engineering. There are three awards given, one for each of the three IAFSS regions. The awardees of the 15th Symposium are:

- ***Americas***: Jonathan Zimak, Worcester Polytechnic Institute, for the PhD thesis: "Inert gas discharge and extinguishing dynamics of total flooding systems"
- ***Asia-Oceania***: Rongwei Bu, Central South University of China, for the PhD thesis: "Study of flame spread characteristics and heat transfer mechanisms over curved PMMA"
- ***Europe-Africa***: Nikolaos Kalogeropoulos, Imperial College London, for the PhD thesis: "Wildfire simulations to protect rural communities and avoid dire evacuations"

In addition, three Honorable Mentions for the Best Thesis Award were granted:

- Mohamed Ahmed, University of Maryland, for the PhD thesis: "Development of a Lagrangian -Eulerian modeling framework to describe thermal degradation of porous fuel particles in simulations of wildland fire behavior at flame scale"

- Yohannes Shewalul, Stellenbosch University, for the PhD thesis: “Fire behaviour of construction systems incorporating biomass and recycled materials”
- Pascale Vacca, Universitat Politècnica de Catalunya, for the PhD thesis: “Fire risk analysis framework at the wildland-urban interface”

The IAFSS warmly congratulates the awardees on their well-deserved recognitions. More information about the awards and awardees can be found at the 15th IAFSS Symposium website (https://www.iafss2026.com/awards).

In addition, other awards will be presented at the 15th IAFSS Symposium, including the Dougal Drysdale Award for Extraordinary Service to the IAFSS, Sheldon Tieszen Student Awards Sponsored by the FORUM, FORUM Sjölin Awards, FORUM Mid-Career Awards, and Best Poster and Image Awards. The selection processes for these awards are still ongoing.

Signed: Tuula Hakkarainen, Erica Kuligowski and Carlos Fernandez-Pello

Awards Committee Co-Chairs of the 15th IAFSS Symposium

UPDATES FROM IAFSS WORKING GROUPS

Large Outdoor Fires and the Built Environment (LOF&BE) Working Group

The Large Outdoor Fires and the Built Environment (LOF&BE), a permanent working group of the International Association for Fire Safety Science (IAFSS) is preparing for two workshops at the 15th IAFSS Symposium in La Rochelle, France on June 7, 2026. First workshop will highlight the progress to date of the IRC and EME subgroup, questions and discussion on progress, and finally an open discussion for LOF&BE future activities. Second workshop will highlight a newly developed activity, cone calorimeter data comparison among large outdoor fuels. A long used experimental tool in the fire research field for fires inside buildings has been the cone calorimeter. Yet, it is not apparent how useful the cone calorimeter is to study fuels found in large outdoor fires, such as WUI fires. What types of data have been collected using the cone calorimeter for large outdoor fire fuels? For what purposes? IAFSS LOF&BE desires to collect cone calorimeter data and compare them among various large outdoor fuels types. This workshop will highlight the progress of LOF&BE cone calorimeter data comparison, comparing the data of wildland fuels, WUI fuels, urban fuels or informal settlement fuels. A summary and comparison would be presented and participants in this activity will be invited to present their own data. We will discuss how to best compare the various large outdoor fuels.

Dr. Rahul Wadhwani has stepped down recently. IAFSS LOF&BE thanks him for his many years of service! Ankit Sharma is appointed to be an EME subgroup leader now after years of being an active member of LOF&BE.

About Ankit: Ankit Sharma, PhD works as Lead Research Consultant at Jensen Hughes, USA, specializing in Fire Science and Safety. His work spans fire dynamics, experiments, and modeling in areas such as energy storage, built environment, microgravity and others. He was named a 2023 SFPE "5 Under 35" Awardee and served as a 2022 SFPE Foundation GCI Fellow for Climate Change. In his previous roles, he has worked on numerous projects at leading institutions such as the National Institute of Standards and Technology (NIST), Johns Hopkins University, at CWRU on a NASA-sponsored project and at ARUP. He earned his PhD from IIT Roorkee (India) where he co-founded India's first SFPE chapter.

IAFSS LOF&BE Management Team

Co-Leaders

Samuel L. Manzello, Reax Engineering, USA and Tohoku University Japan

Sara McAllister, USDA Forest Service, USA

Sayaka Suzuki, Tokyo Institute of Technology, Japan

Ignition Resistant Communities (IRC) Subgroup Leaders

Alexander Filkov, University of Melbourne, Australia

Nima Masoudvaziri, Berkshire Hathaway Specialty Insurance, USA

Rafal Porowski, AGH University of Krakow, Poland

Emergency Management and Evacuation (EME) Subgroup Leaders

Ankit Sharma, Jensen Hughes, USA

Yu Wang, USTC, China

Fire Service Advisory Panel (FSAP)

Haonan Chen, USTC and Henan Fire and Rescue Brigade, China
Mark Chubb, Seattle Fire Department, John Jay College of Criminal Justice, City University of New York, USA
Robert Cook, Tesco UK Fire Safety Manager, UK
Ethan Foote, CALFIRE, Retired, USA
Charles Scawthorn, University of California at Berkeley and SPA Risk LLC, USA
Chia Lung (Farian) Wu, Chang Jung Christian University, Taiwan, formerly National Fire Service of Taiwan

Signed: Samuel L. Manzello (Tohoku University, Japan and Reax Engineering, USA), Sara McAllister (USDA Forest Service, USA), and Sayaka Suzuki (Tokyo Institute of Technology, Japan)

Human Behaviour in Fires (HBiF) Working Group

The IAFSS Human Behaviour in Fires (HBiF) permanent group is making great progress on the two main tasks of the group, 1) the development of a research roadmap for our field and 2) a webinar series to promote the exchange of knowledge.

We are pleased to share that our detailed review of the research gaps in the field led by E. Kinkel has been published in Fire Technology:

Kinkel, E., van der Wal, C. N., Ronchi, E., & Kuligowski, E. D. (2025). Gaps in Human Behaviour in Fires Research: A Scoping Review. *Fire Technology*, https://doi.org/10.1007/s10694-025-01781-3

Thus far, our group has published three journal papers. The complete list of publications includes two additional papers focusing on the reasons why the research gaps are present and a review and bibliometric analysis of the field:

E Ronchi, K. Kapalo, N. Bode, K. Boyce, A. Cuesta, Y. Feng, E. R. Galea, P. Geoerg, S. Gwynne, E. B. Kennedy, M. Kinateder, M. Kinsey, E. Kuligowski, G. Köster, R. Lovreglio, A. Mossberg, R. Ono, M. Spearpoint, K. Strahan, S. D. Wong (2024) Determinants of gaps in human behaviour in fire research. Fire Technology Doi: https://doi.org/10.1007/s10694-024-01625-6

M. Haghani, R. Lovreglio, M. Langridge Button, E. Ronchi, E. Kuligowski (2024) Human Behaviour in Fire: Knowledge foundation and temporal evolution. Fire Safety Journal. Doi: https://doi.org/10.1016/j.firesaf.2023.104085

Work is ongoing on the next and final step of this task which concerns the development of a research agenda for the human behaviour in fire field.

Our webinar series is continuing, and recordings of our past events are available on the working group's YouTube channel, where we have crossed the milestone of 4,750 views and >280 subscribers. You can subscribe to our YouTube channel here: https://www.youtube.com/channel/UCSqMIEaZ08r5BrtOb5q2d0Q

Our most recent webinars are:

Webinar 13 – Evacuation Modelling, when less is more – by Dr Michael Spearpoint (OFR Consultants)

Webinar 14 – Verification and validation of evacuation models – by Angelika Kneidl (accu:rate GmbH)

Follow us:

Twitter: @HBinFire

LinkedIn: https://www.linkedin.com/groups/14004136/

We would like to thank all task group leaders for their efforts on the research roadmap:

Natalie van der Wal, Delft University of Technology, The Netherlands

Erica Kinkel, Delft University of Technology, The Netherlands

Milad Haghani, University of Melbourne, Australia

Ruggiero Lovreglio, Massey University, New Zealand

Mary Button, Maze Fire Consulting, UK

Kate Kapalo, University of Nebraska, USA

Stephen Wong, University of Alberta, Canada

Signed:

Erica Kuligowski (RMIT University, Australia) - erica.kuligowski@rmit.edu.au

Enrico Ronchi (Lund University, Sweden) - enrico.ronchi@brand.lth.se

IAFSS Working Group on Measurement and Computation of Fire Phenomena

Call for Participation in the MaCFP-4 Workshop

June 6-7, 2026 - La Rochelle, France

MaCFP

The general objective of the "IAFSS Working Group on Measurement and Computation of Fire Phenomena" (abbreviated as the "MaCFP Working Group") is to establish a structured effort in the fire research community to make significant and systematic progress in fire modeling, based on a fundamental understanding of fire phenomena. This is to be achieved as a joint effort between experimentalists and modelers, identifying key research topics of interest as well as knowledge gaps, and thereby establishing a common framework for fire modeling research. The MaCFP Working Group is intended as an open, community-wide, international collaboration between fire scientists. It is also intended to be a regular series of workshops. Information on previous MaCFP workshops (held in 2017, 2021 and 2023) can be found on the MaCFP website (https://iafss.org/macfp/) and the MaCFP GitHub repository (https://github.com/MaCFP).

MaCFP-4

The fourth MaCFP workshop, called "MaCFP-4", will take place on June 6-7, 2026, as an (in-person) pre-event to the 15th IAFSS Symposium (https://www.iafss2026.com) in La Rochelle, France. The workshop will feature activities organized by the Gas Phase Phenomena subgroup, the Condensed Phase Phenomena subgroup, and the Radiative Heat Transfer Phenomena subgroup. This call for participation provides a summary of target cases to be discussed at MaCFP-4 and a schedule of the events leading up to the Workshop (including virtual meetings).

Target cases are for the most part target experiments; target cases can also be occasionally reference simulations. The format of the workshop will consist in presentations of both the target cases selected for fire model validation and detailed comparisons of target data and computational results obtained by different fire modeling groups. While the workshop topic is of direct interest to experimental and computational fire researchers, the workshop is also of broad interest to the fire research community at large. Interested individuals can participate in MaCFP-4 by attending the workshop; interested modeler and modeling groups can also participate by contributing computational results for comparisons with target data. Guidance on how to contribute computational results and expected comparisons will soon be provided. One should check the MaCFP website (https://iafss.org/macfp/) and the MaCFP GitHub repository (https://github.com/MaCFP) for regular updates.

Target Cases

Radiative Heat Transfer Phenomena subgroup

- Sensitivity studies for radiation solvers used in fire models. Sensitivity studies using a 30-cm methanol pool flame (HRR = 19.2 kW) and a 13.7-cm ethylene diffusion flame (HRR = 15 kW) as targets. Guidance for new participants will be provided in an online meeting, Friday December 5 (contact Fabian Brännström, braennstroem@uni-wuppertal.de, to get an invitation).
- Prediction of radiation fields in benchmark combustion systems. Predictions made by the radiation solvers of fire CFD codes will be compared against experimental heat fluxes and synthetic data (net source term, emission, absorption) obtained from Particle Monte Carlo - Line-by-line (PMC-LBL) calculations of a 30-cm methanol pool flame (HRR = 19.2 kW) and a 13.7-cm ethylene diffusion flame (HRR = 15 kW).
- Characterization of absorption and emissivity of a charring material. The Radiative Heat Transfer Phenomena subgroup will help coordinate the Condensed Phase Phenomena subgroup's pyrolysis model calibration exercise.

Condensed Phase Phenomena subgroup

- Pyrolysis model calibration of a charring material: pine wood. No single approach is suggested for model parameterization. In fact, a key objective of this material property determination exercise is to catalog current approaches used to parameterize complex pyrolysis models.

  Experimentalists are asked to perform tests and share their measurement data to be made publicly available on the MaCFP GitHub repository (https://github.com/MaCFP/matl-db/tree/master/Wood).

  Modelers are asked to calibrate material property sets using this data and perform simulations of material response to heating (0D thermal decomposition and 1D gasification).

Limited quantities of the test material have been made available directly to participants who have committed to conducting experiments. To date, more than 20 institutions across 12 countries have requested samples to participate in the experimental component of this exercise.

MaCFP-4 pyrolysis modeling targets will include only anaerobic conditions; however, participants are encouraged to develop experimental datasets and corresponding models that will describe oxidation (as will be studied in detail at MaCFP-5).

Gas Phase Phenomena subgroup

- FM Burner. Controlled co-flow round diffusion flame experiments (13.7-cm diameter diffusion flames featuring different fuels and an oxygen-nitrogen oxidizer). Study of soot formation/oxidation and thermal radiation emissions in turbulent buoyant diffusion flames using a burner configuration developed at FM and data also generated at FM. See the FM Burner folder (https://github.com/MaCFP/macfp-db/tree/master/Extinction/FM_Burner) on the MaCFP GitHub repository.
- Upward flame spread. Study of flame structure/heat flux and fire growth over PMMA. Two configurations are considered:
    - A parallel panel configuration based on the FM 4910 fire test and studied at the National Institute of Standards and Technology: flame spread experiments in a parallel panel configuration, with PMMA. See the parallel panel fire folder (https://github.com/MaCFP/macfp-db/tree/master/Fire_Growth/NIST_Parallel_Panel) on the MaCFP GitHub repository.
    - A corner wall configuration based on the EN 13823 Single Burning Item (SBI) fire test and studied at the University of Maryland: flame spread experiments in a corner wall configuration, with PMMA. See the corner wall fire folder (https://github.com/MaCFP/macfp-db/tree/master/Fire_Growth/UMD_SBI) on the MaCFP GitHub repository.
- Compartment/façade fires. 1-MW-scale compartment fires producing external flames and spill plumes over a vertical non-combustible façade. Study of flame structure and heat transfer using a configuration based on the JIS A 1310 fire test and data generated at the Building Research Institute of Japan and the University of Tokyo. See the façade fire folder (https://github.com/MaCFP/macfp-db/tree/master/Wall_Fires/JIS_Facade) on the MaCFP GitHub repository.

Workshop Timeline (Tentative)

Date	**Objective**
Dec. 5, 2025	Online meeting of the Radiative Heat Transfer Phenomena subgroup
January 2026	Call for volunteers [repo management, data analysis, scripting, etc.] **Virtual Meeting ("MaCFP-3.5")** Coordinated by Condensed Phase Phenomena subgroup, all participants welcome Summary of experimental data submitted to pyrolysis model calibration exercise Call for participation (modelers) in pyrolysis model calibration exercise
February 2026	Share final version of "Guidelines for Participation in MaCFP-4" document Deadline to submit revisions to experimental datasets (pyrolysis model calibration)
May 2026	Deadline to submit fire modeling results (Gas Phase Phenomena subgroup, all cases) Deadline to submit pyrolysis model calibration results (Condensed Phase Phenomena subgroup) Deadline to submit radiation modeling results (Radiative Heat Transfer Phenomena subgroup) Poster abstract deadline (MaCFP-4 experimental data and modeling submissions)
June 6-7, 2026	**MaCFP-4 Workshop: La Rochelle, France**

Points of contact

Gas Phase Phenomena subgroup

Randy McDermott (National Institute of Standards and Technology, USA) (randy.mcdermott@gmail.com)
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Arnaud Trouvé (Co-Chair) (University of Maryland, USA) (atrouve@umd.edu)
Yi Wang (FM, USA) (yi.wang@fm.com)

Condensed Phase Phenomena subgroup

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Stanislav Stoliarov (University of Maryland, USA) (stolia@umd.edu)

Radiation Phenomena subgroup

Fabian Brännström (University of Wuppertal, Germany) (braennstroem@uni-wuppertal.de)
Simo Hostikka (Aalto University, Finland) (simo.hostikka@aalto.fi)

FIRE SAFETY JOURNAL: THE OFFICAL JOURNAL OF IAFSS

Fire Safety Journal is the official journal of IAFSS. Its scope is purposefully wide, as it is deemed important to encourage papers from all sources within this multidisciplinary subject. Research covers a range of topics including but not limited to:

- Fire chemistry and physics
- Fire dynamics (including gas explosions)
- Active fire protection systems, including detection and suppression
- Passive fire protection methods
- People/fire interactions (physical, physiological and psychological)
- Fire safety management
- Assessment and quantification of fire risk (including acceptability of risk)
- Fire investigation
- Fire safety design (including consumer items, industrial plant, transportation, buildings)
- Fire safety legislation
- Fire safety education.
- Original contributions relating to any of the above topics are invited, particularly if they incorporate a quantitative approach to the subject in question.

Editors are Luke Bisby and Bart Merci

Link to Fire Safety Journal (ScienceDirect)

UPDATES FROM ISO TC92

ISO TC92/WG14

A special issue focused on Wildland-Urban Interface (WUI) Fires, guest edited by Anja Hofmann and Samuel L. Manzello, was published in the August/September 2025 issue of Fire and Materials. The special resulted in the publication of 25 papers, highlighting the growing WUI fire problem worldwide. Special issue on Wildland ‐ Urban Interface (WUI) Fires: Fire and Materials: Vol 49, No 5. An overview of current ISO TC92/W1G14 activities was one of the papers published. Progress to Develop Globally Harmonized International Testing Standards for Large Outdoor Fires, Including Wildland ‐ Urban Interface Fires - Manzello - 2025 - Fire and Materials - Wiley Online Library.

If you are interested in ISO TC92/WG14 activities, please contact the convenor of ISO TC92/WG14, Samuel L. Manzello (manzello@tohoku.ac.jp; manzello@reaxengineering.com)

Signed: Samuel L. Manzello (Convenor of ISO TC92/WG14, with IFS, Tohoku University, Japan and Reax Engineering, USA)

NEWS FROM MEMBERS

News submitted by members are included in this section, the contributions are not arranged in any specific order. Editorial edits have been made in the submissions.

AfriWUIFire

AfriWUIFire joined AJ-CORE workshop & SRI 2025 Africa Satellite Event at Nairobi

Prof. Rejoice Tsheko of Botswana University of Agriculture & Natural Resources and Dr. Natalia Flores-Quiroz of Stellenbosch University presented an AfriWUIFire project progress at AJ-CORE workshop at Nairobi, Kenya in June 2025. This is mid-term presentation for AfriWUIFire. We had a poster presentation during AJ-CORE workshop and SRI (Sustainability Research + Innovation) 2025 Africa Satellite Event (https://sricongress.org/sri2025-africa-satellite-event/) with the help from team member Mr. Guy Godiraone Yuyi & Ednah Kgosiesele of Botswana University of Agriculture & Natural Resources.

AfriWUIFire presented at 13th Mediterranean Combustion Symposium at Corfu

Prof. Samuel L. Manzello of Tohoku University presented an outcome from AfriWUIFire project, at 13th Mediterranean Combustion Symposium at Corfu, Greece in June 2025. Samuel explained an attempt for a firebrand generator to produce the different distribution of firebrands, firebrands from African vegetation, for upcoming experiments.

AfriWUIFire work published in AECS

The paper, co-authored by Prof. Sayaka Suzuki of Institute of Science Tokyo and Prof. Samuel L. Manzello of Tohoku University, is an invited paper as a part of Women in Combustion Special Issue in Applications in Energy and Combustion Science. In this paper, using a firebrand generator, a new kind of firebrands was produced, and for the first time, two kinds of wood materials were fed into the firebrand generator at the same time to produce firebrands from vegetation and structure at the same time. You can read it from https://doi.org/10.1016/j.jaecs.2025.100399.

Special Issue on Wildland-Urban Interface Fires at Fire and Materials are completed

Prof. Samuel L. Manzello of Tohoku University run a special issue on Wildland-Urban Interface Fires at Fire and Materials, which is published in August 2025 as Volume 49, Issue 5 (Page 507-846) August/September 2025.

https://onlinelibrary.wiley.com/toc/10991018/2025/49/5

AfriWUIFire presented at TICAD9

Prof. Samuel L. Manzello of Tohoku University and Prof. Sayaka Suzuki of Institute of Science Tokyo presented AfriWUIFire project at Tokyo International Conference on African Development 9 (TICAD9) at Yokohama, Japan in August 2025. Our booth had a quite a lot of visitors and Samuel and Sayaka spent busy three days explaining AfriWUIFire project. People are quite interested.

Signed: Sayaka Suzuki (Science Tokyo) Samuel L. Manzello (Tohoku U.) Natalia Flores-Quiroz (Stellenbosch U.) Richard Walls (Stellenbosch U.), Doug Harebottle (Sol Plaatje U.), and Rejoice Tsheko (BUAN)

University of Canterbury

Global Fire Science Training Program: **Training-of-Trainers**

The University of Canterbury has launched an initiative to strengthen fire safety engineering education in emerging economies. This initiative focuses on a **Training-of-Trainers (ToT)** approach aimed at building the capacity of fire engineering educators. As part of this effort, the university is developing a plug-and-play introductory course titled *Fire 101*.

Fire 101 forms part of the Global Fire Science Training Program (G-FiSci) at the University of Canterbury, New Zealand. The G-FiSci program aims to build capacity in emerging economies by focusing on training the trainers, particularly university academics in the field of fire science.

The program supports academics from universities with established fire science and engineering programs to travel to emerging economies and deliver plug-and-play introductory fire science courses. Course participants are encouraged to adapt and implement the materials at their home institutions to establish equivalent courses.

Participation for academic trainers is free of charge, while the course may also be offered to fire professionals in emerging economies at a nominal fee.

This course will be delivered for the first time in Sri Lanka, with Aatif Khan travelling to Colombo to lead a four-day session in December 2025.

Short course on Tunnel fire safety and forensic fire Engineering

Daniel Nilsson and Aatif Ali Khan delivered short courses on **Tunnel Fire Safety** and **Forensic Fire Engineering** to members of IFE Singapore. The courses were attended by more than forty fire safety professionals. The University of Canterbury's proceeds from these courses will be used to support the delivery of an introductory fire engineering course in emerging economies where fire safety engineering is not yet established.

Many thanks to IFE Singapore for hosting Daniel and Aatif and for giving us the opportunity to raise funds for the G-FiSci Foundation, which supports the delivery of *Fire 101* in emerging economies.

Visit to Sweden and Denmark

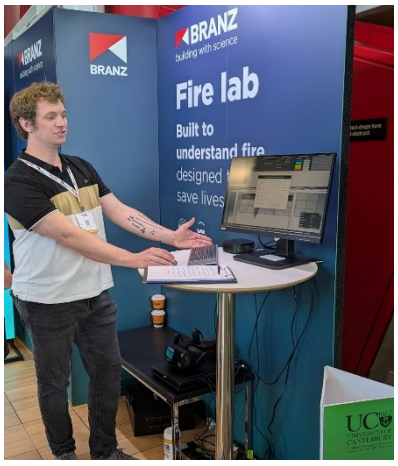
Daniel Nilsson and Aatif Ali Khan visited Lund University (Sweden) to strengthen the research collaboration between the University of Canterbury and Lund University. The ongoing research on Virtual Reality (VR) and smart firefighting closely aligns with the work being conducted at both institutions. Strengthening this partnership will help advance the research in the right direction and avoid duplication of efforts.

During the visit, they also met with academics and researchers at the Technical University of Denmark (DTU) to discuss current projects at UC and DTU and explore opportunities for future collaboration.

Additionally, Daniel and Aatif delivered lectures on fire engineering and the application of Virtual Reality in firefighter training at the SFPE Sweden event held in Malmö, Sweden.

They also visited the **RISE Research Institutes of Sweden** (RISE), where they shared research activities at the University of Canterbury and learned about ongoing projects at RISE. The discussions focused on identifying areas for future collaboration and potential joint research initiatives between UC and RISE.

Demonstrating with BRANZ at FireNZ convention



Nick Harding and Peter Thompson demonstrated the new Möbius crown movement viewer at the BRANZ booth at the FireNZ convention at the start of October. Nick helped conference attendees try on the VR headset to immerse themselves in evacuation simulations, view crowd movements throughout a large building, look at density heatmaps, congestion and evacuation flow metrics. We got great feedback from these user testing and feedback sessions, which will all feed into the final product to view evacuation simulations, which will be released in open source form for unrestricted usage and access for all. Fire engineers, and architects, will be able to drive simulations from BIM models, and view evacuations in immersive and interactive 3D environments, to aid the safe design, communication and visualisation processes.

We gratefully acknowledge the funding and assistance for this project from BRANZ, Fire and Emergency New Zealand, Building Innovation Partnership, GHD, and Halliwell Fire Research.

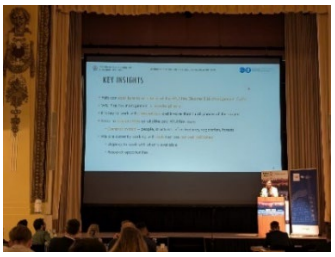
New PhD Student

Reza Nugroho has recently started his PhD, which focuses on overpressure events in combustible compartments. This work is supported by a prestigious grant from the Fire Safety Research Institute (FSRI). Previously, Reza completed both his bachelor's and master's degrees at Universitas Indonesia. His master's focused on the development of a laboratory-scale polymer-based building façade material fire testing apparatus.

Signed: Aatif Kahn

Polytechnic University of Catalonia

People update



At the European Symposium on Fire Safety Science (ESFSS 2025) in Ljubljana, **Dr. Pascale Vacca** delivered one of the keynote lectures entitled "Integrating WUI Fire Risk Management into the Fire Safety Engineering Practice: Challenges and Opportunities." She emphasised the need to embed WUI fire considerations into engineering design and risk assessment frameworks. Additionally, Amira Imraish, supervised by Dr. Vacca and Dr. Paugam, received an honourable mention for Best Poster Award for her IMFSE thesis on "Analysis of the Influence of Ambient Turbulence on Wind-Driven Vegetation Fires in FDS at the WUI Microscale."

Dr. Simona Dossi delivered an acclaimed presentation at the 11th International Seminar on Fire and Explosion Hazards (ISFEH11), where her paper "Wildfire NaTech Accidents in the Wildland-Industrial Interface: Exposure Pathways Analysis" received the Best Paper Award. Her research introduces a probabilistic framework for assessing wildfire-triggered NaTech accident risks in industrial contexts, bridging natural hazard and process safety domains.

Dr. Martin Peter Hofmann joined CERTEC as a Postdoctoral Researcher in May and he is working closely with Dr. Alba Àgueda to explore efficient water use on the fireline to inform design strategies for wildfire suppression systems. Previously, through field-scale prescribed burns in Gran Canaria under the FIRE-RES project, Dr. Hofmann's team analysed the effect of controlled water distribution on fire behaviour. The innovative experimental setup earned him the DIREKTION Award for excellence in experimental design. Dr. Hofmann also co-leads the FIRE-MOISTSAFE project with Prof. Pastor, funded by HoZe Solutions GmbH, focusing on identifying critical humidity and fuel moisture thresholds for integrated wildfire management in Europe.

Within the PROSAFE Marie Skłodowska-Curie Doctoral Network, CERTEC hosted the second training week in Barcelona, gathering doctoral candidates and industry partners for intensive sessions on AI-driven process safety.

Lorenza Saturnino received the Best Poster Award at the LP2025 Conference in Bologna for "Benchmark Analysis of Accident Modelling Software Applied to Hydrogen Storage." She also co-presented CERTEC's ongoing PROSAFE work in a special session chaired by Prof. Planas.

Muchen Zhang presented "Machine Learning for Efficient CFD-Based Quantitative Risk Analysis" at LP2025 and contributed to the International Conference on Hydrogen Safety (ICHS2025) with research on cryogenic hydrogen tank simulations, presented by Prof. Planas.

Jairo Andrés Meneses Gelves presented his unsupervised ML analysis of hydrogen incident databases at LP2025 and a comparative QRA study at ICHS2025 in Korea. He also participated in the European PhD Hydrogen Conference (Trieste), outlining his research on advancing QRA methodologies for hydrogen systems

PhD Researcher **Artemis Papadaki** renewed CERTEC's collaboration with CAIMI (Centro de Aplicaciones Informáticas y Modelado en Ingeniería) at the Universidad Tecnológica Nacional (Argentina) during her research stay. Her work focuses on surrogate modelling for safety distance estimation in process industries, enabling optimisation of plant layouts and accident prevention strategies.

Prof. Eulàlia Planas was elected a member of the Institut d'Estudis Catalans (IEC, the Catalan Academy of Sciences). It serves as both the academy of the Catalan language and a research institution encompassing all fields of knowledge. The IEC brings together individuals with professional and academic backgrounds across all areas of expertise

IEC Institut d'Estudis Catalans

Projects updates

Under the coordination of **Prof. Elsa Pastor**, CERTEC continues to lead European efforts in wildfire resilience through the FIREPRIME project, funded by the EU Civil Protection Mechanism. The initiative is now approaching completion, having developed a comprehensive wildfire preparedness toolkit, available at fireprime.eu, to strengthen resilience at the Wildland-Urban Interface (WUI). Tested across pilot sites in Barcelona (Spain), Tyrol (Austria), and Gothenburg (Sweden), the toolkit integrates a user-friendly mobile app for household risk assessment, infrastructure guidelines for critical facilities, and community engagement tools. In Sant Cugat (Barcelona), partners and local stakeholders gathered to promote self-protection strategies and collective action, reinforcing the bridge between science, policy, and community resilience.

Dr. Ronan Paugam represented CERTEC in the SILEX airborne campaign, Monitoring Active Fire (Summer 2025), conducted in southern France within the EUBURN initiative led by Météo France. His work focused on integrating airborne and satellite fire observations through the development of a near-real-time monitoring system based on Meteosat's FCI data. Dr. Paugam also supported the operation of a mid-wave infrared camera onboard the SAFIRE ATR-42 aircraft, capturing high-resolution imagery of active wildfires to refine coupled fire-atmosphere models.

Academic updates

CERTEC is pleased to welcome two new PhD Researchers, **Haseeb Kazmi** and **Pouria Safari**, both distinguished IMFSE alumni, who join the team to strengthen ongoing research in wildfire and process safety

Signed: Eulàlia Planas

University of Central Lancashire

The University of Central Lancashire has officially rebranded as the **University of Lancashire**, marking a new chapter in the institution's evolution and continued commitment to excellence in education and research. We would like to welcome our new students in next academic year's MSc in Fire Safety Engineering, MSc in Fire Scene Investigation, BEng (Hons) Fire Engineering, MEng Fire Engineering, BSc (Hons) Fire Safety and Risk Management and BSc (Hons) Fire and Leadership Studies.

We are delighted to welcome our new PhD student, Max Cox, who has joined our team September 2025 to work on the project "The Study of Fires in Tunnels." We would also like to congratulate Dr. Anoop Warrier on the successful completion and defence of his PhD thesis titled "Externally Venting Flames (EVF) Dynamics and Development in Non-Orthogonal Geometries" supervised by Dr. Eleni Asimakopoulou and Dr. Tony Graham. Our

sincere thanks go to the external examiners, Dr. Francesco Restuccio and Dr. Jianping Zhang, for their valuable contributions.

In July 2025, University of Lancashire had a strong presence at Interflam 2025 Dr. Eleni Asimakopoulou presented the SAFE project related paper entitled "Experimental Investigation of Strategies Aiming at Effective Fire Evacuation using Evacuation Alert System in Single and Dual Staircase High-Rise Residential Buildings," co-authored with S. Ndlovu, J. Fowler, G. Castelblanco, K. Khan, T. Graham, T. Bradford, and C. L. Liyanage. Our team was also well represented in the poster sessions. Simon Cox presented his research on "Experimental Investigation of the Effect of Ceiling Geometry and Slope on Smoke Characteristics and Gas Temperature in Tunnels". Our PhD student Amy Grainger presented her poster "The Current State of Early Deep-Seated Fire Detection for Waste and Recycling Materials". This study, supported by the Waste Industry Safety and Health (WISH) Forum, explores innovative methods for the early detection of deep-seated fires in waste and recycling facilities. Sai Pavan Kumar Balabomma also presented his poster "Data-Driven Computational Mechanics in Fire Engineering Applications" which highlights the use of advanced computational approaches to enhance predictive capabilities in fire engineering. Sai presented this work at the FiredUp Conference held at the University of Liverpool in July 2025; our MSc student Toni Ryder also attended. Later, in August 2025, he also participated in the SFPE Engineering Solutions Symposium in Chicago, USA, further contributing to the University of Lancashire's growing international research presence and collaboration within the global fire engineering community.

Sai, Simon, Tracy and Amy presenting their posters at Interflam 2025.

In addition, the group had the pleasure of welcoming a visiting colleague, Prof. Richard Walls, from Stellenbosch University. Hosted by Dr. Shephard Ndlovu and Dr. Eleni Asimakopoulou, the visit provided an excellent opportunity to exchange ideas and explore future collaborations in fire safety education and research.

University of Lancashire further contributed to the IFE International President's Technical Conference 2025, held on 18-19 June 2025 at the University of Lancashire, under the theme "Taking the Next Steps: A Collaborative Path to a Fire Safe Future." Dr. Shephard Ndlovu and Dr. Eleni Asimakopoulou delivered their joint presentation, "Evacuation Guidelines for Fire and Rescue Services during Fire Emergencies," within the Fire and Rescue Service theme. Their talk drew on findings from the ongoing SAFE Project, focusing on evacuation strategies and operational procedures in high-rise residential buildings, with particular emphasis on improving guidance for vulnerable occupants and supporting effective decision-making during fire emergencies.

The University of Lancashire has been a key academic partner in Arup's Transition Programme to Become a Fire Safety Engineer, a structured professional development initiative launched in 2021 to strengthen technical competencies for early-career fire safety engineers. The University of Lancashire collaborated with Arup to design and deliver a bespoke week-long fire dynamics course, tailored to Arup graduates. The 2025 course provides hands-on exposure to fire experiments and in-depth understanding of fire and smoke dynamics, ensuring that theoretical knowledge is linked to practical application within the built environment.

Dr. Shephard Ndlovu introducing the course (left) and Arup graduates along with university staff during the Fire Dynamics Course 2025 dinner (right).

The academic year 2025-2026 began with the first Continuing Professional Development (CPD) event, jointly organised by the University of Lancashire, The Institution of Fire Engineers, and the Lancashire Fire and Rescue Service. The event featured Dr. Konstantinos Chotzoglou, Associate at OFR Consultants and Secretary of the SFPE UK Chapter, who delivered an engaging presentation on "Shaping the Future of Façade Fire Testing: Historical Insights and Tools." The session explored the evolution of façade fire testing and the innovative tools driving future advancements in the field, including research on revisiting the BS 8414 timber crib and enhancing façade fire safety

Signed: Dr. Eleni Asimakopoulou

Central South University, China

Symposium Attendance
15th Asia-Pacific Conference on Combustion (ASPACC 2025)

Professor Zhisheng Xu, Dr. Zhengyang Wang, and Ph.D. student Zihan Yu attended the 15th Asia-Pacific Conference on Combustion (ASPACC) held in Singapore. Zhengyang Wang delivered a presentation titled "Thermally thin–intermediate–thick transition on horizontal wood flame spread under external radiation." He introduced the fire spread behavior of densified wood under the coupled effects of thickness and density. Mr. Zihan Yu presented a report titled "Study on the fire combustion behavior and temperature transport processes in tunnels with ceiling beams."

13th Asia-Oceania Symposium on Fire Science and Technology (AOSFST 2024)

Professors Zhisheng Xu, Chuangang Fan, Long Yan, Zhengyang Wang, Ph.D. students Houlin Ying, Zihan Yu, Yihan Chen, and Master's students Saiya Feng, Shiyi Chen, Bei Zhao, and Yaolong Yin attended the 13th Asia-Oceania Symposium on Fire Science and Technology (AOSFST 2024). Four posters, covering topics such as solid flame spread, flame-retardant coating performance simulation, cracking behavior of densified wood, and intelligent algorithms for fire risk identification were presented. Prof. Chuangang Fan chaired the session J-3: Flame Dynamics, and Dr. Zhengyang Wang chaired the session G-1: Enclosure Fire Dynamics. Master's student Saiya Feng received the Best Oral Presentation Award for the presentation titled "A Comprehensive Model to Predict the Fire Performance of Intumescent Fire-Retardant Coating on Steel Substrate.

11th International Conference on Fire Science and Fire Protection Engineering

Professors Chuangang Fan, Long Yan, and Zhengyang Wang, together with Ph.D. students Hui Liu, Dia Luan, Houlin Ying, and master's students Yaolong Yin and Guanjie Rao, as well as more than twenty alumni of the Department of Fire Protection Engineering, participated in the 11th International Conference on Fire Science and Fire Protection Engineering (ICFSFPE 2024). During the conference, faculty members and students from the department delivered multiple academic presentations in various forums, including Smoke Control, Electrical Fire Prevention, Flame Retardancy and Fire Resistance, and Fire Mechanisms. The papers submitted by Dr. Zhengyang Wang and Ph.D. student Hui Liu (advised by prof. Long Yan) were recognized as Outstanding Papers of the Conference.

40th International Symposium on Combustion

Faculty and students from the Department of Fire Protection Engineering, Central South University, attended the 40th International Symposium on Combustion. Dr. Zhengyang Wang delivered a presentation titled "Eruptive Flame Spread over Concave Surface."He introduced the phenomenon of eruptive acceleration in flame spread over concave surfaces and explained the underlying mechanisms behind this distinctive fire behavior. This research was primarily conducted by Dr. Rongwei Bu, under the joint supervision of Prof. Yang Zhou, Chuangang Fan, and Zhengyang Wang.

Academic and Professional Events Organization

Railway Fire Protection Technology Exchange Conference (2025)

Under the support from the China Railway Society, the CSUFPE hosted the **Railway Fire Protection Technology Exchange Conference** in Changsha, China. Experts from academia and industry discussed the latest research findings, cutting-edge technologies, and practical experiences in railway fire protection. The conference further promoted the standardization and modernization of railway fire safety, and contributed to the development and improvement of railway fire protection standards, systems, and management measures.

20th Anniversary celebration of the Department of Fire Protection Engineering in Central South University

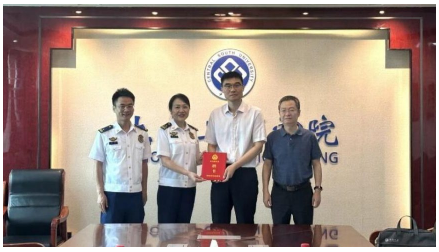
The 20th Anniversary Academic Exchange and Sharing Event of the Department of Fire Protection Engineering was also held at Central South University, bringing together nearly 200 alumni in Changsha. Professor Chuangang Fan, Dean of the Department, reviewed the department's development journey, growth, and research achievements.

2025 National Conference of the Teaching Steering Committee for Fire Protection Engineering Programs in China

In July 2025, CSUFPE hosted the 2025 National Conference of the Teaching Steering Committee for Fire Protection Engineering Programs in China. The conference brought together faculty representatives from universities offering fire protection engineering programs in China, along with experts from related industries. Discussions centered on emerging trends in fire safety and emergency management, strategies for enhancing undergraduate education and talent development in fire engineering, and approaches to strengthening teaching excellence. The event aimed to foster the sustainable and innovative growth of fire protection engineering education in the new era.

Social Contribution:

Professor Chuangang Fan Appointed as a Distinguished Research Fellow of the China National Fire and Rescue Administration



The China National Fire and Rescue Administration selected 26 leading professors, scholars, and experts from top universities, enterprises, and think tanks as its first group of Distinguished Research Fellows. Professor Chuangang Fan was awarded the official certificate of appointment, recognizing his long-standing contributions to fire and rescue work. The appointment also encourages him to continue fulfilling his responsibilities with dedication and to contribute further to the advancement of China's fire and rescue services.

The Fire Safety Science Education Base at Central South University

The Fire Safety Science Education Base at Central South University has been selected as both a National Railway Science Education Base and a National Highway Science Education Base. In collaboration with the China Fire Protection Association, the center offers fire-safety education programs for students of all ages.

Dr. Zhenyang Wang has been appointed a member of the Education Committee of the International Association for Fire Safety Science (IAFSS).

Professor Changkun Chen has been appointed Deputy Secretary of the Society for Public Safety Science and Technology. He is now organizing the 2025 National Public Safety Conference and serving as Chair of the Young Professionals Forum.

Professors Zhisheng Xu, Changkang Chen, Chuangang Fan, and Long Yan were included in Stanford University's Top 2% Scientists list (2025).

Students:

Dr. Rongwei Bu defended his doctoral dissertation, "Study on Flame-Spread Characteristics and Heat Transfer Mechanisms over Curved PMMA," and received the **International Association for Fire Safety Science (IAFSS) Best Thesis Award ("Excellence in Research")**. His advisors were Professor Chuangang Fan and Associate Professor Yang Zhou. Dr. Bu is currently a faculty member in the School of Transportation at Changsha University of Science & Technology.

Dr. Tong Xu defended his doctoral dissertation, "Research on Combustion Characteristics and Fire-Spread Behavior of Bending Cables." His advisor was Professor Changkun Chen. He is currently a faculty member in the School of Emergency and Safety Engineering at China University of Mining and Technology (Beijing).

Dr. Qiulin Liu defended his doctoral dissertation, "Research on Fire Combustion Characteristics and Smoke Control of Ultra-Long Underwater Road Tunnels." His advisor was Professor Zhisheng Xu. He is currently a faculty member in the Department of Fire Protection Engineering at Southwest Jiaotong University.

Dr. Weibing Jiao defended his doctoral dissertation, "Study on the Mechanisms of Flowing-Fire Spread and Fire Characteristics in Tunnels." His advisor was Professor Changkun Chen. He is currently a faculty member in the School of Safety Engineering at China University of Mining and Technology.

Dr. Dia Luan successfully defended her doctoral dissertation, "Study on the Characteristics of Tunnel Fire Development and Smoke Control under Heavy Rainfall Conditions." She also received the **SFPE Frederick W. Mowrer Global Scholar Award (2024)**. Her research focuses on smoke spread and ventilation control for tunnel fires under extreme weather. Her advisors were Professors Liang Yi and Chuangang Fan. Dr. Luan is currently on the faculty of the Department of Fire Protection Engineering at Southwest Jiaotong University.

Master's students Binyan Xu, Wenxin Zeng, and Tong Lu have gone on to pursue Ph.D. degrees at The Hong Kong Polytechnic University. Master's student Zheng Wei is pursuing a Ph.D. in Fire Protection Engineering at the University of Maryland.

Ph.D. candidate Mr. Ao Jiao completed joint training at the School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore, under the supervision of Associate Professor Wan Man Pun and Dr. Mingjun Xu, conducting research on fire dynamics in large underground spaces. Now Ph.D. candidate Qian Yang is undertaking joint training the Prof. Pan's group, working on the sustainable, smart urban buildings ersearch

Signed: Zhengyang Wang

University of Edinburgh

Dr A.A. Ali Awadallah Awarded Best Paper & Best Presentation (Joint) Award at ESFSS 25

In September, Dr Ahmed Ahmed Ali Awadallah and his co-authors Dr Angus Law and Prof. Rory Hadden were awarded the Best Paper Award at the 5th European Symposium on Fire Safety Science for their paper titled "Estimating the Energy Terms in Timber-Lined Compartments'. Dr Ali Awadallah was also the recipient of the Best Presentation Award which was jointly awarded alongside Ayyappa Thejus Mohan from The University of Queensland.

5th European Symposium on Fire Safety Science (ESFSS 2025)

Several group members recently attended the excellent ESFSS2025 Conference held in Ljubljana in September and organised by FRISSBE. Participants from The University of Edinburgh contributed both Oral Presentations and Poster Presentations, with papers now published in the conference proceedings https://iopscience.iop.org/issue/1742-6596/3121/1. We would like to take the opportunity to thank the organisers for such a well-organised conference, and we are already looking forward to sharing future work at the next ESFSS conference in Prague.

Jack Bono Award for Engineering Communication

The Jack Bono Award was recently awarded to Dr David Morrisset and co-authors Dr Jonathan Reep, Ian Ojwang, Prof. Rory Hadden and Dr Angus Law, for their paper titled "Repeat Fire Tests of Upholstered Furniture: Variability and Experimental Observations". This prize is awarded annually to the best paper published in Fire Technology as selected by the Editorial Team, and is named after Jack A. Bono, a Past President and Fellow of SFPE who worked at Underwriters Laboratories Inc. for 44 years.

https://www.sfpe.org/foundation/foundationawards/foundationawards/foundationbono

New Group Members

Krzysztof Munko has joined the Edinburgh Fire Research Centre as a PhD student in Fire Science. He graduated from the University of Edinburgh with a Master of Engineering (Hons) in Structural and Fire Safety Engineering. His interest in fire science developed throughout his degree, which concluded in an MEng thesis entitled "Diffusion flame dynamics on burning solids," supervised by Prof. Rory Hadden. This work characterised the impact of oxidative conditions on diffusion flames originating from solid fuels and was recognised with the Ashton Fire Prize, awarded to the BEng or MEng graduate achieving the best performance in a thesis project in the fields of fire science, fire safety engineering or fire engineering.

In his final year of study, Krzysztof also received the Charles Innes Prize for overall academic excellence. Alongside his studies, he gained professional experience with the Arup Edinburgh Fire Team, where he worked on fire engineering projects during two summer placements. Krzysztof's doctoral research focuses on developing experimental methodologies to evaluate the burning behaviour of firebrands during simulated transport, contributing to a deeper understanding of wildfire dynamics. Outside of research, he enjoys discussing Formula 1 and playing basketball.

Sean Hanlon also joined the Edinburgh Fire Research Centre in mid-October as a Part-Time PhD student looking at Risk and Robustness assessments for structures in ambient and fire conditions. The project scope is still being refined but will focus on the UK context. Sean joins us while managing his own company (StruKtures) and has a wealth of engineering experience to bring to the project. His educational background is Civil Engineering with a masters in Timber Engineering.

Congratulations Antonela Colic & Ahmed Ahmed Ali Awadallah

We are delighted to celebrate the success of three group members in successfully defending their PhD thesis. Congratulations to Antonela Colic who recently successfully defended her PhD thesis. This project was supervised by Prof. Luke Bisby, Dr Angus Law, Dr Felix Wiesner (University of British Columbia) Dr Michael Spearpoint (OFR) and Dr Danny Hopkin (OFR), with Prof. Thomas Gernay from John Hopkins University serving as the external examiner.

Congratulations to Ahmed Ahmed Ali Awadallah who recently defended his PhD thesis titled: 'Decay and extinction of timber-lined compartments'. This project was supervised by Dr Angus Law and Prof. Rory Hadden, with Dr Michael Spearpoint (OFR) as the external examiner.

And congratulations to Norlizan Wahid who is also now set to graduate, with her PhD thesis titled: 'Finite element analysis of flat slab behaviour at elevated temperatures'. This project was supervised by Profs. Tim Stratford and Luke Bisby, with Prof. David Lange (UQ) as the external examiner.

XPrize Wildfire Semi-Finals

The University of Edinburgh is a member of the Flare-X team recently selected as one of 15 semi-finalists for the XPRIZE Wildfire Autonomous Wildfire Response Track, a $5 million innovation competition. The team is led by the University of Texas at Austin along with the University of Southampton, Texas A&M Forest Service and The University of Edinburgh. In October the team conducted semi-final testing in October as they continue to demonstrate the capability of their system to meet the XPrize challenge of developing a fully autonomous, integrated system that can rapidly detect and suppress an incipient stage, high-risk wildfire within a 1,000 km^2 area in under 10 minutes. https://news.utexas.edu/2025/07/21/ut-led-team-advances-in-competition-to-autonomously-detect-suppress-high-risk-wildfires/

UoE SFPE Student Chapter visits Scottish Fire & Rescue Service Training Centre

Recently, the UoE SFPE Student Chapter had the opportunity to visit the Scottish Fire & Rescue (SFRS) training centre in Cambuslang. This was an excellent opportunity for students to put some theory into practice, and the chapter are very grateful to the SFRS team for taking the time to host the group and share their knowledge and experience. The trip involved a tour of the centre's facilities including simulators for pipeline leakage, flashover and backdraft. As well as suiting-up into turnout gear and Self-Contained Breathing Apparatus and experiencing the dark maze, before operating hose nozzles to extinguish a simulated vehicle fire.

The UoE SFPE Chapter continues to build upon the success of a 2025 SFPE Gold Chapter Award, with another packed schedule of events, careers talks and socials throughout the 2025/26 academic year.

Signed: Zakary Campbell-Lochrie

ETH Zurich

Greetings from the fire safety research group within the Chair of Timber Structures at the Institute of Structural Engineering, ETH Zurich, Switzerland. Our current team includes Professor Andrea Frangi, Dr. Michael Klippel, Dr. Joachim Schmid, and PhD candidates Chamith Karannagodage and Fernando Pérez Pérez.

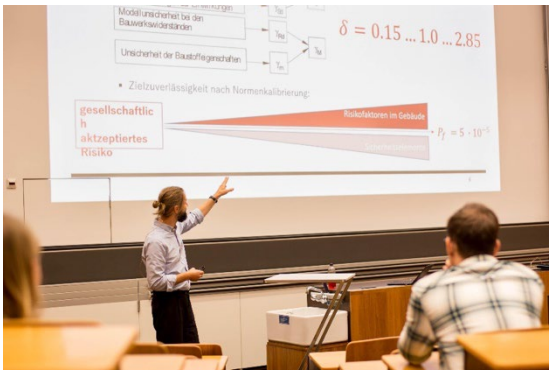
Our main ongoing research projects include:

1. **Mechanical properties of timber at elevated temperatures:** This project addresses the need to review the relationships for temperature-dependent thermal and mechanical properties of timber provided in Eurocode 5 (EN 1995-1-2) as part of its ongoing revision. The goal is to verify if these relationships represent the current state-of-the-art and, if necessary, propose modifications to the simplified design rules. The methodology combines model- and full-scale fire resistance tests with thermo-mechanical finite element simulations. This work is supported by the European Confederation of Woodworking Industries (CEI-Bois), Construction WG Subgroup Fire.
2. **Fire safety of cross-laminated timber (CLT):** Led by Chamith Karannagodage, this research focuses on fire design for CLT and is conducted in collaboration with Henkel AG and supported by Innosuisse, the Swiss Innovation Agency.
3. **Fire Dynamics in Exposed Mass Timber Compartments:** Led by Fernando Pérez Pérez, this project investigates fire behaviour in compartments with exposed timber surfaces and is supported by the Swiss National Science Foundation (SNSF).
4. **Fire protection from clay boards.**

We continue using non-stop our Fire Simulator for research on the behaviour of timber and other construction materials when exposed to fire. This facility features a 2.3 m^3 fire chamber, allowing us to conduct tests using standard fire curves (e.g., ISO 834) or replicate custom natural fire scenarios, including controlled cooling phases and varying gas compositions (O_2, N_2). The chamber is coupled with hydraulic actuators for loaded fire resistance tests and incorporates a custom-built frame for measuring mass loss during experiments.

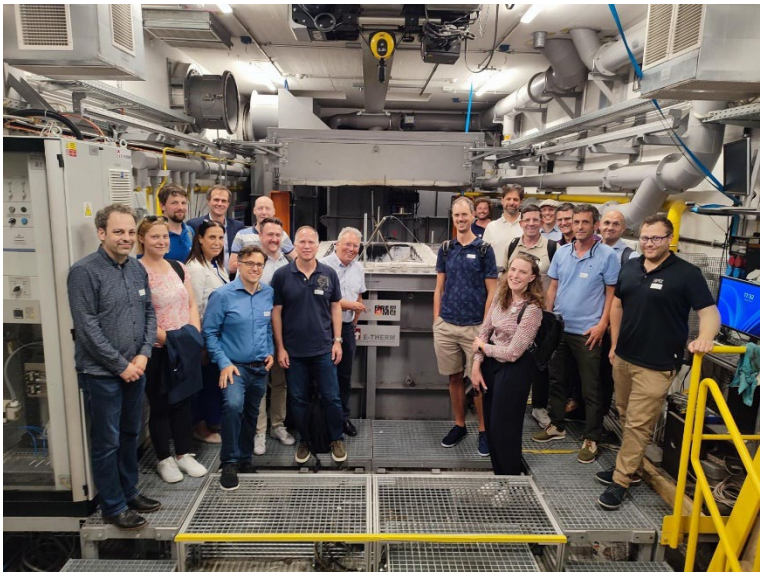
In September we celebrated the 15th year anniversary of Proff. Frangi Chair of Timber Structures with a conference where Dr. Schmid presented the background of the fire resistance design framework and Dr. Klippel presented about performance based design method for exposed timber structures.

Dr. Schimd presenting on the 15th year anniversary of Proff. Frangi at ETH Zurich.



Over the past few months, our group has actively disseminated research findings:

- ICSBE 2025 Pre Conference Webinar Timber and fire: innovations in fire-resilient timber construction given by Dr. Klipel and C. Karanagodage in October.
- Webinar on the content of the upcoming Eurocode 5 part 1-2 (fire) in Spanish to the IPV, catedra maderamen by F. Pérez.
- Seminar to the Zurich Fire Brigade about fire performance of innovative structures by Dr. Klipel.
- Presentation about fire safe design of composite timber-concrete structures at a local conference of Swiss structural engineers organised by Holcim.
- Short presentation on the fire research activities by the group to the SFPE members that attended the SFPE Switzertland GA meeting followed by avisit to our laboratory.



Fire Simulator visit after SFPE Switzerland General Assembly at ETH Zurich.

We fostered collaborations through:

- Hosting visiting PhD student Andres Ollino from Tallin University during his work on part of the experimental campaign on the project **Mechanical properties of timber at elevated temperatures** from September 2025.

Our educational activities include:

- **MAS ETH in Fire Safety Engineering:** The third cohort of our Master of Advanced Studies (MAS) program (https://mas-brandschutz.ethz.ch/) is underway. This two-year, part-time program taught in German is designed for working professionals and delivered in five intensive five-week modules. It covers fire science fundamentals to build the knowledge base for competent fire safety engineers. The last module of the programme was focused on performance-based design partly taught by the ETH Zurich Chair of Risk, Safety and Uncertainty Quantification and guest lecturer Gianluca De Sanctis.
- Starting in September 2026, we will launch a new part-time program specifically tailored for professionals working with Swiss authorities. This program aims to enhance competency regarding upcoming fire safety regulations in Switzerland.

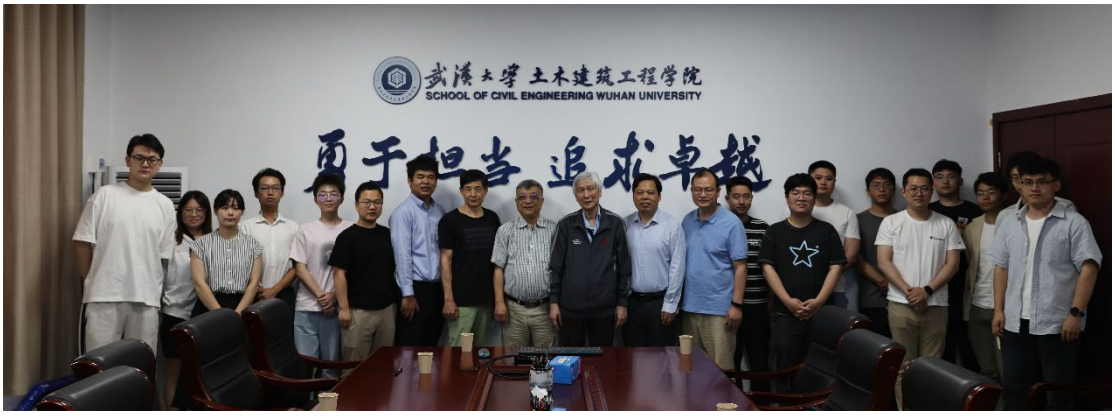
MAS Fire Safety Engineering during live fire experiment at ETH Zurich Fire

Signed: Fernando Pérez Pérez

Fire Testing and Research Center of Hubei Province

Profs. Wai-ki Chow & Siu Ming Lo visited WHU

Professors Wai-ki Chow & Siu Ming Lo delivered seminars at the School of Civil Engineering of Wuhan University (WHU) on April 28, 2025. Prof. Chow, Fellow of the Hong Kong Academy of Engineering Sciences and Justice of the Peace, is Emeritus Professor of Architectural Science and Fire Engineering at The Hong Kong Polytechnic University, Principal Advisor and Distinguished Chair Professor in Aviation Safety at the Civil Aviation Flight University of China. His research focuses on building science, fire safety engineering, and safety science. Prof. Lo is Retired Professor in the Department of Architecture and Civil Engineering at City University of Hong Kong. Prof. Lo introduces his research on evacuation problem senior apartments. Prof. Chow delivered a lecture on simulations of big enclosure fires. Profs. Zheng Fang & Chao Zhang of WHU hosted the seminars.



The center carried out on-site fire experiment

On October 28, 2025, Prof. Chao Zhang's research group conducted an on-site fire experiment at an abandoned building in Qingshan District, Wuhan. The purpose of the experiment was to achieve controlled fire temperatures in a real room. The test confirmed the feasibility of using the group's development for conducting real structure in-situ fire tests. The experiment was organized and implemented by the center, with on-site support provided by the Qingshan District Fire Rescue Brigade of Wuhan.

During the test, Prof. Chao Zhang and the research team closely monitored and recorded the fire development status and data from key measurement points throughout the process. The system collected data from all stages, including ignition, growth, stability, and decay. Subsequent analysis confirmed that the test successfully achieved the target temperature curve and reached the expected levels of heat release rate and temperature distribution. This test differs from standard laboratory environments, as the in-situ test addresses the complexities and uncertainties present in real buildings. This successful attempt has provided valuable technical data for subsequent research on the response of building structures during real fires and post-fire assessments.

Prof. Chao Zhang lectured at Summer School of Fire Dynamics Modelling 2025

Prof. Chao Zhang taught "CFD for Structural Safety" at the Southern European Summer School on Fire Dynamics Modelling held in Padova on June 23-27, 2025. In many European countries, the new performance-based regulatory context for fire safety allows for increased design flexibility. But this flexibility comes with an additional challenge for fire safety engineers that should learn and apply the new tools for modeling fire dynamics. Following the great experience and the lead of the Forschungszentrum Jülich Summer School, this summer school offers to the participants an improved understanding of the underlying theory and algorithms of fire modeling, with a special bend to fire safety application purposes. It is dedicated to the fire safety engineers and scientists that already are proficient fire modelling tools users.

The Conference on Fire Simulation and Expo was followed completing the courses for the summer school. Prof. Zhang delivered a talk on structural fire testing for the conference. Two graduate students from WHU attended the summer school and the conference.

Invited by Dr. Emanuele Gissi, Professional Fire Chief of Corpo Nazionale dei Vigili del Fuoco, Roma, Prof. Zhang visited and delivered a talk at the Genova Fire Brigade after visiting Padova. He, as a representative of the Fire Department of Wuhan City, the largest city level fire department in China, discussed the collaboration potential between the Genova and Wuhan city.

The last stop of Prof. Zhang's visit to Italy is the Chinese Embassy in Rome, where he met with a Minister-Counselor and discussed the collaborations between China and Italy on firefighting and rescue.

Prof. Chao Zhang delivered plenary talk at ICFSFPE 2025

From April 26-27, 2025, the 11th International Conference on Fire Science and Protection Engineering (ICFSFPE) was held in Wuhan. Over 500 experts and scholars from more than ten countries and regions participated in the conference both online and offline. ICFSFPE is a major event in the field of fire science and fire protection engineering. It was originally initiated in 2004 by the China Fire Protection Association, Tsinghua University, University of Science and Technology of China, and City University of Hong Kong, with the goal of exploring new trends in the development of international fire science, analyzing challenges in the application of fire protection engineering, and promoting the development of fire science and fire protection technology. Over the years, the conference has been successfully held in cities such as Hong Kong, Taipei, Beijing, Guangzhou, Wuhan, and Nanjing, and has grown into an important academic event that spans regions and disciplines.

SFPE Hubei Student Chapter established at Wuhan University

The SFPE Hubei Student Chapter has been officially approved by the Society of Fire Protection Engineers (SFPE) Guide Committee and established within the School of Civil Engineerin at Wuhan University. The formation of this chapter marks a significant step in creating a high-level international academic platform for students in the fire science and engineering field within the Hubei region.

Leveraging the strong research foundation of Wuhan University's School of Civil Engineering, the SFPE Hubei Student Chapter will organize a series of academic events. These initiatives aim to connect Wuhan University with the global fire engineering community, helping members broaden their international perspectives and enhance their professional competencies and career development. The chapter also intends to collaborate with faculty and students from other relevant institutions across Hubei Province, working collectively to build a vibrant academic organization and a dynamic platform for professional exchange.

Signed: Chao Zhang, Professor, School of Civil Engineering, Wuhan University and Director, Fire Testing and Research Center of Hubei Province

Fire Protection Research Foundation

Fire Protection Research Foundation (FPRF) receives grant funding for a new project - We are excited to announce that our organization has been awarded funding through the FY2024 FEMA Assistance to Firefighters Grant (AFG) Fire Prevention & Safety (FP&S) program to support three important new projects. Each two-year initiative will advance fire service safety, health, and knowledge:

- Ensuring Fire Service PPE Cleaning Best Practices
- Fluorine-Free Foam Application Techniques and Firefighting Tactics
- Solving the Fire Service Cancer Problem: Coordinating and Facilitating Fire Fighter Cancer Research

Notice of recent FPRF research reports

- Measuring Thermal Image Quality for Fire Service Applications -July 2025
- Fire Fighting Foams: Fire Service Roadmap Phase 2 -July 2025
- Review of Smart Features of Buildings and Systems Impacting Fire, Electrical, and Life Safety -July 2025

Notice of recent FPRF webinars

- Sprinkler Protection Guidance for the Modern Warehouse and Automated Storage and Retrieval Systems - August 2025
- Development of Fire Hazard Assessment and Mitigation Solutions for PV Panels Installed on Building Roofs- September 2025

For more information, visit: www.nfpa.org/foundation

Call for Abstracts: Student Research Presentation and Poster Session at NFPA Conference & Expo 2026

Don't miss the opportunity to showcase your research in fire safety. Call for abstracts for student research presentation and poster session at NFPA Conference & Expo 2026 is now open. The deadline to submit abstract is November 10, 2025. Submit your abstract here: https://nfpa.confex.com/nfpa/2026/student/papers/index.cgi

Signed: Emily Kalil

FM Global

New Staff

We are delighted to welcome back Dr Marcos Chaos to FM in the position of Principle Research Scientist within the Fire Hazards and Protection area. Dr Chaos was formerly the technical leader of the Flammability team from 2008 to 2016, making many contributions to pyrolysis modeling and other topics. Having spent the intervening years at Laurence Livermore National Laboratories, we look forward to benefiting once more from his technical leadership and insights into fire dynamic.

We also warmly welcome Dr Luís Gustavo Pires Rodrigues to the role of Post-Doctoral Researcher in the fire modeling. Dr Pires Rodrigues comes to FM from a post-doc position at the University of Connecticut, working under the supervision of Prof. Xinyu Zhao on the topic of radiation modeling. He will be contributing to improving the performance and functionality of fire modeling using FireFOAM.

2026 FM Fire Modeling Workshop – Call for Papers

The FM Fire Modeling Workshop will be held in Q2 2026 at the Four Points by Sheraton in Norwood, MA, USA, with the exact date to be announced. Topics will include experimental, numerical and machine-learning research related to modeling fire and its suppression of solid and liquid fuels, including battery energy storage system. Prospective participants are invited to register and submit abstracts for oral or poster presentation. The abstracts will be evaluated based on their quality and suitability for the objectives of the workshop. Please visit the workshop website for further details: https://fmglobal.github.io/firemodelingworkshop/

Signed: Alex Krisman

Ghent University

Professor Bart Merci is the winner of the 2026 Howard Emmons Invited Plenary Lectureship

Our programme director, Prof Bart Merci of Ghent University, has been selected for the Howard W. Emmond Invited Plenary Lectureship, which he will deliver at the 15th IAFSS Symposium in La Rochelle, France. This prestigious recognition was awarded to Prof Bart Merci for his innovative and significant contributions to a broad range of topics within the Fire Safety Engineering research field.

Read more about the Emmons Lectureship and Bart Merci's work here.

PhD Defence Jeri At Thabari

On Wednesday 25 June, Jeri At Thabari publicly defended his PhD *Systematic Study on Extinction and Re-Ignition on LES Simulations of Buoyant Diffusion Flames'.* Supervisors were Prof Bart Merci and Georgios Maragkos, PhD. We congratulate Jeri on the successful completion of his PhD!

Start of Academic year 2025-2026

As of September, our new students have been flocking in. Thirty-five new Fire Safety Engineers to be! The students who participate in the (International) Master of Fire Safety Engineering come from all over the world, creating a fun and diverse group of people, united by their studies and other shared adventures.

If you want to know more about our students' experiences, be sure to visit our Blog!

The First Xavier Deckers Award goes to Elijah Igweh

During the official Graduation ceremony at Ghent University on 27 September, the very first Xavier Deckers Award was granted. This award honours the best master's dissertation in FSE, upon decision by a dedicated jury, and as such reflects the student's dedication and passion for fire safety engineering and its community. Xavier's family proudly presented the award to Elijah Igweh (who graduated from the IMFSE programme) for his outstanding master's dissertation on H*eat* F*lux* M*easurement* U*sing* C*olour* R*atio* P*yrometry*. Among other IMFSE students' work, this thesis can be found on the IMFSE website under the 'About us' section.

Elijah Igweh has now joined FRISSBE at ZAG - Zavod za gradbeništvo Slovenije as a PhD student, continuing his journey in advancing fire safety research.

More about FSE at Ghent University

Follow us on:

LinkedIn - MFSE @ Ghent University and SFE @ UGent

Instagram - mfse_ugent

Facebook - Master of Science in Fire Safety Engineering – Ghent University

Signed: Natalie Veranneman

The Hong Kong Polytechnic University

4th International Symposium on Lithium Battery Fire Safety (ISLBFS 2025) successfully held in HK

The 4th International Symposium on Lithium Battery Fire Safety (ISLBFS 2025) was held at The Hong Kong Polytechnic University (PolyU) from 30th October to 2nd November 2025, Chaired by Prof. Xinyan Huang. The symposium was founded by Prof. Qingsong Wang and Jinhua Sun (USTC) in 2019. This year, the 4th symposium welcomed more than 300 delegates from over 20 countries/regions, shared their valuable insights towards recent developments in lithium battery safety, fire dynamics, risk assessment, safety technologies, fire impact assessment, simulation methods, and industrial applications.

The symposium included 10 plenary lectures and 6 keynotes lectures plus a roundtable discussion. In total, 230 conference submissions were received, and after a rigorous review process, 120 papers were accepted for oral presentation and 40 for poster presentation. We'd like to thank all participants for joining the symposium and contributing to its successful holding. See official website https://batteryfire2025.com

Tianwei Chu, Liming Jiang, and Asif Usmani honored with IAFSS Philip Thomas Medal of Excellence

Prof. Asif Sohail Usmani

Dr. Liming Jiang

Dr. Tianwei Chu

The 2026 Philip Thomas Medal of Excellence is awarded to BEEE research team for their best paper presented in IAFSS 2023, which is titled "Introducing an active opening strategy to mitigate large open-plan compartment fire development". This research is led by Prof. Jiang Liming (Chief Supervisor of 1st Author and Corresponding author of the awarded paper). The 1st author Dr Chu Tianwei was a PhD student in BEEE, graduated in March 2025, has started his Associate Professorship in China Univ of Mining and Technology.

PolyU Fire Group attends the APSS 2025 and will held APSS 2027 in HK

The Asia Pacific Symposium on Safety (APSS 2025) was held in Jeju, Republic of Korea, 9-12 Nov 2025. This symposium provided opportunities for professionals, researchers, engineers, and students from all around the world to present and exchange research ideas on explosion and fire safety, risk assessment, process safety, occupational safety, and material safety. Dr Zhichao He and Ho Yin Wong won the Best Paper awards. **PolyU will host the Asia Pacific Symposium on Safety (APSS 2027) in Hong Kong, chaired by Prof. Xinyan Huang.**

Dr Anthony Chun Yin Yuen invited as Keynote Speech by AOFSM'6 at Beijing

The 6th Asia-Oceania Symposium for Fire Safety Materials Science and Engineering (AOFSM'6) was held in Beijing, China, from 16th to 18th October 2025. Hosted by Beijing University of Chemical Technology, University of Science and Technology of China and Asia-Oceania Association for Fire Safety Materials Science and Engineering, this symposium brought together renowned international experts and researchers to present their latest academic progress. Dr Anthony YUEN was invited to deliver a talk about "Comprehensive Characterisation and Kinetics Acquisition of Two-dimensional Nanosheet Flame-retardants". We would like to share deepest gratitude to Prof Seng ZHANG (Beijing University of Chemical Technology), the funding chairman of AOFSM Prof Yuan HU (USTC) and others for their efforts. **PolyU will host the 7th Asia-Oceania Symposium on Fire Safety Materials Science and Engineering (AOFSM'7) 2027 in Hong Kong, led by Prof. Bin Fei.**

PolyU researchers secured research funding from GRF and ITC

Prof. Xinyan HUANG secured the Hong Kong Research Grant Council (RGC) General Research Fund (GRF) titled: Smart Forecast of Backdraft Risk and Explosion Hazards Driven by Sensor Data and Fire Images. This project will facilitate the development of intelligent prediction systems for backdraft and explosion hazards using advanced sensor data and fire image analysis. Xinyan also secured the Innovation and Technology Commission (ITC) Mainland-Hong Kong Joint Funding Scheme (MHKJFS) under the National Key R&D Program of China, titled: Key Technologies for Intelligent Firefighting and Emergency Management in Confined Urban Transportation Infrastructure. This project will facilitate the development of cutting-edge intelligent firefighting technologies and emergency management systems for confined urban transportation spaces such as tunnels and underground facilities.

Prof. Anthony Chun Yin YUEN secured the Hong Kong Research Grant Council (RGC) General Research Fund (GRF) Early Career Scheme (ECS) 2025/26 round, project no. 25200925, titled: Development of a Molybdenum Carbide MXene and Bio-based Flame Retardants Interlayer Coating on Lightweight Polymers for Building Fire Safety Performances. This project will facilitate the development of cutting-edge fire coating solutions for soft-furnishing materials (i.e. polyurethane foams).

Prof. Anthony Chun Yin Yuen interviewed by Singtao News Headline Register Fire Engineer Scheme

Working together with the Hong Kong Fire Services Department (HKFSD), Dr Anthony Chun Yin YUEN and his team will further develop the new Register Fire Engineer (RFE) initiative. The new policy aims to streamline business operations by allowing registered fire engineers to conduct safety assessments, reducing processing time from up to 34 days to an average of 8 days. This initiative will be implemented on November 1, focusing initially on food-related establishments.

Profs. Asif Usmani, Xinyan Huang, Liming Jiang from PolyU all involved in the establishment of RFE initiative, as well as the education and interview of future RFEs.

Website for International Research Hub on Smart Fire Safety Engineering is launched

The International Joint Research Laboratory (Hub) on Smart Fire Safety Engineering was initiated by Tongji University, Hong Kong PolyU, Wuhan University, and co-founded by University of Queensland, Nanyang Technological University, Manchester University. Prof Liming Jiang serves as Vice Director of this join lab. The website this international lab (research hub). You can browse the website via this address: https://irhsfse.com/.

New PhD students join PolyU Fire Group

Miss JIANG Yuting, and Mr. ZHENG Hongtao have joined PolyU fire group as PhD students starting in Sep 2025, and Miss SUN Xiaoyu and Mr. CAI Ziqi as Mphil students starting in Sep 2025, all supervised by Prof. Xinyan Huang.

New PhD Graduates

CHEN Cheng has successfully defended his viva on 6 Oct 2025, with high recommendations from his two external examiners: Prof Anthony Abu (University of Canterbury) and Prof LI Zheng (Tongji University). Prof Liming Jiang is his Chief Supervisor and Prof Asif Usmani is his co-supervisor.

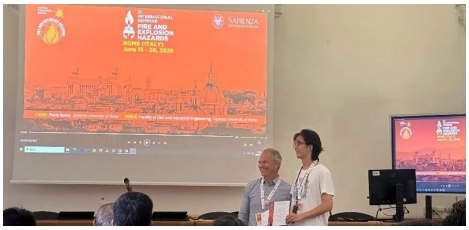
QIN Yunzhu and DOMADA Veera Venkata Ramakanth attended the PhD congregation at HK PolyU on 1 Nov 2025. Yunzhu was supervised by Prof. Xinyan Huang, and his thesis title is "Critical Oxygen supply and combustion thresholds of smouldering fires."

Dr. Domada Venkata Ramakanth is supervised by Chair Prof. Asif Usmani, and his thesis is entitled Multidisciplinary Forensic Investigation of Buildings in Fire: The Case of the Plasco Tower.

Alumnus Dr. Zhuojun Nan joins TU Delft as an Assistant Professor

Dr. Zhuojun Nan has joined Delft University of Technology (TU Delft) as an Associate Professor in Structural Fire Engineering. Specializing in advancing structural fire safety and urban resilience. Her research leverages advanced structure-fire modelling, multi-scale experiments, and technologies like AI and digital twins. With a PhD from Hong Kong Polytechnic University where her work earned the SFPE Foundation Student Scholar Award, she has contributed to Hong Kong International Airport major projects and pioneered works such as AI-assisted structural fire analysis within the Smart Urban Resilience and Firefighting (SureFire) project.

PolyU Fire Group attended 11th International Seminar on Fire and Explosion Hazards.

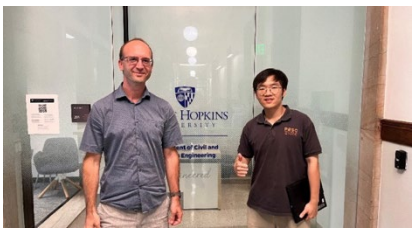


Lei Zhang and Yichao Zhang, PhD students in PolyU Fire Group attended 11th International Seminar on Fire and Explosion Hazards in Roma, Italy in June 2025. Yizhao Zhang presented his research about the impact of smoldering wildfires on the plant roots. Lei Zhang presented a speech about early emergency cooling for mitigating the onset of battery thermal runaway. **Lei Zhang was also selected as Best Student Presenter Award.**

Yifei Ding awarded March 2025 SFPE Student Research Grants.

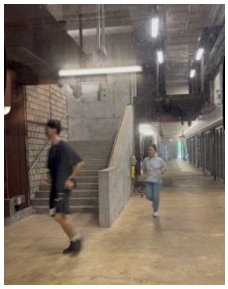
Yifei Ding, PhD student in PolyU Fire Group awarded March 2025 SFPE Student Research Grant funded $5K for his project, "Intelligent Assessment of Structural Fuel Load and Damage Degree in Wildland-Urban Interface (WUI) Fire." Yifei will develop a database of geographic and structural information about buildings in fire-prone areas, and then ultimately use that data to train an AI model to forecast structural damage in a WUI fire. The outcome of the project could potentially optimize WUI fire spreading simulation, firefighting strategies and evacuation planning for an entire community.

Yifei Ding has ended his joint Ph.D visiting program in the Johns Hopkins University.



Yifei Ding, PhD student has ended his joint PhD visiting program in the Johs Hopkins University hosted by Prof. Thomas Gernay from February to August 2025. Yifei conducted his research about intelligent structural fuel load assessment and impacts on WUI fire modelling supervised by Prof. Thomas Gernay. He also attended the PhD level course of structure fire safety in Johns Hopkins and learned a lot about professional structure fire dynamic simulation software. During his visiting program, he also attended three international academic workshop and conference in USA.

PolyU Fire Group held two real fire drill tests in Hong Kong FASA and Hong Kong Pui Ying School



PolyU Fire Group held a real fire drill in a simulated metro station in Hong Kong Fire and Ambulance Services Academy (FASA) in September 2025. Students and research faculties in PolyU Fire Group organized and participated in the drill test to collect pedestrian dynamic data in underground confined spaces. In November 2025, they organized another real fire drill in Hong Kong Pui Ying Secondary School for the middle school students. This drill tested the feasibility and reliability of intelligent dynamic signage system developed by PolyU Fire Group and its Start-up company GABES.

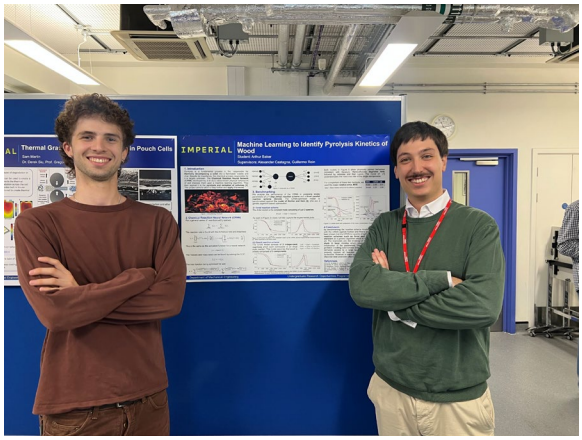
Signed: Dr Xinyan Huang, The Hong Kong Polytechnic University, China

Imperial College London

Hello friends of Imperial Hazelab! Welcome to another update of our recent activities on research and engineering.

For more news visit our website, publications, or watch our video.

Graduating and arriving students



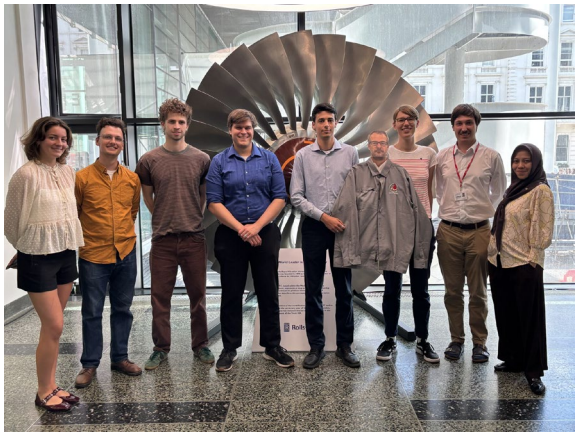
This past month we said goodbye to two of our Hazelab members. **Nick Kalogeropoulos** successfully passed his viva in July and is now moving to the US, where he will be taking on an exciting new position in wildfire modelling at Cloudfire. **Harry Mitchell**, after 8 years as part of Hazelab, is also leaving us to join Trigon, and we wish him the very best in this next chapter. On a brighter note, we are delighted to welcome to Imperial **Mauro Innocente** as Advanced Research Fellow, who will be working on drone swarms for wildfire emergencies. We are also excited to have **Auriane Javaloyes** officially joining the group as a PhD student, funded by Knauf, where she will be focusing on the fire performance of mineral wool used in building insulation. Over the summer, we also had a UROP student, **Arthur Baker**, joining the group to work on Machine Learning for pyrolysis kinetics. Finally, we have welcomed **Frixos Papachristodoulou** as a research assistant to investigate the influence of vapour pressure deficit on wildfires.

Awards

We are thrilled to announce that **Nick** has been awarded the 15th IAFSS Best Thesis Award (Europe and Africa) which he will receive next summer at the International Symposium in La Rochelle. His thesis, titled "Wildfire Simulations to Protect Rural Communities and Avoid Dire Evacuations", focuses on the development of joint wildfire dynamics – evacuation models to ensure rural community safety.

At the 11th International Symposium on Fire and Explosion Hazards (ISFEH), held in June in Rome, **Alexander Castagna** was awarded "Best student-led paper" for his study on "Physics-based model for wood charring accurate for a wide range of compartment fire conditions". For his teaching the Combustion Safety and Fire Dynamics module at Imperial College London, **Alexander** was awarded the "Best Graduate Teaching Assistant" in the Department of Mechanical Engineering.

Internal events and visitors



In May, we welcomed members of the Civil Protection of Greece, for an exchange on wildfire emergencies.

Taking advantage of Interflam in London, we were also honoured to host several international visitors at Imperial Hazelab:

- Jonathan Hodges who introduced Jensen Hughes' work and research.
- Jason Floyd from UL Fire Safety Research Institute, who gave a seminar on sub-grid scale chemistry modelling in FDS.
- Sara McAllister from the USDA Missoula Fire Sciences Laboratory, who shared an overview on wildfires research.
- Vincent Brannigan, Professor Emeritus at the University of Maryland, gave a talk on performance-based fire safety regulation, with Barbara Lane from ARUP among the attendees.

We welcomed to Imperial the editorial board of Fire Technology concurrent with the 60th birthday of the journal.

More recently, we were pleased to host Juan Carlos Pina from Universidad de Santiago de Chile, with a talk on timber fires in buildings.

Conferences and outreach

The past six months have been incredibly busy for Hazelab in the department of conferences and outreach. In May, **Nick** and **Auriane** attended the WFRM's 3rd Wildfire Risk Management Clustering Event, held in Brussels in May. There they presented a poster on the layers of wildfire protection. Also in May, **Guillermo Rein** introduced and **Hanna Berry** attended a training course lead by Nicholas Bartlett on NFPA 855, the standard for the installation of stationary energy storage systems.

Nick and **Guillermo** attended and presented at the SFPE AI in Fire Engineering Summit at UC Berkeley, **Guillermo**'s Alma Mater. **Guillermo** then took the opportunity to visit the Pacific Palisades community in California after the disastrous wildfire that had damaged the area six months prior.

In June, **Alexander**, **Nick** and **Afi Mulyasih** presented their work at the 13th Mediterranean Combustion Symposium in Corfu, where they engaged in discussions with the wider combustion community. A week later, **Alexander**, **Nick**, **Harry** and **Afi** presented their work at the 11th International Symposium on Fire and Explosion Hazards in Rome. It was a great occasion to reconnect with alumni from Hazelab.

Guillermo gave a keynote presentation at the 5th International Fire Safety Symposium 2025 in Ulster, titled "Timber Towers? Enhancing Fire Safety and Sustainability in Modern High-Rise Buildings".

The full Hazelab team – **Alexander**, **Auriane**, **Afi**, **Nick**, **Harry**, **Hanna** and **Guillermo** – attended the Interflam conference in Royal Holloway, just outside of London, catching up with collaborators and discussing new research project while presenting the work of the past year. **Guillermo** gave the plenary lecture of the conference, titled "Wildfires and Safety at the Crossroads: Global Lessons and the Path Forward".

Alexander, **Auriane** and **Hanna** then attended Fired-Up, held at the University of Liverpool. It was a great opportunity to meet with colleagues and friends from the fire science community from the UK!

Finally, **Alexander** presented at the Current Research in Combustion Conference in Cambridge.

Following filming late last year, the Netflix documentary Grenfell: Uncovered was released in June. It is a harrowing look into the Grenfell tragedy and the following inquiry, and it features an interview with **Guillermo** and lab demos on Aluminium Composite Material (ACM) conducted by **Carlos Walker-Ravena** and **Guillermo**.

We were also very excited to participate in the filming with the popular science YouTube channel, Veritasium, for their episode titled: 'This Battery was almost too dangerous to exist" which discussed the development of the Lithium-ion battery and its hazards. **Hanna, Harry, Nik** and **Guillermo** conducted controlled battery fire demos for the video and an interview with **Guillermo** also featured. The video already has almost 20 million views on Youtube.

During a heatwave in August, the BBC published pieces discussing the increased risk of wildfires associated with dry weather, featuring interviews with **Guillermo** across Radio (BBC Today programme), Television (BBC Breakfast) and Online.

SFPE Greater London student chapter

In collaboration with the students of the fire research groups at University College London and King's College London, **Alexander**, **Hanna** and **Auriane** have relaunched the SFPE Greater London Student Chapter, with the aim of uniting London fire research students, promote collaboration and events related to fire research and fire engineering. **Alexander** was elected as the representative from Imperial, with Abdullah Rehman being the representative of King's and Sergio Caponi the one from UCL. They officially launched the Chapter with their first event in October, a London-Fire-themed pub quiz!

Journal Publication

Multidisciplinarity in Fire Science: The Importance of Domain Knowledge in a Wave of New Contributions Fire Technology https://doi.org/10.1007/s10694-025-01821-y

Historical investigation into the first burning model of a solid fuel and the origin of the Crank–Nicolson numerical method Applications in Energy and Combustion Science https://doi.org/10.1016/j.jaecs.2025.100404

Modelling the probability of smouldering ignition of vegetation from hot metal particles ejected by power lines Fire Safety Journal https://doi.org/10.1016/j.firesaf.2025.104537

Visual analysis of firebrand transport from a large mass timber compartment fire Fire Safety Journal https://doi.org/10.1016/j.firesaf.2025.104458

Fire Inside the Cavity of a Non-flammable Facade: Step-by-Step Development of Multiphysics Computer Simulations Fire Technology https://doi.org/10.1007/s10694-024-01680-z

Heatwaves and firewaves: the drivers of urban wildfires in London in the summer of 2022 Fire Technology https://doi.org/10.1007/s10694-025-01737-7

Signed: Alexander Castagna, Auriane Javaloyes, Hanna Berry and Guillermo Rein

INERIS

Work regarding the aftermaths of Notre Dame de Paris Cathedral fire event

On April 15, 2019, a major fire occurred at the Notre Dame Cathedral in Paris. In July 2020, the decision was made: Notre-Dame Cathedral in Paris will be rebuilt identically. Viollet-le-Duc's neo-Gothic architecture would therefore be restored, using the original materials. This means, in particular, rebuilding a solid oak frame covered with a lead roof. The public institution wanted to call on fire safety engineering services to determine more precisely the passive and active safety measures compatible with the requirements of this historic monument (lead roof, no exhaust vents, etc.). Ineris was selected to complete the requested fire safety study and has chosen to use a dual experimental and numerical approach.

The numerical part consists of FDS simulations using a 2-step-specific pyrolysis model, which considers the thermal and burning characteristics of the wood, since one of the objectives of these simulations was to reproduce the fire propagation dynamics. An experimental campaign was designed to provide specific and relevant validation data. The results led to the validation of the power curve (propagation kinetics) of the fire and the behavior of the flames obtained by modeling.

View of the experimental validation in Ineris Burn-hall

Then, those 3D simulations enable the design of specific safety measures, including passive ones, such as structural modifications to limit fire propagation, as well as active ones with a water mist system. The water mist system was evaluated using a numerical model based on four fire scenarios, varying the position of the ignition point, including the nave, transept, base of the spire, and others. In the simulation incorporating passive measures, the activation of the water mist system had a significant impact, as temperatures dropped from 800°C to less than 100°C within minutes. The numerically designed system was then validated based on a scaled mock-up (0.4 times the actual size), with tests conducted both with and without water mist.

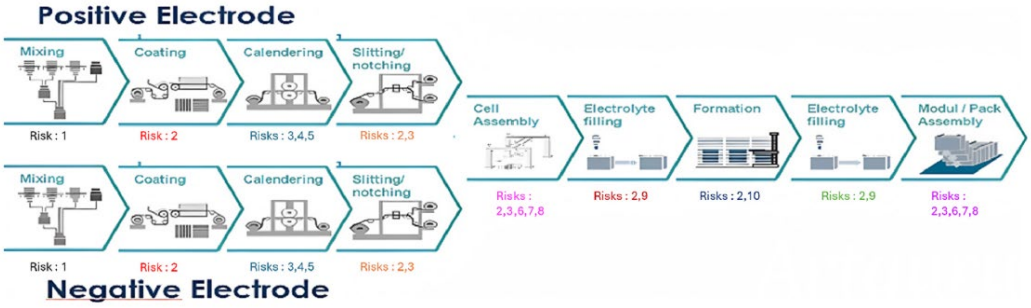
Contact: benjamin.truchot@ineris.fr

News regarding Ineris' recent or on-going commitments in battery safety topic

Active in the field for about two decades in a variety of commitments (research, battery accident investigations, technical support to French CA, commercial testing, standardization, safety information outreach…) since the sudden promotion of e-mobility by the French government, dedicated safety related research still continues on both conventional Li-ion technologies as well as commercially emerging technologies, combining testing at material, cell and pack levels together with development of multiscale modeling. Currently 3 thesis programs are supervised or co-supervised by Ineris scientists:

a) In the context of the EU-funded DESTINY project (https://www.destiny-phd.eu/), and in partnership with the start-up TIAMAT and LRCS UPJV (https://www.lrcs.u-picardie.fr) , Pempa Tshering BHUTIA is about to complete his thesis work about safety of advanced Sodium-ion batteries (SIBs); as regards this work, two papers have already been published outlining in particular that safety claims of SIBs vs LIBs have to be carefully revisited and analysed for all subcategories of SIB technologies; as a matter of fact parent electrolytes used in LIBs and SIBs leads to significant differences in case of a fire as regard thermal and chemical subsequent threats, (see: Batteries 2024, 10, 370. https://doi.org/10.3390/batteries10100370 and Journal of Power Sources 622 (2024) 235234).

b) In another research project associating Ineris, ACC (https://www.acc-emotion.com/fr) and ICMCB (https://www.icmcb-bordeaux.cnrs.fr/), Jordan SETTA's thesis work deals with the development of an improved test reflecting the detailed behaviour of LIB cells when subject to internal short-circuit, one of the more complex modes of triggering the so-called thermal runaway phenomenon: a first review paper has already been published as a contribution in this project (see: Journal of Power Sources 658 (2025) 238265).



Potential manufacturing defects leading to short-circuit risk at use according to manufacturing stage (adapted from Setta's paper).

c) Finally, in the context of the THOR EU-funded project led by CEA (https://thorbatteries.eu/), a third thesis program supervised by Ineris and VUB deals with multiscale modeling of li-ion battery TR and relating consequences.

Main objectives set in the THOR project

Fani Fousika, as PhD student, is working on WP5 of the Thor project. She started at Ineris on November 4th 2024. Her work aims to develop a numerical model capable of predicting the propagation and effects (mainly thermal and electrical) in the event of a thermal runaway of a cell within a battery pack.

Ineris and EDF were very successful in organizing in a collaborative way the event "Battery safety day" that took place on June 2025, 19th in Saclay (France). During one day, more than 200 attendees coming from many European countries and also Japan joined this event dedicated to safety risks on batteries. The conference focused on the risks associated with lithium-ion batteries used in electric vehicles and stationary energy storage. Researchers explained how aging and certain usage patterns could make batteries dangerous or cause fires. Experts also studied ways to better predict and extinguish these fires, as well as techniques to prevent their spread. New safety regulations and the role of firefighters in managing these risks were also discussed. Emerging rechargeable battery safety was also shortly addressed by one of Ineris presenters.

The program of the Battery safety day that was held on June 2025, 19th

Finally, the conference addressed the environmental impact of battery fires and recycling. These subjects were presented by 16 different speakers coming from Japan, USA, Poland, Australia and France (learn on feedback to this event at: https://www.edf.fr/groupe-edf/inventer-l-avenir-de-l-energie/rd-un-savoir-faire-mondial/toutes-les-actualites-de-la-rd/battery-safety-day-une-journee-dediee-aux-risques-et-a-la-resilience-des-batteries).

Contact; thierry.delbaere@ineris.fr

Ammonium nitrate-based fertilizer safety revisited

As it was the case for previous disasters regarding accidental explosions of ammonium nitrate, lots of discussions arose again about the pertinence of the current regulations applicable in France for the safe storage of ammonium nitrate after the Beirut disaster (August 2020, 5th).

Pyrotechnic testing field belonging to URI (USA) used in the study

As a matter of fact, nearly all recent ammonium nitrate disasters (Beirut scenario being no exception) were somewhat delayed mass explosions following a well-developed fire. Among different actions taken on behalf of French competent authorities, a comprehensive review of the potential safety gain that could result from the promotion of medium-dosage AN-based fertilizers (e.g. CAN27, calcium ammonium nitrate containing less than 80% AN with carbonates fillers) over high dosage so called "*ammonitrates*" ones (33.5% nitrogen from AN) was carried out by Ineris in collaboration with Dr Jimmie Oxley's team from URI (Kingston University, RI, USA).

This study, based on testing on both sides of the Atlantic Ocean combining a variety of testing procedures including screening tests (DSC, ARSST) Regulation recognized tests (UN series 2, EU

Resistance to detonation test, UN F2 ballistic mortar test...) and innovative testing (see: Propellants Explos. Pyrotech. 2022, 47, e202200136) was started in 2023, end completed early this year. Most important results are intended to be presented at the next IAFSS symposium, should Ineris, jointly with URI be offered this opportunity based on the supporting manuscript, currently being under review by the selecting committee.

Contact: guy.marlair@ineris.fr

Signed: Guy Marlair

International Master of Science in Fire Safety Engineering

Celebration Day for the Class of 2025

A new batch of Fire Safety Engineers got to celebrate their graduation on 27 June. Twenty-two graduates presented their thesis and held a poster session during lunch. But more importantly, family and friends were able to reunite and celebrate at the lovely Industry Museum in Ghent. Many proud faces, lots of laughs and a couple of tears made this a memorable event.

Congratulations to the Class of 2025!

Online Thesis Event

On 18 September 2025 we held the Online Thesis Event again. During this annual event, all graduating students present their theses via short video presentations. We've received positive feedback from attendees, as this low-threshold event is open to all and is a great way to see what our students have been up to.

If you are interested in joining this event next year and to find out more about the diverse topics that are being researched by our Fire Safety Engineering students, be sure to keep an eye on our social media and website for news on the Online Thesis Event in 2026!

IMFSE Lecturers and alumni win SFPE Foundation Awards

The Dr. Guylène Proulx, OC Scholarship was awarded to 2019 IMFSE alumnus Leo Willem Menzemer. The award recognizes an undergraduate, graduate, or doctoral student undertaking a research project in the field of human factors or human behaviour related to fire or emergencies.

The Jack Bono Award for Engineering Communication is given to a paper published in the SFPE Journal (Fire Technology) in the previous year and to the authors who have contributed the most to the advancement and application of professional fire protection engineering. This year the award went to the article "Repeat Fire Tests of Upholstered Furniture: Variability and Experimental Observations" by David Morrisset from our associated partner, the University of Queensland, IMFSE programme director Rory Hadden and Edinburgh lecturer Angus Law.

Applications for 2026-2027 and Virtual Tour

Applications for the academic year 2026-2027 have opened! For those interested in applying, check out the How to apply page on our website and fill in the application form.

Every year we host a Virtual Tour to guide new applicants and give more information on the programme. This year it will be held on 15 December. Those who are interested in joining should keep an eye on our website or social media for the exact when and where.

More about IMFSE

Check our website http://imfse.be or follow us on

LinkedIn - IMFSE

Instagram – imfse_erasmusmundus

Facebook - International Master of Science in Fire Safety Engineering (IMFSE)

Signed: Natalie Veranneman

King's College

New arrivals

We are extremely happy to welcome two new members to the group, Marissa Dauner and Dr Carolina Cruz-Cordona, who both joined us in October. Marissa will be working on a PhD project on wildfire spread for development of a physics-based global use mode, funded by the ERC Starting Grant FIREMOD. She comes with a wealth of experience in fires and emissions.

Carolina joins as a Postdoc on battery fire modelling, funded by the Faraday Institution SAFEBATT project. She is an expert on continuum modelling and battery technology.

Research

In June, Hosein Sadeghi and Dr Francesca Lugaresi presented two papers at the Eleventh International Seminar on Fire and Explosion Hazards in Rome, focus on their research on lithium-ion battery fire modelling. Francesca presented on Investigating the Heat Transfer to Surroundings from Flaming Batteries Utilizing a Surrogate Fuel Model and Hosein on Flame heat emissions in thermal runaway of 18650-type lithium-ion batteries with thermally active particles. Both papers can be downloaded at the links above.

In September, Francesco Restuccia was honoured to give a plenary talk at ESFSS2025 conference in Ljubljana. He presented a perspective on lithium-ion battery fire safety.

Finally, our group has published several new papers this last quarter, and they can be found on our website, https://heatandfire.github.io/publications.html

Signed: Francesca Lugaresi

University of Lorraine (LEMTA)

Twitter: LEMTA (@Labo_Lemta) / LEMTA-OS Feux (@FeuxOs)

Web site: https://lemta.univ-lorraine.fr

Work in progress

The group is involved in several on-going projects funded by the French research agency (ANR), all being focused on our historical topics within fire-related problems: fire propagation, thermal decomposition, radiative transfer and firefighting with water mists.

- Project PAF focuses on protection against fire using water sprays. Numerical and experimental investigations will be conducted by a dedicated research group built with laboratory SPE from Corsica, EFECTIS and STME-Fire company. Effects related to radiation shielding and façade cooling will be evaluated both at reduced and large scale, to provide new inputs for the evaluation of protection ability.
- RAGNAROCH project aims to contribute to radiative transfer analysis in high-temperature configurations. Its objective is to develop and validate theoretical and numerical tools enabling the use of hyperspectral imaging in real flame scenarios, including real industrial configurations. French laboratories IUSTI, CETHIL, LOA, M2P2 and LEMTA are working together, LEMTA specifically contributing with its experimental means (hyperspectral camera) under the supervision of Gilles Parent.

New projects

Two new projects are also starting:

- RAYFLAM is a new project started on September 2025, with the aim to evaluate a new method for predicting radiative transfer in flame simulations. A Monte-Carlo Method will be combined with a Line-By-Line model for the gas properties. Our ambition is to obtain a benchmark solution for flame radiation, similar to that offered by the MacFP group, and in collaboration with this group of researchers. The innovation lies in the application of a new method tracking photons along their path without splitting the path cell by cell, rather using the concept of "null- collision" to decide wether a photon is absorbed or not. The innovation will also lie on the line sampling. The proof of concept is already available. Results are expected for the next IAFSS symposium to allow further discussion within the Mac-FP group for radiation.

- Finally, SAFE-FAÇADE is another project also funded by ANR. It will gather PPRIME laboratory, Saint Gobain Recherche and LEMTA on a new effort dedicated to facade fires, investigating the role of materials and structure in the propagation. Zoubir Acem is leading the group of LEMTA (to be started in January 2026, with experimental and numerical tasks conducted in parallel).

Highlights:

Exchanges with Chile: As part of the fire science collaboration between the two countries, several visits have been arranged this year to discuss common research topics. Initially, in January 2025, Pedro Reszka (Assistant Professor at Adolfo Ibáñez University) spent one month at LEMTA, where he observed the activities of the fire team, particularly the experimental setups and measurement techniques. At the same time, Juan Pablo Martínez, a student from Adolfo Ibáñez University, spent six weeks at LEMTA. He studied the radiative properties of Chilean pine needles, using LEMTA's infrared spectrometers and exposing some of these needles to the cone calorimeter to determine their response to a controlled heat flux. In May 2025, Rabah Mehaddi visited Adolfo Ibáñez University for a week to strengthen ties with LEMTA. He presented LEMTA's activities, with a focus on his own work on compartment fires and smoke flows, to the Chilean research team in the form of a seminar. In October, Lucas Terrei and Gilles Parent were invited to Adolfo Ibáñez University for two weeks. Lucas Terrei gave a seminar focusing on his research at LEMTA (wildland-urban interface (WUI) fires and wood fire behaviour) and conduct sample degradation tests. Gilles Parent was involved as a teacher for two courses at the Combustion School (3rd APCISS, Valparaíso): one on radiative transfer and the second on spectrometry and radiative emission by flames.

Study of cracking: Similar themes emerged from the work of LEMTA and Adolfo Ibáñez University, resulting in a collaboration to study wood cracking in response to different heat fluxes. In this context, an article was published in collaboration with Boris Aguilar (IMFT). A dynamic detection method for characterizing wood cracking during fire tests was developed, providing quantities such as surface area, length, and number of cracks. Spruce samples were exposed to a wide range of heat fluxes during at least 40 min using a vertical cone calorimeter. An infrared camera with a specific filter wavelength was used to track crack formation. A total of 74 experiments were carried out in air, and seven were carried out in an oxygen-free atmosphere to determine the cracking dynamics of the wood. The results show that the cracking rate and the number of cracks quickly reach a constant value. The heat flux and the presence of oxygen are not dominant factors in wood's dynamic cracking. This work provides quantitative data for readers interested in accounting for cracking and heterogeneous pyrolysis gas release on the surface of a sample (https://doi.org/10.1016/j.firesaf.2025.104546).

Arrivals

Idir Khaldi, joins the fire team for a thesis entitled: Study of the ignition and propagation of 'zombie' fires. This thesis, both experimental and numerical, aims to develop an experimental bench with controlled thermal conditions, using different types of soil. Specific metrology will be set up to study the propagation of heat waves in the soil. Initially, an inert soil will be tested in order to control the boundary conditions, then reactive soils. Finally, different soil strata will be tested to take into account the heterogeneity of the soils. All of these soils will be characterized in order to determine their thermo-physical properties and develop a predictive model.

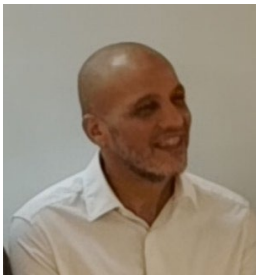
Yaniss Nyffenegger-Péré joined the group on september for a post-doctoral position within the frame of the RAYFLAM project. Yaniss is a specialist of the physics of radiative transfer. He got his PhD in 2023 at the Laplace laboratory, working on the radiative forcing in the earth atmosphere, in relation with CO_2 concentration increase. Then he spent two years in Spain at the Instituto de Astrofísica de Andalucía, applying his skills on the physics of radiation to astrophysics-related problems. At LEMTA, he will be the main developer of the RAYFLAM project, applying his experience on Monte-Carlo methods and spectroscopy, with the objective to develop a new reference model for the radiation emitted from flames. The work will be connected to the benchmarks conducted within the frame of the MacFP group on radiation.

Laurine CAPPON will join the team in November 2025 to complete her thesis entitled: "Fire behavior of external insulation systems for ventilated facades." This thesis work is part of the ANR SAFE FACADE program (2025-2029), which aims to develop an innovative multi-scale method based on large-scale and laboratory-scale experiments supported by numerical modeling to better understand the fire behavior of the new facade system, propose safe constructions and new safety barriers to limit the spread of fire. The objective is to numerically study facade systems and fire barriers in order to validate the Fire Dynamics Simulator (FDS) code. To do this, Laurine will also conduct laboratory-scale experimental tests and participate in larger-scale tests

PhD Defenses

Lucie Lapillonne and Eric Verret defended their thesis work on late 2024. Lucie worked on the Modeling of the interaction between a mist and a fire controlled by the ventilation, as part of a collaboration with NAVAL Group and INERIS. Eric applied machine learning to optimize protective systems based on intumescent materials within a collaboration with UMET laboratory.

Congratulation to... Zoubir Acem!



Our colleague Zoubir ACEM just got the french accreditation to head research (the "HDR diploma"). He brilliantly presented his research work to a panel of specialists who appreciated the richness of his work in fire science, in particular on radiation, thermal decomposition, flame characterization and protection using water mists. This step will now allow Zoubir to apply for full Professor positions, a well-deserved promotion considering his passion and the quality of his research work. Congratulations Zoubir!

Signed Lucas Terrei and Pascal Boulet, at LEMTA laboratory, University of Lorraine and CNRS.

University of Liverpool

The Fire Safety Engineering Group at the University of Liverpool (UK) is composed of two academics and five PhD students involved in research projects related to fire risk, structural fire engineering, international fire incidents, fire financial evaluations, fire dynamics, fire resilience and sustainability, EV and car park fires.

New Members

Jim Bridgeman started his PhD on "Unravelling the data behind battery fires" on 1st October 2025 under the supervision of Dr Martina Manes and Dr Xu Dai from the University of Liverpool and Dr Ulises Rojas-Alva from ZAG-Frissbe. He is part of the CDT N0mes and will be involved in the MSCA Staff Exchange eRISIKO.

Ming Xiyue, new PhD student has joined our fire research group on the 1st of October 2025, with topic "Quantifying Fire Size, Structural Failure, and Water Pollution from Lithium-Ion Battery Fires in Ro-Ro Cargo Maritime Firefighting.", under the supervision of Dr Xu Dai, Dr Martina Manes, Dr Yi Dong, and Prof. Mohaddeseh Mousavi Nezhad from UoL, Dr Zhuojun Nan from TUDelft, and Hamed Zoghi from SOCOTEC

Research project

2025 MSCA Staff Exchange eRISIKO The 2025 MSCA Staff Exchange Grant eRisiko project (Grant: 101236710) funded by the European Commission was awarded to the Universidad de Navarra, University of Liverpool, Universiti Putra Malaysia, ZAG-Frissbe and Akedemi Bomba Malaysia with the support of Efectis. The overarching aim of eRISIKO is to enhance the fire safety of buildings in the context of the growing presence of EVs by developing a dynamic, AI-powered fire risk assessment tool for fire safety design and real-time assessment, supported by robust experimental data and integrated with energy management and regulatory studies. Recognising the rapid evolution of EV technology, the intent is to create adaptable regulatory frameworks and tools that remain relevant amidst technological advancements. To achieve this, eRISIKO leverages international staff exchanges and interdisciplinary mobility, enabling researchers to collaborate across institutions, share expertise, and apply cross-border insights to conduct this research.

Conferences and Outreach Activities

2025 16th International Interflam Conference (London, UK)

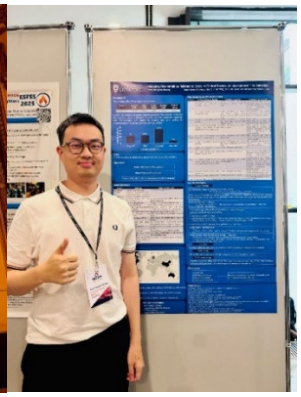
PhD student Morvarid Koohkhezri presented her research on "A round-robin study from 12 UK fire services on the fire safety of open-sided car parks: is current guidance adequate?" under the supervision of Dr Xu Dai, Dr Martina Manes, and Charlie Hopkin (Ashton Fire Ltd.). This work was also in collaboration with Michael Houghton (Ashton Fire Ltd.), Lynsey Seal (London Fire Brigade), Sara Waring (University of Liverpool), Stephen Welch (University of Edinburgh), and Richard Clark (National Fire Chiefs Council).

2025 National Fire Chiefs Council Data, Digital and Technology Conference (Solihull, UK)

Dr Martina Manes was invited to the National Fire Chiefs Council (NFCC) Data, Digital and Technology Conference on 1st July 2025. She presented the work related to the impact of COVID-19 on fire incidents of houses in multiple occupancy, developed with my MEng Graduate Rachel Foster, and participated with Georgios Tzoumas and Savvas Gkantonas in the panel led by Jo Stoner on the possible approaches to strengthen the collaboration between academia and the Fire and Rescue Services.

2025 5th European Symposium on Fire Safety Science (Ljubljana, Slovenia)

PhD Student Yam Hongxin Zhuang participated in the 5th European Symposium on Fire Safety Science in Ljubljana, Slovenia and contributed with an oral presentation on "A Systematic Review of International Standards and Codes Towards a Unified Framework for Fire Financial Losses" and a poster presentation on "Mapping Fire Variables Related to Costs: A Critical Review of International Fire Statistics" under the supervision of Dr Martina Manes, Dr Xu Dai (University of Liverpool) and Prof Eric S. Lin (NTHU)



2025 NTHU and University of Liverpool Annual Bi-Lateral Conference

PhD Student Yam Hongxin Zhuang presented his ongoing research at the NTHU and University of Liverpool Annual Bi-Lateral Student Conference. He engaged with fellow researchers and received valuable feedback as he continues developing his PhD research under the supervision of Dr Martina Manes, Dr Xu Dai (University of Liverpool) and Prof Eric S. Lin (NTHU).

Invited presentation -2025 IFE CPD Seminar

On 12th May 2025, Dr Martina Manes was invited as a speaker for the CPD organised by the Institution of Fire Engineers London Branch. Her presentation was focused on the influence of cooking practices and social fires in residential kitchen fires.

Research visit

2025 Carleton University (Ottawa, Canada)

Dr Martina Manes had the pleasure of visiting Mohamed Beshir at Carleton University in Ottawa. His Ember Research Group is composed of talented researchers conducting high-quality fundamental and applied investigations in fire safety engineering. She was invited as a visiting academic in one of Mohamed's postgraduate courses, delivering a lecture on international fire incident data and discussing the importance of comprehensive data interpretation to support reliable, evidence-based analyses in fire safety engineering. She also had the opportunity to visit the National Research Council Canada/Conseil national de

recherches Canada (NRC) laboratories, which provide extensive capabilities for small, medium, and large-scale fire testing. Discussions with NRC were constructive and identified opportunities for future collaborations.

2025 York University (Toronto, Canada)

Dr Martina Manes visited Dr John Adam Gales at York University, exchanging perspectives on current research directions in structural fire engineering. A unique opportunity to reconnect and explore potential synergies in advancing the field through collaborative research initiatives.

Events

2025 Seminar Prof Luke Bisby of the University of Edinburgh

On 28th April 2025, Prof Luke Bisby gave an afternoon seminar at the University of Liverpool. His inspiring and constructive talk discussed how to ensure fire safety in the face of a climate emergency, with a particular focus on mass timber buildings, highlighting the need for a critical and comprehensive investigation of fire safety aspects. The audience, composed of 40 participants, asked questions on existing applications, competencies and sustainability.

The event was organised in collaboration with Liverpool University Women in Science & Engineering, and a special thank you goes to Lisa Barker and Sophie O'Hanlon for their unique support and professionalism.

2025 Fired-Up Conference at the University of Liverpool

PhD Students Yam Hongxin Zhuang and Morvarid Koohkhezri hosted the Fired-Up Conference 2025 on the 10th of July, welcoming early-career researchers from across the UK to the University of Liverpool for two days of knowledge sharing, collaboration, and innovation.

This student-led conference provided a dynamic platform for emerging voices in fire safety engineering to present cutting-edge research on topics ranging from fire dynamics and sustainable design to lithium-ion battery hazards and wildfire behaviour, engage in interactive poster sessions, and network with peers to exchange insights and strengthen the fire safety community. The programme highlights included opening remarks by Professor Nigel Cassidy, introducing the Department of Civil and Environmental Engineering and emphasising the importance of fire research and research-led innovation, student presentations from institutions including Imperial College London, University of Edinburgh, UCL, Carleton University, and the University of Liverpool, a city tour of Liverpool and a networking dinner fostering collaboration. Sincere thanks to every presenter, poster author, and participant for contributing with their expertise and curiosity. The professionalism and energy of the participants shaped an unforgettable event, demonstrating how student initiatives can advance fire safety research and practice.

2025 OFR Career Event

On 27th October 2025, OFR hosted a Career event at the University of Liverpool, in partnership with the School of Engineering and the Liverpool Engineering Society. The event raised awareness of fire safety as a field and provided an overview of a career in fire safety consultancy.

Visiting Academics

2025 Dr Yu Wang of the University of Science and Technology of China

On 8th July 2025, Dr Yu Wang of the University of Science and Technology of China visited the University of Liverpool. His research group covers several topics, including glass and compartment fires based on complex experimental campaigns and advanced simulations. Constructive discussions supported future collaborations between our universities.

2025 Dr Mohamed Beshir of Carleton University

Dr Mohamed Beshir from Carleton University visited the University of Liverpool on 10th July 2025. His research group works towards the advancement of knowledge in the field of fire safety. Their ongoing work demonstrates integration between experimental, analytical, and modelling approaches to address contemporary challenges in fire science.

Summer placement

2025 OFR Summer Placement

MEng Student Ali Saaed completed an internship with OFR Consultants. Over the 10 weeks, he had the opportunity to work alongside talented fire engineers on a wide range of tasks, from capacity assessments and damper reviews to preparing a site visit report, as well as contributing to graduate-level tasks that gave him a real insight into the profession. A special thank you to Jamie Clark, Yifan Li, Richard Rankin and all the engineers and staff in the Manchester office for the continuous support and advice during his time at OFR.

Summer project

2025 EPSRC Vacation Bursary

John Hussey (MEng student in Civil Engineering), under the supervision of Dr Martina Manes, worked on the EPSRC Vacation Bursary in the Summer of 2025 on research focused on a "Gap analysis on existing UK building regulations for wildfires" in collaboration Dr Emma McIntyre and Ms Greta Gall of ARUP.

Signed: Martina Manes

Lund University

Education

Our previous 15 ECTS course in *Fire Safety Systems* has been redesigned and divided into two new courses:

- Passive Fire Safety Systems (6 ECTS)
- Active Fire Safety Systems (9 ECTS)

These courses are part of the new five-year (B.Sc. + M.Sc.) programme in Fire Safety Engineering. They are being offered for the first time this autumn to a group of 40 students.

Students visiting DBI, Denmark, 2025

The updated courses include several new learning activities, such as laboratory exercises using the Single Burning Item (SBI) setup and a study visit to the Danish Institute of Fire and Security Technology (DBI) in Copenhagen to explore their fire testing laboratories.

In addition to these courses the planning and preparations for courses in Methodology in the Fire and Rescue Services (7,5 ECTS), Explosion Dynamics (7,5 ECTS) and Evacuation Modelling (7,5 ECTS) are currently on-going at the division.

The planning of the 40th year celebration of the fire engineering educational programs at Lund University is on-going. Celebrations are planned to take place in spring 2026.

Research

A wide range of research projects is currently underway at the division. Ongoing work includes studies on the fire safety of wood and mass timber structures, façade fires, tunnel fires, hydrogen and battery safety, human behaviour in fire scenarios, and smart firefighting technologies, among others. An overview of the division's research projects and outputs can be found on the Division's profile - in Lund University's Research Portal

Positions and personnel

Marcus Höjgaard and Sujith Ghazaryan have both joined the division as new PhD students focusing on fire safety related to batteries. Marcus holds an M.Sc. in Materials Chemistry from Chalmers University of Technology, Sweden. Sujith holds a master's degree in Thermal and Fluids Engineering from Amrita Vishwa Vidyapeetham, India and brings valuable experience from his previous work at Mercedes-Benz. Both Marcus and Sujith are supervised by Dr. Marcus Runefors.

Cecilia Wetterqvist has joined as an industrial PhD student employed at Bengt Dahlgren Fire Research. Her research focuses on decision making and sustainable fire safety, under the supervision of Prof. Margaret McNamee and Dr. Brian Meacham.

Anush Ghazaryan has also joined the division as a Research Assistant, where she will apply her expertise in VR/AR technologies to real-world studies of human behaviour in fire in collaboration with Dr. Enrico Ronchi.

Dr. Brian Meacham will receive the Kunio Kawagoe Gold Medal at the upcoming IAFSS Symposium. This prestigious award, presented by the International Association for Fire Safety Science (IAFSS), recognizes outstanding lifetime contributions and achievements in fire science and engineering.

Congratulations, Brian, on this well-deserved and distinguished honour!

Our PhD student Leo Willem Menzemer has been selected as the 2025 recipient of the Proulx Scholarship for his research advancing the understanding of human behaviour in fire. This prestigious award honours individuals who continue Dr. Guylène Proulx's legacy in human behaviour studies within the field of fire safety. Congratulations, Leo!

In June, Professor Haukur Ingason retired and stepped down from his position as Adjunct Professor in the division. Professor Ingason has made valuable contributions through his teaching in tunnel fire dynamics and his supervision of PhD students. We wish him all the best in his well-deserved retirement.

In October, Dr. Robert McNamee's adjunct lectureship came to an end. Dr. McNamee has been an important part of our activities, particularly through his teaching in heat transfer for our second-year students and his supervision of PhD candidates. Robert will continue to be affiliated with the division as a co-supervisor of PhD students, and we look forward to continued collaboration with him in various research projects.

Presentations at conferences and events

Senior staff and PhD students have presented at several international conferences the last half year. Here are some of the events where divisions staff have presented.

- Interflam 2025 – 16th International Conference and Exhibition on Fire Science and Engineering
  June 30 – July 2, 2025, London, UK.
- 5th European Symposium on Fire Safety Science (ESFSS 2025)
  September 3–5, 2025, Ljubljana, Slovenia
- International Conference on Hydrogen Safety (ICHS 2025)
  September 23–25, 2025, Seoul, South Korea
- 21st Annual Meeting of the Northern European Network for Wood Science and Engineering (WSE 2025)
  October 7–9, 2025, Växjö, Sweden.
- SFPE Annual Conference & Expo 2025
  October 21–23, 2025, Vancouver, Canada
- SFPE Engineering Solutions Symposium: Addressing European Lithium-Ion Battery Fire Safety Challenges
  November 11–13, 2025, Lisbon, Portugal

Upcoming events

PhD thesis defence

Arthur Rohaert will defend his doctoral thesis, *Driving Behaviour During Wildfire Evacuation*, on December 4th, 2025, at 09:00 CET at the Division of Fire Safety Engineering, Lund University. The thesis investigates how people drive when evacuating from wildfires, how this behaviour differs from everyday traffic, and how these differences can be modelled to improve the effectiveness and accuracy of wildfire evacuation planning. The defence is public, and all are welcome to attend, either in person or online, Zoom: https://lu-se.zoom.us/s/69763852633

BIV-conference

Lund University will host the "BIV-dagarna" 2026, the biennial conference organized by the Swedish SFPE chapter, on March 24–25, 2026. The conference serves as a key meeting place for professionals, researchers, and students engaged in or interested in fire engineering in Sweden.

Human Behaviour in Fires Symposium 2026

On October 6th-8th 2026, we will host the Human Behaviour in Fires Symposium at Campus Helsingborg, part of Lund University (Sweden), which will be co-chaired by Dr Enrico Ronchi from Lund University and Prof Daniel Nilsson from University of Canterbury. The event will gather the Human Behaviour in Fire community and will cover a wide range of topics including behavioural data collection/analysis, AI/VR/AR/BIM applications in human behaviour in fire, Evacuation modelling, Crowd dynamics and management, Outdoor fire evacuation, Egressibility and inclusive evacuation, Fire safety training. All info about the event are available here: https://humanbehaviourinfires.se/

More information

More information about the Division, are available on www.brand.lth.se. You can also follow our updates via our linkedin page: https://www.linkedin.com/company/fire-safety-engineering-lund/

Signed: Nils Johansson

University of Maryland

NSF Awards $900K to Project Enhancing Fire Investigation Training Models

The National Science Foundation (NSF) has awarded a $900,000 grant towards an initiative set to improve fire investigation training programs, which will address a training gap that could enhance post-scene analysis quality for public safety. Shuna Ni, Assistant Professor in FPE, will lead the development of a multimodal embodied fire investigation training platform that focuses on immersive experiences to better equip fire investigators with skills for determining fire origins and causes. The platform will bridge the gap between conventional classroom instruction and the challenging realities of post-fire investigations. At UMD, co-principal investigators include Ruohan Gao, an assistant professor from the Department of Computer Science, and FPE Professor Stanislav I. Stoliarov, with collaborators from Lehigh University and the University of Florida. For more details visit

https://fpe.umd.edu/news/story/nsf-awards-900k-to-project-enhancing-fire-investigation-training-models

UMD Team Contends in Semifinals of XPRIZE Competition to End Destructive Wildfires

A multidisciplinary team of students, faculty and staff from UMD participated in the last stage of semifinals in the XPRIZE Competition to End Destructive Wildfires—a four-year challenge to incentivize subject matter experts to design innovative technologies that detect, characterize, and respond to wildfires before they become destructive. Team "Crossfire," led by members of FPE and xFoundry@UMD, advanced to semifinals earlier this Summer after demonstrating a system with a three-step approach: detection, reconnaissance and suppression. The team, which includes researchers in the Departments of Aerospace Engineering, Mechanical Engineering, Maryland Robotics Center, UAS Research and Operations Center (UROC), and the Maryland Fire and Rescue Institute (MFRI) began the work for this system after entering the competition in the Spring of 2024. "We started working on this project almost two years ago and, from the very beginning, we knew that the UMD ecosystem had a considerable amount of expertise relevant to this problem," said Fernando Raffan-Montoya, Assistant Professor of FPE and a team lead. For more details visit

https://fpe.umd.edu/news/story/umd-team-contends-in-semifinals-of-xprize-competition-to-end-destructive-wildfires

Scientists Develop AI-Based Software to Enhance Wildfire Forecasting

Researchers studying artificial intelligence algorithms are developing tools to assist first responders with high-resolution images and accurate fire spread software—enhancing the functionality of operational wildfire forecast models. Ali Tohidi, Assistant Professor in FPE, is studying AI algorithms that could assist stakeholders and decision makers by providing them with more reliable wildfire progression forecasts. He presented two of his developing models at the 2025 AI in Fire Engineering Summit at the University of California, Berkeley, and the 2025 Engineering Mechanics Institute (EMI) Conference, in Anaheim, California. One of the platforms that he is developing could aid researchers by curating a dataset of high-resolution observational data. The software utilizes data engineering techniques combined with computer vision algorithms to create a clearer view of the fire progression and help interpret and segment the active fire area in the region of interest. It works by displaying a dashboard of images masked by AI algorithms to a human expert who in turn ensures that the correct active fire area is identified. For more details visit

https://fpe.umd.edu/news/story/scientists-develop-aibased-software-to-enhance-wildfire-forecasting

High School Design Challenge Ignites Interest in Fire Protection Engineering

"Fire" and "lit"—popular Gen Z slang—took on a literal connotation for the more than 200 teens at an engineering competition hosted on Friday by the UMD FPE Department. Students from 11 area high schools put their FPE skills to the test in the 11th annual FPE Design Challenge, which culminates in a Burn Day event, where students see how their designs stand up to fire. Over several months, small teams of students create from supplied materials a fire detection, notification, and suppression system design for a reduced-scale two-room apartment, complete with furniture, carpet, and wall coverings. While most teams use a hardware and software kit—that includes a circuit board and light or heat sensors that trigger the release of water, baking soda and vinegar, or another fire suppressant—students may opt to use a chain reaction-type design. Teams are asked to spend no more than $50 beyond the materials they receive and to account for all materials used. For more details visit

https://fpe.umd.edu/news/story/high-school-design-challenge-ignites-interest-in-fire-protection-engineering

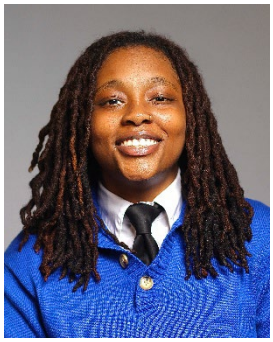
Nicole Hollywood Awarded SFPE Fire Protection Person of the Year

Nicole Hollywood, Associate Director, was honored with the 2025 SFPE Fire Protection Person of the Year Award. The awardee is recognized for an outstanding contribution that is broad in scope and has lasting effects on FPE. The awardee must come from outside the SFPE membership. Hollywood was selected for her recruitment for the FPE industry through the UMD FPE Department. For details visit

https://www.sfpe.org/membership/awards/awardshonors/personyearrecipients

Announcing the 2025 Master's Fellows in Fire Protection Engineering

The FPE Department announces the 2025 awardees of the John L. Bryan Chair Graduate Research Assistantship and the Fire & Risk Alliance (FRA) Fellowship, who will be conducting research in fire dynamics and fire protection challenges in energy storage systems. Eric Bridges, Jr. M.S.'26 is the recipient of the John L. Bryan Chair Graduate Research Assistantship. A recent graduate of Eastern Kentucky University with a bachelor's degree in fire protection and safety engineering technology. His M.S. thesis advisor will be Peter Sunderland. Autumn Walton M.S.'26 is the recipient of the Fire & Risk Alliance (FRA) Fellowship. She is a graduate of the North Carolina Agricultural and Technical State University with a bachelor's degree in architectural engineering. Her M.S. thesis advisor will be Stanislav Stoliarov. For details visit



https://fpe.umd.edu/news/story/announcing-the-2025-masterrsquos-fellows-in-fire-protection-engineering

Fire Protection Engineering Students Recognized with Academic, Service and Leadership Awards

Each year the A. James Clark School of Engineering at UMD celebrates exceptional undergraduate scholars through its Honors and Awards, which recognize students for their academics, leadership, and service. Maryland Engineering honored 76 undergraduates—among them 5 students in the FPE Department—who exemplify the college's commitment to excellence at this year's ceremony event, held April 24 in the Stamp Student Union. "We always encourage our students to develop leadership skills," said Arnaud Trouvé, FPE Department chair. "We celebrate in these awards student leaders who demonstrate outstanding academic achievements or outstanding service to the department and to the engineering community. These students make us particularly proud!" The NFPA Ambassador Award recognizes students who have served as exemplar FPE ambassadors in promoting the major, and was awarded to Robert 'RJ' McCandless. The FPE Department Service Award recognizes student service, with a focus on increasing community success and workforce development of the engineering community here at UMD, and was awarded to Sam Farren. The SFPE Outstanding Senior Award, sponsored by the Chesapeake Chapter of SFPE, recognizes the senior student who has the highest GPA in the cohort, and was awarded to Nicholas Mertz. The Robert J. Taylor Academic Achievement Award, sponsored by the Salamander Honorary Society, recognizes the junior student who has the highest GPA who has participated in the program for at least an academic year, and was awarded to Ryan Vacek. The FPE Department Chair's Award, in recognition of a student who made a significant contribution to the department's mission and vision through their service and leadership during the year, was awarded to Tori Latham. For details visit

https://fpe.umd.edu/news/story/fire-protection-engineering-students-recognized-with-academic-service-and-leadership-awards

Howard Baum, Research Professor, Dies at Age 89

Howard R. Baum, Glenn L. Martin Research Professor in the FPE Department, and retired National Institute of Standards and Technology (NIST) fellow, died at the age of 89 at his home in Gaithersburg, Maryland. Born April 3, 1936, the late professor earned a bachelor's degree in aeronautical engineering in 1957, and a Master of Science in applied mathematics in 1959 from the Polytechnic Institute of Brooklyn. He later attended Harvard University, where he earned a doctorate degree in applied mathematics in 1964. Prior to joining UMD, where he retired in 2020, Baum was first a research physicist and then a fellow at NIST, where he worked between 1975–2006. He had previously served as a senior scientist for Aerodyne Research Inc. between 1971-1975, and as a lecturer and assistant professor in the Division of Engineering and Applied Physics at Harvard University. For details visit

https://fpe.umd.edu/news/story/fire-protection-research-professor-and-retired-nist-fellow-dies-at-age-89

Announcing the 2026 WUI Fire Engineering Summit

We are thrilled to host the 2026 WUI Fire Engineering Summit on the UMD campus on August 10-12, 2026. We look forward to working with the SFPE Foundation and Fire Safety Research Institute to make this event both enjoyable and productive. The Summit will bring together researchers and practitioners for a review of the state of the art on WUI and urban fires, with the ambition to develop new engineering solutions to this challenging societal problem. The Call for Abstracts will be announced in late 2025. For more details visit https://www.sfpe.org/2026wuisummit/home

Theses Published in 2024

The following M.S. theses were advised by FPE faculty and published in 2024:

- Kyra Cromwell Reed, *Design and Performance Exploration of a Scaled-Up Milligram-Scale Flame Calorimeter* (Advisor: Fernando Raffan-Montoya).
- Thomas DiPietro, *Experimental Characterization of the Thermal Response of Firefighter Protective Ensembles Under Non-Flaming Convective Exposure* (Advisor: Fernando Raffan-Montoya).
- Siriwipa Kamma, *Development and Validation of a Pyrolysis Model for Flexible Polyurethane Foam* (Advisor: Stanislav Stoliarov).
- Shubham Pimple, *A Study of Cool Diffusion Flames Utilizing Ignition Delay Characteristics of n-Heptane Autoignition Simulations* (Advisor: Peter Sunderland).

For details visit https://fpe.umd.edu/MS-theses

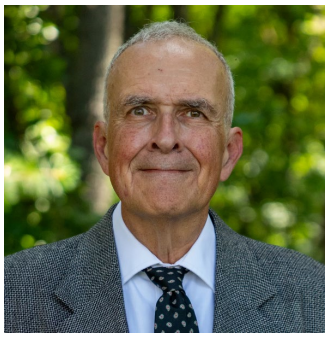
Signed: Peter Sunderland

NIST Fire Research Division

The NIST Fire Research Division (FRD) is excited to be back and fully operational after the prolonged US Government shutdown. We are eager to return to supporting the fire research community.

NIST is actively working toward the 2026 release of a new online educational tool designed to reduce community losses from wildland urban interface (WUI) fires. This resource will guide homeowners and city officials through the Hazard Mitigation Methodology (HMM) – a performance-based approach to structure, parcel, and community hazard mitigation. Commissioning and cold-flow experiments are nearing completion for a new medium-scale wind tunnel [2.4 m square cross-section; 12 m length]. This wind tunnel will enable the study of vegetation fires with controlled, well-characterized wind underneath the 10 MW and 20 MW calorimeters in the National Fire Research Laboratory. The Fire Dynamics Simulator (FDS) team is targeting a major release of FDS 7.0 (FDS Roadmap) in the coming calendar year. To explore our current projects and stay informed with the latest news, visit the Fire Research Division website.

Celebrating Two Lifetimes of Passion for Fire Science



Glenn Forney (Source: NIST)

Glenn Forney received the 2025 Arthur B. Guise Medal from the SFPE Foundation. Glenn single-handedly developed numerical and information tools for zone fire models and scientific visualization of computational results from CFAST and FDS in the Smokeview software. Dr. Forney was recognized for his rare combination of capabilities that include a thorough understanding of fire physics, an exceptional grasp of applied mathematical and computational methods, and the ability to lead technical efforts to practical ends through innovation and persistence. The Guise Medal recognizes eminent achievement in the advancement of the science and technology of fire protection engineering.

Alex Maranghides (Source: NIST)

Alexander Maranghides received the 2025 Samuel J. Heyman Service to America Medal for decades of research into how fires that occur in communities adjacent to wildlands spread, what can be done to prevent them, and how to protect life and property. The Samuel J. Heyman Service to America Medals honor exceptional public servants who keep the United States running and moving forward. This premier awards program for career federal employees, known as the Sammies and considered the "Oscars" of public service, shines the spotlight on remarkable accomplishments that benefit the nation, seeks to build trust in our government and inspires more people to consider careers in public service.

Postdoctoral Research Associateship Program

National Research Council (NRC) Research Associateships are awarded to exceptionally talented postdoctoral and senior scientists and engineers through a rigorous selection process. These selected individuals are granted tenure as guest researchers at NIST. Interested postdoctoral candidates are encouraged to review and apply to Research Opportunity Descriptions that are available online.

Signed: Isaac Leventon

University of Melbourne - FLARE Wildfire Research Group

FLARE is a unique team in Australia, integrating laboratory fire experiments with large-scale field studies to advance the understanding of wildfire behaviour. Its Fire Lab, equipped with over AU$1.5 million in custom-built equipment, enables detailed studies of fire dynamics and behaviour, vegetation flammability, ember attack, and fire impacts on communities and ecosystems. Experiments are conducted to understand how different vegetation types ignite and burn under varying heat exposures, wind speeds, and moisture levels, and how fire affects species resistance, regeneration potential, and soil heating. Essential fire properties such as heat release rate, flame spread rate, and ignition delay are measured to improve both wildfire behaviour models and building standards. FLARE's work extends far beyond the laboratory: the field research programme is active across Australia and internationally, deploying cutting-edge equipment to gather data in planned and ecological burns. The core team consists of interdisciplinary researchers from the University of Melbourne's FLARE group and extends beyond fire behaviour, with specialists in fire dynamics, behaviour and risk, fire ecology, and fuel flammability.

Leadership

The Fire Behaviour theme of FLARE is led by A/Prof Alex Filkov, an internationally recognised expert in wildfire behaviour with over 20 years of experience translating experimental and modelling research into practical applications.

Waseem Hittini - Research Fellow

Waseem joined the group in August 2025. He specialises in the modelling and experimental investigation of fire spread, building directly on his PhD research at The University of Queensland. His current work is centred on improving understanding of wildfire behaviour in plantation landscapes through laboratory experimentation, data analysis, and modelling. In particular, he is examining the fire-behaviour characteristics of plantation fuels to help define the critical conditions for canopy ignition and to support the development of a predictive canopy-ignition model. Alongside this, he is developing and calibrating fire-package sensors designed to measure three-dimensional wind speed and heat fluxes for deployment during field experiments and prescribed burns.

Brendan Holyland - Research Fellow

Brendan recently completed a project funded by the New South Wales Rural Fire Service (Australia) to evaluate building standards in the WUI and house risk assessments during the 2019–2020 Black Summer fires. His findings indicate that spatial factors, especially proximity to other impacted buildings, are the strongest predictors of damage, surpassing traditional metrics like distance to vegetation or slope. Smaller houses and those near large, continuous forest patches with tall canopies were more vulnerable. The study also identifies vulnerabilities in current construction materials and reveals that theoretical Bushfire Attack Level predictions based on Australian Standard 3959:2018 underestimated actual fire conditions. These findings highlight the weaknesses in the regulatory framework and emphasise the need for improved fire exposure models, better vegetation descriptions, and stronger building requirements to prepare for future wildfires.

Mohamed Mohamed - PhD Candidate (University of Melbourne).

Mohamed's research integrates experimental testing, CFD modelling and machine learning to deliver new insights into structural vulnerability in WUI fires. In particular, he investigates the combustion behaviour and ignition mechanisms of large-scale decking materials (e.g. pressure-treated wood and wood–polymer composite) exposed to firebrand piles under Wildland–Urban Interface fire conditions. He collaborates on experimental work with researchers from the University of Maryland, UC Berkeley, and the Fire Safety Research Institute (FSRI) of UL Research Institutes in the US, as well as with Carleton University in Canada on CFD modelling. You may have met Mohamed at the 11th International Seminar on Fire and Explosion Hazards (2025), where the paper "Firebrands-Induced Cavity Development in Pressure-Treated Wood Decking" was recently presented and published.

Alberto - PhD Candidate (Université de Corse, France & The University of Melbourne).

Alberto's research focuses on modelling medium- and long-range transport of firebrands using coupled Fire–Atmosphere models such as MesoNH–ForeFire. During his year with the FLARE group, he collaborated with CSIRO in Canberra, using their vertical wind tunnel to study Eucalyptus firebrands, and worked with the Bureau of Meteorology and the University of Queensland to compare radar scans of wildfire plumes with simulation outputs. When not working on models or experiments, he can usually be found running in the mountains.

Ha-Ninh Nguyen - PhD Candidate (The University of Melbourne & Université de Corse, France).

Ninh's work is aimed at improving the accuracy of wildfire spotting models by characterising firebrands (embers) generated from forest fuels. He combines laboratory-scale experimentation with 3D model reconstruction to understand how fuel type, structure, and burning conditions influence firebrand generation. Under controlled combustion experiments, he quantifies firebrand geometry, mass, and temperature, then couples these measurements with modelling frameworks such as MesoNH–ForeFire to improve predictive capability for spotting behaviour. This research supports the development of more accurate fire spread models and informs mitigation strategies to reduce ember-driven impacts on communities.

Habtamu Getnet Gessesse - PhD Candidate (The University of Melbourne).

Habtamu's project focuses on examining the resprouting ability of perennial grasses under the combined effects of different fire intensities and dryness levels. His research is conducted under controlled conditions in glasshouses and laboratories. The grasses are treated to simulate drought conditions and then exposed to either low or high-intensity heat exposures using a Variable Heat Flux apparatus. Currently, he is underway to apply these laboratory findings to real-world field conditions. Additionally, Habtamu has been actively participating in various conferences, including the 7th Fire Behaviour and Fuels Conference, to share and discuss his research findings.

Min-Chien Wu (Debby) - Master student

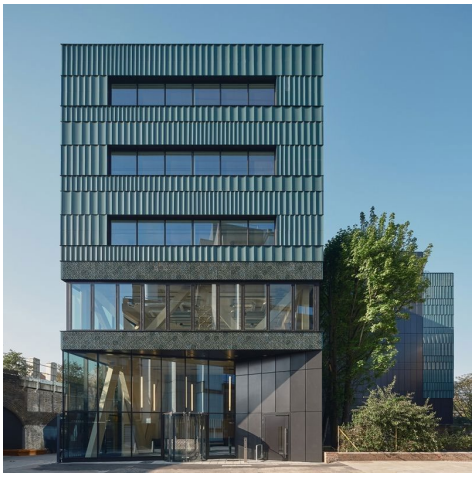
Debby's work examines how defensible spaces (i.e., asset protection zones) at the Wildland–Urban interface are defined, designed and regulated across various international jurisdictions. This project is funded by the International Fire Safety Consortium in collaboration with Lund University, Insurance Institute for Business & Home Safety, and the University of California, Berkeley. The project compares separation distances, fuel-modification requirements and implementation practices; evaluates the scientific evidence for effectiveness, including species selection, arrangement and maintenance; and identifies gaps to guide future research and potential harmonisation of standards. Using a systematic literature review and policy/guideline analysis, Debby compiles peer-reviewed and grey literature, surveys building codes and fire management guidance, and develops a comparative framework spanning fuel types, terrain and maintenance strategies.

If you are interested in working on wildfire research, please contact Alex Filkov; more information about FLARE can be accessed via the following link: https://www.flarewildfire.com/

Signed: Waseem Hittini

OFR Consultants

OFR continue to contribute to the international project led by the University of Greenwich to develop an Information Delivery Specification for fire safety engineering through buildingSMART International (bSI). This project links with the PhD research of Chan Sorayudh Chanthan at the University of Greenwich which is partly funded by OFR.



Paradise - The Institution of Structural Engineers

We would like to extend our congratulations to Antonela Čolić who successfully defended her PhD on 'Bond line performance at elevated temperature in engineered wood products' as the result of her research carried out at the University of Edinburgh under Prof. Luke Bisby, Dr Angus Law, and Dr Felix Wiesner from the University of British Columbia (UBC). Antonela has now joined the OFR London office. Related to our collaboration with leading mass timber suppliers to undertake meaningful research, generate pragmatic fire safety guidance, and work with leading universities to support PhDs, at the recent Structural Timber Awards we were part of the team that were awarded Project of the Year, Commercial / Infrastructure Project of the Year and Engineer of the Year for our work on Paradise SE11.

Members of OFR were involved in six presentations and posters at Interflam in July, including some of the work by Antonela and Chan. Copies of the papers are available in the OFR ResearchGate archive.

Signed: Michael Spearpoint

Université de Poitiers

New PhD student – Mohamad FAWAZ, working on "Flame propagation along a solid material – application to WUI"

My name is Mohamad Fawaz. After obtaining a Bachelor's degree in Physics from the Lebanese University, I pursued a Master's degrees in France in *Energy of Complex Fluids* at Le Havre University. Currently, I am a PhD student in the Heterogeneous Combustion (CH) research group at the Pprime Institute, under the supervision of Thomas Rogaume and Franck Richard. My thesis focuses on flame spread and pyrolysis on combustible surfaces, with applications to Wildland Urban Interface (WUI) fires. This work is part of a broader effort to better understand the vulnerability of buildings in wildfire-prone regions, particularly in Nouvelle-Aquitaine, where recent large-scale fires have highlighted the urgency of the problem.

During a fire, wood combustion involves a cascade of complex physical and chemical processes. When exposed to heat, wood undergoes *pyrolysis*, where solid material decomposes into gases, char, and tar. This process is highly nonlinear, influenced by internal heat transfer, moisture transport, and secondary reactions within the porous structure. To capture these condensed-phase phenomena, I use the PATO (Porous Analysis Toolbox) code, originally developed by NASA and adapted for wildfire applications.

At the same time, the gas phase flame propagation above façades is governed by turbulent combustion, radiation, and convection, all of which strongly interact with the release of pyrolysis gases. These processes are modeled with FireFOAM, a CFD solver that employs Large Eddy Simulation (LES), turbulence closures, and radiation models to resolve the dynamics of flames spreading along surfaces.

A special focus of my work is the coupling of these two approaches: linking the detailed condensed-phase modeling of PATO with the turbulent gas-phase simulation in FireFOAM. The aim is to build a unified solver capable of capturing the entire chain of wood combustion — from pyrolysis inside the material to flame propagation in the surrounding atmosphere. By bridging these scales, my research seeks to provide new insights into ignition thresholds, flame spread dynamics, and ultimately to support the development of more fire-resistant building practices in wildfire-prone regions.

New PhD student – Fredys Romero-Menco, working on "ignition and propagation of a smoldering front in a porous medium applied to the "zombie" fires issue"

My name is Fredys Romero – Menco; I hold a master's degree in mechanical engineering (MsC) and mechanical engineering degree, both from the University of Antioquia (Colombia). My research experience has been focused on, and related to the design, development and characterization of hydraulic power turbines at small scale (under 10 kW) to isolate communities without a reliable electricity supply. The last 3 years, I have been working on the development of strategies to quantify and reduce the pollutant emissions and the improvement of efficiency in biomass gasification cookstoves. Moreover, I worked as a teacher on specialization at postgraduate school, and technical training institutions in fields related to renewable energies and energy efficiency. At industry level I have developed my career in the energy industry as operation and maintenance engineer in hydroelectric power plants and as project engineer in a company dedicated to the corrective maintenance of hydraulic turbines.

Recently I started my 1st year of doctorate at University of Poitiers in the specialty of energy, thermal and combustion at Pprime institute under the supervision of Dr. Frank Richard and Pr. Thomas Rogaume. My investigation topic is the ignition and propagation of a *smoldering* (or *smouldering*) front in a porous medium applied to the *"zombie"* fires issue. This phenomenon is presented in soils rich in organic matter, as the peat and lignite, in which the fire spread beneath the surface and is capable of persist for long time periods, displace long distances, and even, according to the circumstances, reignite surface fires.

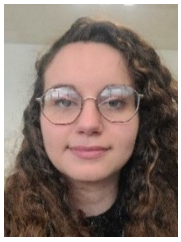
The study will be addressed under numerical and experimental approaches. In the numerical approach, an underground fire propagation model will be developed following a multi-scale approach that let us study the physicochemical phenomena involved in the fire spread, such as the heterogeneous and homogeneous reactions which are related to the porous media properties (humidity, composition, etc.). The numerical model will be implemented on the Porous Analysis Toolbox based on OpenFOAM (PATO, by its acronym) simulation code.

In the experimental approach a laboratory scale bench test will be designed and constructed to reproduce the conditions of the *smoldering* process in the peat rich soils. This setup will include the implementation of several measurement equipment (High-speed and thermal IR cameras, Gas analyzers, thermocouples, etc.) and data acquisition systems that allow us to study the influence of the environmental conditions that favor the ignition of

the pyrolytic front and the ignition of vegetation cover, besides the characterize the propagation mechanisms considering the porous media properties of.

Through these 2 scientific approaches finally we could understand better the processes of ignition of the *smoldering* front, propagation of the reaction and the transition to *smoldering* to a crown fire. A good understanding of these processes could help to prevent the reignition of the surface and with this all the environmental issues derived of the wildfires.

New post-doctorate position – Manon Arreteau, working on "MURTERFEU project- Fire behaviour of various earth-based construction techniques"



I am Manon ARRETEAU, an Industrial Ceramics Engineer, graduated from ENSCI Limoges, and hold a PhD in Civil Engineering from the University of Caen. My doctoral research focused on the 3D printing of cementitious pastes, exploring how different mixtures and printing methods affect mechanical properties and durability. Currently, I am a postdoctoral researcher in the Heterogeneous Combustion team led by Thomas ROGAUME at the P'PRIME Institute in Poitiers. I am working on the MURTERFEU project, which is part of the Fire Safety section of the Projet National Terre (National Earth Project). The goal of MURTERFEU is to study the fire behaviour of various earth-based construction techniques—such as bricks, rammed earth, lightweight earth, and earthen plasters—and to support the use of raw earth in wall systems requiring fire risk assessment. This collaborative project brings together four university laboratories (CY Cergy Paris University, IMT Alès, University of Pau and Pays de l'Adour, and University of Poitiers), an accredited testing centre (Efectis), and a professional association for raw earth construction (ASTERRE).

New research project - PSGAR GRIFON – Management of Multiple Risks in Forests of Nouvelle-Aquitaine

The PSGAR GRIFON project (*Management of Multiple Risks in Forests of Nouvelle-Aquitaine*) is a large-scale scientific initiative supported by the Nouvelle-Aquitaine Region and coordinated by INRAE. Its objective is to better understand, anticipate, and manage the multiple risks threatening regional forests — including wildfires, storms, droughts, pests, and diseases — in the context of climate change. By combining ecological, economic, and social approaches across multiple scales (stand, landscape, and territory), GRIFON aims to strengthen the resilience of forest socio-ecosystems. The project brings together fundamental research, modeling, knowledge transfer to forest management, and stakeholder training to develop innovative and sustainable strategies for the future of forests in Nouvelle-Aquitaine.

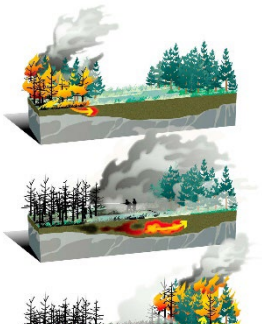


Figure 1: Zombie fire

Within this framework, the Poitiers team contributes to the component focusing on wildfire risk, which represents one of the most critical threats to forests in Nouvelle-Aquitaine. In recent years, several large-scale fires — notably the Landiras fires of 2022 — have highlighted the magnitude of this issue. Due to the geological characteristics of certain areas in the region, where peat and lignite layers are present, a new and particularly challenging fire behavior has been observed: the so-called "zombie fires." These underground fires are difficult to detect and extinguish, as they can smolder below the surface for long periods and later reignite surface fires that were believed to be contained. This phenomenon was dramatically illustrated in Landiras in 2022, where a re-ignition event led to the destruction of an additional 7,400 hectares of forest.

Figure 2: Cone calorimeter

The research conducted in Poitiers will combine field, laboratory, and modeling approaches. Fieldwork will focus on the collection of soil samples from affected areas, followed by laboratory analyses to determine their chemical composition and physical properties such as porosity, permeability, and moisture retention capacity. Controlled experimental studies will then be carried out to reproduce and analyze the smouldering process under various environmental and material conditions, in order to better understand its ignition, propagation, and extinction mechanisms. In parallel, numerical modeling and simulation will be developed to represent and predict the behavior of underground fires. The ultimate goal of this integrated approach is to establish practical guidelines and management strategies that can assist firefighters and forest managers in the detection, monitoring, and suppression of this type of incident.

This research is conducted in collaboration with the University of Bordeaux and the I2M laboratory, combining expertise in porous media, material behavior, and risk management to improve understanding and mitigation of wildfire propagation in the region.

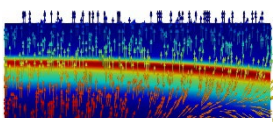


Figure 3: Pyrolysis front

New project SAFE-FACADE Sustainable Architecture for Fire safety and Evaluation of façades, supported by the French Government

One objective of the SAFE-FACADE project is to better understand the fire for ventilated façades equipped with different fire barriers which performance is evaluated by the British standard BS 8414 and evaluated using the

European standard test EN ISO 13785-1. A second is to anticipate the recent harmonized European standard and a third to develop new intermediate-scale experimental protocols of characterization permitting a large number of tests at reduced cost in order to support innovation and the development of new constructive solutions.

Thus, by understanding the key processes involved for a given façade system and a given mounting, the project aims to support the development of innovative constructive solutions safer in the event of a disaster, considering the two main families of fire scenarios that are possible:

- A thermal attack external to the construction, threatening the façade by its exterior.
- A thermal attack coming from the inside of the building itself or passing from the external surface of the façade to the interior of the façade system.

The project will study new constructive solutions, notably passive elements such as metal strips or active materials such as intumescent fire stoppers.

The greatest added-value of the project is to develop an innovative multi-scale method based on large-scale and laboratory-scale experiments supported by numerical modelling to:

- Better understand the fire behaviour of the new façade system, to propose fire safe constructions and to propose new security barriers to limit the fire propagation.
- Develop new intermediate-scale experimental protocols of characterization permitting a large number of tests at reduced cost in order to support the French companies in their innovation and the development of new constructive solutions.
- Consider the new European test and regulation for the French industrials.

Signed: Thomas Rogaume

University of Queensland

UQFire welcomes new PhD students

Anjana Rameshan

Anjana is a PhD student enrolled in the UQ-IIT Delhi joint PhD programme. She commenced her studies in July of 2025, and is supervised by Dr Anwar Orabi and A/Prof David Lange from UQ, and Dr Svetha Venkatachari and Prof Vasant Matsagar from IITD.

Anjana has a strong background in finite element analysis, with her master's thesis focusing on numerically evaluating the performance of cold-formed steel sections under axial loading. In the joint PhD programme, Anjana will combine her strong numerical background with her passion for the environment by looking at the impact of bushfire on structures of different material within the wildland urban interface.

Her main objective is to formulate a holistic structural fire design methodology for structures within the WUI.

Recent Graduates and New Staff

One outstanding PhD student specialised in fire research graduated from UQ in 2025. Congratulations to Dr Waseem Hittini!

Assessing the Influence of Model Complexity on Flame Spread: An Integrated Experimental and Numerical Study

Waseem Hittini, supervised by Felix Wiesner, David Lange, and Juan Hidalgo

Waseem examined how modelling complexity influences the predictive capabilities of flame spread models. He proposed a taxonomy that classifies approaches by their assumptions and sub-models, then used it to design two bespoke experiments: one to provide assessment parameters for simplified analytical models, and a second to generate high-resolution data for evaluating coupled Pyrolysis–CFD tools.

He also explored the possibility of embedding seeding particles within fuel composites for Particle Image Velocimetry, enabling velocity measurements in buoyant flames. The Pyrolysis–CFD dataset spans in-depth temperatures, heat release, flame and pyrolysis-front progression, gas-phase temperatures, soot extinction coefficients, and two-dimensional velocity fields, offering a benchmark for Pyrolysis–CFD model evaluation. Using these measurements, he quantified the errors introduced by common simplifying assumptions in analytical flame-spread models. He also investigated how condensed-phase model

complexity affects predictions of time to ignition, pyrolysis-front advancement, and in-depth temperature profiles during the flame spread process.

Waseem has now joined the FLARE Wildfire Research Group at the University of Melbourne, where he is advancing understanding of wildfire behaviour in plantation landscapes, defining the conditions for canopy ignition and supporting the development of predictive models

Achievements

SFPE Student Chapter awarded the Gold Medal

The SFPE UQ Student Chapter ran a packed learning program and hosted 17 webinars and 3 workshop-style sessions covering mass-timber fire resistance, high-rise timber design with case studies from Japan, thermomechanical behaviour of steel-timber composites, AI in fire safety, autonomous fire response systems, fire-door performance, and the big regulatory shifts in NCC 2022 and 2025. Most sessions were recorded and posted to our YouTube channel so students and practitioners could catch up and share highlights.

A standout moment was the SFPE Asia Oceania Fireside Talks on 2 August 2024. This collaborative forum brought together five student chapters from UQ, the University of Canterbury, Hong Kong, Hefei, and Shanghai. Eight invited speakers shared straight-to-the-point advice on career development, setting research directions, and moving into industry. The format blended short talks, open Q&A, and themed breakout rooms, which made it easy to swap ideas, compare notes, and build new connections across the region.

All of this consistent, collaborative, and practice-aware programming paid off. The chapter earned the SFPE Gold Award for Chapter Excellence (2024–2025), which marks the third time the chapter achieves this distinction. We will look forward to adding this to our other awards once the badge arrives!

UQ Fire turns 10!

Our Introduction to Fire Safety Engineering course was first delivered in 2014 by then Head of School Professor Jose Torero. This was the first course in fire engineering at UQ and was the start of the development of the current program that we deliver. It's hard to believe that Fire Safety Engineering education here is so old. The staff and students had a number of low-key celebrations to mark this, including some close presentations with current and former students and a bigger celebration with close colleagues. We even got to celebrate the wedding of a former PhD student (Congratulations Vinny Gupta!).

We're already looking forward very much to our next big milestone!

Congratulations also to our friends on the other side of the world who recently celebrated their 45th and 50th Anniversaries!

David Morrisset Wins the Jack Bono Award

Dr David Morrisset received the Jack Bono Award for Engineering Communication for his SFPE Student Research Grant–funded work "Quantifying the Statistical Uncertainty of Furniture-Scale Fire Testing." (https://doi.org/10.1007/s10694-023-01523-3)

Dr Anwar Orabi awarded the 2025 Jack Watts Award

Dr Anwar Orabi was one of the recipients of the Jack Watts Award for Outstanding Reviewers which went to the top four out of 900 reviewers for Fire Technology. This award recognises the most dedicated and insightful reviewers whose contributions are essential to maintaining the high quality of the journal. It is given annually to those whose reviews stand out in terms of depth, helpfulness, number, and timeliness.

Ayyappa Thejus Mohan Receives Best Presentation Award

Ayyappa received the Best Presentation Award for his presentation entitled "The Assumptions Trap: Implications for Fire Safety Engineers" at the 5th European Symposium on Fire Safety Science (ESFSS 2025), held last week in Ljubljana, Slovenia. In his work, Ayyappa's work explores the nature of complexity in fire safety engineering and its impact on the role of fire safety engineers.

Zhiruoyu Wang Receives Certificate of Distinction — Best Ph.D. Doctoral Research Project

EOS OpenSees

Announcement the Winners of the

1st EOS OpenSees Research and Innovation Awards

OpenSees

EOS RESEARCH AND INNOVATION AWARD

The Eurasian Association of OpenSees (EOS) is thrilled to announce the winners of the 1st EOS OpenSees Research and Innovation Awards. This award was established to recognize and promote excellence in research, development, and innovative applications related to the OpenSees platform.

We were overwhelmed to receive a vast number of high-quality applications from all over the world, showcasing the global impact of the OpenSees community. The task of selecting the winners was a challenging one, and we extend our sincere gratitude to the international jury for the diligent and impartial evaluation.

After a thorough review process, we are proud to celebrate the following individuals for their outstanding contributions to the advancement of computational modeling and structural analysis.

Congratulations to all our winners and honorees!

The awards will be formally conferred during the next **Eurasian OpenSees Days (EOS) Conference** that **will take place at EPFL in Lausanne, Switzerland, on July 5–7, 2026.**

We thank everyone who participated and contributed to making this inaugural competition a resounding success.

Certificates of Distinction

- **Zhiruoyu Wang** (The University of Queensland) — Supervisors: Dr. David Lange, Dr. Anwar Orabi, Dr. Matthew Mason (The University of Queensland); Dr. Weiyong Wang (Chongqing University).

Zhiruoyu Wang has received a Certificate of Distinction (Best Ph.D. Doctoral Research Project) in the 1st EOS OpenSees Research & Innovation Awards. Established by the Eurasian Association of OpenSees (EOS), the awards recognize excellence in research and innovation on the OpenSees platform, with winners selected by an international jury. Zhiruoyu's doctoral work, "Design and Optimisation of Diagrid Structures for Fire," features an OpenSeesforfire–driven workflow for structural analysis and optimisation design. Zhiruoyu is supervised by A/Prof David Lange, Dr Anwar Orabi and A/Prof Matt Mason from UQ; and Professor Weiyong Wang from Chongqing University.

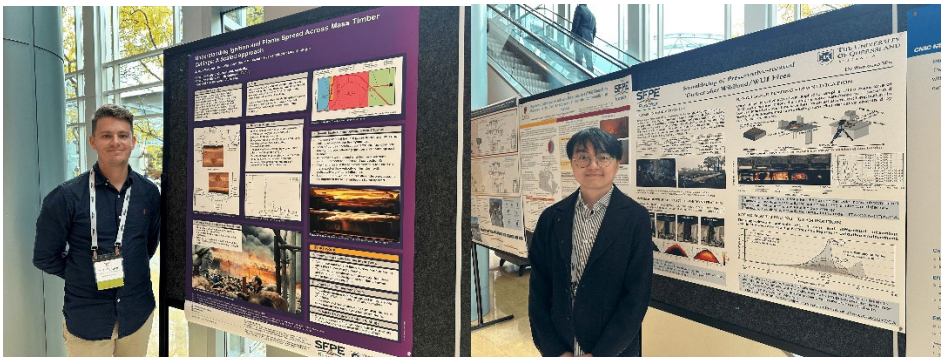
Conferences

World Conference on Timber Engineering 2025

UQ hosted the World Conference on Timber Engineering (WCTE 2025) where scientists, engineers, suppliers and other stakeholders from the timber industry came together to discuss and present key research and developments on timber engineering. Dr Luis Yerman, Dr Wenxuan Wu, Josh Madden, Stavaros Spyridakis, Zeinab Durabi, and many other current and former researchers and graduates from UQFire presented on topics related to the fire safety of timber construction. This ranged from smouldering combustion at the micro scale using detailed analytical and thermochemical techniques, to benchscale evaluation of fire protection methods such as intumescent coatings, and all the way up to compartment-level fire dynamics of timber compartments. It was great to see so many former colleagues and graduates from UQFire at this event and to have the opportunities to reconnect with international colleagues across a range of disciplines and backgrounds.

UQ Presentations and the SFPE Performance Based Conference in Vancouver

Joshua Madden (PhD Student) and Wenxuan Wu (Postdoctoral Research Fellow) presented the SFPE Student Research Grant–funded works "Phenomena Governing the Fire Dynamics in Open-Plan Timber Compartments" and "Smouldering of Preservative-Treated Timber after Wildland/WUI Fires" at the SFPE 2025 Annual Conference & Expo in Vancouver.



Australian Combustion Symposium

UQ are hosting the Australian Combustion Symposium in December 2025 at our St Lucia campus, with Dr David Morrisset on the local organising committee. Several current and former PhD Students will be presenting their work, including Joshua Madden, Zeinab Darabi, Haiyang Fang, and Wenxuan Wu. We're very excited to be part of this event and are looking forward to welcoming back our former head of school, Professor Jose Torero who will be delivering a keynote presentation during the conference.

Signed: Anwar Orabi

RISE Fire Research in Trondheim, Norway

Some of the team from RISE Fire Research in Norway that has worked on the TREEADS project, in front of the Oslo opera house, for the final general assembly spring 2025.

Wildfires: Wildfires in Europe are a severe threat, and in Scandinavia, wildfires are also predicted to become more frequent and severe. We are very proud to have successfully coordinated and completed the **TREEADS** research and innovation project on wildfires (EU grant agreement No. 101036926). In TREEADS, 48 partners collaborated to develop a Holistic Fire management Ecosystem for the Prevention, Detection, and Restoration of environmental disasters from December 2021 to May 2025.

The Norwegian pilot in TREEADS has developed Norway's first wildland-urban-interface **(WUI) guideline** [1] to help in the prevention work towards this coming hazard. We have found that the ignition causes in Norwegian WUI fires differ from those in other locations, in that direct flame impingement is a more common cause of ignition than flying embers, and that it is not during summer, but during spring, that WUI fires cause the most damage to structures [2]. We have also studied **how Norwegian vegetation burns** [3] and developed a **larger-scale test method** to document the fire resilience of materials against WUI wildfires [4,5].

Wildfire field exercise in Kvam, near Bergen 2023 [1]. Details in video: https://youtu.be/RTc8d8if5UM?si=wDa5-Y_lS2OiAwMc

Now the work continues in a project named **WildfireSafe** [6]. The focus is on wildfire safety of homes and other vulnerable establishments in the wildland-urban interface, with joint funding from the Research Council of **Norway** (project no. 352949) and the National Research Foundation, **South Africa** (NOSA240308208391).

Hydrogen and ammonia: Hydrogen and ammonia are promising carbon-free alternative fuels in the global transition toward sustainable energy, but they present significant safety challenges. To address these, large-scale experimental studies have been carried out through the SH2IFT and SH2IFT-2 projects (funded by the Research Council of Norway and industrial partners) at RISE Fire Research. Using hydrogen cylinder bundles and a unique 500 L, 890 bar hydrogen reservoir, the research examined large-scale hydrogen jet fires impinging on obstacles in various configurations and assessed the impact of gaseous hydrogen jet fires on equipment with and without passive fire protection. Additional information can be found in the published paper [7] and the accompanying report [8]. Similarly, within the AMAZE project (also funded by the Research Council of Norway and industrial partners), RISE Fire Research explored practical mitigation strategies for ammonia release on marine vessels using existing onboard fire suppression systems. This study evaluated the effectiveness of high-pressure and low-pressure water mist systems, as well as traditional sprinklers, in absorbing and dispersing gaseous ammonia in confined spaces.

Development of a larger scale test method to document WUI fire safety [4,5]

Safety first! The RISE team is ready for ammonia safety testing.

Battery and EV: The SafeBESS project (funded by the Research Council of Norway and industrial partners) aims to ensure the safe integration of large battery energy storage systems (BESS) in buildings by addressing fire risks associated with Li-ion batteries. In the project, RISE Fire Research has conducted a series of fire experiments at different scales, starting with individual cells and modules and progressing to full-scale experiments in a purpose-built battery room mock-up with ventilation. These full-scale experiments involved different battery systems and evaluated the performance of four suppression technologies: low-pressure water mist, high-pressure water mist, sprinklers, and inert gas systems.

Fire experiments at different scales, for battery cells and modules.

RISE Fire Research is conducting a sprinkler protection project, which builds upon two previous phases of research (*Modern Vehicle Hazards in Parking Structures and Systems*) conducted by the Fire Protection Research Foundation, the research affiliate of NFPA. The project aims to assess the effectiveness of automatic sprinkler protection in the parking structure, considering modern vehicle fire hazards. In the project, RISE Fire Research conducted a series of full-scale experiments on ICEV (internal combustion engine vehicle) and BEV (battery electric vehicle) fires, utilising sprinkler suppression. Together with NFPA and Combustion Science & Engineering, Inc., the results are analysed. Current regulations on sprinkler protection are reviewed and evaluated, and potential updates are discussed.

Thermal runaway is an extreme event, and experimental battery fire studies is critical to understand battery safety.

AI and digitalization: We are conducting a project for the Norwegian Directorate of Civil Protection to explore how AI, digitalisation, and emerging technologies can enhance fire safety in society. As part of this work, we have interviewed fire brigades and technology companies to understand the current status and future opportunities. Our findings highlight existing solutions, such as drones, robots, and IR-equipped helmets, while identifying significant potential in VR training, digital twins, and the automation of tasks like reporting and incident evaluation. The results will be published in a Norwegian report at the beginning of 2026.

Read more from RISE Fire Research:

[1] https://risefr.no/media/publikasjoner/upload/2025/rise-report-2025-23-wui-guideline-norway-treeads.pdf

[2] https://onlinelibrary.wiley.com/doi/abs/10.1002/fam.3292

[3] https://iopscience.iop.org/article/10.1088/1742-6596/2885/1/012066/meta

[4] https://iopscience.iop.org/article/10.1088/1742-6596/2885/1/012069/meta

[5] https://urn.kb.se/resolve?urn=urn%3Anbn%3Ase%3Ari%3Adiva-78726

[6] https://risefr.com/services/research-and-assessments/wildfiresafe

[7] https://doi.org/10.1016/j.jlp.2025.105614

[8] https://sh2ift-2.com/wp-content/uploads/2025/10/SH2IFT-2-RISE-jet-fire-report.pdf

Signed: Ragni Fjellgaard Mikalsen

SFPE Foundation

Events

In 2025, the SFPE Foundation, with the partnership of the NFPA Research Foundation, UC Berkeley Engineering, and the Pacific Earthquake Engineering Research Center, hosted the 2025 Artificial Intelligence in Fire Engineering Summit from May 28-30. The Summit brought together a global community to explore the transformative potential of AI in fire engineering, drawing over 160 attendees from more than 19 countries and 20 U.S. states, reflecting a worldwide interest in this emerging sector of fire protection engineering. Presentations

from leading experts covered a broad spectrum of topics, including the primary drivers of fire risk in California's WUI, machine learning-based models for flammability prediction, verification and validation of AI systems, and AI applications in smart firefighting.

Save the date for our 2026 Summits:

- WUI Fire Engineering Summit, August 10-12, 2026 at University of Maryland, College Park
- Emerging Energy Technologies Summit, December 3-5, 2026 at the National Research Council of Canada in Ottawa, ON

The Calls for Papers for both events will be announced in early 2026.

On the left, Dr. Glenn Forney (NIST) gives his Guise Medal Keynote at the 2025 SFPE Annual Conference in Vancouver, BC, Canada.

SFPE Foundation Student Research Grant, Travel Grant, and Award recipients presented their research, as well. Pictured on the right from left to right are: Joshua Madden (University of Queensland), Dr. Darko Glujic (University of Rijeka), Dr. Wenxuan Wu (University of Queensland), Maria Binte Mannan (University of Maryland, College Park), Amy Metz (Oregon State University), Mohammad Javad Moradi (Carleton University), Leo Willem Menzemer (CERN, formerly of Lund and DBI), and Tadele Getu (Queen's University).

Grants & Awards

Our 2025 Awards recipients are:

- **Dr. Guylène Proulx, OC Scholarship:** Leo Willem Menzemer, Ph.D. student, Lund University (Sweden) and the Danish Institute of Fire and Security Technology (DBI, Denmark)
- **Frederick R. Mowrer Global Scholar Award:** Dia Luan, Ph.D. student, Central South University (China)
- **Student Scholar Award:**
  - Mahdis Borani, Ph.D. Student, University of Utah (USA)
  - Mohammad Javad Moradi, Ph.D. Student, Carleton University (Canada)
- **Arthur B. Guise Medal:** Dr. Glenn Forney, Computer Scientist at the National Institute of Standards and Technology (NIST, USA)
- **Jack Bono Award for Engineering Communication:** David Morrisset, Ph.D., The University of Queensland (Australia), and Jonathan Reep, Ph.D., Ian Ojwang, Rory M. Hadden, Ph.D., and Angus Law, Ph.D., CEng, The University of Edinburgh (Scotland, United Kingdom)

Twice a year, the SFPE Foundation awards student research grants of 5,000 USD. The most recent recipients (from the April 2024 round of submissions) are Gabriele Campi, Master's student, The University of Applied Sciences and Arts of Southern Switzerland, Yifei Ding, Ph.D student, The Hong Kong Polytechnic University, and Kara van Heerden, master's student, Stellenbosch University. To learn more about their projects and our student research grant program please visit https://www.sfpe.org/foundation/funding-opportunities/student-research-grants

Do you have students in search of research funding? We can virtually speak to your students about SFPE funding opportunities for students. To arrange a presentation, please contact Amanda Tarbet at atarbet@sfpefoundation.org. The next submission date for student research grant proposals will be in April 2026.

Publications

We have four new publications to share:

- *The WUI Virtual Handbook for Fire Risk Assessment & Mitigation*, 2nd Edition is now available at https://www.sfpe.org/wuihandbook/home. Funded by FEMA grants, the WUI Virtual Handbook is a tool for assessing and mitigating fire risks for both individual properties and entire communities in the wildland-urban interface. The second edition expands on the original content and includes a companion website with videos and checklists, serving as a flexible, open-access resource to help fire departments and community stakeholders reduce wildfire risk.

- *The Contributions of Fire Engineering in Addressing the Wildland-Urban Interface Fire Problem*, our latest white paper, introduces the work performed by the volunteers that participated in the SFPE Foundation Wildland-Urban Interface (WUI) Working Group Initiative. In this report, the WUI fire problem is analyzed, focusing on how fire engineering can contribute to addressing the issues, gaps and needs that are related to WUI fire risk. Read it at https://doi.org/10.64167/x5h6-75nw.
- *Environmental and Health Impacts of Thermal Runaway Events in Outdoor Lithium-Ion Battery Energy Storage System Installations*, a new research report, presents a methodology to assess the health and environmental impacts from thermal runaway events in outdoor, large-scale, Li-ion BESS units. Through application of the methodology, a relationship between exposure limit distance and wind speed, ambient temperature, event duration, cell chemistry, and toxic gas species can be established. Read it at https://doi.org/10.64167/3d04-pax1.
- *Fire Testing of Resilient and Sustainable Building Materials*, our latest research report, provides technical guidance on the fire testing of these materials, establishing a framework that links material properties to fire dynamics. It presents a state-of-the-art review of key material categories (biomass-based, non-combustible, and synthetic) and critically assesses the strengths and shortcomings of existing standards for fire resistance, reaction-to-fire, façades, and photovoltaic (PV) systems. Read it at https://doi.org/10.64167/50c9-5gan.

All our publications are open access and can be found at https://library.sfpe.org.

Please visit our website at https://www.sfpe.org/foundation to keep up to date with new events, funding opportunities, and more!

Signed: Amanda Tarbet

The Slovenian National Building and Civil Engineering Institute (FRISSBE)

Three New Researchers Join FRISSBE

The FRISSBE Department at ZAG has recently welcomed three new members, further strengthening its expertise in fire safety research and engineering.

Dr Martin Košiček (left) joined in May 2025, bringing a background in chemistry and nanoscience from the University of Ljubljana and Jožef Stefan Institute. His work focuses on understanding material behaviour under extreme environments, supporting the development of safer and more sustainable materials.

In June 2025, Dr Vadim Kudryashov (middle), a fire safety specialist with over 20 years of academic and practical experience, joined FRISSBE. His research covers structural fire resistance, performance-based design, and experimental fire testing across multiple materials and scales.

Finally, in September 2025, Elijah Igweh (right), an IMFSE graduate and PhD student at Ghent University, became part of the team. His research integrates fire dynamics, material testing, and data-driven analysis of sustainable materials.

Together, their diverse expertise contributes to FRISSBE's mission to advance innovation in fire-safe, sustainable construction.

European Symposium on Fire Safety Science 2025 in Ljubljana

From 3rd – 5th September 2025, the 5th European Symposium on Fire Safety Science (ESFSS 2025) took place at the Grand Hotel Union in Ljubljana, organised by ZAG and the FRISSBE Department. The event opened with addresses from Tanja Vertelj (Ministry of Higher Education, Science and Innovation), Dr Urška Kropf (Deputy Director, ZAG), and Prof Grunde Jomaas (FRISSBE ERA Chair Holder). Dr Ulises Rojas-Alva served as Master of Ceremonies.

The symposium gathered 150 participants from 25 countries, creating a vibrant forum for discussion and collaboration. From the FRISSBE team, Nik Rus and Dr Andrea Lucherini delivered presentations, and other members contributed with several poster presentations.

Across three days, the programme included thematic technical sessions, plenary lectures by leading researchers, and interactive poster discussions. Topics covered ranged from battery and solar cell fire safety and sustainable materials to fire dynamics, risk analysis, and human behaviour in fires.

During the closing banquet at Ljubljana Castle, three awards supported by IAFSS (Best Paper, Best Presentation, and Best Poster) were presented, recognising excellence in presentations, papers, and posters.

Sponsors: Protectowire FireSystems, Jet Fire & Safety, Kingspan, Fire & Risk Alliance, ROCKWOOL, Halliwell Fire Research, Knauf Insulation, Evoks, AllShield, Equipro, FM, Efectis, Ignist, Fire Rover and Vid Firekill.

ESFSS 2025 successfully fostered collaboration among researchers, industry experts, and policymakers, highlighting both the challenges and opportunities in building a fire-safe and sustainable future.

Dr Aleš Jug Elected Chair of the CTIF Fire Prevention Commission

The CTIF Fire Prevention Commission held its annual meeting from 24th - 26th September 2025 in Gornja Radgona, Slovenia, alongside the Protection and Rescue Fair at the Pomurski Sejem venue. Delegates from several member countries gathered to share updates and discuss priorities in advancing fire prevention strategies.

The agenda included national reports on smoke alarm campaigns, fire safety engineering practices, and fire prevention initiatives across Europe. Highlights featured a demonstration of a newly developed fire prevention truck by Slovenian colleagues, a Finnish presentation on small-house fire safety, and results from photovoltaic fire testing conducted at ZAG's Fire Laboratory.

A major outcome of the meeting was the election of Dr Aleš Jug as Chair of the Fire Prevention Commission for the 2025–2030 term. In this new role, Dr Jug will lead efforts to enhance cooperation, share best practices, and strengthen fire prevention awareness among CTIF member states.

The meeting concluded with the adoption of a five-year action plan, reinforcing CTIF's commitment to collaboration and knowledge exchange in fire safety.

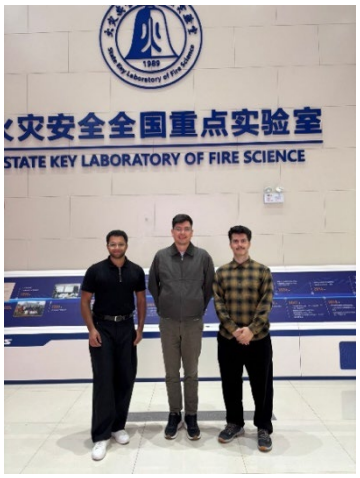
Collaboration Visit to CTU Prague

From 7th – 10th October 2025, the Faculty of Civil Engineering at the Czech Technical University (CTU) in Prague hosted a joint workshop and research meeting focused on fire safety science, collaboration, and science communication.

The event featured contributions from Dr Andrea Lucherini (ZAG FRISSBE) and Dr Urška Blumauer (ZAG Fire Laboratory), who presented their recent work on advancing fire research and effectively communicating scientific results to wider audiences. Participants engaged in discussions on linking laboratory research with engineering practice. Organised under CTU's Initiation Fund for Young Scientists, the workshop combined scientific rigour with open dialogue. From morning sessions on communication to afternoon technical discussions, the atmosphere was dynamic and productive.

The collaboration between CTU and ZAG continues to grow, reinforcing shared efforts toward safer and more resilient buildings through research-driven innovation.

Two Weeks in China: Training and Research Collaboration



From 12th – 26th October 2025, Jonay Brito and Elijah Igweh participated in the Science and Technology Training Course on Design and Evaluation Methods of Fire Safety Engineering Materials.

Hosted by the State Key Laboratory of Fire Science (SKLFS) at the University of Science and Technology of China (USTC), the two-week course brought together 24 participants from across Belt and Road Initiative countries, including Slovenia.

The programme included nine lectures, four laboratory sessions, and four technical visits. The topics ranged from flame-retardant chemistry to fire testing and safety technologies for lithium-ion batteries. Distinguished lecturers such as Prof Manfred Döring (Germany), Prof Tim-Patrick Fellinger (BAM, Germany), Prof Baljinder Kandola (University of Grear Manchester, UK), and Prof Marisa Sponton (CONICET, Argentina) led the sessions.

For Jonay and Elijah, the course was an opportunity to deepen their understanding of fire safety materials while strengthening cooperation between ZAG and USTC, two institutions with established research ties.

In parallel, Dr Ulises Rojas-Alva visited USTC in Hefei as a guest of Prof Xiaoyu Ju, supported by the Chinese Academy of Sciences. He delivered a lecture on Risk Analysis and participated in discussions to prepare a joint experimental campaign planned for next year. His visit strengthened academic exchange and was warmly received by his hosts and their students.

Visiting IMS in Belgrade

On 23rd October 2025, Dr Aleš Jug and Aleksander Bergant from ZAG Fire Laboratory, visited the IMS Institute's Fire Laboratory in Belgrade. The purpose of the visit was to exchange expertise, strengthen cooperation, and explore opportunities for joint research and testing activities in the field of fire safety.

The meeting also aimed to revitalize and further develop the professional ties that existed in the past between the two institutions, recognising the value of past collaboration and looking forward to further joint efforts in the future.

During the visit, both teams discussed current projects, laboratory capabilities, and future collaboration, particularly in façade fire testing, material fire performance, and standardization. The visit reaffirmed the shared commitment of both institutions to advancing fire science and improving fire safety in the region.

ETICS Façade Test

On 2nd September 2025, a large-scale ETICS façade fire test was carried out within the scope of the L2-50046 ETICS Project (ARIS). The test procedure follows the protocol developed within the European Commission-funded project to establish a European approach for assessing the fire performance of façades.

The tested façade represented a classical EPS-based ETICS system, with a 140 mm-thick EPS thermal insulation layer, covered with a cementitious, fiberglass-reinforced render. The test assembly was 7.5 m in height and included two openings: one hosting a wooden crib with a design heat release rate of approximately 3.0 MW, and the second representing an architectural detail of the façade system.

During the test, the time to façade failure and failure behavior were monitored, including burning and falling components, temperature development, and vertical fire spread within the EPS layer. Instrumentation and visual observations were used to document the response of the system under real-scale fire exposure.

FRISSBE Researchers Contribute to Fire Safety Dialogue in Brussels

On 3rd October 2025, FRISSBE and the Slovenian Business and Research Association (SBRA) co-organised a workshop titled *Mind the EPBD Harmonisation Gap: New Fire Risks from Electrification and Renovation of Buildings* at the University Foundation Stichting in Brussels.

The event brought together experts from research, policy, and industry to discuss how the Energy Performance of Buildings Directive (EPBD) can be implemented while maintaining high fire-safety standards.

Prof Grunde Jomaas, FRISSBE ERA Chair, co-opened the workshop with Assoc. Prof Dr Draško Veselinovič (SBRA) and contributed to the session *New fire risks associated with sustainable solutions: what is our preparedness level?*, highlighting challenges linked to electrification and large-scale renovation.

Dr Andrea Lucherini, senior researcher at ZAG-FRISSBE, presented *Fire safety of façades – does testing ensure fire safety?"* addressing the limitations of current façade testing and the need for harmonised European standards.

The workshop emphasised collaboration and evidence-based policy as vital to achieving a safe green transition across Europe.

The full program and the presentations are available on the SBRA website:

https://www.sbra.be/en/content/mind-epbd-harmonization-gap

Signed: Grunde Jomaas and Jonay Brito Garica

State Key Laboratory of Fire Science (SKLFS), University of Science and Technology of China

The 16th National Conference on Fire Safety Materials successfully held in Hefei

The 16th National Conference on Fire Safety Materials was successfully held on July 11-13, 2025, in Hefei, Anhui, China. The conference is hosted by the State Key Laboratory of Fire Science (SKLFS) of the University of Science and Technology of China (USTC). More than 600 delegates from more than 150 universities, institutions, and industry enterprises attended the conference on-site.

During the conference, Prof. Tao Tang from the Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Prof. Yanzhi Xia from Qingdao University, Prof. Jianjun Li from Kingfa Technology Co., Ltd., and Prof. Teng Fu from Sichuan University were invited to deliver plenary presentations. In addition, 18 keynote presentations, 51 oral presentations, and 140 rapid oral presentations were presented, and 136 posters were also presented. To encourage academic exchange, especially to stimulate the enthusiasm of young students, the conference selected 15 outstanding poster awards. The presentations cover core areas such as flame-retardant materials, thermal protection materials, refractory materials, and fire extinguishing materials and expand to cutting-edge application scenarios such as aerospace, national defense, construction, electronic appliances, automobiles, new energy, and artificial intelligence.

The National Conference on Fire Safety Materials is a high-level academic conference in the field of fire safety materials in China aimed at building an academic exchange platform for domestic peers, promoting the development of fire safety materials science in China, expanding its academic influence worldwide, attracting outstanding scholars to join the basic research and technological innovation of fire safety materials, serving the main demands of the national economy, and meeting major national requirements. The success of this conference will undoubtedly promote research on fire safety materials to gain wider attention and support and help the field of fire safety materials usher in a more brilliant future.

Prof. Jie Ji delivered an Invited Lecture at the first "Sino-French Conference on Conservation of Wooden Cultural Relics and Earthen Sites" in Paris

From May 13 to 14, 2025, the first "Sino-French Conference on Conservation of Wooden Cultural Relics and Earthen Sites" was held at the Guimet Museum in Paris, France. The conference was jointly organized by the Emperor Qinshihuang's Mausoleum Site Museum and the French Fondation des Sciences du Patrimoine. It coincided with the one-year anniversary of the signing of the Sino-French scientific research cooperation agreement on conservation of wooden cultural relics and earthen sites, marking a significant step in implementing the Sino-French cooperation agreement.

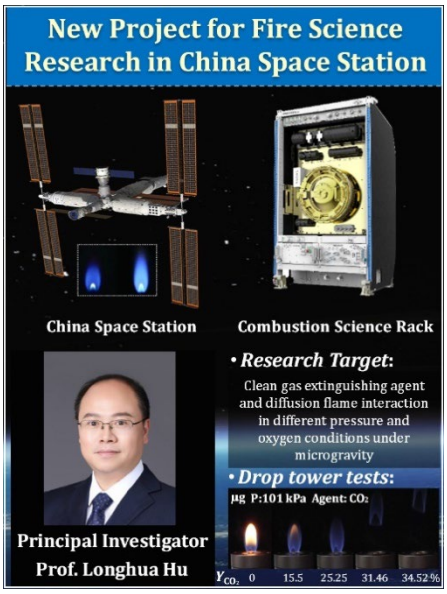
Prof. Jie Ji was invited to deliver a 50-minute lecture on the topic “Fire Development Characteristics and Protection Technologies Research of Heritage Buildings”. In this lecture, he systematically presented recent research achievements, including the mechanisms of fire occurrence and development in wooden heritage buildings, fire prevention and control strategies (e.g. fire risk assessment methods, anti-interference electrical fire warning technology, early fire anti-interference detection technology), applications in seven UNESCO World Heritage sites and cultural heritage units in China, and improvement of fire safety awareness and skills.

In May 2024, the Emperor Qinshihuang's Mausoleum Site Museum in Xi'an, Shaanxi Province, reached an agreement with the Fondation des Sciences du Patrimoine to conduct in-depth cooperation on the protection of wooden heritage relics and earth sites. Prof. Jie Ji was invited to participate in this collaboration and was assigned responsibilities related to the mechanisms of fire spread, as well as fire prevention and control strategies. The research is expected to provide fundamental theoretical insights and technical support for the fire safety of wooden relics in both China and France, such as Notre Dame and the Emperor Qinshihuang's Mausoleum Site Museum.

Prof. Jie Ji’s team has committed to research on fire prevention and control in heritage buildings for many years. They led the first National Key R&D Programs in the field of fire safety in heritage buildings in China named “Fire Spreading Mechanisms and Key Technologies for Fire Risk Assessment and Forewarning of Heritage Buildings”. The achievements have been applied to UNESCO World Heritage sites and Chinese cultural heritage units, including the Forbidden City in Beijing, Potala Palace in Tibet, Hongcun Village in Anhui, etc.

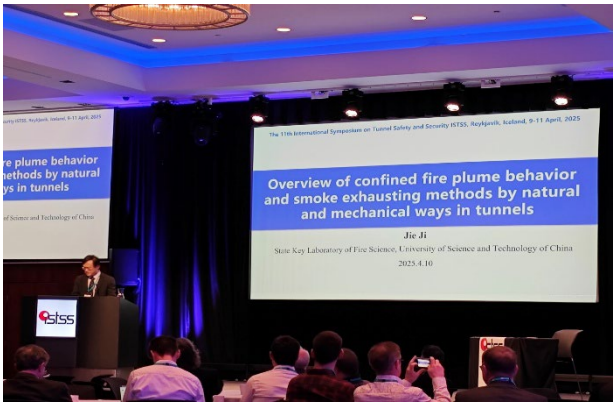
Fire Science Research Project Aboard the China Space Station

The State Key Laboratory of Fire Science (SKLFS) has been granted a new project, funded by the China Manned Space Engineering Office. The project, entitled "Study on clean gaseous extinguishing agent and diffusion flame interaction, flame instability under different atmospheric pressures and oxygen concentrations in microgravity" will be conducted using the Combustion Science Rack onboard the China Space Station. Prof. Longhua Hu, Vice-director of the SKLFS, serves as the Principal Investigator.



As manned spaceflight extends to long-duration missions, the risk of fire becomes an increasingly critical concern. A residual-free and efficient extinguishing agent is essential for ensuring crew safety and mission integrity. This project aims to explore how clean gaseous extinguishing agents interact with diffusion flames in microgravity, and how varying atmospheric pressure and oxygen level affect fire behaviors. Through a series of on-orbit fire experiments, the research aims to directly observe and analyze the transition from flame instability to extinction in long-duration microgravity environments, and to deepen the understanding of flame dynamics and extinction mechanisms. The results are believed to offer insights into the design of fire prevention and suppression systems for ensuring fire safety in future manned space missions.

Prof. Jie Ji delivered a Plenary Speech at the 11th International Symposium on Tunnel Safety and Security



The 11th International Symposium on Tunnel Safety and Security (ISTSS 2025) was held in Reykjavik, Iceland from April 9 to 11, 2025. This symposium has attracted more than 200 experts and scholars from over 20 countries and regions. Prof. Jie Ji was invited to give a plenary speech, also the first Chinese scholar to do so at this international symposium (the most influential in the field of tunnel fire safety in the world).

The speech was titled "Overview of confined fire plume behavior and smoke exhausting methods by natural and mechanical ways in tunnels". It provided a systematically review of the key issues and current advances in the study of tunnel fire behavior and smoke control methods. For tunnel fire behavior, the speech reviewed the research progress from classical fire theory, fire in narrow long spaces within buildings to tunnel fire, highlighting his research team's findings on confined fire plume behavior in tunnels. With regard to smoke control methods, the global research advances from case analysis, mechanism interpretation to design and optimization of discharging smoke was summarized. Then, the quantitative models and conclusion of his team on the efficiency and effect of different smoke exhaust methods are particularly elaborated. Finally, the future challenges in tunnel fire were put forward, and the questions raised by the attending scholars were discussed.

Prof. Jie Ji has long been devoted to the research on fire behavior in long and narrow spaces (tunnels, subways, long passages, etc.). The research results have been widely quoted, verified and applied by scholars both in China and abroad, serving the construction of major national and local projects. He was elected as the Fellow of The Combustion Institute and National Science and Technology Innovation Leadership Talent, etc. He is also the Members of Editorial Board for Fire Safety Journal, Fire Technology and Building Simulation.

First Prize of Natural Science Award of Anhui Province on Tunnel Fire Safety

The State Key Laboratory of Fire Science (SKLFS) has been granted the First Prize of Natural Science Award of Anhui Province entitled as "Tunnel Fire Smoke Transportation Theory and Control Mechanism". The first awardee is Prof. Longhua Hu, the other awardees include Prof. Wanki Chow, Prof. Fei Tang, Prof. Dong Yang and Prof. Ran Huo.

Understanding smoke transportation behavior in tunnel fires and developing effective smoke control strategies remain key challenges in fire safety science. The main contributions of this award include: Established theoretical models for the evolution of tunnel fire plumes and ceiling jets under complex ventilation conditions; revealed the transportation mechanisms of smoke layer in tunnel fires, and proposed optimized methodology for smoke control. The research has resulted in over 100 academic publications, and the book "Fundamentals of Tunnel Fire Dynamics and Prevention Technology". The research outcomes have been widely applied in tunnel constructions in China, providing fundamental theories and methodologies for predicting and controlling the smoke spread in tunnel fires, benefiting both research and engineering communities.

Research Project on High-Rise Building Facade Fire Safety

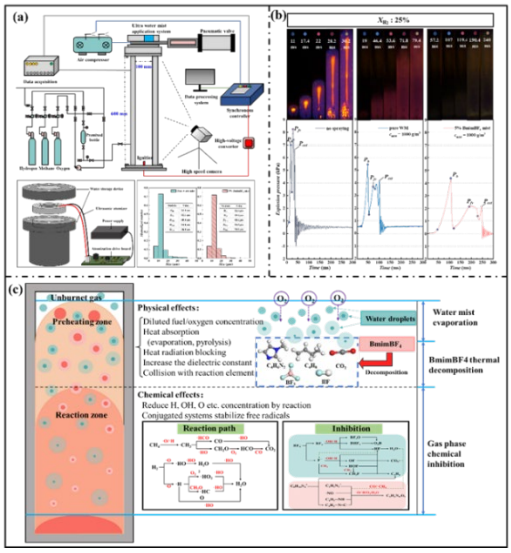
The State Key Laboratory of Fire Science (SKLFS) has been granted a new project of the National Key R&D Program of China entitled as "Key Technologies for Fire Monitoring, Early-stage Detection, and Automatic Extinguishing of High-Rise Building Facade Fire" (2025.1-2027.12, total budget of 38 million CNY), which is funded by the Ministry of Science and Technology of the People's Republic of China. The Principal Investigator of project is Prof. Longhua Hu, who is the Vice-director of SKLFS.

High-rise building fire is a major problem for urban safety. In recent decades, numerous facade fire accidents have occurred in high-rise buildings. The research contents of this project cover the fire hazard identification and risk analysis, fire dynamics and development prediction based on artificial intelligence, remote fire detection technologies, and fixed/movable automatic fire suppression systems of high-rise building facades. The research outcomes are expected to advance the fire prevention and suppression ability, ensuring improved facade fire safety in high-rise buildings.

Progress in Premixed-Gas Explosion Mitigation with Ionic-Liquid Water Mist Technology

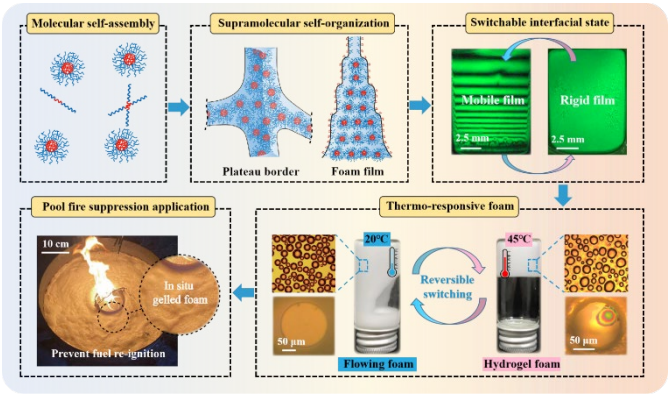
As a non-polluting and cost-effective inhibitor, water mist has garnered significant attention from researchers in the field of gas explosion suppression. However, current explosion suppression strategies for premixed gases face notable challenges. Conventional chemical additives in mist can crystallize, corrode equipment, and disrupt droplet uniformity, which limits their practical engineering application. To address these issues, the research group of Prof. Xishi Wang (SKLFS) investigated a water mist strategy with the addition of ionic liquids, which are non-flammable, highly thermally stable, essentially non-volatile salts at room temperature, composed of bulky organic cations paired with tunable inorganic or organic anions that serve as water mist additives.

The research team developed a test and measurement system for water mist suppression of premixed-gas explosions that precisely quantifies mist flux by measuring the mass loss. Building on this platform under engineering-relevant initial conditions, the team introduced the ionic liquid (1-butyl-3-methylimidazolium tetrafluoroborate) as a water mist additive and conducted small-scale explosion suppression experiments with mechanism validation. The ionic-liquid mist demonstrated the ability to delay flame propagation and reduce explosion overpressure, consistent with a dual action of evaporative cooling and radical scavenging from thermal decomposition products. This work provides a promising new strategy for mitigating the risk of premixed-gas explosions.



Ionic-liquid water mist explosion suppression: platform, results, and mechanism. (a) Schematic of the experimental system. (b) The flame propagation with the corresponding pressure transient. (c) Schematic of the flame suppression mechanism.

Progress in Thermo-Responsive Fluorine-free Foam Stabilized by Triblock Copolymer for Pool Fire Suppression

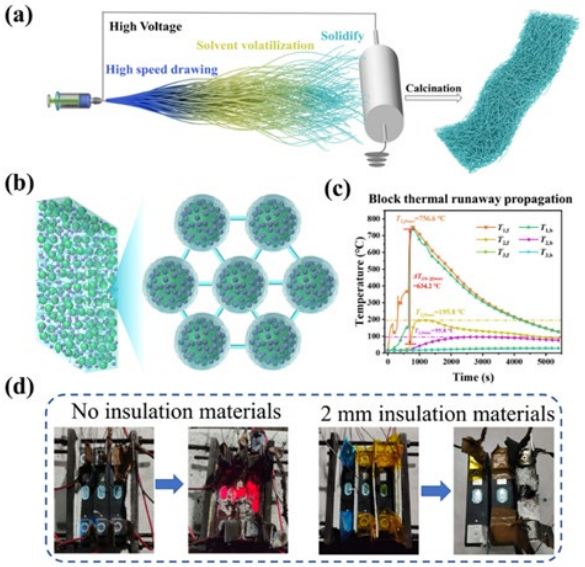


Aqueous film-forming foam (AFFF) has been considered the gold standard for pool fire suppression. It was the fluorocarbon surfactants contained in AFFF that were essential to enhance the pool fire suppression performance. However, the perfluorooctyl-based surfactants have been shown to be bio-persistent, bioaccumulative, and toxic because of the extremely high stability of fluorine-carbon bonds in hydrophobic tails. The development of novel fluorine-free fire-fighting foams to replace fluorinated AFFF is crucial for both improving fire suppression performance and environmental protection. Prof. Shouxiang Lu and Dr. Xiaoyang Yu, from SKLFS, have developed a thermo-responsive fluorine-free foam with designed triblock PEO–PPO–PEO copolymers, contributing to the development of smart fire-suppression materials. By controlling the molecular self-assembly, the liquid foam exhibited a switchable interfacial state for reversible switching between flowing and hydrogel foam under different temperatures. Based on the mechanism, the burnback performance exhibited by thermo-responsive copolymer foams is 3 times better than that for classical fluorine-free foams and almost 1.5 times higher than that for commercial AFFF. The associated work was published in the SmartMat (5 (2024): e1232) (the top journal of material science with an impact factor of 15.3) and has been recognized as a top cited article in this journal.

Note: The non-ionic triblock PEO–PPO–PEO copolymers, as the building blocks for thermo-responsive foams, could create interfacial and bulk ensembles that could be reversibly switched between mobile and rigid states at gas–liquid interfaces, in response to changes in bulk concentration and fuel temperature. The active switching of the two interfacial states led to the significant enhancement of the foam stability, especially under the dual defoaming effects of heat and oil, and thermo-responsive fluorine-free foam had stronger stability than fluorinated foam.

Advanced Ultra-Pressure-Resistant Insulation Material Halts Thermal Runaway Propagation in Lithium-ion Batteries

Thermal runaway propagation (TRP) remains a major challenge for lithium-ion batteries (LIBs) safety, with heat conduction being the primary transfer mode in battery modules. To mitigate TRP, thermal insulation materials are commonly integrated into battery modules to block heat transfer from a failing battery. However, under abuse conditions, rapid gas generation causes battery expansion, leading to an average pressure of 0.3 MPa and localized spikes of up to 1 MPa, compromising conventional insulation materials. Specifically, flexible materials like fibrous aerogels offer excellent insulation but lack compressive strength (<10 kPa), while rigid materials provide mechanical stability but inadequate thermal insulation. Therefore, developing an insulation material that combines both high compressive strength and excellent thermal insulation performance is crucial for enhancing LIB module safety.

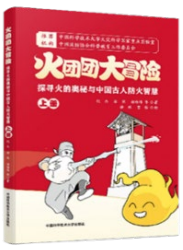


Schematics of insulation material fabrication, structure, and performance in battery modules. (a)Schematic of the electrospinning process. (b)Schematic of the internal structure of the insulation material. (c)Temperature profile of the battery module with a 2 mm insulation layer. (d)Photographs of the battery module before and after testing with and without insulation material.

Prof. Qingsong Wang from SKLFS has developed an ultra-pressure-resistant composite insulation material with a compressive strength of 1.45 MPa. TRP tests demonstrate that a 2-mm-thick layer of this composite material effectively prevents TRP within the battery module containing 58 Ah NCM batteries, achieving a maximum temperature difference of 634.2 °C. These findings have been published in Energy Storage Materials (76 (2025): 104148).

The Popular Science Comic Book "The Adventure of Fiery Sprite: Exploring the Mystery of Fire and the Wisdom of Ancient Chinese Fire Protection" has been Selected as One of the 100 Recommended Books on a Reading List by China Central Television

On April 23, China Central Television's Science and Education Channel (CCTV-10) broadcast a special program for World Book and Copyright Day, and a reading list for the public with 100 recommended books was released. The list includes not only classic works such as "The Tao-te Ching" "The Old Man and the Sea" and "Les Misérables", but also cutting-edge new knowledge and technology books like "A Short History of Nearly Everything" and "The Three-Body Problem". The popular science comic book "The Adventure of Fiery Sprite: Exploring the Mystery of Fire and the Wisdom of Ancient Chinese Fire Protection" created by Prof. Jie Ji's group was also included in the list.



This book was inspired by Prof. Jie Ji's National Key R&D Program Project of China, "Fire Spreading Mechanisms and Key Technologies for Fire Risk Assessment and Forewarning of Heritage Buildings", in ain effort to convey scientific research findings on heritage buildings fires to the public. It includes over 100 knowledge points and historical allusions, covering topics such as firefighting measures, fire prevention strategies, building structures, and the latest scientific research findings in fire science. To date, it was awarded the Special Excellence Award of China Fire Protection Association (only one from the 235 works), first prize of Anhui Province's Excellent Popular Science Works in 2025 (only one), "Dianzan•2024 Popular Science Anhui" popular science book prize from Anhui Provincial Science and Technology Association, etc.

Profs. Lizhong Yang's and Xiaoyu Ju's Research Group Actively Promotes International Collaboration

In recent years, the research team led by Prof. Lizhong Yang and Prof. Xiaoyu Ju (Yang–Ju team) at the SKLFS, University of Science and Technology of China, has actively pursued international collaboration. By engaging with leading global institutions, the group has focused on frontier areas such as wildland-urban interface (WUI) fires, building fire safety, and energy system fire risks, achieving significant results.

In July 2024, Prof. Yang and Prof. Ju visited the National Technical University of Athens, Greece, exchanging views with Prof. Dionysios Kolaitis and his team on WUI fire research and exploring future cooperation. Later that month, the team visited the Slovenian National Building and Civil Engineering Institute (ZAG), meeting with Prof. Grunde Jomaas to discuss building and new energy fire safety, reaching preliminary collaborative intentions. In October 2024, Dr. Ulises Rojas Alva from ZAG visited SKLFS, delivering a lecture on lithium-ion battery fire safety and discussing further academic cooperation.

In April 2025, Prof. Yuji Nakamura, Vice Chair of the International Association for Fire Safety Science, visited SKLFS and gave a lecture on fire dynamics and scale modeling, discussing joint research frameworks with the team. Between May and June 2025, the Yang–Ju team visited Universiti Malaysia Putra) and later hosted Prof. Jomaas again at SKLFS, advancing plans for collaborative experiments and international projects.

These high-quality exchanges have strengthened the global presence of the Yang–Ju team and SKLFS, promoting interdisciplinary innovation in fire safety and laying a solid foundation for integrated global research.

International Collaboration Enhances Fire Dynamics Course

The Introduction of Fire Dynamics course at the SKLFS, University of Science and Technology of China (USTC), welcomed distinguished international scholars. Prof. Ruggiero Lovreglio from Massey University visited USTC to participate in the mid-term demonstration of the fire experiment. His engagement provided valuable insights and deepened students' understanding of fire experiments. Prof. Guillermo Rein from Imperial College London delivered an online lecture on smouldering fires, offering students a first-hand perspective on cutting-edge research in fire dynamics. Dr. Ricky Carvel from the University of Edinburgh conducted two weeks of in-person teaching. His visit further strengthened the collaboration between USTC and the University of Edinburgh in the field of fire science.

Due to the increasing international influence of the course, Prof. Yu Wang, the lead instructor of Introduction to Fire Dynamics, was invited to deliver guest lectures at multiple institutions beyond mainland China, including teaching undergraduate fire engineering students at Central Police University, Taiwan, and Fire Safety Engineering Programme at the International College of Engineering and Management, University of Central Lancashire, Oman. All the above international interactions in this course improve our English Fire Dynamic course teaching and much positive feedback from students were received.

Fire Technology
https://doi.org/10.1007/s10694-025-01802-1

Developing an English Curriculum *Introduction of Fire Dynamics* for Graduate Students in Non-English Speaking Countries: An Example in China

Yu Wang · Liaoyang Zhou · Ricky Carvel · David Rush

Received: 23 February 2025 / Accepted: 19 August 2025
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Abstract

In response to the challenges prevailing in the international education of fire science for graduate students, and the core one is how to accurately and efficiently disseminate cutting-edge or fundamental international knowledge in the Far East, particularly in non-English-speaking countries or regions, the State Key Laboratory of Fire Science (SKLFS) at the University of Science and Technology of China (USTC) has established an English curriculum titled *Introduction of Fire Dynamics* with the researchers from University of Edinburgh, UK. This course gives an effective collaborative teaching methodology that fully considers the learning/teaching characteristics of domestic and international students at USTC by combining the strengths of fire safety education across the continents and is dedicated to bridging fire safety education gaps in two hemispheres, broadening the horizons of graduate students, enhancing their professional English level and developing the critical thinking skills. It has transformed its midterm examination by incorporating experimental demonstrations and theoretical explanations of its mechanism, which significantly inspired the students' interests and passion in fire safety science, attracting extensive national official media reports from China News, People's Daily Online, China Youth Daily, etc. The students from five other Chinese universities also attended this course online, which is unusual for an English course in a non-English-speaking country, so the course was called the "hottest" course at USTC. This paper will introduce this initiative and propose important references and experiences for education innovation in fire safety science for non-native English-speaking graduate students.

Keywords Fire safety education · Fire dynamics · International cooperation

In September 2025, the paper titled "Developing an English Curriculum Introduction of Fire Dynamics for Graduate Students in Non-English Speaking Countries: An Example in China" has been published in Fire Technology, for more details, please refer to https://doi.org/10.1007/s10694-025-01802-1.

Signed Prof. Jie Ji, vice Director of State Key Laboratory of Fire Science, University of Science and Technology of China.

Toyohashi University of Technology

The fire safety group, **ECE** (**E**nergy **C**onversion **E**ngineering) LAB at TUT (**T**oyohashi **U**niversity of **T**echnology) in Japan, is experiencing continued growth and actively seeks both international and local students, as well as new opportunities for collaboration. The current members include Professor Yuji Nakamura, two Associate Professors - Tsuneyoshi Matsuoka and Nobumasa Sekishita, Assistant Professor Daiki Matsugi, two postdocs, a secretary, and 20 students.

Biography of early-career members

Since the last newsletter only briefly mentioned the newly appointed early-career members, we would like to take this opportunity to introduce three of them in more detail:

Dr. Daiki Matsugi (left) has been working as an Assistant Professor in the ECELAB since August 2024. He successfully completed his doctoral degree under the supervision of **Prof. Nakamura** in March 2022. Prior to this position, he gained two years' experience as a postdoctoral researcher under **Prof. Nakamura**. His research interests have expanded from fire science to innovative combustion technologies, particularly focusing on the incorporation of porous structure into combustion systems, not only to enhance combustion but also to control or suppress it. His works have already been recognized through peer-reviewed publications (e.g., *Combustion and Flame* and *Applications in Energy and Combustion Science*).

Dr. Yuyang Jiang (middle) successfully completed his doctoral degree in March 2025 from The University of Tsukuba (supervisor: Prof Nishioka) and has been working as a postdoctoral researcher at the ECELAB since this April. Previously, he mainly investigated the flame characteristics of gaseous fuels through numerical simulations (CHEMKIN), and his work has been published in some journals (e.g., *Combustion Science and Technology*). Currently, his research interests have expanded to innovative combustion technologies (powder–gas hybrid combustion) and fire simulation. His study on gas–powder hybrid combustion has already been presented and awarded at an international conference, as will be mentioned later.

Mr. Takafumi Yamazaki (right) has been working as a researcher at the ECELAB since April 2025. His research focuses on the development and practical application of ultrasonic temperature measurement techniques in high-temperature environments, including flames. His work covers both advanced signal analysis methods that remain robust even in noisy conditions and tomographic reconstruction approaches for obtaining two-dimensional temperature distributions. These achievements have been published in the Japan Association for Fire Science and Engineering.



(left): **Dr. Daiki Matsugi,** (middle): **Dr. Yuyang Jiang,** (right): Mr**. Takafumi Yamazaki**

Notable personal updates and promotions since the last newsletter

There have been significant updates since the last newsletter. **Dr. Vojtěch Šálek** has completed his one-year stay with us and returned to Czech Republic. **Dr. Yue Zhang** has also concluded her three-years stay with us. We are pleased to announce that **Dr. Vojtěch Šálek** has returned to a postdoctoral researcher position at The University of Chemistry and Technology (Czech Republic). **Dr. Yue Zhang** also started as a research assistant professor at Hong Kong Polytechnic University. Thank you very much for your dedicated contribution during their time here! We are also excited to welcome a new visiting scholar from China, **Mr. Chunyin Zhang,** this upcoming December. Welcome!

Recently received awards

We are very pleased to share that our master students, **Mr. Uchida** and **Mr. Kawai** received the *Student Excellent Presentation Award* for their outstanding presentations at the 2025 annual conference of Japan Association for Fire Science and Engineering, held in Aichi, Japan. Also, we are delighted to share that **Dr. Jiang** was awarded the *Excellent Presentation Award* for his poster presented at the International Symposium on Fuels and Energy (ISFE2025), held in Hiroshima, Japan. Our master students, **Mr. Goshu** and **Mr. Ogawa**, also received awards for their excellent presentations at a poster session organized by the former astronaut Dr. Mouri in the Conference of Japan Society of Microgravity Applications, held in Hokkaido, Japan. Congratulations to everyone!

From left to right: ***Mr. Goshu****,* ***Mr. Ogawa****, and* ***Dr. Jiang*** *receiving prestigious awards*

Recent lab activities

Recently, we welcomed nine new fourth-year undergraduate students and held a joint orientation to introduce them to the lab. The event was followed by a pizza party, during which we also took a commemorative group photo. In addition, ECELAB joined a friendly softball match organized among laboratories in the Department of Mechanical Engineering. Furthermore, to show ECELAB's

From left to right: Group photo at the pizza party, Photo during the match, Uni. TECH Festival 2025.

activities and experimental facilities, we opened our laboratory for numerous visitors at various events, including parents and their children during the University TECH Festival. As seen here, the ECELAB members actively participated not only in internal activities but also in external ones.

Conferences & community contributions

ECELAB members have actively participated in various conferences, presenting their works through oral and poster presentations. Notably, three master students, **Mr. Uchida**, **Mr. Kawai**, **Mr. Yamabayashi**, along with **Dr. Matsugi** presented their works at the annual conference of Japan Association of Fire Science and Engineering, held at Toyohashi University of Technology. We also hosted the conference, which was chaired by **Prof. Nakamura** as the executive chair. The conference successfully concluded, and we sincerely would like to thank the participants who joined us. In addition, **Dr. Zhang** and **Dr. Matsugi** delivered their presentations at 4th International Conference on Computational Engineering and Science for Safety and Environmental Problems (COMPSAFE), held in Kobe, Japan. **Dr. Šálek** presented at two conferences: The 16th International Conference and Exhibition on Fire Science and Engineering (Inferflam) held in UK, and 5th European Symposium on Fire Safety Science (ESFSS) held in Slovenia. Thank you all for your excellent presentations and for representing our research activities!

From top left to top right: ***Dr. Matsugi***, ***Dr. Zhang***, *From bottom left to bottom right:* ***Mr. Uchida***, ***Mr. Kawai***, *and* ***Mr. Yamabayashi****. All delivered presentations on their research at the international and domestic conferences.*

International activities by Prof. Nakamura

Prof. Nakamura has been invited to give talks at several events. He will deliver a keynote lecture at the 6th Asia-Oceania Symposium on Fire Safety Materials Science and Engineering in Beijing, China, visit University of Science and Technology Beijing (host: Dr. Huinting Bian). Additionally, he will visit **Dr. Jian Gao** (former postdoc in ECELAB, 2014~2017), Associate Professor in the Department of Vehicle Engineering at the College of Urban Transportation and Logistics, Shenzhen Technology University, China. In November, **Prof. Nakamura** is also scheduled to visit Korea Maritime & Ocean University and will be an invited speaker at the Korean Society of Combustion.

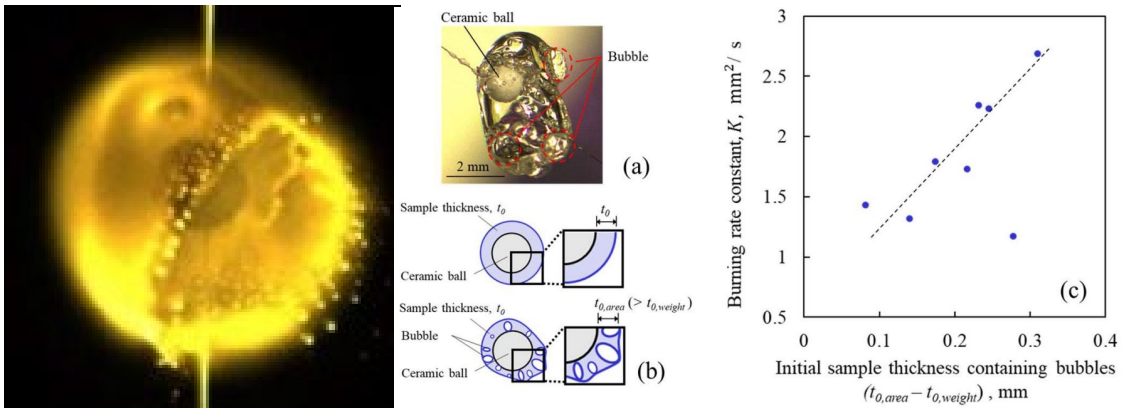
Research visits

A noteworthy set of experiments was conducted using the drop tower in Hokkaido (July 2025), Japan, to investigate flammability of polymer materials under microgravity. Our master students, **Mr. Ogawa**, **Mr. Kawai**, **Mr. Yamabayashi**, an undergraduate student, **Mr. Takayama**, **Dr. Matsugi**, and **Prof. Nakamura** successfully concluded precious experiments and obtained a very valuable dataset! Next microgravity experiments are scheduled for November.

Research on polymer combustion:

Prof. Nakamura has devoted the past decade to fundamental (unique) research on polymer combustion supported by various financial agencies. From April 2025, it is successfully awarded another JSPS fund (Kakenhi Kiban A) and JKA (Japan Keirin Autorace) foundation, enabling to continue to summarize a series of works in the upcoming years.

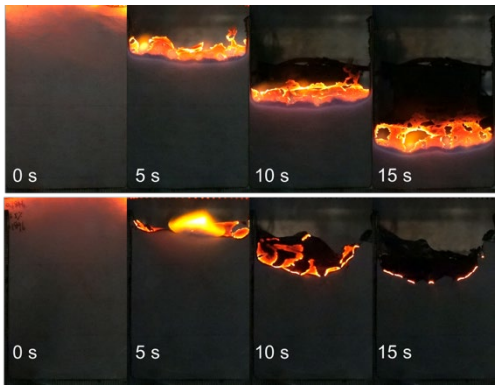
Prof. Nakamura is leading a series of research on the impacts of initial bubble presence and their growth and bursting during entire burning events on the burning characteristics of polymeric materials under microgravity conditions. The figure below shows one of **Prof. Nakamura's** research outcomes: (left) representative example image of burning spherical polymer under microgravity environment. One significant outcome confirmed that the classical d^2 law (d represents the sample diameter), which can be applied for liquid droplet combustion, is also applicable to combustion of the solid polymeric materials. As illustrated in the right graph, a series of experiments revealed that the burning rate constant significantly increased with the initial volume of internal bubbles within the polymer. These bubbles glow and eventually burst, significantly influencing the burning characteristics, including the burning rate constant and the flame appearance. These notable findings have already been published in a peer-reviewed journal (R. Matsumoto et al., *International Journal of Microgravity Science and Application*, Vol. 42 (2) (2025) 420201) and have been presented at multiple domestic conferences.



(left): Image of burning spherical polymer under microgravity, (right): effect of initial internal bubble on the burning rate constant, showing significant influence from bubble presence (cited from Matsumoto et al., Int J Microgravity Sci. Appl. 2025).

Suppressing fires by Gel

Prof. Nakamura has recently started to research on forest fire management, with strong support from governmental and scientific agencies. In April 2025, his project successfully received funding from the Fire and Disaster Management Agency (FDMA), enabling the continuation and expansion of this research in the upcoming years.



Effects of (top) water and (bottom) mass fraction 1.5% gel on flame-spread suppression behavior.

The figure shows one of **Prof. Nakamura's** representative outcomes in forest fire suppression research adopting "gel". The gel added to combustible solid material can effectively extinguish flames and suppress flame-spreading rate. A carbonized protective layer is formed over the solid surface of the combustible material when the gel added is heated, blocking oxygen from reaching the fuel and thereby achieving efficient flame suppression. We are now investigating the details, mechanisms, and how to utilize this phenomenon more effectively to apply future firefighting methodology. A series of outcomes from this project have been presented in the 2025 annual conference of Japan Association for Fire Science and Engineering, held in Aichi, Japan, and awarded to **Mr. Uchida** as the *Student Excellent Presentation Award* for their excellent presentation.

Joining the ECALAB team

To summarize, ECELAB offers a unique environment filled with challenges and opportunities, where researchers and students are given the freedom to explore their ideas while receiving unwavering support. With a diverse range of research interests and a dedicated team, ECELAB fosters a culture that empowers researchers and students to grow and take charge of their career development. We highly value the independence and ambitions of doctoral students and postdocs, ensuring they have the resources and guidance needed to pursue meaningful research in combustion and fire dynamics.

If you're interested in being part of our dynamic laboratory, please don't hesitate to get in touch with Prof. Nakamura (yuji@me.tut.ac.jp). We will be looking for a postdoctoral researcher in the next intake! The contact details, scientific topics, achievements, and news can be found at ECELAB web pages (https://ece.me.tut.ac.jp/wp/).

Signed: Daiki Matsugi

Trigon Fire Safety

For readers who do not know us: Hello, we are Trigon Fire Safety! We are a fire engineering consultancy in the UK. We specialise in solving unique fire safety challenges for buildings of all shapes, sizes, and occupancies. We also have a research team, currently comprised of Dr. Matthew Bonner (research lead) and Dr. Harry Mitchell (researcher). Our research team addresses modern fire safety research challenges involving everything from facade fires to mass timber, with the goal of creating a bridge between science and industry.

Have a look at our Website, LinkedIn, Instagram accounts to learn more about us.

Arriving members

We are delighted to welcome Dr. Harry Mitchell to our London office as a Fire and Research Engineer. Harry completed his PhD studies at Imperial College London with Imperial Hazelab and Professor Guillermo Rein, researching flaming and smouldering hazards in large mass timber buildings. Shortly after he joined Trigon, Harry was awarded the Katopodis Prize, awarded for the best PhD thesis within the Thermofluids division of the Imperial College London Mechanical Engineering Department. Welcome to Trigon, Harry.

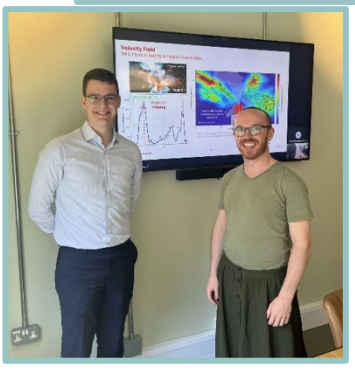
We are also proud to share that our full Trigon team has grown to 30 people this year, led by eight chartered engineers. We now have offices in London, Manchester, Birmingham, and Edinburgh.

Awards and achievements

Earlier this month, we celebrated the 6-year anniversary of Trigon being founded. We are proud to have spent the past 6 years bringing excellence in people, services, and solutions to the built environment – and we look forward to many more.

At the 2025 SFPE European Conference & Expo, our own Dr. Matthew Bonner was given the “Top Abstract Award” for their presentation “Standardized Facade Tests and Flammability: What Are We Measuring and Why?" (with co-authors Guillermo Rein from Imperial College London and Wojciech Węgrzyński from Instytut Techniki Budowlanej).

Two of our team members, Ryan Collins and Alina Erkulova, recently completed their respective studies at The University of Edinburgh. Alina finished her Masters’ in Structural and Fire Safety Engineering, and Ryan completed a Masters’ in Fire Engineering Science.



Our research lead Matthew supported a Masters’ student research project from Frixos Papachristodoulou, along with Professor Guillermo Rein and Dr. Harry Mitchell. Frixos’ project, “Studying Ejecta Transport in Battery Fires using Computer Vision”, involved using AI to identify battery ejecta in videos, and from this being able to characterize the velocities of such ejecta. Battery ejecta are hot particles that can be released at high speed during a battery fire and can potentially ignite secondary fires surprisingly far from the original cell. After submitting his Masters’ thesis, Frixos presented his research to both Trigon and the Fire Safety Research Institute (FSRI). Congratulations, Frixos, for a truly exceptional research project.

Outreach

This year, the whole Trigon team attended a two-day training conference in Ghent, Belgium, where we received great presentations from fire scientists and researchers Prof. Thomas Gernay and Dr. Thomas Thienpoint of Ghent University, who presented on a range of topics, including structural fire engineering and case studies of actual fire incidents.

At Trigon's quarterly training day, Associate Professor Francesco Restuccia of King's College London joined us and gave us an informative technical presentation on the fundamentals of combustion. In addition to this, we had Trigon members presenting on a range of topics in fire science. Darren Agnew presented on fire and smoke plume calculations; Freya Stewart Grant presented on the fundamentals of compartment fires, Ryan Collins and Alina Erkulova presented on their research conducted at the University of Edinburgh on smouldering in timber compartments and the trench effect.

One of our Directors, Karl Wallasch, has been lecturing on fire safety as part of an online Masters' course on building physics at the Bauhaus-University Weimar (Germany).

Trigon has also been proud to sponsor and foster outreach in the wider fire community over the past year, including at the 6th International Conference on Structures and Architecture (ICSA2025) in Antwerp, SheCanEngineer events, the Structures in Fire Forum (STiFF) conferences, and the Society of Fire Protection Engineers UK Chapter and SFPE Edinburgh Student Chapter.

Signed: Harry Mitchell

UL Fire Safety Research Institute

New Research

- FSRI Completes Initial Experiments Investigating the Impact of Vehicle Fires on Personal Protective Equipment
- Percutaneous Absorption of Fireground Contaminants
- Impact of Skin Decontamination Wipe Solutions on the Percutaneous Absorption of Polycyclic Aromatic Hydrocarbons
- Evaluating the ingress of total polycyclic aromatic hydrocarbons (PAHs)
- Experiments Studying Fire Blanket Effectiveness to Control Electric Vehicle Fires are Completed
- Hawai'i Hires State Fire Marshal and Moves Forward with Recommendations from Phase Three Report
- Researchers Continue Gathering Data on California Fires
- Online Workshop Explores Research on the Transfer of Toxic Chemicals in Firefighter Gear
- Researchers Conduct Experiments Measuring Gravimetric Soot Mass and Soot Particle Size
- Toxic Chemical Transfer Through PPE

New Research Reports

- **Lahaina Fire Forward-Looking Report Released by the Attorney General of Hawaii'i**
  - Read the "Lahaina Fire Forward-Looking Report (Phase Three)"

New Peer-Reviewed Journal Articles

- Journal Article Quantifies the Fire Hazard from Li-Ion Battery Fires Caused by Thermal Runaway in E-scooters published in *Fire Technology*
- Journal Article Develops Pyrolysis Model to Characterize the Burning Behavior of Ultra-Porous Polyurethane-Based Aerogel published in *Combustion and Flame 272*
- Journal Article Reports on Measuring Two-Dimensional Heat Flux Using a Plate Sensor and Infrared Thermography published in *MethodsX*

- Journal Article Reports on Approaches to Improve Convection Models in the Fire Dynamics Simulator published in the *International Journal of Heat and Mass Transfer*
- Journal Article Reports on the Development and Validation of Novel Analytical Method for Quantifying Methyl Methacrylate Yields published in the *Journal of Analytical and Applied Pyrolysis*
- New Journal Article Examines Protection Provided by Firefighting Gloves published in the *Journal of Occupational and Environmental Hygiene*
- Journal Article Reports on New Engineering Approach to Modeling Pyrolysis published in *Fire Technology*
- Journal Article Examines Heat Exposure from Electric Vehicle Fires published in the *Fire Safety Journal*

New Online Training Courses

- Structure Triage Considerations for Wildland Urban Interface Firefighting

FSRI Expands Expertise

Travis Bennett - Digital Marketing and Analysis Manager

Travis Bennett is a digital marketing and analysis manager for the Fire Safety Research Institute, part of UL Research Institutes. He leads the marketing operations for FSRI, which includes overseeing digital platforms, collaborating across teams to implement strategic campaigns, and measuring and identifying performance insights to optimize the effectiveness of research amplification initiatives. Travis brings more than 15 years of digital marketing and operations expertise, primarily within the education and staffing industries. He holds an MBA and a Bachelor of Science in business administration from Frostburg State University.

LaShunda Colvin - Web Development Coordinator

LaShunda Colvin is a web development coordinator for the Fire Safety Research Institute (FSRI), part of UL Research Institutes. In her role, she leverages her expertise in structured content, information architecture, and knowledge management in the web development and maintenance support she provides to the amplification team. LaShunda holds a Master of Fine Arts in creative writing from the University of Baltimore and earned a Bachelor of Arts in journalism from the University of Memphis. Prior to joining FSRI, LaShunda worked in healthcare as a web production and content management specialist. There, she defined and managed component web design, UX strategy, and user training across multiple digital platforms. In her free time, LaShunda enjoys spending time with her dog, reading, writing short stories, and taking road trips.

Daniel Liu - Software Engineer

Daniel Liu is a senior software engineer for the Fire Safety Research Institute (FSRI), part of UL Research Institutes. As a full-stack developer, Daniel supports the development of the National Emergency Response Information System (NERIS). Before joining FSRI, Daniel worked at iFixit, where he helped maintain and improve the company's e-commerce system. Daniel graduated from the University of California, Davis, with a Bachelor of Science in computer science.

Claire Gerner - Multimedia Content Production Manager

Claire Gerner is the multimedia content production manager for the Fire Safety Research Institute (FSRI), part of UL Research Institutes. She leads and manages FSRI's digital media production team and oversees the full production cycle from creative brief to final delivery. Claure also collaborates with other members of the research amplification team to enhance project outcomes and streamline workflows, creating engaging multimedia resources for FSRI's community.

With 15 years of video production experience, Claire has led the development, execution, and delivery of multimedia projects for federal government clients and technology companies. She holds a Bachelor of Science in broadcast journalism from Emerson College.

Rebecca Harned - Principal Research Scientist

Rebecca Harned is a principal research scientist for the Fire Safety Research Institute, part of UL Research Institutes. In her role, Rebecca will support the National Emergency Response Information System by developing a comprehensive National Fire Risk Index that provides a consistent framework to measure various types of fire

risks at the most local level, on a nationwide scale. Rebecca holds a Bachelor of Science degree in biology and a master's degree in international peace and conflict studies. She possesses over 20 years of experience working with the fire service and emergency management community at the intersection of technology, science, and policy. Rebecca most recently served as the advisor on technology and data modernization to the US Fire Administration (USFA) within the Federal Emergency Management Agency (FEMA). She has also served in various senior leadership and management capacities within FEMA, the International Association of Fire Chiefs (IAFC), the National Alliance for Public Safety GIS (NAPSG) Foundation, and the National Association of State Fire Marshals, among other organizations.

Andrew Hitchens - Engineering Technician Manager

Andrew Hitchens is an engineering technician manager with UL Research Institute's Fire Safety Research Institute, leading the engineering technician team at the research facility in Delaware County, Pennsylvania. Andrew served ten years of active-duty service in the Marine Corps as a UH-1Y helicopter pilot and continues to serve in the Reserves. He earned a bachelor's degree in political science in 2014 and holds a project management professional certification, as well as a Lean Six Sigma green belt certification. In his role, Andrew is responsible for ensuring efficient communication and operations at the Delco testing facility to coordinate efforts in support of multiple research projects and initiatives.

Baylie Scott - Research Scientist

Baylie Scott is a research scientist for the Fire Safety Research Institute (FSRI), part of UL Research Institutes. She has a Bachelor of Science in Public Health from East Tennessee State University and a Master of Arts in Public Policy from Liberty University. Before joining FSRI, Baylie worked at Esri and the Tennessee State Fire Marshal's Office. At Esri, she was the product owner for fire solutions, where she created geospatial applications for the fire service. While at the Tennessee State Fire Marshal's Office, she oversaw state-level fire data analysis and led community risk reduction initiatives. She has a passion for empowering fire departments to better protect their communities using evidence-based decision-making.

Evangelos Stefanidis - Postdoctoral Researcher

Evangelos Stefanidis is a postdoctoral researcher for the Fire Safety Research Institute, part of UL Research Institutes. In his role, he will apply advanced laser diagnostics to study combustion-generated nanoparticles and gases and enhance fire safety science. Evangelos holds a Ph.D. and a Master of Science in chemical engineering from the University of Connecticut, where his research cantered on the application of advanced in-situ laser diagnostics– including Raman spectroscopy, laser-induced incandescence (LII), and laser light scattering– for the characterization of nanoparticles, soot, and gas phase species in combustion environments. Evangelos brings a broad technical background spanning experimental design, combustion diagnostics, fuel chemistry, and systems engineering, with an active engagement from previous roles in petroleum refining, automation, and electronics, bridging academic research with real-world engineering.

Laura Zilverberg - Public Relations and Media Relations Manager

Laura Zilverberg is a public relations and media relations manager for the Fire Safety Research Institute (FSRI), a part of UL Research Institutes. In her role, she leads the outreach and engagement team, managing public and media relations and sharing lifesaving research and public safety education messages with the general public. She holds a degree in journalism and mass communication from Arizona State University. Prior to joining FSRI, Laura spent 16 years working for Allison Worldwide, working across integrated marketing and public relations.

Meet The Rest of the Team

Join the FSRI Team:

- Research Scientist IV
- Engineering Technician III
- Engineering Technician III
- Lead Research Engineer II - Fire Modeling

Signed: Jennifer Williams

University of Waterloo

Conferences, Contributions and Keynotes

At Interflam 2025, Keon Senez presented research on smoke detection, focusing on detector placement and available safe escape time (ASET) in residential fire scenarios under varying ventilation conditions. Jennifer Ellingham shared her work on smoke density measurement and modeling and contributing to discussions on improved characterization of smoke behavior in building-scale experiments.

Professor Weckman delivered an invited keynote speech at the SFPE 2025 Annual Conference & Expo in Vancouver in November. Entitled "Do you know what you need to know?" it outlined some important elements of fire modeling, testing, codes, egress and artificial intelligence for practitioners to consider in fire safety engineering and design.

Hannah Odia delivered two excellent presentations at the Indigenous Public Safety Conference 2025 in Calgary, Alberta. These highlighted Indigenous-led community-based wildfire safety and resilience research underway at University of Waterloo, as well as fire fighter safety and wellness research and educational materials she has conducted during her undergraduate projects with the UW Firelab.

Professor Gupta recently travelled to Hong Kong to present several papers at the 4th International Symposium on Lithium Battery Fire Safety, addressing topics such as lithium-battery fire dynamics, thermal-runaway mitigation, and suppression strategies.

We're pleased to congratulate Keith Calder on successfully completing his PhD thesis, titled "A Novel Framework for Performance-Based Fire Safety in the National Building Code of Canada." His research proposes a risk-based framework to transition building codes from prescriptive/objective methods to performance-based approaches. Through historical analyses, technical reconciliation and detailed case-studies, Keith demonstrates how status-quo bias, generational amnesia, shifting performance baselines and restricted integration of modern fire science and engineering limit current approaches, and how solutions can be more effectively engineered to meet quantified performance criteria and societal safety objectives. https://hdl.handle.net/10012/22519

EV Fire Safety Studies

A novel combustion chamber purpose built for lithium-ion battery thermal runaway experiments is designed, and fabrication will begin within a few weeks. The chamber will contain a custom copper calorimeter that is connected to an adjustable controlled heating system capable of specified heating rates to induce thermal runaway. The chamber is optically accessibly allowing for in-situ interrogation of venting dynamics. It also contains ports for various gas sampling, temperature sensing and flow measurement instrumentation to characterize the thermal and gaseous environment.

Prof. Gupta is looking for additional PhD and MASc students to join the team on this project. Interested? Please reach out via email (vinny.gupta@uwaterloo.ca).

Wildfire Research

Mayur Patel, a PhD student, has recently completed a study to define a design basis fire scenario for wildfires in the boreal forests of northern Saskatchewan. The work considers key aspects of wildfire behaviour, including vegetation-specific fire dynamics and flame front characteristics. It was applied to a realistic assessment of wildfire impacts on remote electrical infrastructure. This highlighted that existing national and international guidance, while suitable for assessing structural integrity to allow occupant egress, does not directly consider criteria relevant to safety of more sensitive equipment or the assessment of heavy metal release. The study developed a conservative, averaged design fire scenario, highlighting the challenges posed by spatial and temporal variability of heat flux from flame fronts, factors highly sensitive to local vegetation and fire behaviour. These insights inform the next phase of his research, aimed at quantifying ground-level radiative and convective heat flux and temperature profiles critical for modelling the volatilisation of heavy metals during wildfires.

UW Fire Researchers have partnered with the National Indigenous Fire Safety Council for several years on research related to House Fire Risk and the Wildland Urban Interface (WUI) Community Preparedness Digital Tool.

Exciting new research involves working hand in hand with the Council and our NIFSC Advisors to understand Indigenous traditional knowledge and create new Indigenous inspired risk assessment frameworks to inform and propose community-designed risk identification, preparedness and mitigation strategies. The goal of this study is to reclaim Indigenous wildfire knowledge by embracing Indigenous-informed strategies for vulnerability assessment and community resilience. Indigenous communities engage with our research team to provide vital input related to the development of wildfire risk management programs, technologies, and educational resources.

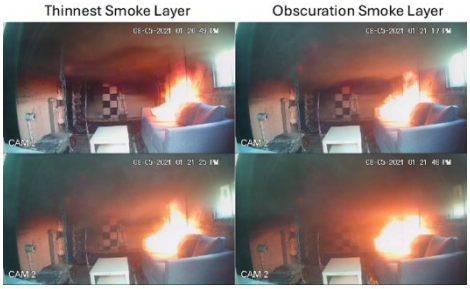
Canadian Wood Construction Research

Keon Senez is conducting research within the CWCRN *Next-Generation Wood Construction* initiative to develop a risk-based framework for assessing fire performance in of mass timber buildings. In this stage of the study, he is compiling and analyzing data from over 80 large-scale compartment fire tests conducted internationally. Main topics of investigation include how parameters such as compartment geometry, ventilation, encapsulation failure, and delamination influence fire growth and structural response. The ongoing work seeks to quantify key performance metrics—ignition, flashover, and burnout times—to better understand the overall timeline and interactions governing mass timber fire dynamics and develop tools to support evidence-based approaches to fire safety design.

Kyle Weir, a summer research assistant at the UW Firelab, worked with Professor Gupta to design and build a new experimental system for future studies into façade fire behaviour in mass timber compartments.

Smoke Visibility

A controlled observer smoke visibility study by Jennifer Ellingham, PhD student, has shown that the thinnest smoke layer height is distinctly different from the obscuration smoke layer height for a variety of fuel sources and measurement locations. Her newly developed Radiance Method for automated determination of smoke layer height from recorded videos can estimate both thinnest and obscuration smoke layer heights with excellent results in most smoke conditions investigated as shown here. Her thesis and additional publications will be completed early in 2026.



Signed: Beth Weckman

Victoria University

Victoria University's Fire Research Group (VUFRG) has been a leader in fire research and education since 1991, under the leadership of Professor Khalid Moinuddin, Professor Maurice Guerrieri, and Associate Professor Paul Joseph. With three postdoctoral fellows and ten PhD students, the group continues to deliver cutting-edge research across a wide spectrum of fire safety disciplines.

Professor Moinuddin leads pioneering work in wildland fire propagation and liquid pool fire suppression using water mist. Professor Guerrieri heads research on the behaviour of concrete in fire, while Associate Professor Joseph oversees fire safety engineering education and research into active and passive protection strategies, including eco-friendly suppression agents and advanced polymeric materials for fire resistance.

Wildland Fire Research

VUFRG is undertaking groundbreaking research to improve understanding of extreme bushfire and forest fire behaviours, including junction fires, surface-to-crown transitions, grassland fires, and firebrand dynamics.

Surface-to-Crown Fire Transition:

The transition from a surface fire to a crown fire represents a critical stage in wildfire behaviour. Using the Fire Dynamics Simulator (FDS), the group has investigated how crown base height (CBH) and wind speed govern this transition. Results indicate that a lower CBH facilitates earlier and more sustained crown ignition, while higher CBH values require stronger winds (≥10 m/s) for transition. These findings highlight the coupled influence of canopy structure and wind dynamics on crown fire initiation and sustainability.

Junction and Canyon Fires:

VUFRG is also leading research into junction fires (JF) and canyon fires (CF) — extreme fire behaviours known for rapid propagation and eruptive dynamics.

Junction fires occur when two fire fronts merge, forming a V-shaped front that advances much faster than individual fronts. Physics-based CFD simulations have revealed that junction angle, wind, and slope strongly influence fire acceleration and heat-transfer mechanisms.

Canyon fires, driven by confined terrain and wind channelling, exhibit intense up-slope convection and complex flow dynamics. VUFRG is developing a new physics-based modelling framework to reproduce coupled aerodynamic and thermal feedback in canyon fires. This work will serve as a benchmark for predicting wildfire spread in complex terrain.

Firebrand Dynamics:

Firebrands play a vital role in wildfire spread by igniting spot fires within the Wildland–Urban Interface (WUI). VUFRG has developed a state-of-the-art experimental facility to investigate firebrand generation, transport, landing, and ignition under controlled conditions.

Recent experiments show that firebrand size, shape, and shower density significantly affect landing patterns. This work will be presented at the International Fire Behaviour and Fuels Conference, to be held 28 April – 1 May 2026, Hobart, Tasmania.

Fire Suppression by Water Mist

In collaboration with industry and government partners, VUFRG has conducted a series of benchmark experiments in a standard ISO 9705 room at the Werribee Campus to develop a design fire curve tailored for ship engine rooms.

The study examined the influence of fire location, fuel load, ventilation, and obstacles on fire growth using heptane fuel. Results showed that ventilation and tray size are dominant factors affecting the heat release rate (HRR). A new design curve was derived using regression methods, showing good agreement with experimental data during the growth and peak phases. These findings will be presented at the 14th IAFSS Symposium, June 2026.

Thermal and Calorimetric Studies

VU researchers are advancing material performance studies using thermal and calorimetric analysis. Ongoing work includes:

- Development of polymer-based electrolytes for hydrogen energy systems
- Investigation of fire-retardant additives on timber
- Evaluation of flammability in aged polymers and photovoltaic panels

A recent study examined firebrand combustion using cone calorimetry, testing pine cubes (8–25 mm) at 35 kW/m^2. Results demonstrated higher heat release from multi-cube setups and from larger samples with lower surface-to-volume ratios, providing insights into the thermal behaviour of firebrands in wildland fires.

Concrete Behaviour in Fire Research

Under the leadership of Professor Maurice Guerrieri, Victoria University continues to contribute to large-scale structural fire testing through its NATA-accredited Structural Fire Testing Facility.

In 2025, the group conducted standard fire resistance testing for the Suburban Rail Loop Project, supporting infrastructure fire safety design and compliance for one of Victoria's largest transport developments.

This work reinforces VU's strong industry engagement and its ongoing role in providing independent, full-scale testing for major engineering projects across Australia.

Signed: Siddharth Gupta

Worcester Polytechnic Institute

New members

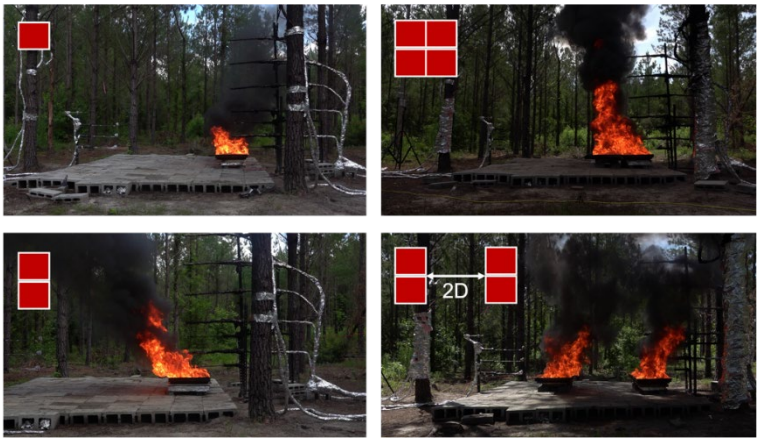
We are excited to welcome two post-doctoral researchers, **Dr. Bhattacharjee** and **Dr. Bathina Siva Kumar** into **Prof. Urban's** research group.

Dr. Bhattacharjee finished his PhD at WPI investigating industrial drying processes using computational fluid dynamics approaches. He is currently working on research related to physics-based WUI fire modelling in FDS.

Dr. Bathina Siva Kumar earned his Ph.D. from IIT Dharwad, where he worked on experimental and numerical investigations on multiple pool fires. He is currently engaged in research on fire emissions and the ignition of wildfire caused by hot metal particles.

Vyto Babrauskas was appointed Adjunct Full Professor at WPI and has been teaching a new course: FP588 Practical Explosion Analysis: Case Studies in Energy Industry during the Fall term. This course is part of the new Explosion Protection Engineering curriculum at WPI which has been started by Prof. Ali Rangwala. Vyto also took this opportunity to teach his students details of NFPA 921, Guide for Fire and Explosion Investigations. Any engineering students who go on take positions where they will be investigating fire or explosion incidents should be knowledgeable in this NFPA document, since it represents the only standard of care for such work. This topic has not generally been taught to FSE students, but as the investigations specialty draws in more qualified engineers, it will be important and timely.

Current Research



Photographs of flames from different pool fire configurations: one pan, two pans, four pans (square), and four pans (spaced).

A Multiscale Study of the Coupling Between Flow, Fire and Vegetation – Influence of Vegetation Distribution and Flow on Fire Behavior and Plume Development for Risk Mitigation in Prescribed Burns: In June 2025, a series of field-scale pool fire experiments were conducted beneath a loblolly pine forest canopy at the Savannah River National Laboratory. The tests explored how the fire behavior and plume transport evolve within a forest canopy, providing valuable insights into wildland fire dynamics and canopy–plume interactions. Visual observations of fire behavior, plume generation and transport were recorded by multiple GoPro and 3D cameras installed within the canopy. Novel techniques were adopted for measuring the drag and heat transfer coefficients as the plume interacted with a pine needle branch.

Quantifying firebrand generation: This summer, our Ph.D. student **Fernando Ebensperger** visited the University of Edinburgh (UoE) to conduct lab-scale experiments to investigate how the geometry and wind velocity affect the burning dynamics of firebrands (MLR, flaming and smoldering time). This collaborative research was headed by **Prof. Simeoni** (WPI) and **Prof. Rory Hadden** at the UoE. Further, in a separate study, an algorithm was developed to segment each firebrand (recover its area) and employ an empirical correlation to transform the area into mass, thereby quantifying the mass of firebrand generated. The results of both these works are submitted (as individual articles) to the IAFSS symposium to be held next year.

Graduated students

We are excited to announce that **Christian Vogt**, MS 2025 and **Luqing Zhu** (PhD – expected Dec. 2025), have started staff positions at Underwriters Laboratories Fire Safety Research Institute (UL FSRI). Christian completed his MS thesis in the spring on the thermal exposure of ground-mounted photovoltaic systems from grass fires and Luqing defended his thesis and is waiting for review of the final edits from his committee. We are excited for them as they progress to this next stage of their careers!

Awards

Our Ph.D. candidate Rayna Vreeland was awarded the Pearsall Award at WPI which has funded her thesis research to measure emissions from fire and the a-priori estimation of the uncertainty in calorimetry systems.

2025.

Publications

[1] Pinto, P. E., Xi, X., Miska, A., Thomsen, M., & Urban, J. L. (2025). Transient horizontal flame spread under non steady concurrent airflow. Fire Safety Journal, 152, 104336. doi: https://doi.org/10.1016/j.firesaf.2024.104336 (open access)

[2] Valdivia, J., Xi, X., Simeoni, A., & Urban, J. L. (2025). Glowing to flaming transition in Douglas fir with varied moisture content. Fire Safety Journal, 104430. doi: https://doi.org/10.1016/j.firesaf.2025.104430

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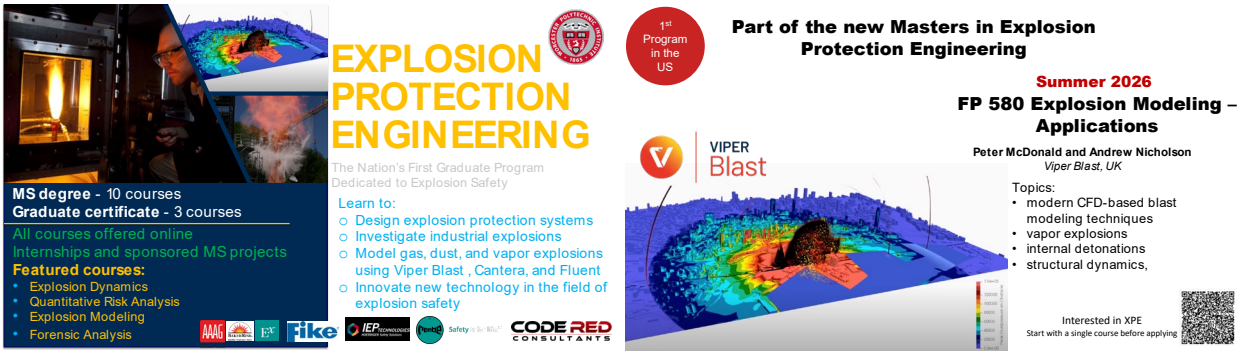
Introducing WPI's Masters in Explosion Protection Engineering Program



Signed: Selvaraj Muthu Kumaran

CONFERENCES AND MEETINGS

Upcoming Conferences and Meetings

15th International Symposium on Fire Safety Science, June 8 to June 12, 2026

The 15th International Symposium on Fire Safety Science will be held in La Rochelle, France. The IAFSS Symposium has been organized triennially since 1985 and has become the premier fire safety science meeting attracting researchers, students, and practicing fire protection engineers from across the globe.

The five-day event will feature invited lectures from world-leading fire science researchers, parallel presentations of peer-reviewed papers, work-in-progress poster sessions, and an image session showcasing fire research. In addition to the technical sessions, social activities are planned to provide meeting and networking opportunities for colleagues at different career stages in informal settings.

During the two days prior to the symposium, a series of workshops will be organized, targeting a range of important topics in fire safety science and fire protection engineering.

Registration for the next symposium is now open: https://www.iafss2026.com/registration

2026 WUI Fire Engineering Summit, 10-12 August 2026

UL Research Institute's Fire Safety Research Institute has joined the Society of Fire Protection Engineers as a co-hosting partner for the SFPE Foundation 2026 WUI Fire Engineering Summit. Together with the Department of Fire Protection Engineering - University of Maryland, we look forward to welcoming attendees in College Park, Maryland August 10-12, 2026.

The Call for Abstracts will be announced in late 2025, with submissions invited from researchers and practitioners. We encourage anyone studying or working in the wildland-urban-interface and the emerging fire risks to submit to speak at this event.

Registration will open in 2026. Sponsorship opportunities are currently available. Contact Rose Portera at rportera@sfpe.org for more information.

Additional details and agenda will be shared in early 2026. Stay tuned for more information.

Human Behaviour in Fires Symposium 2026 (HBiF26) 6-8 October 2026

On October 6th-8th 2026, the Human Behaviour in Fires Symposium will be held at Campus Helsingborg, part of Lund University (Sweden), which will be co-chaired by Dr Enrico Ronchi from Lund University and Prof Daniel Nilsson from University of Canterbury.

Campus Helsingborg, Lund University, Sweden https://humanbehaviourinfires.se/

Asia-Oceania Association for Fire Science and Technology (AOAFST) Activities

The 14th Asia-Oceania Symposium on Fire Science and Technology will be hosted by the State Key Laboratory of Fire Science (SKFS), University of Science and Technology of China (USTC) at Hefei, Anhui in 2027. Professor Hu Longhua will be the organization committee chairman. He will announce updates later.

The 1st International Symposium on Frontiers of Fire Science and Technology will be held in Fuzhou

To deepen collaborative innovation among industry, academia, research, and application, and to focus on breakthroughs in key common technologies within the fire protection field, the China Fire Protection Association, the National Key Laboratory of Fire Safety at the University of Science and Technology of China, and the National-Local Joint Engineering Research Center for Thermal Safety Technology (Anhui) jointly convened the 1st International Symposium on Frontiers of Fire Science and Technology in Fuzhou from November 7 to 9, 2025.

The 2025 Civil Aviation Safety Academic Conference will be held in Guanghan, Sichuan

The Civil Aviation Flight University of China plans to co-host the 2025 Civil Aviation Safety Academic Conference with multiple higher education institutions in Guanghan, Sichuan from November 14 to 16, 2025.

The event will invite renowned domestic and international experts and scholars in civil aviation safety. The conference will focus on the global technological frontiers of civil aviation safety, major national needs, the primary battlefield of the national economy, and people's health and safety. Topics will include fire prevention and rescue for civil aircraft, aircraft airworthiness, low-altitude emergency rescue, aviation new energy safety, and aircraft icing and de-icing. Participants will investigate main theories, critical technologies, and fundamental approaches for the civil aviation safety technology system in the new era.

Call for Abstracts: Student Research Presentation and Poster Session at NFPA Conference & Expo 2026

Don't miss the opportunity to showcase your research in fire safety. Call for abstracts for student research presentation and poster session at NFPA Conference & Expo 2026 is now open. The deadline to submit abstract is November 10, 2025. Submit your abstract here: https://nfpa.confex.com/nfpa/2026/student/papers/index.cgi

Reports from Conferences

The 11th International Conference on Fire Science and Fire Protection Engineering (ICFSFPE) was Held in Wuhan

The 11th International Conference on Fire Science and Fire Protection Engineering (ICFSFPE) was successfully held in Wuhan, China, from April 25 to 27, 2025. It was an important international academic event in fire science and fire protection engineering. The symposium conducted in-depth discussions and exchanges on scientific research in fire science and fire protection engineering. Experts and scholars from home and abroad participated.

The 4th International Symposium on Lithium Battery Fire Safety was successfully held in Hong Kong on 30 October - 2 November 2025

5 November 2025

The 4th International Symposium on Lithium Battery Fire Safety (ISLBFS 2025) was successfully held on 30 October - 2 November 2025 in Hong Kong. This symposium was hosted by The Hong Kong Polytechnic University (PolyU) and chaired by **Prof. Xinyan Huang**. This symposium welcomed more than 300 delegates from over 20 different countries/regions, shared their valuable insights towards recent developments in lithium battery safety, fire dynamics, risk assessment, safety technologies, fire impact assessment, simulation methods, and industrial applications. A total of 230 research submissions were received, and after a rigorous review process, 120 papers were accepted for oral presentation and 40 for poster presentation. See official website https://batteryfire2025.com

The symposium received strong support from numerous prestigious organizations including the IAFSS, University of Science and Technology of China (USTC), China University of Petroleum (East China), National Institute of Guangdong Advanced Energy Storage, International Association of Disaster Reduction and Emergency

Management(IADREM), SFPE, CityU, China Energy Storage Alliance (CNESA), NFPA, and the Fire Division of Hong Kong Institution of Engineers (HKIE).

The symposium included 10 plenary lectures by the world's leading experts, including **Prof. Jennifer Wen, REng** from University of Surrey and **Prof. Li Wang** from Tsinghua University. A special highlight of the first day was the Roundtable Discussion session moderated by **Prof. Wojciech Węgrzyński** from the Building Research Institute of Poland, where **Prof. Michael Pecht**, **Dr Anil Kapahi**, **Dr Yi Wang**, and **Dr Francesco Restuccia** engaged in thought-provoking discussions about the future pathways, technologies, standards, and industrialization of lithium battery fire safety. Topics included applications of artificial intelligence in battery fire prevention, safety challenges in battery recycling and reuse, and international standards coordination, generating lively interaction and debate among participants. Selected plenary/keynote lectures can be view in

https://youtube.com/playlist?list=PLyVe5fL3rmdQDZbhvNhs9rgR2BDvPybSh&si=gFU-28RKPCpsinAG

Plenary lecture by Prof. Jennifer Wen, and Roundtable Discussion

A total of 13 Best Paper Awards, 6 Best Poster Awards, and 15 Best Oral Presentation Awards were presented by **Prof. Qingsong Wang** and **Prof. Jinhua Sun** from USTC. Congratulations to all of the awardees! Selected high-quality papers from the symposium have been invited for submission to three journal special issues, ensuring the dissemination of cutting-edge research findings to the broader scientific community.

ISLBFS 2025 Award, from left to right: best Paper Awards, best Oral Presentation Awards, best Poster Awards.

Undoubtedly, this symposium provides an excellent platform for scientists, engineers, industrial practitioners, and governmental policy makers to exchange ideas and seek collaborations on the development and applications of lithium battery safety technologies. As the new energy industry continues its rapid advancement, lithium battery safety will become crucial for ensuring supply chain stability.

Signed by Prof. Xinyan Huang, The Hong Kong Polytechnic University

INVITATION TO THE 2025 CHRISTMAS TREE HEAT RELEASE RATE COMPETITION

On Thursday December 18, 2025, at 12:00 pm (EST) the Department of Fire Protection Engineering at the University of Maryland will host its 12th annual competition to predict the burning behavior (heat release rate, HRR) of Christmas trees. This friendly competition is designed to bring together members of the fire safety science community and provide an opportunity to explore and develop collaborations in the future. The event also serves to share a positive fire safety message, mainly: "If you have a natural Christmas Tree this season, please keep it well-watered."

We invite you to join us by submitting predictions to this year's competition. Predictions can be made online by visiting https://pages.nist.gov/christmas_tree_fire_safety/ and using a custom-made app that allows you to 'build' and submit your own fire by adjusting three parameters: (1) Peak Heat Release Rate, (2) Relative time to Peak HRR, and (3) Total Heat Released. Rules, scoring guidelines, additional competition information, and some reference materials can be found online at: https://fpe.umd.edu/burn-competition.

In each of the last two years, the competition received close to 200 predictions from participants residing in more than 25 countries (and 11 US states). A brief history of the competition is available online: https://burningmatters.beehiiv.com/p/christmas-tree-fire-experiments-at-the-university-of-maryland.

*The Technical University of Munich: Winners of the 2024 Golden Pinecone. *The 2024 Silver Pinecone did not clear customs to reach The University of Queensland; we are working on its replacement.*

Last year's event was unique. In collaboration with the National Institute of Standards and Technology (NIST), competition burns consisted of repeated experiments on extremely large (5.8 m tall) Douglas-Fir trees burned in the National Fire Research Laboratory (NFRL). Videos of these large tree fire experiments are available on the NIST Fire Calorimetry Database. A full report of experimental results is available online: NIST Technical Note 2327.

First and second prize in the 2024 competition (and the winners of the 2024 Golden and Silver Pinecones) were earned by The Technical University of Munich and The University of Queensland. Each year, teams of *at least 3* individuals from the same University or Research Institution are eligible to win best team prediction awards.

JOB POSTINGS

Stay up to date with the latest opportunities by visiting the IAFSS job postings page:
https://iafss.org/opportunities/

The page is continuously updated!

CALL FOR CONTRIBUTIONS

To continue succeeding with this newsletter, it is important that we receive contributions from the IAFSS membership at large. Please consider submitting articles, letters to the editor, images, news, announcements or job openings related to fire safety science of IAFSS members. These could be collected from your department, institution, country or region. Please send your contributions to the Co-Editors (Nils Johansson, nils.johansson@brand.lth.se or Xinyan Huang, xy.huang@polyu.edu.hk.

Letters to the Editor are most welcome, anytime, in response to newsletter content or any other topic related to the IAFSS.

Deadline for contributing to the next regular issue (No. 55) is APRIL 30, 2026

http://www.iafss.org