International Association for Fire Safety Science

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Fire Safety Science News

http://www.iafss.org

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Editors:
Nils Johansson, Lund University
Xinyan Huang, Hong Kong Polytechnic University

Prescribed burning experiments in Northeast China in the spring of 2025 (Photo provided by Prof Jie Ji, USTC)

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

Secretariat Office: Email: office@iafss.org

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

Message from the Chair – International Association for Fire Safety Science (IAFSS)

It is my pleasure to share my second message as Chair of the International Association for Fire Safety Science (IAFSS), as we enter an exciting phase of planning for the 15th International Symposium on Fire Safety Science, which will take place from June 8–12, 2026, in La Rochelle, France. This five-day event will bring together the global fire safety science community and feature:

- Invited lectures from world-leading researchers,
- Parallel presentations of peer-reviewed papers,
- Work-in-progress poster sessions, and
- A dedicated image session showcasing innovative fire research.

The official website has been released https://www.iafss2026.com. Key dates to remember:

September 24, 2025	Submission deadline for full papers
November 14, 2025	Reviews and requests for rebuttal are sent to authors
December 2, 2026	Author's rebuttals are due
January 8, 2026	Notifications of acceptance or rejection for oral presentation are sent to authors

In addition to the technical program, we are planning social activities designed to foster connections and collaboration across all career stages in informal and engaging settings.

As many of you know, organizing each Symposium is an enormous undertaking. I want to extend my sincere gratitude to the Symposium Planning Committee and especially our Co-chairs, Yuji Nakamura and Yi Wang, for their leadership and dedication to this important work. In addition to the international symposium, IAFSS supports the organization of the regional fire symposium in Asia-Oceania and Europe and other scientific events related to fire safety science.

Over the last year, the Trustees and Membership Advisory Council (MAC) have met regularly and made important updates on the voting mechanism to facilitate the critical decision making of IAFSS. Each subcommittee has proposed new ideas that are discussed thoroughly by Trustees and MAC, and new actions will be taken to support existing members and attract new members to the IAFSS community.

In line with our commitment to diversity, equity, and inclusion (DEI) within the fire safety science community, we are exploring several new initiatives aimed at creating a more inclusive and accessible environment. Our goal is to establish a DEI strategy that supports the active recruitment and retention of members from diverse backgrounds—across gender, culture, ethnicity, geography, and perspectives.

On January 22nd, 2025, we held our Annual General Meeting (AGM) virtually via Zoom, with an excellent turnout of over 50 members. I would like to thank our Trustees, MAC members, and committee leaders for their active participation. A special thanks goes to Tony Abu, our Honorary Secretary, whose efforts were instrumental in organizing the event.

The Education Committee and Early Years Committee have been hard at work developing a proposal for IAFSS sponsorship of Summer Schools, which has now been circulated to the membership. We are pleased to see early interest and look forward to supporting these educational initiatives that benefit our emerging researchers.

With great sadness, we lost our co-founder of IAFSS, close friend and mentor, Prof. James (Jim) Gennaro Quintiere (05/05/1940-23/12/2024). A memorial event celebrating the life and legacy of Prof. James Quintiere was held at the University of Maryland – College Park on Saturday, May 3, 2025. The event was organized by Prof. Arnaud Trouvé, Prof. Ali Rangwala and Dr. Yi Wang. The gathering drew over 80 participants, including representatives from NIST, ATF, FAA, FM, ULRI, NASA, UC Berkeley, WPI, USFS, BRI-Japan, Kyoto U, Case Western, U Iceland, and many others.

Thank you for your continued support and dedication to the IAFSS community. I look forward to the opportunities and progress the coming months will bring as we prepare for another milestone Symposium.

Signed: ***Naian Liu, Chair of 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.

contact@iafss2026.com

Call for papers

15th International Symposium on Fire Safety Science

La Rochelle, France – June 8 – 12, 2026

The International Association for Fire Safety Science (IAFSS) is delighted to announce that the 15th International Symposium on Fire Safety Science will be held between June 8 – 12, 2026 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.

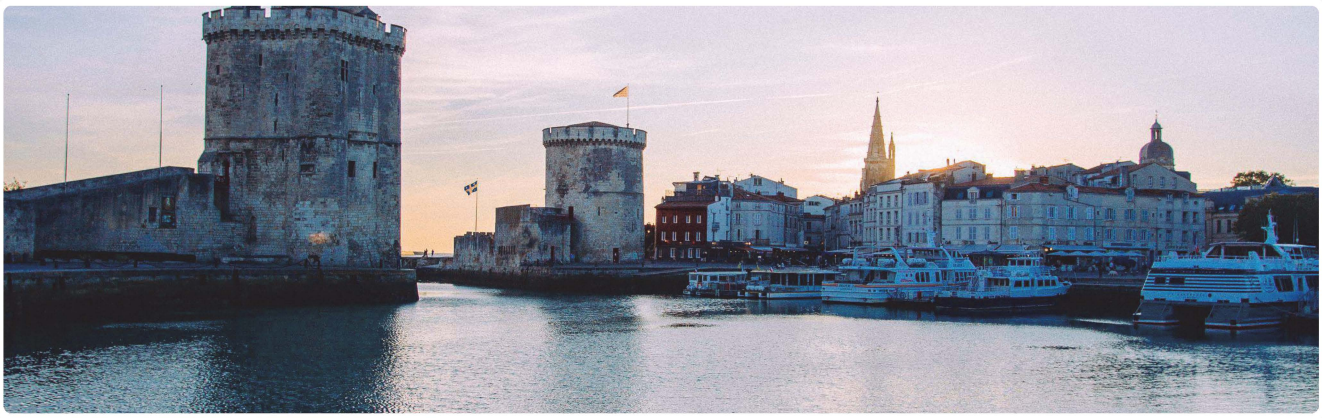
01 Host venue

The symposium will be held at Espace ENCAN in La Rochelle. La Rochelle is a city in the southwest of France, located on the Atlantic Ocean between the Loire estuary (Nantes) and the Gironde estuary (Bordeaux). With the presence of three ports (fishing, boating, and trade), it is nicknamed “La Porte océane”. The city of La Rochelle has a population of 80,000 inhabitants, named “the Rochelais”.

La Rochelle ranks 5th among France’s most-visited cities due to its rich history, landscapes, architecture, climate and hospitality, benefiting from 2,400 hours of sunshine per year.

From La Rochelle, it is possible to visit the spectacular Re and Oleron islands by boat or public transport. The old and beautiful cities of Bordeaux and Nantes are also easily accessible from La Rochelle. The famous French vineyards of Cognac and Bordeaux are a short distance away.

The city of La Rochelle is well connected to Europe and the world. La Rochelle Airport serves a number of European destinations, including Brussels, Dublin, Geneva, London, Lyon, Marseille, and Porto. The city also benefits from the excellent French railway network, being served daily by TGV trains from Paris Montparnasse Station and Paris Charles de Gaulle Airport.



02 Research tracks

Submissions are encouraged on the following tracks:

1. Ignition, flame structure, and spread (including pool fires and flame heat transfer)
2. Solid pyrolysis and smouldering
3. Material flammability (including flame retardant materials, flammability testing, fire emissions and their toxicity)
4. Enclosure fire dynamics (including compartment, building, façade, tunnel fires, and smoke transport)
5. Large outdoor fires (wildland, wildland-urban interface fires, and urban conflagrations)
6. Fires in energy systems and industrial installations (including electrical vehicles, hydrogen, photovoltaics, wind turbines, manufacturing, and storage facilities)
7. Fire detection and suppression
8. Structure-fire interactions (mechanical response to fires of steel, concrete, timber, or composite structures)
9. Evacuation, human behaviour, and societal impact of fires
10. Fire risk assessment, performance-based design, and fire forensics
11. Special track for the papers of chairs and co-chairs of the symposium that fall in the scope of the track they are chairing

03 Symposium timeline

Full papers

AUGUST 1, 2025
Full paper submission opening

SEPTEMBER 24, 2025
Submission deadline for full papers

NOVEMBER 14, 2025
Reviews and requests for rebuttal are sent to authors

DECEMBER 2, 2026
Author's rebuttals are due

JANUARY 8, 2026
Authors notified of selection decision for oral presentations

FEBRUARY 15, 2026
Revised papers with extended rebuttals are due

JUNE 1, 2026
Authors notified of selection for publication in Fire Safety Journal

Posters and images

JANUARY 30, 2026
Submission deadline for poster abstracts and images

MARCH 2, 2026
Authors notified of selection decision for posters

MARCH 2, 2026
Authors notified of selection decision for images

04 Manuscript requirements

Manuscripts must be original work and must not have been submitted to another forum. Manuscripts must be no more than 16 pages in length, with text in single-spaced 12-point Times New Roman and 1-inch page margins. The title, abstract, keywords, figures, and figure captions are subject to the page limit. References, acknowledgments, and author contribution specifications are not subject to the page limit. Supplementary materials are permitted but are not encouraged. Papers must be submitted directly to Fire Safety Journal's Editorial Manager (EM) system. When submitting the paper, please select the special issue tag "FISJ_IAFSS 2026". Submissions must follow the paper style guide and template, which are available here (August 1st: full paper submission opening).

The authors must also identify the selected research track in the letter to the editor. The platform for manuscript submission and review is currently being identified. Information on the submission process will be provided in future communications. Submitted papers will be subject to three independent peer reviews. Papers will be accepted for oral presentation at the symposium based on their quality and originality. The papers accepted for presentation will undergo a second round of evaluation, which may include additional reviews, to determine whether they meet the standard for publication in a special issue of the Fire Safety Journal.

05 Poster and images submission

A Call for Posters and Images will be issued in mid-2025. Posters may describe work-in-progress or completed projects. One-page poster abstracts will be accepted based on their quality and originality in fire safety science and its applications. Images should display non-commercial fire-related topics and can be original photographs, composites or artwork.

06 Contact

If you have any questions on the paper submission process for the 15th International Symposium on Fire Safety Science, please contact Dr. Xinyan Huang (xy.huang@polyu.edu.hk) or Dr. Pedro Reszka (pedro.reszka@uai.cl).

07 Code of conduct

All symposium attendees are expected to adhere to the IAFSS Code of Conduct. IAFSS is dedicated to diversity, equity, and inclusion within its organization and official events, and no discriminatory behavior will be tolerated.

08 Symposium planning committee

Symposium Planning Co-Chairs (SPCC)

- Prof. Yuji Nakamura (Toyohashi University of Technology, Japan)
- Dr. Yi Wang (FM, USA)

Program Scientific Co-Chairs (PSCC)

- Prof. Eulalia Planas (Universitat Politècnica de Catalunya, Spain)
- Prof. Stanislav Stoliarov (University of Maryland, USA)

Local Organizing Committee (LOC)

- Prof. Thomas Rogaume, Chair (Université de Poitiers, France),
- Prof. Benjamin Batiot (Université de Poitiers, France)
- Prof. Franck Richard (Université de Poitiers, France)

Program Communication Co-Chairs (PCCC)

- Prof. Xinyan Huang (Hong Kong Polytechnic University, China)
- Prof. Pedro Reszka (Universidad Adolfo Ibáñez, Chile)

Program Proceedings Co-Chairs

- Prof. Luke Bisby (The University of Edinburgh, UK)
- Prof. Bart Merci (Ghent University, Belgium)

Poster & Image Committee Co-Chairs

- Prof. Lukas Arnold (Forschungszentrum Jülich, Germany)
- Dr. Alex Filkov (University of Melbourne, Australia)
- Prof. Miho Seike (Hiroshima University, Japan)

Workshop Committee Co-Chairs

- Prof. Rory Hadden (The University of Edinburgh, UK)
- Dr. Randy McDermott (National Institute of Standards and Technology, USA)
- Prof. Maria Thomsen (Universidad Adolfo Ibáñez, Chile)

Diversity, Equity and Inclusion Committee Co-Chairs

- Prof. Anthony Abu (University of Canterbury, NZ)
- Dr. Sara McAllister (USA)

Early Career Committee Co-Chairs

- Prof. Vinny Gupta (University of Waterloo, Canada)
- Dr. Mélanie Rochoux (CERFACS, France)
- Prof. Yuxin Zhang (Hong Kong Polytechnic University, China)

Awards Committee Co-Chairs

- Prof. Carlos Fernández-Pello (University of California, Berkeley, USA)
- Dr. Tuula Hakkarainen (VTT Technical Research Center, Finland)
- Prof. Erica Kuligowski (RMIT University, Australia)

IAFSS Chair

- Prof. Naian Liu (University of Science and Technology, China)

IAFSS Past Chair

- Dr. Brian Meacham (Crux Consulting, USA)

16th IAFSS Symposium Local Host

- Prof. Andrés Fuentes (Universidad Técnica Federico Santa María, Chile)

Secretary

- Ms. Victoria Cuff (UK)

Program Scientific Committee Members

Track name	Chair / Co-chair	Name and affiliation
01 Ignition, flame structure, and spread (including pool fires and flame heat transfer)	Chair	Andrés Fuentes, Universidad Técnica Federico Santa María
	Co-chair	Michael Gollner, University of California Berkeley
	Co-chair	Kazunori Kuwana, Tokyo University of Science
	Co-chair	Co-chair Jiao Lei, University of Science and Technology of China
02 Solid pyrolysis and smouldering	Chair	Simo Hostikka, Aalto University
	Co-chair	Isaac Leventon, National Institute of Standards and Technology
03 Material flammability (including flame retardant materials, flammability testing, fire emissions and their toxicity)	Chair	Prof. Gaëlle Fontaine, Université de Lille
	Co-chair	Prof. Richard Hull, University of Central Lancashire
	Co-chair	Prof. Yan Ding, China University of Geosciences
04 Enclosure fire dynamics (including compartment, building, façade, tunnel fires, and smoke transport)	Chair	Prof. Tarek Beji, Ghent University
	Co-chair	Prof. Eleni Asimakopoulou, University of Central Lancashire
	Co-chair	Prof. Jie Ji, University of Science and Technology of China
	Co-chair	Dr. Jason Floyd, UL Fire Safety Research Institute
05 Large outdoor fires (wildland, wildland-urban interface fires, and urban conflagrations)	Chair	Prof. Elsa Pastor, Universitat Politècnica de Catalunya
	Co-chair	Prof. Sayaka Suzuki, Tokyo Institute of Technology
	Co-chair	Dr. Eric Mueller, National Institute of Standards and Technology
	Co-chair	Prof. Natalia Flores Quiroz, Stellenbosch University
06 Fires in energy systems and industrial installations (including electrical vehicles, hydrogen, photovoltaics, wind turbines, manufacturing, and storage facilities)	Chair	Dr. Dong Zeng, FM
	Co-chair	Prof. Qingsong Wang, University of Science and Technology of China
07 Fire detection and suppression	Chair	Dr. James White, FM
	Co-chair	Dr. Haukur Ingason, RISE

Program Scientific Committee Members

Track name	Chair / Co-chair	Name and affiliation
08 Structure-fire interactions (mechanical response to fires of steel, concrete, timber, or composite structures)	Chair	Prof. David Lange, University of Queensland
	Co-chair	Prof. Thomas Gernay, Johns Hopkins University
09 Evacuation, human behaviour, and societal impact of fires	Chair	Prof. Daniel Nilsson, University of Canterbury
	Co-chair	Prof. Rosario Ono, University of São Paulo
10 Fire risk assessment, performance-based design, and fire forensics	Chair	Prof. Shuna Ni, University of Maryland
	Co-chair	Dr. Andrea Lucherini, Slovenian National Building and Civil Engineering Institute
11 Special track for the papers of chairs and co-chairs of the symposium that fall in the scope of the track they are chairing	Chair	Prof. Elisabeth Weckman, University of Waterloo
	Co-chair	Prof. Nils Johansson, Lund University
	Co-chair	Prof. Bogdan Dlugogorski, Charles Darwin University

contact@iafss2026.com

Call for Posters & Images

15th International Symposium on Fire Safety Science — La Rochelle, France – June 8 – 12, 2026

Call for Posters

The International Association for Fire Safety Science (IAFSS) is delighted to announce the Poster Session at the 15th International Symposium on Fire Safety Science (IAFSS2026) held from June 8 – 12, 2026 in La Rochelle, France.

For display at this event, you are invited to submit a poster that advances basic understanding and presents or advances new ideas on any topic related to fire safety science.

01 Poster Key Dates

JANUARY 9, 2026
Beginning of submission of posters

JANUARY 30, 2026
Submission deadline for posters

MARCH 2, 2026
Notification of acceptance/rejection of posters

02 Poster Submission / Review

One-page abstracts should be electronically submitted by January 30, 2026 through the IAFSS2026 website. Posters can include completed work or work in progress, including new and relatively underdeveloped concepts. Students are especially encouraged to submit posters for presentation. The poster sessions are designed to foster a collegial environment where authors and attendees can discuss their research interests and make or renew relationships to help build collaborations. A template for the poster abstract can be found below and at the symposium website.

Poster abstracts will be accepted based on their quality and originality in the science of fire safety and its applications. Submissions that serve as commercial advertisements or promotional content will not be considered. The abstracts of the selected posters will be published in the electronic book of posters for the 15th International Symposium on Fire Safety Science. Detailed instructions on the format requirements of printed posters for display at the symposium will be provided upon acceptance.

Call for Images

The International Association for Fire Safety Science (IAFSS) is delighted to announce the Poster Session at the 15th International Symposium on Fire Safety Science (IAFSS2026) held from June 8 – 12, 2026 in La Rochelle, France.

For display at this event, you are invited to submit an image produced through experimental studies, numerical studies or actual events related to fire safety science. A best image award will be made at the symposium.

01 Image Key Dates

JANUARY 9, 2026
Beginning of submission for images

JANUARY 30, 2026
Submission deadline for images

MARCH 2, 2026
Notification of acceptance/rejection of images

02 Submitting your image

Images and captions (no more than 100 words) should be electronically submitted by January 30, 2026 through the IAFSS2026 website. The image format should be jpg, png, or bmp with then maximum image size for submission review of 5 Mbyte. Images submitted after the January 30, 2026 deadline will not be considered.

03 Image requirements

Images: Must be original work, non-commercial, non-promotional, and not AI-generated. For submission through the IAFSS2026 website, the image format should be jpg, png, or bmp with then maximum image size for submission review of 5 Mbyte. Images printed for display at the symposium by the submitter should be between A5 (148 mm x 210 mm) and A4 (210 mm x 297 mm) in size.

Style: Images may correspond to experimental studies, numerical studies or actual events related to fire safety science.

Caption: A brief figure caption describing the image is expected to accompany the images. Captions are limited to 100 words. The submitter should also include their name and affiliation with the caption, but this information is not included in the word count.

Display: Submitters will be provided a display space of 450 mm wide and 450 mm high that will include their image, caption, name and affiliation. The submitter is required to bring a copy of their image, caption, name and affiliation for display at the symposium. Submitters are not required to be in attendance at their image during the display session.

04 Awards

Images presented at the 15th International Symposium on Fire Safety Science will be considered for the Best Image Award.

Best Image Award – Awarded to the best fire safety science related image based on originality, scientific significance, and artistic/ aesthetic appeal. The selection will be made by the Symposium Delegates.

05 Contacts

If you would like more information on the Fire Science Image events at the 15th IAFSS Symposium, please contact Prof. Alex Filkov (Email: alexander.filkov@unimelb.edu.au), Prof. Miho Seike (Email: mihoseike@hiroshima-u.ac.jp) or Prof. Lukas Arnold (Email: l.arnold@fz-juelich.de)

06 Permissions

By submitting your image, you agree that all media (images, videos, etc.) submitted to the International Association for Fire Safety Science (IAFSS) Fire Science Image Gallery will be licensed under the Creative Commons Attribution-NonCommercial 4.0 International License, permitting non-commercial use with appropriate attribution. You grant the IAFSS a non-exclusive right to redistribute and reuse the submitted media across its communication channels, including the website, newsletter, YouTube channel, and third-party services. You will retain copyright and may reuse your content freely, including in future publications. Authors of submitted images also agree to open access use, allowing the IAFSS to feature awarded images in promotional and communication materials.

03 Awards

Posters presented at the 15th international symposium will be considered for the following Awards:

- Best Poster Award: Awarded to the best poster based on technical content, organization, and visual presentation. The selection will be made by the poster awards committee.
- Best Student Poster Award: Awarded to the best poster by a student author based on technical content, organization, and visual presentation. The selection will be made by the poster awards committee.
- Delegate's Choice Poster Award: Awarded to the best poster based on technical content, organization, and visual presentation. The selection will be made by the Symposium Delegates.

If you would like more information on the Poster event at the 15th IAFSS Symposium, please contact Prof. Alex Filkov (Email: alexander.filkov@unimelb.edu.au), Prof. Miho Seike (Email: mihoseike@hiroshima-u.ac.jp) or Prof. Lukas Arnold (Email: l.arnold@fz-juelich.de)

Type Title of Document Here [Title style]

FIRSTNAME LASTNAME[1], FIRSTNAME LASTNAME[1,2], and FIRSTNAME LASTNAME[1]
[1] Affiliation
[2] Affiliation [All information in this area uses the Author style]
Topic

Abstract [Heading 1 style]

[Body Text style] The poster must be original work. The abstract should include a concise description of the results and findings of the research. The abstract text, including the figures (optional), is limited to 1 page maximum, and must be in English and use SI units.

Example: Burning rate is a key factor in modeling fire growth and fire endurance of wood structures. This study investigated the burning rate of selected wood materials as determined by heat release, mass, loss and charring rates. Thick samples of redwood, pine, red oak and basswood were tested in a heat release rate calorimeter. Results on ignitability and average heat release, mass loss and charring rates are reported for a heat flux range between 15 and 55 kW m-2. It was found that ....

CATEGORY: *General poster* OR *Student poster*. Note: the category of "*Student poster*" means that the first author is a student. For this, please suggest the details, e.g. Student poster (Ph.D. Student).

KEYWORDS: *At least* 3 keywords are required with all letters in lower case and not bold.

Optional Document Components [Heading 1 style]

1. Symbols in the text should be italic.
2. Symbol definitions should include the units of the symbol.
3. If necessary, equations can be used in the abstract, but must be inserted into the text of the abstract.
4. If necessary, 1-2 figures can be used in the abstract. Each figure must have a number and caption [Caption style] (see the example on the right hand). A single space separates the word Fig. and the figure number, as well as the figure number and caption. Number figures consecutively with Arabic numerals.

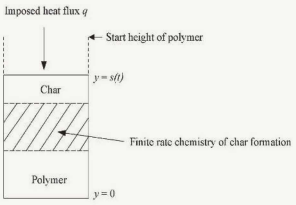


Fig. 1. Figure caption, sentence case, with period at the end. [Caption style]

References [Heading 1 style]

- Indicate references *in the text* using full-size numbers in brackets, i.e., [1]. References are numbered consecutively in the text.
- Include the full title in the *references list* [Reference style]. The reference style formats the indented paragraph and applies consecutive numbers to items in the list.

1. McCaffrey, B.J., Quintiere, J.Q. and Harkleroad, M.F. (1981) Estimating Room Temperatures and the Likelihood of Flashover Using Fire Test Data Correlations, *Fire Technology* 17:98-119,
2. Drysdale, D., *An Introduction to Fire Dynamics*, John Wiley and Sons, Chichester, 1985, p. 146.
3. Heskestad, G., "Fire Plumes," *The SFPE Handbook of Fire Protection Engineering (2nd ed)*, DiNenno P.J. (ed.), National Fire Protection Association, Quincy, MA 02269, 1995, p. 2/9.
4. Hall, J.R., "On People and Chance: the 'Hard' Facts about the 'Soft' Branches of Fire Safety Science," *Fire Safety Science -- Proceedings of the Sixth International Symposium*, International Association for Fire Safety Science, 2000, pp. 23-40.
5. Davis, W.D. and Reneke, P., "Predicting Smoke Concentration in the Ceiling Jet," National Institute of Standards and Technology, Report NISTIR 6480, Gaithersburg, MD, 2000, 12 p.

IN MEMORIAM

Prof. James G. Quintiere

It is with great sadness that we share the news of the passing of our former colleague, close friend and mentor, Prof. James (Jim) Gennaro Quintiere (05/05/1940-23/12/2024).

Jim received a Ph.D. degree in Mechanical Engineering from New York University in 1970 with a thesis entitled "An Analysis of Natural Convection between Finite Vertical Parallel Plates." During his Ph.D., Jim already showed the traits that have come to characterize many of his scientific contributions: using approximate analytical methods to solve complex mathematical problems of great practical importance. His PhD was sponsored by the National Aeronautics and Space Administration (NASA) and was the beginning of a long association with that agency. After completing his PhD, Jim started his career in fire engineering at the Center for Fire Research of the National Bureau of Standards (NBS; in 1988, NBS became the National Institute of Standards and Technology, NIST). Here he rose through the ranks to become Group Leader and then Division Chief. He led NBS through what became one of the most productive periods for fire research. From defining a theoretical framework for material flammability (that led to ASTM-E-1321) to developing practical criteria for flashover through the McCaffrey, Quintiere & Harkleroad (MQH) correlation, Jim not only touched on almost every subject pertaining to fire safety during his time but also was at the center of an impressive research activity that found his name associated to many of the people who are considered today as the forefathers of fire and combustion science. In 1990, Jim joined the Faculty of the Department of Fire Protection Engineering at the University of Maryland (UMD) with a mission to bring fire science to the growing teaching and research activities of the department. He became John L. Bryan Professor in 2000 and retired with the title of Professor Emeritus in 2012. After his retirement from the University of Maryland, Jim remained active in fire research through his close collaboration with the fire research team of the Federal Aviation Administration (FAA) Technical Center located near Atlantic City, New Jersey, and with his colleagues at UMD and NASA. During the past few years, Jim's enduring interest in fire research was further demonstrated by his participation in a NASA-sponsored project on a "burning emulator," a project that he started in collaboration with his colleagues at UMD, and that led to a series of experiments conducted in the International Space Station (ISS).

Jim has an outstanding record as a scientist, as a teacher and as an engineer. Throughout his career, Jim has been a strong advocate for building the discipline and the practice of fire safety engineering on renewed foundations set by fire science. He is well known for pioneering ground-breaking experimental work aimed at revealing fire phenomenology as well as for developing theoretical analysis aimed at providing a mathematical/physical framework to understand and predict fire dynamics. He is also well known for translating the results of his research work into methods and tools available for practicing engineers; he truly had a unique talent to connect the fundamental concepts displayed in fire problems with their practical application. Jim has authored or co-authored many influential textbooks used worldwide in fire safety engineering and fire investigation programs: "Principles of Fire Behavior" (1st edition published in 1997, 2nd edition published in 2016); "Enclosure Fire Dynamics" (co-authored with Bjorn Karlsson, 1st edition published in 1999, 2nd edition published in 2022); and "Fundamentals of Fire Phenomena" (published in 2006).

Jim was also one of the founding members of the International Association for Fire Safety Science (IAFSS), which organized the 1st International Symposium on Fire Safety Science in 1985. Jim was passionate about the need to establish a fire science community in support of fire engineering applications, the need to provide a home for this new scientific community at the international level, around the IAFSS and around shared publications and meetings, and the need to direct the IAFSS community to provide the relevant technical foundations for the practice of fire engineering. Jim delivered the Howard W. Emmons Invited Plenary Lecture, the highest award of the association, in 1986, and acted as Chair of the IAFSS from 1991 to 1997.

Jim's many achievements have been repeatedly celebrated by the fire research community. He became a Fellow of the Society of Fire Protection Engineers (SFPE) in 1999 and a Fellow of the American Society of Mechanical Engineers (ASME) in 2004; he was awarded the Bronze and Silver Medals of the U.S. Department of Commerce in 1976 and in 1982, respectively, the Kunio Kawagoe Gold Medal from the IAFSS in 2011, the Sjölin Award from the International FORUM of Fire Research Directors in 2002 and again in 2023 with the FAA Team, the Arthur B. Guise Medal from SFPE in 2006, and the Rasbash Lecture Medal from the Institution of Fire Engineers (IFE) in 2008.

Jim's understanding of fire reached a wider audience through his involvement with the fire investigation community. He not only participated in several high-profile forensic investigations related to fire, including the investigation of the Branch Davidian fire that occurred in 1993 near Waco, Texas, and the investigation of the collapse of the World Trade Center that occurred on 9/11 2001 in New York City, but also developed educational programs and was a regular speaker at many events globally.

Jim spent his final years at the shore in his home state of New Jersey, where he joined the Durning String Band (https://thedurningstringband.com) as a skilled accordionist and proudly marched with them at special events and each year in the Mummers New Years Day parade in Philadelphia. When Jim was not playing accordion with the Mummers or at local bars and restaurants, he conducted research for the Department of Transportation at the FAA Technical Center, socialized with friends and colleagues around the globe, developed and tested a handicapping system for horse racing, read voraciously, lectured at FAA intermittently, played golf occasionally, hosted lavish dinner parties (Jim always enjoyed debating with people on issues great and small), and took long walks on the beach at his ocean-front condominium in Margate.

The fire safety science and engineering community has lost one of its most enthusiastic, prominent and impactful members. The legacy of Jim Quintiere's professional achievements, humanity, humor and friendship will stay with us forever.

Signed:

Howard R. Baum (retired, formerly at the National Institute of Standards and Technology, Gaithersburg MD, USA)

Michael A. Delichatsios (Northeastern University, Boston MA, USA, and University of Science and Technology of China, Hefei, China)

John L. de Ris (retired, formerly at FM Global, Norwood MA, USA)

A. Carlos Fernandez-Pello (University of California Berkeley, Berkeley CA, USA)

Marc Janssens (Southwest Research Institute, San Antonio TX)

Richard E. Lyon (Federal Aviation Administration, Atlantic City International Airport NJ, USA)

Vladimir Molkov (Ulster University, Northern Ireland, United Kingdom)

Arnaud Trouvé (University of Maryland, College Park MD, USA)

Dr. Howard R. Baum

Celebration of the Life and Legacy of Dr. Howard R. Baum

Howard Baum, 89, retired NIST Fellow and University of Maryland Glenn L. Martin Research Professor, died April 26, 2025, at his home in Gaithersburg, Maryland.

Howard Richard Baum was born on April 3, 1936, in New York City. He earned a Bachelor of Science degree in Aeronautical Engineering (1957) and a master's degree in applied mathematics (1959) from Brooklyn Polytechnic University, and a PhD in applied mathematics from Harvard University (1964). From 1966 to 1971, Howard worked at Harvard as a research assistant, teaching courses in fluid mechanics and applied mathematics. In 1970, his wife Alice and two young children spent six months in England for a sabbatical at Oxford University.

In 1975, Howard joined the Center for Fire Research at the National Institute of Standards and Technology (NIST) — then known as the National Bureau of Standards. He stayed at NIST for the remainder of his career, publishing over 170 papers. His research focused on mathematical and computational modeling, fluid mechanics of fires, turbulent combustion, convective and radiative heat transfer, smoke transport, and microgravity combustion. His pioneering work in fire modeling led to the development of the Fire Dynamics Simulator, a key component in investigations such as the World Trade Center collapse, container ship fire safety standards, and the response to marine oil spills.

Howard earned numerous honors and awards during his NIST career, including being named a NIST Fellow in 1983. He earned the U.S. Department of Commerce Silver Medal Award in 1981 and a Gold Medal Award in 1985. He received the IAFSS Medal of Excellence in 1991 and 1999, the SFPE Arthur B. Guise Medal in 1999, and was elected a fellow and chartered physicist of the Institute of Physics also in 1999. In 1994, he was awarded a Japan Society for the Promotion of Science Fellowship for his visit to the University of Tokyo Institute of Industrial Science. In 2000, he was inducted into the U.S. National Academy of Engineering.

Upon his retirement in 2007, Howard continued to contribute to research projects at NIST and worked as the Glenn L. Martin Research Professor at the University of Maryland's Department of Fire Protection Engineering. There, he collaborated with other professors on several research projects, including the "Burning Rate Emulator," which was taken aboard the International Space Station to learn how to make space flight safer from fire.

Text is abridged from his official obituary, cited here: https://www.sagelbloomfield.com/obituary/Howard-Baum

Birgit Östman

On January 29th, 2025, we lost our dear Brigit Östman, a visionary researcher whose groundbreaking contributions to the field of wood and fire has left an enduring legacy.

Birgit dedicated her career advancing fire safety in timber buildings. As a key person at the Swedish institute Trätek, SP Trätek, SP Trä and in her later years at Linnaeus University, she played a pivotal role in the development of wood and fire research. She led the development of the system of Classification without furhter testing (CWFT) of wood-based materials, and was the driving force and one of the founders of the Fire Safe Use of Wood (FSUW) group. Through her efforts, this group became a vital global platform for sharing knowledge and advancing fire safety in wood-based construction worldwide.

Birgit's contributions were widely recognized. She was honored with the Bernadotte Royal Award of the Swedish Forestry, and the L.J Markwardth Award for Best paper in Wood and Fiber Science 2018, from the Forest Products Society, USA.

She authored numerous essential handbooks, including "Fire Safety in Timber Buildings", the FSUW Global Guildeline, and "Brandsäkra Trähus" (*Fire-Proof Timber Houses*), as well as many other influential publications. Her work was instrumental in setting standards and providing the fire safety community with vital resources for research and application.

Her legacy also includes the fire testing facilities she established for timber research in Stockholm, which became vital for testing and advancing fire safety technologies in timber structures.

Birgit was deeply committed to education and mentorship, particularly through her work with the timber and fire group at TalTech, Estonia. She gave numerous courses on timber buildings in fire, sharing her expertise with countless students and professionals during the later years as an employee at Linnaeus University. The last course at Linnaeus University, which she led, will continue under the care of her followers, ensuring that her teachings endure for years to come.

Birgit's impact on the timber and fire community is immeasurable. She was not only a leading expert in her field but also a source of inspiration and guidance to many across the world. Her passion for fire safety and her generous spirit have positively influenced us all. Her dedication was evident to the very end – just a week before her passing, she actively particiated in the Swedish mirror committee for standadization, TK181.

We will continue to honor Birgit's legacy by advancing her important work, ensuring that the future of timber construction remains safe, sustainable, and resilient.

Rest in peace, Birgit. You will always be with us.

Signed: Alar Just and Robert Jansson McNamee

UPDATES FROM IAFSS WORKING GROUPS

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

The permanent working group under the International Association for Fire Safety Science (IAFSS), known as the Large Outdoor Fires and the Built Environment (LOF&BE), has started a new initiative. LOF&BE aims to bring the community together to tackle large outdoor fire problems such as wildland fires, wildland-urban interface (WUI) fires, urban fires, and informal settlement fires. At present, IAFSS LOF&BE, contains more than 200 members spread across more than 25 countries. Samuel L. Manzello, Sara McAllister, and Sayaka Suzuki, serve as the co-leaders of the IAFSS LOF&BE working group. LOF&BE - International Association for Fire Safety Science (iafss.org).

Large outdoor fires continue to result in devastation, including the recent WUI fires in Japan, South Korea, and USA. There is no simple way to evaluate large outdoor fire 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 it among various large outdoor fuels types. There are two ways to participate. You may run a new series of tests if you desire, or if you already have data on fuels relevant to large outdoor fires, you may provide the detailed data. As this is a LOF&BE activity, the large outdoor fire fuel types may be wildland fuels, WUI fuels, urban fuels, or informal settlement fuels. If interested in joining this initiative, please contact Sayaka Suzuki (suzuki.s.dq@m.titech.ac.jp).

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

Human Behaviour in Fires (HBiF) Working Group

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

Our most recent activities relate to a detailed review of the research gaps, for which an article has been submitted for peer-review to a scientific journal. The next and final step of this task will be 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 crossed the milestone of 4,300 views and >260 subscribers. You can subscribe to our YouTube channel here: https://www.youtube.com/channel/UCSqMIEaZ08r5BrtOb5q2d0Q

Our most recent webinar is: Decision-making and evacuation behaviour– by Max Kinateder (National Research Council Canada) https://www.youtube.com/watch?v=Q3Ac9e2S-SE

Follow us on: Twitter: @HBinFire and LinkedIn: https://www.linkedin.com/groups/14004136/

We would like to thank all task group leads for 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 New South Wales, Australia

Ruggiero Lovreglio, Massey University, New Zealand

Mary Button, Delta Fire Engineering Ltd, UK

Kate Kapalo, International Association of Fire Fighters, 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

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

In February 2025, ISO TC92, Fire Safety, published the second edition ISO TR24188:2025. ISO/TR 24188:2025 - Large outdoor fires and the built environment — Global overview of different approaches to standardization. The document was developed by ISO TC92/WG14, the Large Outdoor Fires and the Built Environment Working Group. ISO TR24188:2025 provides a review of global testing methodologies related to the vulnerabilities of buildings from large outdoor fire exposures. It also provides information on land use management practices. 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 by 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 poster presented at AOSFST 2024

Dr. Natalia Flores-Quiroz of Stellenbosch University presented an AfriWUIFire project poster at AOSFST 2024, Daegu, Korea. Poster included our visions and plans for AfriWUIFire project, as well as introduction of local vegetation – some are considered to produce large amounts of firebrands. Poster was well received at the conference.

AfriWUIFire presented at the 2024 SGCI Annual Forum-Academic Symposium

Prof. Rejoice Tsheko of Botswana University of Agriculture & Natural Resources was invited to present AfriWUIFire project to the Researcher's Symposium at the 2024 Science Granting Councils Initiative (SGCI) Annual Forum and Global Research Council (GRC) Sub-Saharan Africa Regional Meeting, Gaborone, Botswana. Poster presentation included our vision, plans and current progress for AfriWUIFire project. Great discussion with representative from Africa!

AfriWUIFire workshop

1st AfriWUIFire workshop was held in Oookayama Campus, Institute of Science Tokyo, Meguro, Tokyo as well as online on February 20th 2025. More than 60 people, mostly from Japan, South Africa and Botswana registered for this event. Program Officer of AJ-CORE, Prof. Umetsu and JST representative of AJ-CORE, Mr. Masuzawa also attended the workshop. Profs. Walls and Suzuki started a workshop by introducing the project. Drs. Flores-Quiroz and Mat Kiah, Mr. van Zyl, Prof. Tsheko, Mr. Yuyi, and Ms. Maswibilili explained their findings on vegetation and structures in WUI area in South Africa and in Botswana. Prof. Harebottle introduced the policy in SA and Botswana. Prof. Manzello closed with codes and standards related to WUI fires. For interested readers, workshop slides are published in here.

Training in Japan

Following week, Dr. Flores-Quiroz, Mr. van Zyl, Prof. Tsheko, and Mr. Yuyi joined Profs. Manzello and Suzuki for training for upcoming experiments. They learned how to burn vegetations. We got to burn several trees for training!

Tohoku University featured this training at website "Japanese and African Researchers Join Forces to Tackle Wildfire Threats" (https://www.tohoku.ac.jp/en/news/university_news/japanese_and_african_researchers_join_forces_to_tackle_wildfire_threats.html).

Signed by 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)

Aalto University

New arrivals

During the last half a year, doctoral students *Sina Bazrpash, Reza Alibakshian* and *Kuljeet Singh* joined our team. Sina is researching polymeric firestop materials, looking into how they behave under heating, how they age, and what happens during their decomposition. His work blends hands-on experiments with numerical modeling, aiming to gain a deeper insight into how these materials perform over time in fire safety scenarios.

Reza started in December 2024. His research applies engineering-oriented CFD to large-scale hydrogen jet flames,

employing FDS with Lagrangian particles to predict flame length, temperature distribution and heat flux, with the goal of improving predictive tools for hydrogen fire safety and training facility design.

Kuljeet's research focuses on non-gray radiation modeling for large-scale combustion of green fuels (e.g., H_2, NH_3). The objective is to develop and optimize advanced reordering-based non-gray radiation models. Besides fire safety, this project serves the need of steel industry, aiming to integrate these radiation models into automated process controls, ultimately reducing industrial carbon footprints and facilitating the sector's transition to zero-emission green fuels.

Shanmugasundaram Dakshnamurthy joined us in April 2025 as a post-doc. He obtained PhD from Indian Institute of Technology Madras in the field of reaction kinetics and combustion modelling. With the research experience from his previous post-doc position in Chile, related to forest fire modelling, his current research topic also focusses on WUI fire modelling using FDS. The goal is to characterize different fuel particulates from Finnish forests, formulate pyrolysis models and, validate them using laboratory-scale experiments. Model development also includes creation of particle cloud description from remote sensing data, collaborating with the team of Prof Miina Rautiainen of Aalto.

Projects

Three of the above projects are funded by the Finnish fire protection fund (Palosuojelurahasto), and Kuljeet's project by Business Finland. Other new projects include Lignis: Towards carbon-neutral lignin-based fire-retardant adhesives, coatings and impregnation, coordinated by Häme University of Applied Sciences. Aalto's role is to analyze the fire behavior of lignin-infused formulations, to aim at compliance with fire safety standards and reaction-to-fire performance. IMFSE graduate Rebekka Marteinsdottir studied in 2024-2025 the performance of lignin-based adhesives and developed a cone-calorimeter scale method for CLT delamination studies. MSc students Mi Liu and Khadija Monjib use cone calorimeter and pyrolysis modelling to further study ligning-based coatings and impregnation.

Graduation

In 2024, Aleksi Rinta-Paavola defended his doctoral thesis, titled Pyrolysis and Cracking of Nordic Timbers Under External Heat Exposure. The opponent was Prof Zoubir Acem, LEMTA - Université de Lorraine. The thesis examined pyrolysis of Nordic spruce and pine timbers. Aleksi developed a thermal camera -based method to observe the formation of cracks on the surface of a cone calorimeter sample. Aleksi's pyrolysis models are included in the FDS validation database (Aalto woods). (Photo by Reijo Kouhia).

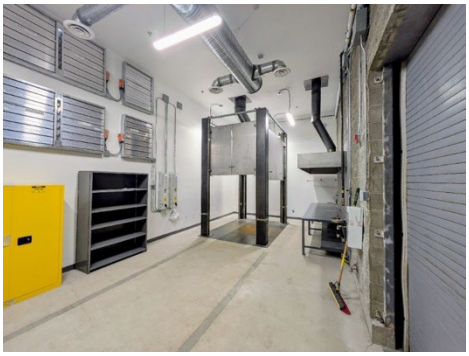
Signed: Simo Hostikka

University of British Columbia

Since the last newsletter, the UBC Fire Safety Research Group can report significant growth, doubling the number of research students. Hanupriyan Selvaganapathi joined the University of British Columbia as a Master of Applied Science (MASc) student in Forestry. He completed his bachelor's degree in civil engineering in India and has gained previous research experience in timber structures in 2022 at the Integrated Wood Design Laboratory, University of Northern British Columbia (UNBC), through the Mitacs Globalink Research Internship. Prior to joining UBC, he worked as a Liquid Waste Management Expert with the Ministry of Water and Sanitation in India. Hanupriyan's research will explore the smouldering potential of Canadian wood species as part of the Canadian Wood Construction Research Network (CWCRN). He is co-supervised by Dr. Christian Dagenais, Professeur invite at Université Laval.

Figure to the left: The newest member of UBC's fire safety research team, Mr. Hanupriyan Selvaganapathi.

Fire lab progress



Construction on the infrastructure of UBC's new Fire Resilience Wood Ignition Safety Evaluation (FIREWISE) Laboratory has nearly concluded and the project is moving into the commissioning stages. The key infrastructure items are the two exhaust hoods, which will allow bench and intermediate scale testing with various standard and bespoke fire testing equipment.

Figure to the right: So fresh and so clean. The nearly completed FIREWISE Laboratory at the University of British Columbia

Signed: Felix Wiesner

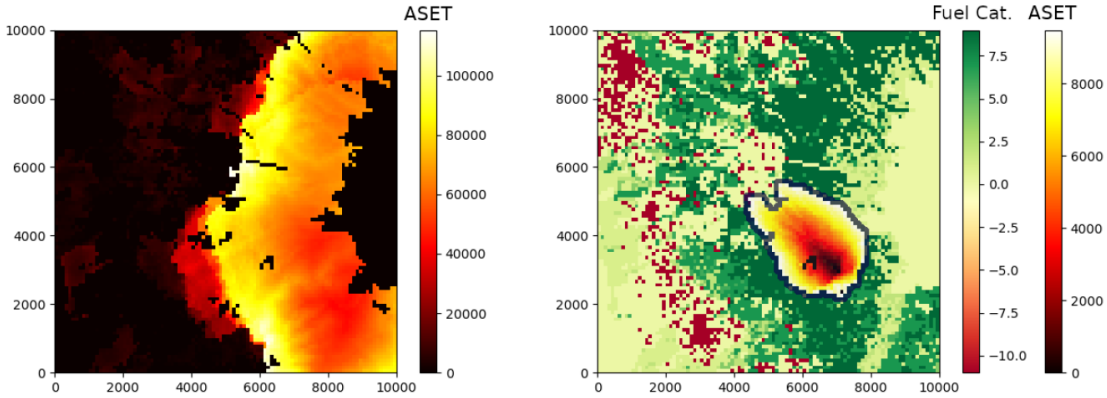
University of Cantabria

Wildfire Propagation Modelling Using Artificial Intelligence

The GAIA project (Grant PLEC2023-010303), funded by MICIU/AEI /10.13039/501100011033, brings together eight partners from academia, research, and industry, with a total budget of €1.2 million. GAIA focuses on the integrated management of forest fires, addressing prevention, extinction, and post-fire reforestation through the application of advanced technologies.

As part of this initiative, the GIDAI-UC group, a member of the GAIA consortium, is developing an advanced wildfire propagation model that combines traditional simulation methods with artificial intelligence. The model adapts the classical Rothermel surface fire spread model using cellular automata and geospatial data (vegetation, topography, and meteorology), while incorporating Deep Q-Networks to account for the stochastic nature of fire behaviour and to anticipate high-risk scenarios in the wildland-urban interface.

The approach is currently being validated using real data from the La Palma (Spain) wildfire, generating probability-based risk maps, expected maximum fire scenarios, and limiting fire conditions. The model will support safer evacuation and intervention planning by improving real-time decision-making in emergencies.



Project Completed with ASTANDER to Improve Safety in Shipbuilding

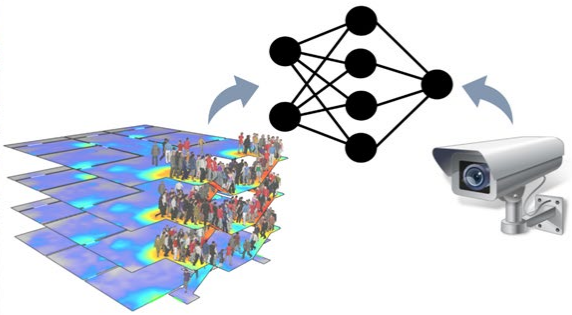
The GIDAI Group, in collaboration with ASTANDER (Sociedad Astilleros de Santander, S.A.), has successfully completed an R&D project aimed at enhancing safety during ship repair and conversion operations and funded by the Government of Cantabria through SODERCAN under the 2023 call for ICT sector projects. The project focused on demonstrating and validating an integrated software tool for risk management and evacuation planning in confined spaces, tailored to the specific needs of shipyard environments.

The tool combines early hazard identification, simulation-based planning, and real-time monitoring to support agile and effective responses to potential risks in critical operations during shipbuilding. In addition to technological innovation, the project contributed to strengthening safety training for both ASTANDER's internal staff and subcontracted personnel, including the analysis of outsourced tasks and the implementation of prevention protocols.

Visit from Foreign Universities

At the GIDAI Group, we maintain a close relationship with other research groups at the international level. From February 27 to March 28, 2025, we have the pleasure of collaborating with Ondrej Uhlík, a professor at the Institute of Computer Science of the Faculty of Civil Engineering at BUT in the Czech Republic. During his stay with our group, under the supervision of Professor Daniel Alvear and as part of the ERASMUS+ program, Ondrej has

carried out various research activities focused on the use of artificial intelligence for real-time emergency management.



Intelligent support system for the prevention and management of industrial emergencies in Cantabria

Last April, we received a visit from the Government of Cantabria at the University of Cantabria to review the partial results of the NEXT project – Intelligent system to support the prevention and management of industrial emergencies in Cantabria. The NEXT project aims to incorporate new developments related to the development of an industrial safety decision-support tool for incidents and emergencies, in order to reduce these types of incidents and their consequences, which translate into significant economic costs and, in the worst case, personal losses. This objective is achieved through the integration and evaluation of detection, propagation prediction, and decision-making (incident propagation and evacuation) modules applicable to different types of industries.

The meeting showcased the early-stage incident detection model developed based on the artificial intelligence algorithm YOLO (You Only Look Once), which, after training and validation, enables fire detection in a complex environment such as an industrial facility. Additionally, the advanced propagation-evacuation model with a VR environment was shown, which will be completed with the models that are being developed for use in real time and that are based on artificial intelligence.

The University of Cantabria has received funding co-financed by the European Regional Development Fund through the 2021-2027 FEDER Operational Program of Cantabria via the grant line 'Funds for research projects with high industrial potential by technological agents of excellence for industrial competitiveness TCNIC. (NEXT Project 2023/TCN/004- Financiado por el Gobierno de Cantabria/FEDER, UE).

Signed: Mariano Lázaro

University of Canterbury

Collaboration with Waseda University

Professor Daniel Nilsson is currently on a four-month sabbatical at Waseda University in Tokyo, where he is collaborating with Professor Tomonori Sano (Waseda University) and Dr. Mineko Imanishi (Takanaka Corporation). Tomonori, Mineko and Daniel are planning to perform collision avoidance experiments to explore how people avoid colliding with others in crowded situations. In the experiments, participants' travel paths will be tracked, but they will also be wearing eye-tracking glasses. The eye-tracking data can be used to determine what people look at when they try to avoid collision with others.

Earlier in the year, Daniel spent one month at Lund University as part of his sabbatical. Some of the things he did in Lund were to plan the upcoming Symposium on Human Behaviour in Fires (planned for October 2026 in Helsingborg), apply for Erasmus+ funding with Dr. Nils Johansson, et al, and assist Dr. Silvia Arias in her project about evacuation planning in hospitals.

Research on Hospital Evacuation

One of our PhD candidates, Luke de Schot, has been collaborating with Professor Ruggiero Lovreglio and Dr. Paul Geoerg, and together they have published a paper on hospital evacuation in Fire Technology. This study is among the most detailed hospital evacuation studies to date and covers real-world hospital evacuation drills across a variety of units, offering a rich insight into pre-movement phases, movement speeds, and evacuation delays due to high-acuity patients and equipment dependencies. The paper can be found at https://doi.org/10.1007/s10694-025-01731-z.

PhD Opportunity

Applications are invited for one fully funded (three years maximum) PhD scholarship in the Department of Civil and Natural Resources Engineering at the University of Canterbury (Christchurch - New Zealand), to explore the use of Virtual and Augmented Reality for firefighting training (supervisors: Dr Aatif Khan, Prof. Daniel Nilsson, and Prof. Jose Torero).

Scholarship: Provided by: Fire and Emergency New Zealand (FENZ)

Amount: $32,000 per annum + tuition fees (New Zealand Dollars).

Closing date: 30th May 2025.

To apply, please send your CV, motivation letter and Transcript to Dr Aatif Khan: aatif.khan@canterbury.ac.nz

Signed: Aatif Kahn

Carleton University

New Faculty Appointment

Mohamed Beshir joined Carleton University in 2023 as an assistant professor in fire safety engineering and developed the EMBER-Fire group.

EMBER Fire Group

At EMBER-Fire we focus on fire safety challenges at the Wildland-Urban Interface (WUI) and within the Low Carbon Built Environment (LCBE). We conduct research on compartment fire dynamics, pyrolysis of solid fuels (e.g., timber), and the transport of firebrands in WUI fire scenarios. We place particular emphasis on vulnerable and understudied communities, including WUI fire risks in Indigenous communities in Canada**,** fires in informal settlements, and equitable evacuation strategies for high-rise timber buildings. To support this, we use Virtual Reality (VR) to explore evacuation needs, with a focus on populations with mobility disabilities.

The team

Ember Fire Research Group is currently composed of: Mohamed Beshir (PI), Taruneet Kaur (Team Manager and Research facilitator, joined March 2025), Ahmed Abdelnabi (PhD student, joined Fall 2023), Mohamed Tawfik (PhD student, joined Winter 2024), Jane Gachuche (PhD student, joined Fall 2024), Joseph Elsayegh (PhD student, joining Fall 2025). Antoine Hickey, Moumina Mire, and Fatema Mohamed (Undergraduate students, joined Summer 2024), Chaloe Ouellette, Jillian Feld, and Yevhen Matsiyevsky (Undergraduate students, joined Summer 2025).

National Research Council of Canada (NRC) collaborations

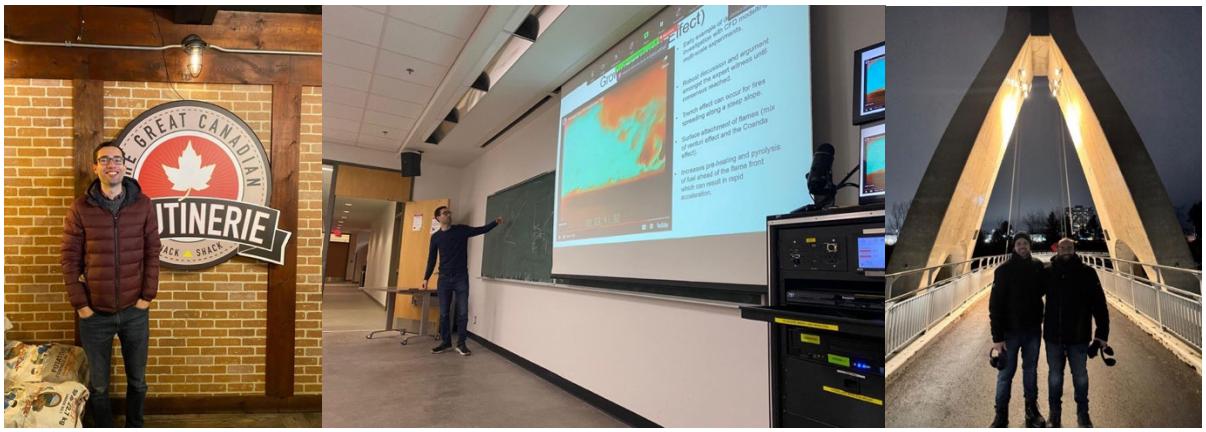
Currently, the group is involved in a two-year collaborative project with the National Research Council of Canada (NRC) led by Dr. Islam Gomaa (research officer at the NRC). This project, titled "Building a Comprehensive Database of Numerical Models for Fire Dynamics and Hazard Assessment," aims to create extensive database dedicated to fire dynamics and hazard assessment. The project supports Canada's LCBE program. Key areas within this project include: (i) Wildfire ignition prediction and risk assessment for communities and natural environments, (ii) Assessment of electric vehicle battery thermal runaway and related fire hazards and (iii) Integration of fire safety models with Building Information Modelling (BIM) to enhance building design. The group is also collaborating with Dr. Max Kinateder and Dr. Noureddine Bénichou from NRC on a project titled "Evaluation of Safety in Single Means of Egress for Residential Occupancies". The project reviews how single-exit designs affect evacuation safety and aims to contributes to the ongoing development of the National Building Code (NBC).

Industrial Partnership

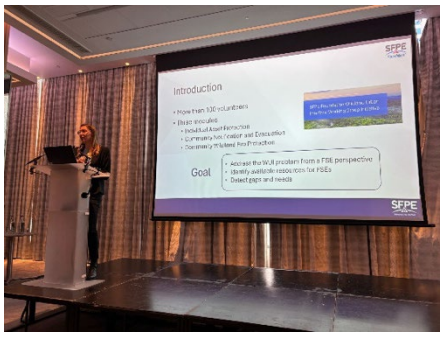
With funding support from LMDG Building Code Consultants Ltd., EMBER-Fire has initiated a collaboration with the firm, led by Kieran Ager, to advance the development of a pyrolysis model for timber compartment fires. The project supports performance-based fire safety design by enabling more accurate assessment of fire risk in mass timber buildings, contributing to Canada's broader transition toward net-zero construction. As part of this collaboration, Kieran Ager visited Carleton University in Fall 2024, engaging with the research team, and participating in a graduate seminar on fire safety engineering.

Academic Visitors

EMBER-Fire continues to benefit from a dynamic exchange of ideas through visits from distinguished scholars and researchers in the fire safety community. In October 2023, Dr. Ann Jeffers from the University of Michigan visited EMBER-Fire at Carleton University and delivered a compelling talk on mental health to the Faculty of Engineering and Design. A recognized voice in promoting mental health in academia, Dr. Jeffers shared valuable perspectives that resonated across disciplines. During her visit, she also delivered a guest lecture in our graduate course, Fundamentals of Fire Safety Engineering, offering students a unique opportunity to engage with her expertise. Dr. Zak Campbell Lochrie from the university of Edinburgh visited EMBER-Fire twice, in Fall 2023 and again in Fall 2024. During both visits, Dr. Lochrie gave guest lectures in the Fundamentals of Fire Safety Engineering course and collaborated on work and design of experiments in our fire lab at Carleton University. He also participated in research visits to the NRC fire lab in Ottawa. Dr. Lochrie now serves as a co-supervisor for our PhD student Mohamed Tawfik, further strengthening academic collaboration between our institutions. From November 2024 to April 2025, EMBER-Fire welcomed Rodolfo P. Helfenstein, a visiting PhD student from the Federal University of Rio Grande do Sul (UFRGS), Brazil. Rodolfo's visit was part of his doctoral research under the supervision of Dr. Felipe Centeno (UFRGS), with Dr. Mohamed Beshir as his second supervisor. His research focuses on fire spread in wildland-urban interface (WUI) areas, with a particular emphasis on the ignition of wooden structures of informal settlements due to firebrand showers. His work combines numerical modeling and experimental investigations to support the development of more effective fire prevention strategies.



Students' achievements and activities



We are pleased to share that Jane Gachuche, PhD student at EMBER-Fire, has been awarded the IBET Momentum Fellowship. This prestigious fellowship supports Black and Indigenous scholars in engineering and STEM, with the goal of fostering more equitable and inclusive research environments. Jane's recognition underscores her strong academic performance, leadership, and commitment to meaningful change within the research community.

PhD student Mohamed Tawfik represented EMBER-Fire at the 2024 Wildland Fire Canada Conference (WFCC), where he engaged with wildland fire management agencies, Indigenous knowledge holders, scientists, and practitioners from across Canada and around the world. His participation contributed to ongoing conversations on wildland fire resilience and integrated fire management strategies. In addition to his academic contributions, Mohamed plays an active role in promoting equity, diversity, and inclusion (EDI) in fire science. He currently serves on the Diversity, Equity, and Inclusion (DEI) Committee of the International Association for Fire Safety Science (IAFSS) and the EDI Committee of the International Association of Wildland Fire (IAWF), where he advocates for a more inclusive global research landscape. Mohamed was also awarded the prestigious Alfred J. Wise Scholarship, an annual recognition presented by the Dean of Graduate and Postdoctoral Affairs at Carleton University, upon recommendation from the Department of Civil and Environmental Engineering. This award honours exceptional graduate students who demonstrate innovation, leadership, and the potential to advance the field of fire safety engineering.

Signed: Mohamed Beshir

Polytechnic University of Catalonia

People update

Dra. Pascale Vacca has been awarded with a Wildland-Urban Interface (WUI) Research Fellowship by the SFPE Educational & Scientific Foundation to contribute to the Foundation's ongoing WUI efforts by collecting the findings of the WUI Working Group in a white paper.

Dr. Pascale Vacca was recently interviewed by eldiario.es to discuss the growing wildfire threat in Spain and the lack of adequate prevention policies.

In September2024, Muchen Zhang, Lorenza Saturnino and Jairo Andrés Meneses-Gelves started their PhD at CERTEC (UPC) as part of the PROSAFE Marie Skłodowska-Curie Actions Doctoral Network.

Academic updates

The 4th European Symposium on Fire Safety Science (ESFSS) was hosted by CERTEC (UPC) in October 2024, in Barcelona. The symposium, endorsed by the International Association of Fire Safety Science (IAFSS), gathered researchers from and beyond Europe to have exchanges and discussions about fire safety science. Key discussions focused on emerging trends in wildfire-urban interface risks, innovative fire suppression technologies, and human behavioural modelling during evacuations. The event also highlighted cutting-edge advancements in computational fire dynamics and fire-resistant materials, fostering collaborations between

CERTEC Team and IMFSE Students, Nov 2024

academia, industry, and policymakers to address evolving fire safety demands in a climate-sensitive era.

We are delighted to celebrate the conclusion of another successful academic year as a Full Partner University of the International Master of Science in Fire Safety Engineering (IMFSE). CERTEC offered courses on wildfires and WUI fires including Wildland Fire Behaviour and Modelling, Risk and Vulnerability at the WUI, and Advanced Fire Safety Engineering as well as Risk and Safety at the Chemical Industry. We look forward to continuing our collaboration with IMFSE to advance education and research in this field.

Projects updates

Smart Integration of Process Systems Engineering & Machine Learning for Improved Process Safety in Process Industries – PROSAFE project, funded under the European Commission's Horizon Europe program, runs from January 2024 to December 2027. It is a Marie Skłodowska-Curie Actions Doctoral Network coordinated by Danmarks Tekniske Universitet (Prof. Gürkan Sin), and involves collaboration with Universitat Politècnica de Catalunya (Prof. Eulàlia Planas & Prof. Elsa Pastor), Norwegian University of Science and Technology (Prof. Johannes Jäschke & Prof. Idelfonso Nogueira), Imperial College London (Prof. Alessandra Russo), Koç Üniversitesi (Prof. Can Erkey), Columbia University (Prof. Venkat Venkatasubramania), and industry partners NOVOTEC (Dr. Miguel Muñoz), KAIROS (Dr. Claus Myllerup & Dr. Denis Kirchhübe), Risktec (Mr. Steve Pearson) and Port de Barcelona (Dr. Carles Rua). The network undertakes innovative and original research and offers unique multi-sectorial and multi-disciplinary research and training opportunities for a total of 12 doctoral candidates (DCs) in the disciplines of machine learning (ML), artificial intelligence (AI), and process systems engineering (PSE) with domain knowledge of process industry and process safety.

Development of a New Intelligent and Dynamic Risk Assessment Framework using AI and CFD – I-DRAF project, started on September 2024 and will end on December 2027. It is a project funded by the Spanish State Research Agency, with Prof. Eulàlia Planas and Prof. Elsa Pastor from CERTEC of UPC as scientific coordinators. I-DRAF aims to revolutionize risk assessment in high-risk environments, such as wildland-urban interfaces and industrial zones handling hazardous substances, by integrating AI and computational fluid dynamics (CFD). Building on previous projects that advanced AI applications in wildfire forecasting, BLEVE effect modelling, and safety distance predictions, this initiative synergizes CFD's predictive capabilities for fires, explosions, and toxic dispersions with AI-driven data analytics.

EUBURN Initiative: Advancing Wildfire Monitoring in Europe through Airborne and Multi-Scale Observations

Ronan Paugam is contributing to the EUBURN initiative, led by Cyrielle Denjean at Météo-France, which includes major airborne campaigns scheduled for the summers of 2025 and 2027. Supported by Météo-France and the newly funded Interreg SUDOE project, EUBURN aims to simultaneously characterize wildfire activity and the composition of associated aerosol plumes using the SAFIRE ATR-42 research aircraft. The initiative adopts a multi-scale approach, integrating satellite, airborne, and ground-based observations—including data from regional air quality monitoring networks. Civil protection agencies are actively engaged in the project to help design monitoring systems capable of addressing the constrains of short time duration in wildfires in Europe.

In the SUDOE project AMAYA (Environmental and Water Agency of Andalusia) and UPC will collaborate on the development of a fire front monitoring system applicable to both fire attack and post processing applications. UPC is also involved in the deployment of real-time active monitoring systems that will support both flight planning and decision-making during the 2025 and 2027 campaigns.

Signed: Eulàlia Planas

University of Central Lancashire

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.

On Wednesday, 7th of May 2025, University of Central Lancashire proudly hosted the Institution of Fire Engineers Graduate Lecture 2025. This annual event, established in 1996, was created to celebrate the first generation of fire engineering professionals who had graduated from University of Central Lancashire, the University of Leeds, and Southbank University. Students from University of Central Lancashire, the University of Edinburgh, and Imperial College London presented their final-year research projects to a panel of academics and industry experts. We are proud to report that University of Central Lancashire students Jack Mitchell and Kristian Haydn Clowes won first and second place, respectively, while Zane Ladhani from the University of Edinburgh secured third place. The judges included Dr. Martina Manes from the University of Liverpool, Dr. Herodotos Phylaktou from the University of Leeds, Dr. Michael Spearpoint from OFR Consultants, and James Lane from Wintech.

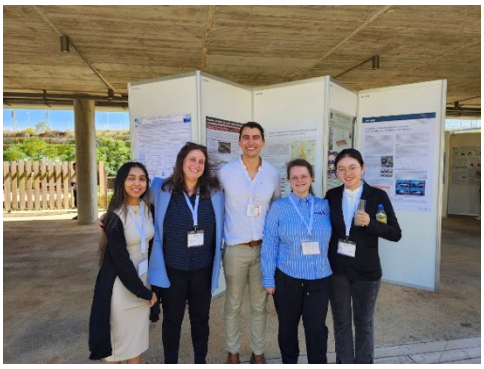
Figure to the left: Jack Mitchell, Dr. Shephard Ndlovu and Kristian Haydn Clowes at the Institution of Fire Engineers Graduate Lecture 2025.

We welcome our new PhD student Daniel John Owen Fairhurst who has joined our team to work on the topic "The Use of a Digital Twin in Fire Incident Management." We would also like to congratulate Tsun Bong Chan on the successful completion and defence of his PhD thesis titled "Theoretical Analysis and Numerical Investigation of Atrium Fire Engineering Design Principles," supervised by Dr. Tony Graham and Dr. Eleni Asimakopoulou, and Fiyinfoluwa Joan Medaiyese for her work on "Pyrolysis of Plastic Waste to Produce Environmentally Friendly Fuel," supervised by Dr. Hamid Nasriani and Dr. Khalid Khan. We also congratulate Michael Akolawole Dada for his 2025 Undergraduate Research Internship, where he will contribute to experimental work on understanding and preventing wildfires, including investigating physical mechanisms of rate of spread and developing a prototype "nose" sensor for early wildfire detection.

In other research news, funding from the Royal Academy of Engineering's pump-priming scheme was used to support collaboration between University of Central Lancashire and the National Technical University of Athens. This included showcasing fire safety research facilities, including large-scale testing at Washington Hall, and recruitment of researchers Sai Pavan Kumar Balabomma and Enya Zhang to support research. We are pleased to report the successful completion of the project "Semi-probabilistic model development to address informal settlement fire spread", funded by the Lloyd's Register Foundation. Led by Chris Randal, Dr. Shephard Ndlovu, Professor Richard Walls, Professor Champika Liyanage, and Dr. Eleni Asimakopoulou, in collaboration with Stellenbosch University and Hydrock now Stantec, the project delivered vital insights into fire spread mechanisms in informal settlements and contributed to improving fire safety for vulnerable communities globally. Also, our SAFE project, funded by the UK Home Office, has informed the revision of National Fire Chiefs Council (NFCC) operational procedures that are implemented across all UK Fire and Rescue Services (FRS).

Figure to the left: Dr. Eleni Asimakopoulou, Sai Pavan Kumar Balabomma, Chris Randall and Dr. Shephard Ndlovu at Washington Hall.

In October 2024, University of Central Lancashire had a strong presence at the 4th European Symposium on Fire Safety Science, held at the Universitat Politècnica de Catalunya in Barcelona, Spain. Five members of our fire team attended and presented their research. Amy Grainger, a Doctoral Training Centre (DTC) PhD student working with KIWA, presented on fire detection in waste and recycling materials. Lareb Nasar, an MSc alumna now with London Fire Brigade, presented work on machine learning to predict fire development. Angus Cameron, also an MSc alumnus now at KIWA, discussed radiative heat transfer in façade fires. Enya Zhang, a BEng (Hons) Fire Engineering alumna now at the University of Cambridge, presented modelling work on wildland fire spread. Dr. Eleni Asimakopoulou chaired a technical session on fire dynamics and structural response in fires. The symposium offered three exciting days of cutting-edge discussions on materials behaviour in fire, evacuation and human behaviour, detection and suppression, structures in fire, wildcards, and WUI fire dynamics, with strong University of Central Lancashire representation throughout. Enya



Zhang also received the prestigious Institute of Fire Safety Managers (IFMS) scholarship to investigate the effect of wood coatings on flame spread and her paper was accepted for as a poster at the Fire Safety of Facades Conference 2024 (FSF) in Lund Sweden and as an oral presentation at the International Conference on Fire Safety Engineering Research and Practice (iCFSERP24).

Figure to the left: From left to right, Lareb Harriet, Eleni Asimakopoulou, Angus Cameron, Amy Grainger and Enya Zhang.

Dr. Shephard Ndlovu, as a member of Operation Florian, a Fire and Rescue Service Humanitarian Charity, partnered with University of Central Lancashire and travelled to Zimbabwe with six BSc (Hons) Fire and Leadership Studies students to assist in developing firefighting infrastructure. This collaboration allowed students to apply their knowledge to enhance fire safety and rescue operations in the region.

Figure above: Dr. Shephard Ndlovu and University of Central Lancashire students in Zimbabwe.

Throughout the academic year, we have continued our CPD seminar series in partnership with the Institution of Fire Engineers and the Lancashire Fire and Rescue Service. Running from September to June, the series features leading voices in fire safety. Highlights from the 2024–2025 series include Steve McGuirk, who opened with "Grenfell… What Really Happened and Why?" on 25th of September 2024, followed by Dr. Michael Kinsey addressing cognitive biases in fire engineering on 16th of October 2024. Dr. Martina Manes and Kevin O'Neil presented on kitchen fire risk linked to cooking practices and social contexts on 20th of November and 11th of December, respectively. In the new year, Ben Levy delivered a talk on tall building fires on 15th of January 2025, and Gary Howe presented on fire risk management on 12th of February 2025. Also, we had the pleasure to host several researchers such as Professor Lukas Arnold, Dr. Alex Belt from Forschungszentrum Jülich and Assistant Professor Gabriel Castelblanco from University of Florida that delivered research seminars to our group.

We are especially proud to host the inaugural International President's Technical Conference 18th-19th June 2025 at University of Central Lancashire's Preston campus. This unique event brings together the global fire safety community to share insights, innovations, and address the technical challenges and opportunities shaping the industry. The conference showcases University of Central Lancashire's strong tradition in applied fire research and industry engagement, offering an ideal backdrop for meaningful technical exchange.

Signed: Eleni Asimakopoulou, Tracy Bradford and Shephard Ndlovu

University of Edinburgh

50 Years of Fire Engineering at The University of Edinburgh – New Video Series

In the previous update, we shared news from our recent celebration of 50 years of Fire Engineering at The University of Edinburgh. The department was initatiated by Professor David Rasbash who was appointed as the UK's first Chair in Fire Engineering in May 1973, with the first engineering diplomas available in 1974/75, and the fist MSc program starting in 1977/78.

A 50th Anniversary celebration event was held in May 2024, bringing together alumni, group members past and present, and a number of distinguished speakers who joined us to share their insights and perspective by reflecting on 50 years of progress in a number of areas from flame spread to fire education. These talks were curated to reflect the program title "New Variations on an Old Theme", as an homage to the Inaugral Lecture of Professor Rasbash.

ADVERTISING FEATURE

CRIME AND FIRE PREVENTION

Upward trend of offences reversed

By David Appleton

Edinburgh University's new department

By Ronald Bassel

Chubb Fire

We are now delighted to share that the following talks from this event are now freely available online:

- Carlos Fernandez-Pello | 50 Years of Flame Spread
- Björn Karlsson | 50 Years of Compartment Fires
- Bart Merci | 50 Years of Fire Modelling
- Sara McAllister | 50 Years of Wildland Fire Research
- Colin Todd | 50 Years of Fire Regulation
- Susan Lamont | 50 Years of Fire Safety Consulting
- José Luis Torero | 50 Years of Fire Education
- The Future | Panel Session

The full set of talks can be accessed via the online playlist:

https://media.ed.ac.uk/playlist/dedicated/1_80rcksf7/1_9bj2fex3

We would like to place on record our thanks to all of these excellent speakers for sharing their reflections on the previous 50 years, and the road ahead, and for kindly agreeing to make these video resources publically available for the fire community.

We are grateful to the following donors for making the event possible: Design Fire Consultants, OFR Consultants, Lygates (Prof James Lygate), Hydrock, now Stantec and Semper.

New Group Members

Dr Rich May has joined the Edinburgh Fire Research Group as a Postdoctoral Research Associate. His interest in fire began during his first degree at Edinburgh which included a summer placement in the fire group investigating the use of digital image correlation to observe bonded joint failure modes. This was followed by a MEng thesis on numerical modelling of unbonded post-tensioned concrete slabs subject to elevated temperatures. Following graduation Rich moved into consultancy, spending almost a decade working on structural assessment, retrofit and conservation. This included interventions to historic landmark buildings in London and Edinburgh. Having gained chartership with the IStructE, Rich returned to University of Edinburgh and completed a PhD in structural health monitoring using vibration-based techniques. Rich's postdoctoral work will relate to fire incident data collection methods in LMICs, combining his interests in fire, existing structures and data-driven assessment. Outside of work Rich enjoys all things cycling and music-related.

Dr Sam Stevens re-joins the Edinburgh fire group as a research associate, conducting experimental and numerical work to investigate heat transfer in FRP materials under burning and airflow conditions. This work, alongside Dr William Jarrett and Prof Rory Hadden, will support the development of large-scale test rig for FRP components. Sam will also continue working as a research consultant for Kindling, including continuing Kindling's existing research collaboration with Dr David Rush at the University of Edinburgh, conducting large-scale fire experiments to investigate fire spread hazards in informal and humanitarian settlements.

Congratulations Dr Hussein Cadosch & Dr Jonathan Reep

We are delighted to celebrate the recent success of two group members in successfully defending their PhD thesis.

Congratulations to Dr Hussein Cadosch who recently successfully defended his PhD thesis titled: 'Fire Behaviour of Concrete Planks Exposed to Elevated Temperatures using Gas-Fired Radiant Panel Arrays'. This project was supervised by Prof. Luke Bisby and Prof Giovanni Terrasi, with Dr Colin Davie from Newcastle University serving as the external examiner.

And congratulations to Dr Jonathan Reep who this month defended his PhD thesis titled: 'The Role of Heat and Mass Transfer on the Effluent Generated by Fire Flames'. This project was supervised by Prof. Rory Hadden, with Dr Christine Switzer from the University of Strathclyde acting as external examiner.

Fire Engineering Science MSc

Applications remain open for our Fire Engineering Science MSc, however deadlines are fast approaching. This programme helps students to develop a greater understanding of the key physical phenomena of fire behaviour and their application in engineering. Further information can be found in a short video shared by the School of Engineering and featuring staff and students from the MSc Program.

Fire Dynamics Course – Hefei, China

Dr Ricky Carvel recently returned from a successful visit to University of Science and Technology of China (USTC) and the State Key Laboratory of Fire Science in Hefei, China. During this visit Ricky delivered a course in Fire Dynamics across 2 weeks and was delighted to spend time with the enthusiastic student cohort, and to catch-up with previous Edinburgh Fire Group member Prof. Yu Wang.

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.

Ongoing research projects include

Mechanical properties of timber at elevated temperatures: This project, previously led by Dr. Cvetanka Chifliganec, 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.

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.

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).

We have recently commissioned a new Fire Simulator (see picture to the right). 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.

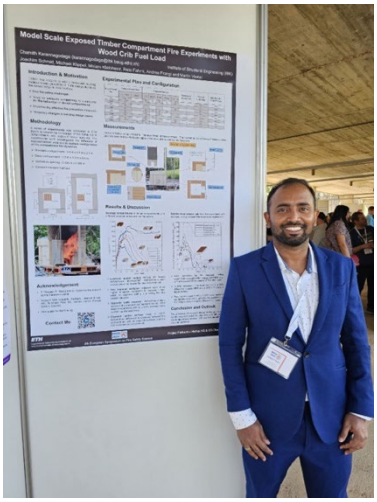
We also continue our collaboration with local research institutions, such as Empa and ZHAW, for specialised experimental capabilities.

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

Holzbau Forum Paris (February 2025): Professor Andrea Frangi and Dr. Joachim Schmid presented on the fire design of timber structures in Europe (see picture to the left), focusing on engineering methods prevalent in German-speaking countries.

SFPE Europe Conference (Edinburgh, April 2025): Fernando presented a comparison of charring depth predictions from three engineering models against experimental results from three independent full-scale tests.

European Symposium on Fire Safety Science (EFSS) (Barcelona, October 2024): Chamith Karannagodage presented a poster titled "Model Scale Exposed Timber Compartment Fire Experiments with Wood Crib Fuel Load" (see picture below).



Former member Dr. Miriam Kleinhenz published her paper related to her PhD thesis "Modelling the fire resistance of cross-laminated timber rib panels" in *Fire and Materials*, June 2024.

Structures in Fire (SiF) Conference (Coimbra, June 2024): Fernando presented his work on measuring char layer thickness progression during a live fire experiment.

Warsaw Summer School on Fire Safety (Warsaw, 2024): Chamith and Fernando attended this event organised by ITB and FRISSBE. They highlighted the excellent availability of the renowned lecturers throughout the week and the diverse, high-calibre selection of international attendees.

We fostered collaborations through:

Hosting Visiting Researcher Assoc. Prof. René Josef Prieler from Technische Universität Graz during his work on his Habilitation during 2024.

A research visit by Fernando to the Hazelab group led by Professor Guillermo Rein at Imperial College London in March 2025. During the visit, he engaged in discussions with the research team and observed smouldering combustion experiments.

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 program features international guest lecturers such as Professor Bart Merci, Professor Guillermo Rein, and Dr Michael Spearpoint, alongside local experts. See picture to the left of a live smoke filling experiment during the MAS Fire Safety Engineering.

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.

Signed: Fernando Pérez Pérez

European University Cyprus (CERIDES)

As part of the Horizon Europe funded project SEMEDFIRE – South Eastern Mediterranean Excellence Development in Fire Research, CERIDES carried out a number of activities in the last few months[1].

First ever controlled burning in the Republic of Cyprus

On the 12th of March 2025 a first controlled burning took place in a forest plot in the outskirts of Nicosia. The burn was carried out in collaboration with Pau Costa (advanced partner at SEMEDFIRE) and with the Department of Forestry of the Republic of Cyprus. The successful implementation of the burn led to a common public statement of the Department of Forestry of the Republic of Cyprus and CERIDES – Excellence in Innovation and Technology at European University Cyprus. This new practice will be incorporated in the fire protection strategy of the country. A link to common statement (in Greek) can be found here.

Fire Fighting Aerial Means Training

Between 11-14 February 2025, the project teams of the two French advanced partners, the General Directorate for Civil Protection and Crisis Management of the French Ministry of Interior (DGSCGC) and Nimes Metropole, visited Cyprus for the scheduled 6th Hands-on Training Short Course. The two project teams were supported by ENTENTE-VALABRE, the national organisation for research, training, innovation and certification in Civil Protection of France.

The training was placed under the auspices of Ministry of Interior of the Republic of Cyprus and it was hosted by the project's co-coordinating organisation European University Cyprus – CERIDES at the premises the University in Nicosia.

With the invaluable help of the project team of EUC-CERIDES who managed the communication and dissemination actions of the training in Cyprus, the event achieved to attract an impressive array of participants during its two-day duration, giving the knowledge exchange efforts a regional character. Pilots from Cyprus, the UK, Greece, France and Jordan participated.

PhD Graduations

In the last 12 months we had 3 fire science PhD graduations from our group:

- Pooja Pandey, in Interagency Collaboration and Exchange in Wildfire Management - An insight from Disaster Risk Management.
- Judith Alexandra Kirschner, in Governing wildfire regimes - creating urgency without a crisis.
- Anna Marie Gjedrem, in Innovative and Sustainable Solutions for WUI Fire Risk Management in Costal Norway

Signed: George Boustras

[1] South Eastern Mediterranean Excellence Development In FIre Research – SEMEDFIRE is a Twinning project under Horizon Europe call: HORIZON-WIDERA-2021-ACCESS-03. It is coordinated by CERIDES – Excellence in Innovation and Technology and the project team is made of HAZELAB at Imperial College London, Wageningen University and Research, Pau Costa Foundation, Securite Civile and Nimes Metropole.

Fire Testing and Research Center of Hubei Province

Prof. Luc Taerwe delivered Luojia Lecture at Wuhan University

Prof. Luc Taerwe of Ghent University delivered Luojia Lecture at Wuhan University on November 7, 2024. Prof. Taerwe is Emeritus Full Professor of Structural Engineering at Ghent University (Belgium) and the director of the East Asia Platform at Ghent University. He is an elected member of the Royal Flemish Academy of Belgium. He serves as Editor-in-chief of the journal "Structural Concrete", the official journal of the International Federation for Structural Concrete (fib). Prof. Taerwe is the former Dean of the Faculty of Engineering and Architecture and the former director of the Magnel Laboratory for Concrete Research at Ghent University. He has an extensive research and practical experience in all aspects of reinforced and prestressed concrete structures, including fire resistance, robustness, tunnel linings, composite reinforcement (FRP), structural reliability, statistical quality control, high performance and fibre reinforced concrete.

Luojia Lecture, established in 2008 for the celebration of the 115th anniversary of Wuhan University, is the highest honor offered by the university to top best scholars in all academic disciplines. Invited scholars deliver lectures to undergraduate students to promote and encourage students' learning through edification. Prof. Torero delivered his lecture on "Architecture, Technology and Competence in Fire Safe Design" at the Library, the most famous building of Wuhan University. Undergraduate and graduate students from School of Civil Engineering and fire investigators from the Fire and Rescue Department of Hubei Province attended the lecture. Prof. Huidong Chen, assistant president of Wuhan University, delivered Luojia Lecture Memorial Plaque to Prof. Taerwe.

Luc joined the "E-Scooter Campus Tour" program initiated by Prof. Chao Zhang of Wuhan University.

The center hosted CPAF seminar on "Fire Safety Science and Engineering"

On November 7, 2024, the CPAF seminar on "Fire Safety Science and Engineering" was held at the School of Civil Engineering of Wuhan University. CPAF (China Partners Academic Forum) seminar series is organized annually by the East Asia Platform of Ghent University. The forum covers all academic disciplines and aims to build a platform for academic exchange to promote education and research collaboration between Ghent University and domestic Chinese universities.

This seminar workshop was organized by Profs. Zhi Tang and Chao Zhang. Profs. Bart Merci and Tarek Beji of Ghent U(online), Prof. Serge Bourbigot of Centrale Lille Institute, Prof. Longhua Hu of USTC (online) and other young researchers attended the seminar. At the opening ceremony, Ghent University President Rik Van de Walle delivered a video address. Vice President of Wuhan University, Yuan Yufeng, and Director of the East Asia Platform at Ghent University, Luc Taerwe, attended the opening ceremony and each delivered a speech. Prof. Ze Liu, Associate Dean of the School of Civil Engineering hosted the ceremony.

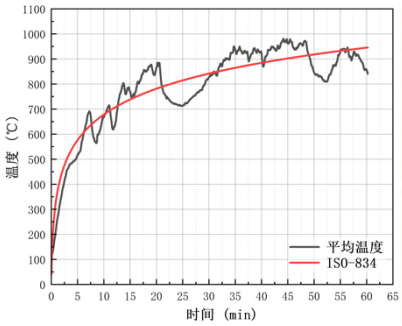
Prof. Chao Zhang completed the RISUD Visiting Fellowship at PolyU

Prof. Chao Zhang received the 2023/2024 RISUD Visiting Fellowship Program of The Hong Kong Polytechnic University (PolyU) and carried out the fellowship visit in August to November, 2024. The program is established by the Kwang-hua Education Foundation at the Research Institute for Sustainable Urban Development (RISUD) at PolyU, with the aim of promoting academic exchange and collaborative research. During the visit period, Prof. Zhang worked with his host, Prof. Liming Jiang, on the design of a natural fire test. He discussed collaborations with Prof. Xiang-dong Li, Dean of FCE and Director of RISUD, Prof. Asif Usmani, Head of BEEE, Prof. Emer. Wai-Ki Chow, Assoc. Prof. Xinyan Huang and other PolyU researchers.

The center carried out on-site fire testing

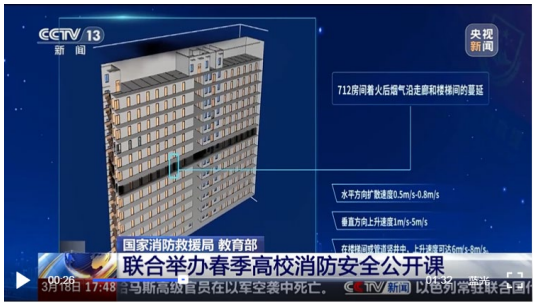
In January 2025, Professor Chao Zhang and PhD student Shijie Li carried out compartment fire tests in a steel framed structure constructed in an industry site in Changxing Island of Shanghai. The steel frame was designed and built by Prof. Guo-Qiang Li's research team at Tongji University for structure fire collapse early-warning research. The fire tests were organized by the center and Intl_Fire_Lab (International Joint Research Laboratory on Smart Fire Safety Engineering). The Chongming District Fire and Rescue Team of Shanghai provided on-site support.

Currently, fire safety design codes for buildings in countries around the world are generally based on the standard fire test method. Since its establishment in 1918, this method has relied on furnace testing. Due to limitations such as furnace size, the applicability and scientific validity of the "standard fire" test method have been a long-standing debate in academia for over a century. Overcoming the limitations of traditional furnace fire testing has become a key research focus and frontier in the field of structural fire safety in recent years. Following Prof. Zhang's previous work at NIST on developing off-furnace standard fire testing method, the on-site fire tests investigated the potential of generating the standard ISO834 fire environment in compartments in real buildings. For more information, regarding the off-furnace standard fire testing please refer to (https://doi.org/10.1007/s10694-019-00924-7).



Prof. Chao Zhang lectured for the Inaugural National Open Course on Fire Safety for universities across mainland China

On the morning of March 18, the National Fire Safety Open Course, organized by the National Fire and Rescue Administration and the Ministry of Education of China was held at Wuhan University. This open course is the first nationwide fire safety lecture for university campuses across mainland China. Prof. Chao Zhang was invited to be one of the three lecturers for this course, where he adopted FDS simulations to explain the hazards of fire and methods of escape and evacuation. This course is featured by China Central Television (CCTV) and The People's Daily. Over 11 million university students, staffs and teachers watched the course.



全国高校消防安全公开课举办

2025年03月21日05:57 | 来源：人民网 - 人民日报　　T₁ 小字号

本报北京3月20日电 （记者亓玉昆）近日，2025年春季全国高校消防安全公开课在武汉大学成功举办。

据了解，全国1100余万名高校学生、教职员工通过“线上+线下”的方式观看。国家消防救援局相关负责人介绍，课程基于全国200余所高校调研成果，围绕“火灾预防、逃生避险、火情处置”三大板块，结合当前正在开展的人员密集场所动火作业和建筑保温材料安全隐患专项整治，全面介绍高校典型火灾类型、宿舍火灾预防要点、建筑保温材料火灾危险性和校园动火作业安全注意事项，详细讲解火场中烟气的危害，以及如何正确逃生避险、如何处置初期火情等内容。

《人民日报》（2025年03月21日 06 版）

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 two new projects - The Fire Protection Research Foundation, the research affiliate of the National Fire Protection Association® (NFPA®), has received funding for two new projects: (1) Three-year project to investigate firefighter personal protective equipment (PPE) contamination, cleaning efficacy and exposures from Lithium-ion battery fires through a US DHS FEMA Assistance to Firefighters Grant. FPRF will partner with North Carolina State University, Illinois Fire Service Institute and Command and Control, LLC for this project which will kick-off in fall 2024. (2) One-year National Institute of Standards and Technology (NIST) fire grant to conduct full-scale testing to characterize electric vehicle hazards in parking structures to inform fire safety design guidance.

2024 Suppression, Detection and Signaling Research and Applications Conference (SUPDET® 2024)– FPRF's SUPDET® conference was held in tandem with the International Conference on Automatic Fire Detection (AUBE'24) in Duisburg, Germany September 24-26th. This conference brought together leading experts in the field of fire protection for the purpose of sharing recent R & D on techniques used for fire suppression, detection, and signaling. Conference presentations will be available soon here.

Notice of recent FPRF research reports

- Mass timber structures postfire: A gap analysis, April 2024.
- Modern Vehicle Hazards in Parking Structures and Vehicle Carriers Phase II, May 2024.
- Sprinkler Protection for Multiple-Row Rack Storage Systems Phase I, May 2024.
- Stakeholder Perceptions of Wildfire Mitigations for Homes Multi-Audience Survey Research, May 2024.
- Digitized Fuel Load Survey Methodology: Data Collection and Statistical Analysis, July 2024.
- Marine Transport of Energy Storage Systems: Hazard Assessment and Regulatory Analysis, September 2024.

Notice of recent FPRF webinars and workshop

- Webinar: Marine Transportation of Energy Storage Systems: Hazard Assessment and Regulatory Analysis, April 2024.
- Webinar: Current State of Smoking-Related Fires in the United States, July 2024.
- Webinar Series: FPRF conducted a series of webinars in March, April, May and June 2024, on several topics addressing fire service guidance while transitioning to fluorine-free firefighting foams as part of the ongoing project: Firefighting Foams: Implementation of Fire Service Roadmap. All webinar recordings and fire service foam newsletters from this project can be accessed from the project website: www.nfpa.org/foamroadmap.

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

Signed: Emily Kalil

Fire Safety Research Institute

New Research Projects:

- 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)
- California Fires Independent Analysis

New Research Reports:

- Study of Heat Transfer Through Walls
- Read the "Technical Report on Heat Transfer and Fire Damage Patterns on Walls Released by FSRI"
- Lahaina Fire Forward-Looking Report Released by the Attorney General of Hawaii
- Read the "Lahaina Fire Forward-Looking Report (Phase Three)"

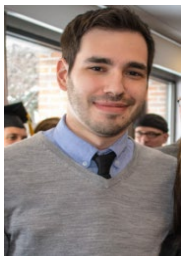
New Peer-Reviewed Journal Articles:

- Journal Article Reports on New Software Research Utilized to Calculate Heat Flux published in *SoftwareX*
- Journal Article Presents Study of Natural Convection on a Vertical Surface published in the *Journal of Physics Conference Series*
- Journal Article Investigates Window Pane Failure During Exterior Fire Exposure published in the journal *Fire Technology*
- New Journal Article Reports on PAH Ingress Through Firefighter Hoods and Base Layers published in the *Journal of Occupational and Environmental Hygiene*
- Journal Article Reports on Heat Transfer Through Different Window Constructions for Wildland-Urban Interface Fire Protection published in *Fire Technology*
- Journal Article Investigates the Role of Residential Siding Materials on the Spread of Exterior Fires published in *Fire and Materials*
- Journal Article Reviews and Analyzes Methods of Separating Heat Transfer Modes in Fire published in the *Fire Safety Journal*
- Journal Article Investigates Passive Silicone Samplers to Measure Hazardous Chemical Exposure to Firefighters published in *Toxics*

New Online Training Courses:

- Contamination Control Strategies for the Fire Service
- Impact of Horizontal Ventilation on Fire Behavior
- Understanding Flow Paths: Low-Intake, High-Exhaust
- Tactical Considerations for Research-Based Public Fire Safety Education

FSRI Expands Expertise



Steven Leabo is a front-end web developer with the Fire Safety Research Institute (FSRI), part of UL Research Institutes. In his role, Steven supports the development of the National Emergency Response Information System (NERIS). He brings expertise in building landing pages, custom website theming, and marketing-focused integrations. Prior to joining the FSRI team, Steven served as a front-end web developer for a variety of Internet of Things companies before starting an LLC and freelancing full-time. Steven earned an Associate of Science in web administration from SUNY Onondaga Community College and is pursuing a bachelor's degree from Syracuse University.

Jack Stanford is an engineering technician with the Fire Safety Research Institute, part of UL Research Institutes, where he supports both bench-scale and full-scale research through fabrication, instrumentation, and firefighting, among other daily responsibilities. Jack holds an associate degree in fire science and serves as a Lieutenant with the Philadelphia Fire Department. He is a state-certified fire instructor and leads training within the Philadelphia Fire Department.

Mary Clare Woodson is a research amplification specialist for the Fire Safety Research Institute (FSRI), part of UL Research Institutes. She works with researchers and other members of the research amplification team to spread knowledge and facilitate the application of FSRI's research results to improve the safety of firefighters and the communities they serve. Mary Clare holds a Bachelor of Science and Master of Engineering degrees in biomedical engineering from Rensselaer Polytechnic Institute and graduated with a Master of Public Health from the University of Illinois at Urbana-Champaign in 2024. Throughout her undergraduate and graduate education, she served as an EMT and firefighter for volunteer and part-time departments and completed several research publications in engineering, safety, and education. She is excited to work on the communication side of research to enable widespread understanding and support translation into practice.

Conor Brady is a software engineering manager for the Fire Safety Research Institute (FSRI), part of UL Research Institutes, where he leads the software development team for the National Emergency Response Information System (NERIS). He has over a decade of experience managing software and technical teams. Conor holds a Bachelor of Science in computer engineering from Texas A&M University. Before joining FSRI, he was a software development manager and technical operations manager at Amazon. He led teams working on the AWS financial reporting tools and support engineering teams in the infrastructure-as-code domain.

Meet: The rest of the team here: https://fsri.org/about/people

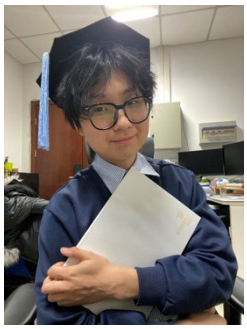
Join the FSRI Team:

- Senior Data Scientist
- Research Engineer II
- Post Doc Researcher
- Post Doc Researcher with the WUI Modeling research project

Signed: Jennifer Williams

Ghent University

PhD Defense Jiang Lyu



On 22nd of January 2025 Jiang Lyu successfully defended his PhD, entitled 'Study on Air Entrainment Dynamics and Flame Behaviour in Horizontal Diffusion Jet Fires'. It is a joint USTC – UGent PhD, with Prof. Longhua Hu (USTC), and Prof. Bart Merci and dr. Georgios Maragkos (UGent) as supervisors. The thesis combines experiments, CFD simulations and theoretical analysis for a range of scenarios with horizontal jet flames.

PhD Defense Manman Zhang

On 22nd of April 2025 Manman Zhang successfully defended her PhD, entitled 'Research on Dripping Combustion and Flame Spread with Molten Flows of Discrete Expanded Polystyrene'. It is a joint USTC – UGent PhD, with Prof. Jinhua Sun (USTC), and Prof. Bart Merci and dr. Georgios Maragkos (UGent) as supervisors. The thesis combines experiments, CFD simulations and theoretical analysis for a range of scenarios with dripping and melting of EPS.

Signed: Natalie Veranneman

The Hong Kong Polytechnic University

SureFire team attend TRS Symposium

The PolyU SureFire team attended the Theme-based Research Scheme (TRS) Annual Public Symposium in Hong Kong University of Science and Technology (HKUST). TRS aims to focus academic research efforts of University Grants Committee funded universities on themes of strategic importance to the long-term development of Hong Kong. TRS is the largest funding scheme in HK (>30 M), and there are four designated research themes. Prof. Asif Usmani and Xinyan Huang gave the presentation on latest development of SureFire smart firefighting projects.

Prof. Xinyan Huang received the IAWF Early Career Award

Prof. Xinyan Huang received the 2025 Early Career Award in Fire Science from the International Association of Wildland Fire (IAWF). The Early Career Award is to recognize a promising early-career professional who has demonstrated outstanding ability in any field of wildland fire science and under 40 years of age. Previous winners include Prof. Guillermo Rein (2015), Dr Sara McAllister (2019), Prof. Michael Gollner (2023). Xinyan is the first awardee from Asia.

Prof. Liming Jiang led the 'Structures in fire' mini-symposium in 1st ICES

The mini-symposium of "structures in fire" mini-symposium in 1st International Conference on Engineering Structures has been successfully held at Guangzhou, which received the support from the Lead Editor-in-chief Prof Jie Yang and all the 16 speakers. Various topics on structural fire safety, such as timber structures, hybrid simulation, have been reported, followed by dynamic discussions. The lead organiser of this mini-symposium is Dr Liming Jiang, and the co-organisers include Prof Asif Usmani, Dr David Lange, and Dr Shaojun Zhu.

Prof. Anthony Chun Yin Yuen co-organized the BS One Day Seminar 2025

Prof. Anthony Chun Yin Yuen has co-organized and hosted a full-day seminar at the Chiang Chen Studio, PolyU campus, Hong Kong, in partnership with the Hong Kong Institute of Engineers (HKIE). The seminar, entitled "The Endless Journey in Exploring Building Services Development and Sustainability," attracted a total of around 100 participants. In this seminar, Engineers shared their future insights into upcoming technologies and challenges in sustainable energy and building sectors. Prof Shengwei Wang (PolyU BEEE) shared his viewpoints on future developments for energy-flexible buildings in China.

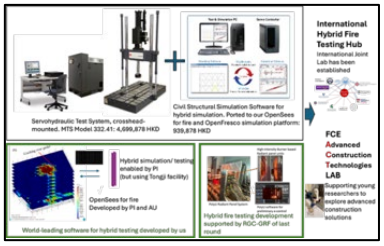
Prof. Liming Jiang led a Research Project of Drone Firefighting

A new project on the development of using drones for firefighting of super-tall buildings has been awarded by Shenzhen Science and Technology Innovation Commission. Prof. Liming Jiang as the PI of sub-project receiving 1 million CNY will conduct research on simulating fire behaviour in super-tall buildings and video-based prediction of fire development. This project was officially launched in January 2025.

Prof. Xinyan Huang got Dean's Award for Research Funding

Prof. Xinyan Huang received the 2024 Outstanding Achievement in Research Funding, and he received the same award back in 2020. In recognition of the valuable contributions and accomplishments of our colleagues, the Faculty has established a series of prestigious Dean's/FCE Awards. These awards are designed to acknowledge the exceptional efforts and achievements of both academic and non-academic staff members, while also encouraging them to reach new heights.

Prof. Liming Jiang won FCE Large Equipment Fund



Prof. Liming Jiang recently received a large equipment fund from the Faculty of Construction and Environment, which provides 4 million HKD in establishing hybrid fire testing facilities. The testing equipment will co-work with OpenSees for fire to enable synchronized testing between a large-scale virtual model and laboratory specimen test.

Prof. Anthony Chun Yin Yuen invited by HKIE for CPD Talk and UNSW Sydney

Prof. Anthony Chun Yin Yuen delivered his first HKIE Fire Division talk in 2025 on the topic "Advanced Technologies in Fire Modelling". Dr. Anthony CY Yuen was honored to receive the certificate from Chairman Ir Vong Kai Va recognising his contributions. Additionally, Dr Yuen was invited to Sydney as an UNSW School of MME alumni for the Distinguished Research Seminar. Additionally, Dr Yuen was invited as key-note speaker for the 1st International Conference on Fire Safety Engineering Research and Practice (iCFSERP-2024) hosted at Western Sydney University.

PolyU Fire Lab attended ESFSS 2024

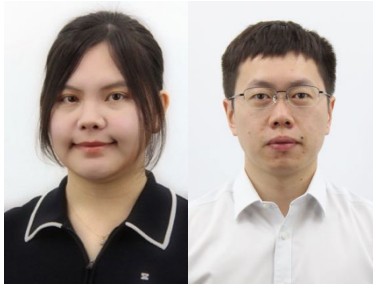
Following the conference held in Nancy (2018), 4th European Symposium on Fire Safety Science (ESFSS 2024) is held by Universitat Politècnica de Catalunya (UPC) in Barcelona, with aims to gather researchers from and beyond Europe to have exchanges and discussions about fire safety science.

Two members from PolyU Fire Lab, Yuxin Zhou and Lei Zhang, attended this event and shared their latest research on battery fire safety.

PolyU Fire Lab visit Universiti Malaysia Sabah

As invited by Dr Dayang Musa, the PolyU Fire group Prof. Xinyan and Yichao visited Universiti Malaysia Sabah to give a research seminar on peat fire to professors in the Faculty of Forestry and a gust lecture to local undergraduate students. They also visit the national peatland reserve in Sabal and local forest management department to study the wildfire management strategies. This visiting program is sponsored by the K.C. Wong Belt and Road Visiting Fellowship Scheme.

New researcher joining PolyU fire group



Dr Yunke Huang has joined PolyU as Research Assistant Professor in Spring 2025. She earned her Ph.D. from Northwestern Polytechnical University supervised by Prof. Hong Hou. During her doctoral studies, she was also a Joint Ph.D. student at University of Strathclyde supervised by Chair Prof. Selda Oterkus. Dr. Huang's research interests include structural health monitoring for fire safety, thermal mechanics, computational mechanics, acoustics, and multi-robot systems.

Dr Zhichao He joined PolyU fire group as Research Assistant Professor in Fall 2024. He obtained her BEng and PhD degrees from Tsinghua University. His research covers the risk analysis, assessment, and management in multi-hazard chemical accidents including fires, explosions, and toxic releases.

New PhD Graduates

Dr Yanhui Liu defended his PhD thesis in Oct 2024, titled "Fundamental Study of Battery Fire Safety under the Low Ambient Pressure", supervised by Prof. Xinyan Huang. His thesis was rated as excellent from his two external examiners: Prof. Yang Jin and Dr. Monica Marinescu

Dr Tianwei Chu defended his PhD thesis in Feb 2025, titled "Fire Behavior in Modern Buildings Considering Window Glass Fallout and Active Ventilation", supervised by Dr Liming Jiang. Tianwei got high recommendations from his two external examiners: Prof. Bart Merci and Prof. Chuangang Fan.

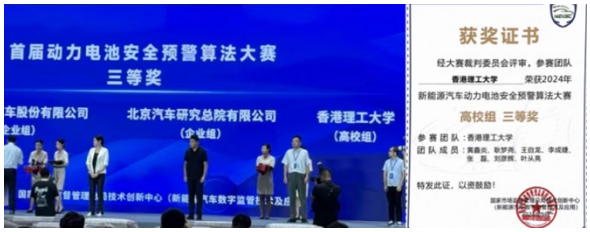
Space Fire Extinguisher got Geneva Gold+ Award

The PolyU Fire team led by Meng Wang and Sainan Quan won the Gold Medal with Congratulations of the Jury in the 50th International Invention Exhibition in Geneva. The proposed project is "Smart Fire Extinguisher for Spacecraft", which applies the air vortex rings to attach the flame in spacecrafts, without the use of water or any other chemical extinguisher. Team members include Yuxin Zhang, Changlin Liu, Zilong Wang, Yanhui Liu, Rong Deng, Caiyi Xiong and Jihao Shi, and the supervisor is Prof. Xinyan Huang.

Yifei got Best Presentation Award

The 3rd National Symposium of Thermal Safety is held in Hefei, China, with aim to promot the communication of scientific and technological achievements in the field of thermal safety. The PolyU Fire Lab member, Yifei, attended this event and gave a presentation of "AI-Driven Digitized Fire Fuel Load Survey: Data Collection and Statistic Analysis". His presentation won the Best Presentation Award. Back in 2021, Zilong's presentation on AI-Image Fire Calorimetry won the same Award in the same conference.

PolyU Fire Lab won the 3rd Prize in EV Battery Safety Competition



The PolyU Fire Team attended the Competition of EV Power Battery Safety Prediction Algorithm, organized by the State Administration for Market Regulation (Innovation Center). The algorithm developed by Mengyao GENG, Prof. Xinyan Huang and other team members won the 3rd Prize. Now, we are working with different companies to further improve the safety of EV and battery energy storage system (BESS).

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

Imperial College London

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

For more news follow us on twitter @ImperialHazelab, visit our website, publications, or watch our video.

It has been another busy but exciting few months for Hazelab! Recently, we had the 2025 Hazelab reunion, where current and former Hazelab members came together at Imperial College London to celebrate 13 years of ground-breaking research, collaboration, and community.

The reunion was filled with great seminars on our group's research and history, dynamic group discussions reflecting on Hazelab's past and future, and plenty of networking across generations of researchers. A huge thank you to everyone who joined us and helped make the day so special.

Graduating and arriving students

As more time passes, we say hello and goodbye to a number of amazing Hazelab members. Dr. Rikesh Amin successfully passed his viva and, after enjoying some very well earned time off, continues his academic career in the department of Civil Engineering, right next door to us. Dr. Carlos Walker-Ravena has also finished his postdoctoral research with us, now moving to research Lithium-ion battery fire safety in mines at Pontificia Universidad Católica de Chile.

This year we welcomed a lot of undergraduate students, working on various fire engineering topics for the year. Yingfan Geng, as his 3rd year Literature Review Project, conducted a historical literature review of the earliest fire models dating back to 1943. As a summer research student, he also investigated ways of automatically characterising firebrand characteristics in the built environment, and looked into machine-learning algorithms for computer vision detection of firebrands. Sami Haque is doing his Final Year Project on the wildfire spread simulations in Minecraft, understanding how wildfire currently spreads in Minecraft and making a "mod" to change the Minecraft wildfire spread to mimic the real world. Frixos Papachristodoulou is also doing his Masters' Project with us, investigating battery fires, and characterising the ejecta generated by batteries using our knowledge of firebrands. Joel Koh is the final Final Year Project student, doing simulation work on elevated fires in compartments, fires that may start in an elevated position such as a table or stove, and beyond the scope of compartment plume equations.

We are glad to be hosting a visiting researcher from Universitat Politecnica de Valencia, Carlos Guaraco-Figueira. He is working on battery fires and will be studying in Hazelab as part of his PhD secondment.

Awards

It has been a very good year for members of Hazelab, with plenty of important awards.

The most important award is of Prof. Guillermo Rein, OYC being inducted into the Order of Isabella the Catholic by the King of Spain. It is an incredible achievement, and one of the highest honours of the Kingdom of Spain, recognising Guillermo's contributions to fire science and safety. The award ceremony was organised by the Spanish embassy in London, with the Spanish Ambassador giving a speech, followed by a dedication from Guillermo (in Spanish).

Our own Matthew Bonner was awarded the best abstract award at the Society of Fire Protection Engineers 6th European Conference & Expo, where they presented their research on standardised facade tests and flammability.

We are also incredibly proud to say that two of our students received two of the best awards offered by the department of Mechanical Engineering at Imperial College London. Dr. Harry Mitchell received the Katapodis Prize for the best PhD thesis within the Thermofluids division of the Mechanical Engineering Department, and Nikolaos Kalogeropoulos received the Dr Ashraf Ben El-Shanawany Memorial Prize, for outstanding achievement by a PhD or EngD student to include research, public outreach, innovation and entrepreneurial achievement. Nick's award was celebrated in an award lunch with representatives of the department, Lloyd's Register Foundation who sponsored the award, and the supervisor and parents of Dr. Shanawany.

Internal events and visitors

In March, the Hazelab team participated at the annual Department of Mechanical Engineering Research Showcase, presenting three posters on our research on fire dynamics in large timber buildings, wildfires and battery fires. We were honoured by the presence of some of our closest collaborators from Arup, Trigon, Hydrock now Stantec and the El-Shanawany family. It was an excellent opportunity to disseminate our research within the department and reconnect with some of our collaborators.

From January to March, Professor Guillermo Rein, assisted by Alexander Castagna and Hanna Berry, taught his module on Combustion Safety and Fire Dynamics to undergraduate and master students in the department. New successful learning opportunities, such as lab visits and office hours, were offered to the students by the team, which resulted in Alexander Castagna being invited to present these improvements to the wider teaching community at Imperial College. On the last day, the students were joined by Professor Andrew Whelton and 20 of his engineering students from Purdue University for a guest lecture on the impact of wildfires on the pollution of water supply systems.

In the new year we also hosted Mohd Zahirasri Mohd Tohir from Putra University Malaysia and Universidad de Navarra. We also hosted Elena Funk, PhD student on EV and Lithium-ion battery fires at King's College London and researcher at the Danish Fire Safety and Security Technology Institute. Finally, we were visited by Fernando Pérez Pérez from ETH Zurich for a week, with insightful discussions on experimental studies on the smouldering of wood.

In January, Hazelab hosted a seminar evening as part of the Society of Fire Protection Engineers UK Chapter. During this, Guillermo presented on Li-ion batteries and innovation blind-spots, Nick presented on Wildfires, and Harry presented on Mass timber building fires.

Conferences and outreach

November was an incredibly productive month within the group, resulting in a total of 17 papers being written for four different conference submissions, resulting in one oral and one poster presentation in SFPE Europe in Edinburgh, three oral presentations in the Mediterranean Combustion Symposium in Corfu, five oral presentations in the International Seminar of Fire and Explosion Hazards in Rome, and four oral and three poster presentations at Interflam in London.

On the 8th of November Alexander Castagna, Nikolaos Kalogeropoulos and Auriane Javaloyes took Sirocco, our fire tornado, to the Royal Institution, where the annual Christmas Lectures, introduced by Michael Faraday, are held. Here they introduced fire science to high school students as part of the Earth Extremes outreach event.

In March, Hanna attended a school on battery research at the University of Warwick hosted by the Faraday Institute, where she learned about a wide range of research on battery technology and safety. Earlier this year, Harry visited the UK House of Commons to present a poster on his PhD research on Mass timber building fire experiments, as a

finalist in the Stem for Britain competition. Guillermo visited the Underwriters Laboratory (UL) and Fire Safety Research Institute (FSRI) offices and labs in January in his capacity as advisor to FSRI.

Finally, several Hazelab members attended the SFPE Europe Conference and Expo 2025. Harry, Alex, and Auriane had a great time volunteering to help with running the Conference, while Afi presented a poster on her research on peat smouldering, and Alex gave a presentation on numerical modelling of timber burning!

Publications

It has been a successful few months for several new journal publications from Hazelab members! Please find links our most recent papers below:

Conceptual design of a wildfire emergency response system empowered by swarms of unmanned aerial vehicles, International Journal of Disaster Risk Reduction, https://doi.org/10.1016/j.ijdrr.2025.105493

Exploratory Simulations on the Effectiveness of Sand Protection Strategies Against Firebrand Accumulation in Wildfires, Fire and Materials Journal, https://doi.org/10.1002/fam.3286

Particles emitted from smouldering peat: size-resolved composition and emission factors, Environmental Science: Atmospheres, https://doi.org/10.1039/D4EA00124A

Quantifying dire evacuations in case of wildfire using trigger boundaries and case study of the 2018 Mati wildfire in Greece, Safety Science, https://doi.org/10.1016/j.ssci.2024.106691

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

Predicting the Average Charring Rate of Mass Timber Using Data-Driven Methods for Structural Calculations, Fire Technology, https://doi.org/10.1007/s10694-024-01593-x

Signed: Alexander Castagna, Nikolaos Kalogeropoulos, Harry Mitchell, and Guillermo Rein

International Master of Science in Fire Safety Engineering

10th IMFSE Fire Safety Engineering Day (FSE Day)

On the 3rd of April 2025, the IMFSE Fire Safety Engineering Day was organized by UPC in Barcelona. This was the 10th edition of the annual event. The central theme this year was: 'Bridging the gap between science and regulations in Fire Safety Engineering'. This event, combining oral presentations, a panel discussion and ample networking breaks, was very much appreciated and enjoyed by the IMFSE sponsors, our students and colleagues, who had the opportunity to learn and discuss all day long.

Applications

Almost 500 applications have been submitted this year, indicating the attractiveness of the IMFSE program. Applying is still possible until the 1st of June for self-sponsored students who do not need a visa for Europe (https://imfse.be/application-overview)!

Read more about IMFSE?

Check our web site (http://imfse.be) for all up-to-date information.

Signed: Natalie Veranneman

King's College

Events & Visits

We had the pleasure and honour of meeting Her Royal Highness Anne, Princess Royal during her visit of the new lab spaces of the Engineering department here at KCL. Hosein, Francesca and Francesco discussed wildfires and battery safety with the princess and the president of KCL himself.

In May, Dr. Xinyan Huang from Hong Kong Poly visited our group, and we took him on a tour of our lab spaces. Hannah and Carlos, PhD students at Imperial College, also joined and we had some interesting discussions on battery fire experiments. Hope to see all of them in HK soon for the upcoming battery conference.

We also held our first in person group dinner this year and officially welcomed the new members – Abdullah & Eleni.

Research

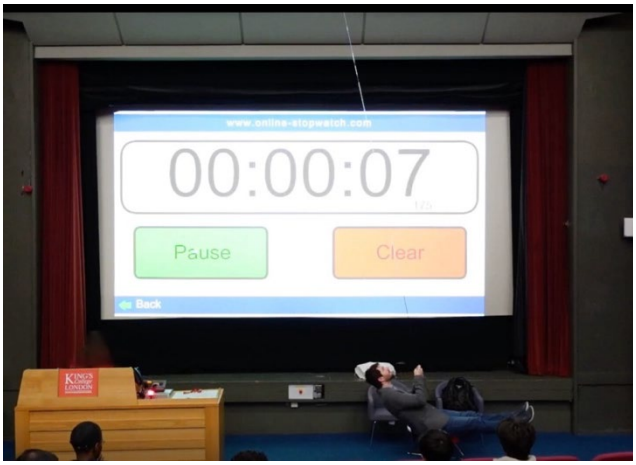
Immy submitted her thesis "Modelling small-scale fire spread in natural fuels" and will be holding her thesis defence soon. Congratulations!

Hosein presented PyBaMM Battery Modelling Conference in London this past February. He presented his work on the implementation of thermal runaway models for li-ion Batteries in PyBaMM, a battery degradation modelling tool develop here in the UK.

We completed the second phase of the SafeBatt project and are getting ready to start the new phase which will run for another year. This is a project funded by the Faraday Institution and is a collaboration of seven universities (Oxford, University College London, King's College London, Newcastle, Sheffield, Warwick and Cambridge) as well as industrial partners, to the investigation of the safety of lithium-ion batteries.

Pendulum Lecture

Not very fiery news but we thought this was fun. During the first-year mechanics class Francesco calculated and showed students that a pendulum is independent of mass and swing angle. This was demonstrated with 3 demos, a pendulum swinging at 5-degree angle, one at 10 degrees, and finally Francesco sat on the pendulum and went for a swing! All came out with the same period, for 10 full swings, and we matched theory, yuuuhuu!



Signed: Francesca Lugaresi

University of Liverpool

The Fire Safety Engineering Group at the University of Liverpool (UK) is composed of two academics and three 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.

Conferences and Outreach Activities

2024 13th Asia-Oceania Symposium on Fire Science & Technology (AOSFST 2024) Dr Ulises Rojas-Alva recently presented part of an ongoing project involving Dr Andrea Lucherini and Dr Martina Manes at the 13th Asia-Oceania Symposium on Fire Science & Technology. His work is based on a collaboration between ZAG-FRISSBE and the University of Liverpool, showcasing the aim to advance fire safety solutions

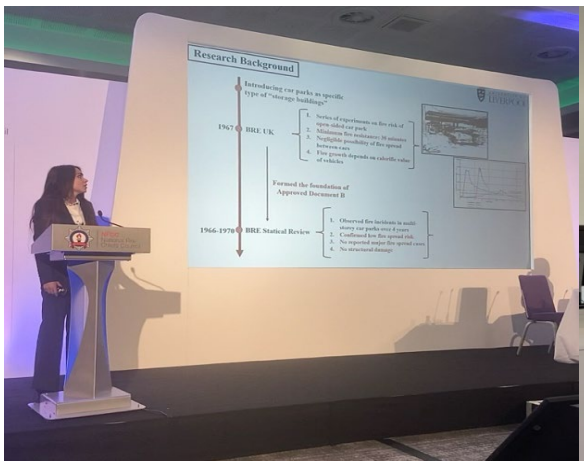
2024 13th NTHU-University of Liverpool Annual Bi-Lateral Student Conference (Liverpool, UK)

PhD Student Yam Hongxin Zhuang presented his research progress under the supervision of Dr Martina Manes, Prof Eric S. Lin and Dr Xu Dai at the 13th NTHU & UoL Annual Bi-Lateral Student Conference in Liverpool. This was a unique opportunity to connect with the entire cohort of PhD students and engage in meaningful discussions.

2024 Royal Academy of Engineering Awardee Excellence Community Conference (Manchester, UK) In December 2024, Dr Xu Dai had the distinct honour of being invited by the Royal Academy of Engineering (RAEng) to attend the inspiring Awardee Excellence Community Conference in Manchester. The event provided a fantastic opportunity for Xu to connect with RAEng awardees and fellows, fostering meaningful conversations and collaborations to expand network and further professional growth within this remarkable community.

2025 National Fire Chiefs Council ACER Conference (East-Midlands, UK)

On the 18th of March 2025, PhD Student Morvarid Koohkhezri and Dr Xu Dai presented their research with the title of "Round-robin study from the fire engineers of 12 UK Fire Services on the design of open-sided car parks". This research is under the supervision of Dr Xu Dai, Dr Charlie Hopkin (Ashton Fire Ltd.) and Dr Martina Manes. The 2025 ACER Conference was mostly focused on "maximising the benefits of academic research with relevance for fire and rescue services (FRS)" and it was a great chance for multidisciplinary knowledge catch-up and developing further communication with professionals and academics.



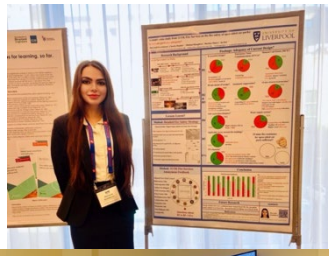
2025 Structures in Fire Forum (STiFF) (Edinburgh, UK)

On the 7th of April 2025, PhD Student Morvarid Koohkhezri gave a presentation on her 9 months PhD research outcomes with the title of "Round-robin study from engineers of 12 UK fire services on the fire safety design of open-sided car parks" in partnership with Ashton Fire Ltd. and contributions from engineers of 12 UK Fire Services, under the supervision of Dr Xu Dai, Dr Charlie Hopkin (Ashton Fire Ltd.), Dr Martina Manes. It was a great opportunity of brainstorming with academics and professionals from UK Fire Safety Consultancies through prolonged Q&A session. A special thanks to Ashton Fire Ltd. and supervisory group's continued support and this event main organizer Dr Dave Rush from The University of Edinburgh for providing interactive academic environment

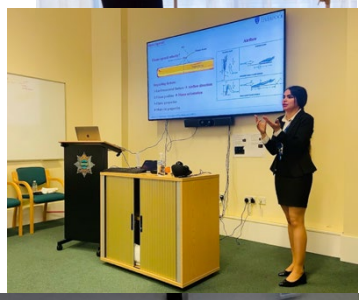
2025 SFPE European Conference & Expo (Edinburgh, UK)

Dr Martina Manes was invited to present the outcomes of the EU FireStat Project on behalf of the consortium at the 2025 SFPE European Conference & Expo, receiving positive feedback, which highlights the efforts and work developed by the consortium partners. The support received by the Fire and Rescue Services and authorities across Europe was fundamental for the success of the project. A special thank you goes to SFPE UK Chapter, Karl Wallasch and the scientific committee for the organisation of this unique two-day conference.

PhD Student Yam Hongxin Zhuang presented his research on the systematic review of assessing fire financial losses in buildings under the supervision of Dr Martina Manes, Prof Eric S. Lin and Dr Xu Dai at the 2025 SFPE European Conference & Expo



PhD student Morvarid Koohkhezri participated in the poster session with the title of "Round-robin study from the fire engineers of 12 UK fire services on the fire safety design of open-sided car parks" at the 2025 SFPE European Conference & Expo. This research is supervised by Dr Xu Dai, Dr Charlie Hopkin (Ashton Fire Ltd.), and Dr Martina Manes.

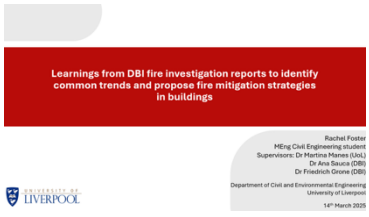


Invited presentations

2024 Seminar University of Central Lancashire and Institute of Fire Engineers (UCLan, UK)

Dr Martina Manes was invited to present the research on the influence of social and personal circumstances on cooking fires in residential buildings in the USA during the CPD organised by the University of Central Lancashire and the Institution of Fire Engineers. The research project was funded by the NFPA and developed by MEng students in civil engineering, Jack Salem and Alex Smith, who graduated in July 2024. This was an application of research-led teaching considered as a core value at the University of Liverpool. A special thank you to all the participants of the seminar from the Fire and Rescue Services, companies and academia for a comprehensive discussion on the possible implementation of the research outcomes in the UK and to Dr Eleni Asimakopoulou for her kind invitation and for creating this unique opportunity.

2024 EPSRC Vacation Bursary (The Danish Institute of Fire and Security Technology, Denmark)



Rachel Foster (MEng student in Civil Engineering), under the supervision of Dr Martina Manes, was invited to present the outcomes of the EPSRC Vacation Bursary focused on "Learnings from DBI fire investigation reports to identify common trends and propose fire mitigation strategies in buildings" at DBI. The project was developed in collaboration with Dr Ana Sauca and Dr Friedrich Grone (DBI)

2025 Cambridgeshire Fire and Rescue Service CPD Event (Cambridgesire, UK)

On the 11th of March 2025, PhD student Morvarid Koohkhezri and Dr Xu Dai were invited to a Cambridgeshire CPD Event as guest speakers on the topic of "Fire Behavior of Flammable Solids and Plastics", and a part of Morvarid's PhD research. The work was in collaboration with Ashton Fire Ltd. and fire engineers from 12 UK Fire Services. This research is under the supervision of Dr Xu Dai, Dr Charlie Hopkin (Ashton Fire Ltd.) and Dr Martina Manes. It was a valuable opportunity for knowledge exchange with fire safety experts, and special thanks to Cambridgeshire Fire & Rescue Service for their participation in this project data and their hospitality.

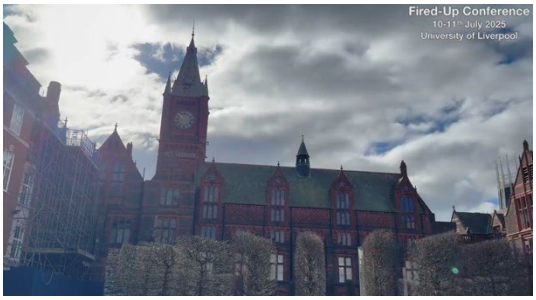
Research visits

Dr Martina Manes visited Slovenia in December 2024 to work at ZAG-FRISSBE on research focused on EV and the environmental impact of building fire incidents. This was her second stay as a visiting researcher funded by ZAG - Zavod za gradbeništvo Slovenije to enhance international collaborations. A special thank you to Dr Ulises Rojas-Alva, Dr Andrea Lucherini and Prof Grunde Jomaas for the constructive exchange and to the entire team for the engaging discussions.

Events

2025 Workshop on Fire Safety for Open-sided Car Parks (University of Liverpool, UK)

On the 31st of March 2025, Dr Xu Dai, Morvarid Koohkhezri, Dr Martina Manes, and Dr Sara Waring successfully hosted a workshop on fire safety in car parks at the University of Liverpool. The event had a series of presentations, discussions, and collaboration with experts from across the fire engineers at 10+ UK fire services, aiming to shape future research and evidence for policy change. This workshop was supported by the Policy Support Fund from Research England.



2025 Fired-Up at the University of Liverpool

The 2025 Fired-Up, the annual student-run conference for fire safety engineering, will be hosted at the University of Liverpool. This conference brings together students from across the UK and internationally, providing a supportive platform to present research, gain valuable feedback, and connect with peers in the field.

Date: 10-11th July 2025

Location: Harrison Hughes Building, 150 Brownlow Hill, Liverpool, L3 5RF

Useful links: Speaker form, Registration, Website and Video

Awards

2025 "Winner" of the Flash Talks at Research Fellow Showcase (University of Liverpool, UK)

At the University of Liverpool, the first annual Research Fellows Showcase took place on the 26th of March 2025, with the theme "Collaboration for Impact". This in-person event aimed at enabling all attendees to hear about the ground-breaking research happening at the University, connect with other researchers and develop their own collaboration and leadership skills. Dr Xu Dai presented his research with the title "Over-ventilated vs. under-ventilated "travelling fires", which one is right?", awarded the "Winner" of the Flash Talks at the event.

Signed: Martina Manes

Lund University

Education

The course schedule for the third year of our 5-year Master in Fire Engineering program is now finalized. Interested readers can review the curriculum, including detailed course descriptions and plans, at the following link: https://kurser.lth.se/lot/programme?ay=25_26&programme=BR

We are currently developing two specializations that will be offered during years 4 and 5 of the program. These specializations will focus on Fire Safety Analysis and Accident Management.

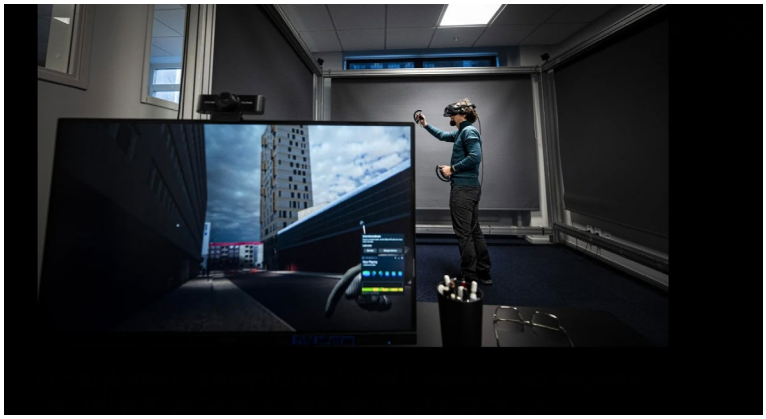
In addition, students will have significantly expanded opportunities to study abroad during years 4 and 5, an improvement compared to our previous 3.5-year program which started in 1986. We are now actively seeking partnerships with international universities to enable meaningful and enriching exchange experiences for our students.

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, 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

Dr Enrico Ronchi received an ERC Consolidator Grant from the European Research Council for a project called "Egressibility: a paradigm shift in evacuation research". This is the most competitive individual research grant in Europe and comes with funding of 2 million euros over a 5-year time span. The Egressibility project will investigate evacuation design for all through several data methods, including interviews, vignette experiments, virtual reality and inclusive machine learning.

Dr Ronchi received a 3-year grant from Lund University equivalent to 3 million SEK to support a new VR laboratory at Campus Helsingborg, part of Lund University, the Helsingborg Safety Hub. The new lab and projects also captured media attention in Sweden, being featured on the first page of the Helsingborg Dagblad newspaper.



Dr Ronchi also received a 70k euro grant through a funding scheme funded by the city of Helsingborg for a project called "The Safety brother: smart safety and security for cities of the future" in which the use of sensor technology and VR are used at urban level to investigate emergency scenarios.

Positions and personnel

In January Dr Daniel Brandon stated as senior lecture at the division. Daniel has a background in structural engineering and extensive research experience in fire safety for timber buildings and large-scale testing. Most recently, he worked at Halliwell Fire Research, and before that, he spent 9 years at RISE, the Research Institutes of Sweden. Daniel brings valuable expertise in structural fire safety engineering and fire safety for timber buildings, further strengthening the division's capabilities.

In February Brian Meacham, a renowned profile in the fire safety community, was appointed as Adjunct Professor in Fire Safety at Lund University. Brian is a respected researcher and performance-based design expert, who brings expertise on a broad range of subjects including international building regulations and socio-technical systems analysis from his time in consultancy, and teaching from his experience as a senior lecturer at Worcester Polytechnic Institute in the USA. He will strengthen research in Lund focused on risk assessment and sustainability, an area he has been building together with our team for several years. We welcome Brian to the academic staff and look forward to many years of fruitful collaboration.

We have a new PhD student at our division! Eliseu Amaro joined us from April 2025. His PhD studies will focus on the use of Virtual Reality technology for the study of perceived safety and human behaviour during emergency scenarios.

Thesis defences

On December 17, 2024, Johan Björck successfully defended his Licentiate thesis titled *"Fire and Rescue Service Preparedness: Current Planning for Natural Hazards and the Role of Early Detection."* The opponent was Dr. Tobias Granberg from Linköping University, Sweden.

https://lucris.lub.lu.se/ws/portalfiles/portal/206786411/_opponent_ex_johan.pdf

On January 9, Vikas Shettihalli Anandreddy successfully defended his Licentiate thesis titled *"Ignition and Flame Spread in Wood-Based Composites."* The opponent, Professor Bjarne Husted from the Technical University of Denmark, contributed to an insightful and engaging discussion during the defence.

https://lucris.lub.lu.se/ws/portalfiles/portal/204707603/Thesis_Vikas_Anandreddy.pdf

On April 23, Franz Evegren, an industrial PhD student working at RISE in Borås, successfully defended his Doctoral thesis titled *"Assessing Fire Safety of Fiber Reinforced Polymer Composite Ship Structures."* The opponent was Professor Emeritus Björn Karlsson from Iceland.

https://lucris.lub.lu.se/ws/portalfiles/portal/212271164/Avhandling_Franz_Evegren_LUCRIS.pdf

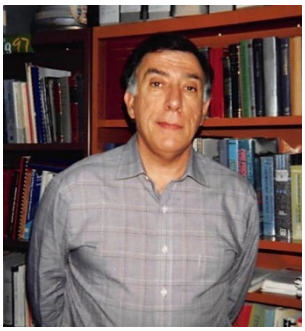
More information

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

Celebration of the Life and Legacy of Professor James G. Quintiere



It is with great sadness that we share the news of the passing of our former colleague, close friend and mentor, Professor Emeritus James (Jim) Gennaro Quintiere (05/05/1940-23/12/2024). The Department is planning a special event to celebrate his professional legacy and life on May 3, 2025, on the UMD campus. It will be an all-day event featuring prepared remarks reminiscing Jim's association with NASA, NIST, UMD, the FAA, the IAFSS. The program will also include stories about Jim as a teacher, an advisor and a mentor, about Jim's involvement with the fire investigation community, and about Jim's private life. Colleagues, former students, family and friends are invited to gather in remembrance, share stories, and honor Jim's lasting contributions to the field of FPE and to our lives.

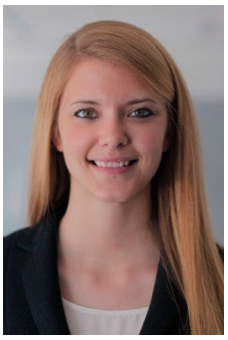
Ken Isman Retires from UMD

Kenneth Isman retired from UMD in 2024. After earning his B.S. (1986) in the FPE Department and an M.S. in management, he worked at the National Fire Sprinkler Association, where he became Vice President of Engineering. He then became the first endowed clinical professor in the Department, where he taught applied courses and enhanced hands-on learning experiences. Isman taught 13 undergraduate courses in his 10 years at UMD, balancing the industry's demands and student well-being. Isman's awards include Elected Fellow of SFPE, FPE Distinguished Alumni, NFPA Standards Medal, SFPE Harold E. Nelson Service Award, Philip Merrill Presidential Scholars Faculty Mentor Award, and Dean's Outstanding Performance Award for Professional Track Faculty. Isman is the co-author of two books: *Layout, Detail and Calculation of Fire Sprinkler Systems* and *Fire Pump Handbook*. Isman is an award-winning singer-songwriter. In "retirement" he will pursue rabbinical studies full-time.

Ali Tohidi Joins FPE Department

Ali Tohidi is excited to have started in his new position in the FPE Department as Assistant Professor. He is developing research initiatives to advance our understanding of wildfire behavior and its impacts. His research will focus on the high-resolution simulation of wildland and WUI fire spread mechanisms. The goal is to use high-resolution simulations to provide insights into fire behavior and its potential impacts on communities and ecosystems. An aspect of his work involves developing multi-phase models to characterize heat transfer mechanisms from firebrand showers. Furthermore, he has upcoming projects on applications of data-driven methods in developing ensemble wildfire simulators that can improve our predictive capabilities and, eventually, risk estimation for stakeholders. Through these efforts, he looks forward to collaborating with members of the IAFSS community and together contributing to the development of innovative solutions and advancement of the field to address emerging challenges in fire.

Alumna Returns to Fire Protection Engineering as New Professor of the Practice



The FPE Department welcomes back Rosalie Hrybyk, B.S. ’13, M.S. ’15, as Assistant Clinical Professor in the new James A. Milke Endowed Professor of Practice position. She brings nearly a decade of experience into the classroom. Hrybyk began her teaching career in 2020 as an adjunct lecturer for the FPE Professional Development Seminar. In her new role, she will ensure that the undergraduate curriculum stays current with industry standards and will teach several applied courses in FPE. Hrybyk returns to UMD from Performance Based FPE, a consulting firm where she has extensive experience with code consulting, fire and life safety plan review, as well as sprinkler and fire alarm design. She specializes in performance-based design, fire and egress modeling, and smoke control rational analyses. She joins the FPE faculty after nine years as a consulting engineer for other firms that include Koffel Compliance, Koffel Associates and Arup. She is a licensed Professional Engineer in Maryland and California.

Christmas Tree Burning Demonstrations Shed Light on Holiday Safety Practices

The FPE Department held its annual Christmas Tree Fire Safety Demonstration on December 12, 2024, in an effort to raise awareness of this seasonal fire risk with the potential for the deadliest outcomes. Isaac Leventon, a research scientist with NIST and an FPE adjunct lecturer, conducted a series of live fire experiments demonstrating the burning behavior of well-hydrated Douglas-Fir trees in comparison to unhealthy, dried out ones. Each year, Leventon seeks to educate the public about the hundreds of fire incidents that repeatedly result in structural losses and civilian casualties. The tests demonstrated the impact of moisture content on ignitability, fire growth rate, and peak fire size, emphasizing how these accidents can be prevented by following certain safety measures. They also engaged fire safety scholars, students, and engineers in a competition to predict the burning behavior of the trees. This year marks the competition’s 11th anniversary; last year’s event drew over 200 participants from across 25 nations and US 11 states.

Four Fire Protection Engineers Among Clark School’s Distinguished Alums

The A. James Clark School of Engineering inducted the Early Career Distinguished Alumni Society, Class of 2024 — four of which were fire protection engineers. The society, which recognizes individuals for their innovations, leadership, and impact made in their respective fields of engineering, brought Christine Chatfield ’08, Isaac Leventon ’10 M.S.’11 Ph.D.’16, Adam Levine ’06 and Rachel Lilienfeld ’16 back to their alma mater for a celebration in their honor.

High School Design Challenge Ignites Interest in FPE

“Fire” and “lit” — popular Gen Z slang — took on a literal connotation for the more than 200 teens at an engineering competition hosted in April 2025 by the 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. Teams are required to spend no more than $50 beyond the materials they receive and to account for all materials used. A team from Elizabeth Seton High School was named overall winner. This competition is sponsored by the American Fire Sprinkler Association. The burn tests took place at the ATF National Laboratory Center in Beltsville, Maryland.

First Online Undergraduate Course to be Offered in Fall 2025

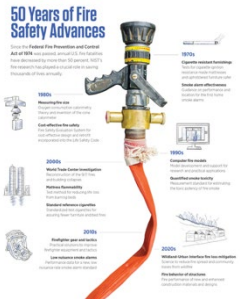
The first offering in the department’s new on-line program code will be offered in Fall 2025. This is ENFP250, *Introduction to Life Safety Analysis*. This is an applied course that serves as an introduction to the principles of fire safety engineering. Out-of-state students who enroll in Fall 2025 or Spring 2026 are eligible for $2,500 tuition assistance for each FPE online course. The offer of tuition assistance is intended to cover most of the difference between in-state and out-of-state tuition costs.

Signed: Peter Sunderland

NIST Fire Research Division

The NIST Fire Research Division (FRD) recently updated its project webpages to provide clear, up-to-date summaries of ongoing research. To explore our current projects and stay informed with the latest news, visit the Fire Research Division website.

50 Years of Fire Safety Advances at NIST

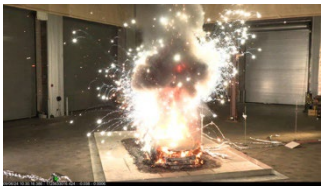


October 2024 marked the 50th anniversary of the Federal Fire Prevention and Control Act of 1974 — a pivotal moment in fire safety history. Since then, fire-related fatalities in the United States have dropped by over 50%. This progress reflects five decades of collaborative research and innovation by NIST and its partners. Through sustained investment in advanced fire metrology, computational fire modelling, materials flammability standards, smoke alarm effectiveness, firefighting gear and tactics, wildland-urban interface (WUI) fire mitigation, and more, NIST has contributed to enhancing public safety. An interactive timeline and comprehensive report highlight key milestones in this legacy. Explore the 50-year impact.

ESCAPE Updated

In April 2025, NIST updated its guidance on preparing for wildfires based on the latest research and community feedback. Called Wildland-Urban Interface Fire Evacuation and Sheltering Considerations: Assessment, Planning, and Execution (ESCAPE), the updated report is now available on the NIST website. Three of the major changes to ESCAPE are updates to temporary refuge areas, sudden-onset fires, and decision-making zones. To support implementation, NIST also launched a new interactive online course that guides users through the core concepts of ESCAPE. The updated report and training tool are freely available on the NIST website. Together, through science-based collaboration, we can continue advancing fire resilience in communities worldwide.

Fire Calorimetry Database (FCD) - New Data Alert!



The NIST Fire Calorimetry Database (FCD) is a resource for high-quality fire calorimetry data and annotated videos from experiments conducted at the National Fire Research Laboratory (NFRL). Over the past 18 months, NIST has expanded this database through its Design Fires initiative, adding new test data on residential and office furnishings, tall trees, vehicles, and more. And the best part? More data is on the way.

Material Flammability Characterization

The Fire Research Division is happy to welcome back Karen De Lannoye [University of Wuppertal] and to welcome new researchers Ryan Greene [Cornell University], Sereen Khalil [GW University], and Alec Tripi [GW University]. These researchers join the Material Flammability Characterization project, led by Isaac Leventon. Dr. Leventon is proud to have recently been inducted in the Early Career Distinguished Alumni (ECDA) Society of the University of Maryland's A. James Clark School of Engineering.

Cooking Nuisance Performance of New Smoke Alarms

NIST recently completed a study on how new smoke alarms perform during typical cooking scenarios. In June 2024, updates to ANSI/UL 217 brought two new fire tests and a new nuisance test into effect. Alarms certified to the updated standard were tested alongside older models in a mock kitchen using foods like bacon, toast, and hamburgers. NIST researchers measured alarm times and aerosol levels. On average, new alarms are better at detecting polyurethane fires without increasing false alarms. Results appear in NIST Technical Note 2305.

International Engagement

In October 2024, Fire Research Division staff attended the 13th Asia-Oceania Symposium on Fire Science and Technology (AOFST 2024) in Daegu, Korea. Congratulations to Andy Tam for his award for the best oral presentation of a paper on developing a robust early-stage thermal runaway detection model for lithium-ion batteries. Learn more about this work in the NIST news story AI Can 'Hear' When a Lithium Battery Is About to Catch Fire.

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. Research Opportunity Descriptions are available online.

Signed: Isaac Leventon

OFR Consultants

OFR actively collaborates with a wide range of organisations across the UK and internationally, fostering innovation and knowledge sharing. Here are some highlights of our recent activities:

OFR retains its strong relationship with the staff and students at the University of Edinburgh (UoE). Twenty OFR staff recently spent a day at the Fire Research Centre to take part in a day of technical presentations, discussions, and hands-on laboratory experiments. OFR also supports the UoE student chapter of the SFPE, contributes to guest lectures, continues to sponsor Antonela Čolić's PhD research and Kate Swinburne from our Edinburgh office is on the Civil Engineering Industrial Advisory Board.

Kate Swinburne is also the President of the IFE (institution of Fire Engineers) Scotland Branch and sits on the newly formed Cross Sector Building Safety Forum. This Forum has been convened by the Scottish Government to support the dissemination of information between interested parties on matters relating to building maintenance and, consequentially, on building safety.

OFR continue to support the PhD research of Chan Sorayudh Chanthan at the University of Greenwich looking at fire engineering and BIM workflows. Related to the Chan's research, OFR are part of a new international project led by the University of Greenwich to develop an Information Delivery Specification for fire safety engineering through buildingSMART International (bSI). More broadly related to BIM, OFR have also been collaborating with Symetri Europe explore the workflow of the Naviate Bimfire plugin for Revit.

OFR have several staff doing their degree apprenticeships in fire engineering through the University of Central Lancashire (UCLAN). In parallel we are increasing our interaction with UCLAN by being a member of their Industrial Advisory Board. Related to UCLAN and also the IFE, OFR was a sponsor of the revitalised IFE Graduate Lecture held on the UCLAN campus in May. We are also a sponsor of the upcoming IFE President's Technical Conference which will also be on the UCLAN campus.

Iziengbe (Izzy) Inerhunwa went along to the University of Manchester to deliver a guest lecture to the MSc Structural Engineering students as part of the Fire Engineering module. Izzy also discussed industry challenges and future teaching and research collaboration opportunities with staff in the Department of Civil Engineering and Management.

OFR have a couple of ongoing research collaborations with Wojciech Węgrzyński at ITB in Poland and we are pleased to continue our partnership with Wojciech in supporting his very successful Fire Science Show podcast. We are also delighted that to hear that Carmen Gorska has been nominated in the Top 100 Women in Engineering in Poland hosted by Perspektywy Women in Tech.

Finally, various members of OFR will be presenting papers and posters at Interflam in July. We look forward to catching up with the many people we already be collaborate with and making new connections.

Signed: Michael Spearpoint

Université de Poitiers

PhD Defense of DINH Duy Cuong: Development of a Detailed Approach to Model Solid Pyrolysis with Coupling Between Solid and Gases Intra-Pores Phenomena

On December 19, 2024, Duy Cuong DINH successfully defended his doctoral thesis at the Pprime Institute, Ecole Nationale Supérieure de Mécanique et d'Aérotechnique (ENSMA) under the supervision of Pr. Thomas Rogaume, Dr. Franck Richard and Dr. Benjamin Batiot from the Université de Poitiers. The defense was evaluated by a distinguished jury comprising Pr. Pascal Boulet (Université de Lorraine), Pr. Bart Merci (Ghent University), Pr. Gaëlle Fontaine (Centrale Lille Institut), Dr. Jean Lachaud (Université de Bordeaux), along with the supervising team.

This research was conducted at Pprime Institute in the scope of fire safety science. It focused on the development of detailed models for porous material pyrolysis, with particular attention to wood, which is increasingly used in building structures and house frames. This work addresses gaps in existing pyrolysis models by integrating the interaction between solid phase and gas phase, the material property calculations during pyrolysis process within a unified framework.

Central to this research is the development of a novel conversion-based model called "Virtual Initial Mass." This approach overcomes limitations in traditional methods by more accurately calculating reaction rates in complex multi-step pyrolysis mechanisms that include both sequential and competitive reactions. By using the calculation for dynamic effective initial mass, this model provides a robust framework for normalizing results across different experimental scales. When implemented within the TGA Calculator and integrated with DAKOTA using Multi-Objective Genetic Algorithm for optimization, this method found optimal kinetic parameters for various wood pyrolysis mechanisms, including global reaction mechanism, parallel component single-step reaction mechanism and more detailed mechanisms like Shafizadeh and Chin's and Miller and Bellan's mechanisms [2, 3].

The experimental approach combined Thermogravimetric Analysis (TGA) and Cone Calorimeter testing under nitrogen atmospheres to isolate pyrolysis from combustion processes. Different thermal scenarios of TGA were conducted to mimic the thermal condition of different positions in cone calorimeter samples. Cone Calorimeter tests provided insights into pyrolysis under more realistic fire scenarios. These experiments revealed that pyrolysis behavior in wood is significantly influenced by factors such as sample size, heating rate. They also highlighted the appearance of some phenomena that only happens in the bigger scales such as the secondary reactions, which convert the heavy tar volatiles into lighter gases and secondary char when their resident time inside the pore is long enough.

Through the research, the author has contributed substantially to Porous Material Analysis Toolbox based on OpenFOAM (PATO), an open-source distributed by NASA, by implementing several new models and enhancing existing ones. The Representative Elementary Volume (REV) concept is employed to include both solid and gas phases in the model. New developments include the implementation of the virtual initial mass concept, calculation models for secondary reactions, temperature calculation through Sensible Enthalpy conversion equations and tracking of evolving solid-phase properties during material transformation. Cantera is also integrated in order to calculate the properties of gas composition during the pyrolysis process. Besides, mass transfer model and species conservation model are modified to fit the new framework.

The comparison between 1D and 2D axisymmetric models was done. The results demonstrated the importance of considering anisotropic properties in wood, such as directional variance in thermal conductivity due to fiber alignment. This anisotropy significantly influences heat distribution during pyrolysis, affecting both the rate of thermal decomposition and char formation. The simulation also concluded the importance of accounting for heat transfer between the sample and its holder. When neglecting this interaction, it can lead to inaccurate predictions of pyrolysis behavior.

The role of secondary reactions inside the pore during pyrolysis was also investigated. Their impact on char yield, gas phase composition and heat releasing are taken into account. Under conditions where volatiles remain within the wood matrix for long periods, the secondary reactions are enhanced. The results showed that secondary reactions contribute substantially to secondary char formation and release a big amount of heat.

Despite its contributions, this research still exists some limitations. The current model assumes a fixed geometry for the wood sample, although the potential deformations can happen during the pyrolysis due to thermal shrinkage and char formation. Additionally, while a full 3D model of the Cone Calorimeter was developed, its computational demands make it less practical for routine use.

For the future works, the author wants to integrate sample deformation effects in simulation. In order to better represent real-world scenarios with large-scale fire tests, optimizing simulation methods to balance computational demands with accuracy, developing simplified models that maintain essential physical features, expanding the approach to different wood types and biomass materials, obtaining more detailed data on gas release for individual reactions, investigating environmental condition impacts need to be conducted.

This doctoral research provides a comprehensive framework for understanding and predicting wood pyrolysis behavior, with significant implications for improving fire safety modeling and assessment in building materials. By bridging fundamental science with practical applications, this work contributes valuable tools and insights to the fire safety engineering community.

[1] Dinh, Duy Cuong. "Development of a Detailed Approach to Model the Solid Pyrolysis with the Coupling Between Solid and Gases Intra-Pores Phenomena." PhD diss., Chasseneuil-du-Poitou, Ecole nationale supérieure de mécanique et d'aérotechnique, 2024.

[2] Shafizadeh, Fred, and Peter PS Chin. "Thermal deterioration of wood." 1977. 57-81.

[3] Miller, Richard Steven, and J. Bellan. "A generalized biomass pyrolysis model based on superimposed cellulose, hemicelluloseand liqnin kinetics." *Combustion science and technology* 126.1-6 (1997): 97-137.

Experimental Study on Fire Behavior of Lithium-Ion Batteries in Domestic Applications

As part of a new multi-partner research project at the Pprime Institute, Dr. Duy Cuong DINH is currently engaged in a comprehensive experimental study characterizing the fire behavior of lithium-ion batteries commonly found in domestic applications. This postdoctoral research, which began in February 2025, under the guidance of Pr. Thomas Rogaume, builds upon the institute's well-established expertise in fire safety science and continues the important work of the Heterogeneous Combustion team.

The increasing presence of lithium-ion batteries in our everyday lives—from smartphones and laptops to power tools and personal mobility devices—presents evolving fire safety challenges that require systematic investigation. The research specifically targets these common consumer applications, aiming to provide crucial data for improving safety standards and emergency response protocols.

The experimental project is originally established with five primary objectives:

- First, the usage conditions that may lead to battery ignition will be defined. In this aspect, the impacts of electrical overvoltage, overheating, physical damage and environmental conditions on battery stability are studied. From there, the team aim to establish safer operating parameters and develop more effective prevention strategies.
- Second, the research characterizes the combustion behavior of batteries and their associated risks. During the tests, multiple parameters including heat release rate, mass loss, temperature fields, explosion risks, radiative and convective heat flux and gaseous emissions are measured. This information allows both the immediate fire hazards and the broader health and environmental effects of battery fires to be quantified.
- Third, the study examines domino effects and fire propagation risks originating from battery fires. The perspective about the heat transfer from the initial source to surrounding materials allows the research team to better understand how battery fires might spread in typical domestic settings and develop appropriate containment strategies.
- Forth, the experiments generate and provide useful data for the numerical models. This data will help these models predict more accurately the battery fires behavior across various scenarios without requiring extensive physical testing.
- Finally, the study aims to identify the effective extinction methods and the safety protocols for battery fire incidents. This practical aspect of the research lets the first responders know what to DO and provide safety recommendations for consumers.

The research uses specialized equipment at the Pprime Laboratory. The calorimetry setups primarily allow precise monitoring of thermal and chemical parameters during controlled battery failure tests. Besides, the tests with battery fire are so dangerous due to jet fire, flammable gases, toxics gases, therefore, therefore, they are employed under many layers of physical protection including test room, protection equipment.

This postdoctoral project represents an important contribution to the broader field of lithium-ion battery safety. It will provide knowledge gaps regarding the specific fire risks with batteries in consumer electronics and small mobility devices. As these technologies continue to proliferate in homes and workplaces, understanding their behavior under various failure modes becomes increasingly important for saving public health and property.

Venue of Professor Jose Luis Torero

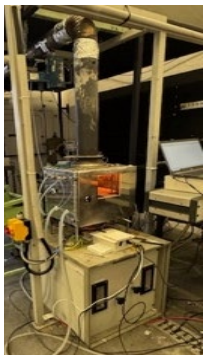
The 2nd April, we were very pleased to receive Jose Luis TORERO from the University College London in the context of the conferences cycle of the IntrEE Graduate School and the Labex on "Exploring interfaces". Jose makes a conference titled "Fire science and fire engineering. The difference between knowledge and professional competency"

It was also the opportunity to have rich exchanges with the PhD students of the research team.

Collaborative Research on Toxic Gases Generated During Building Fires with Efectis, the University of Tokyo, and Japan's National Institute for Land and Infrastructure Management (NILIM)

University of Poitiers is currently conducting collaborative research with Efectis, the University of Tokyo, and Japan's National Institute for Land and Infrastructure Management (NILIM).

This joint project focuses on the study of toxic gases produced during building fires. The objective of the research is to build a model to predict the distribution and dispersion of hazardous smoke and gases within buildings during fire events.



To achieve this, four types of materials commonly used in office interiors—polyurethane foam (PUR), aluminum composite material (ACM), wood, and PVC wallpaper—were selected as test specimens. Thermogravimetric analysis (TGA-DTG) and Controlled-atmosphere Cone Calorimeter (CCAM) tests have been conducted.

The CCAM enables combustion experiments under nitrogen environments, allowing the simulation of oxygen-deficient conditions that may occur during building fires (see picture to the left). In this study, heating was performed under both air and nitrogen atmospheres at heat fluxes of 20, 35, and 50 kW/m^2 (See pictures below). At the start of the experiments under nitrogen conditions, the oxygen concentration inside the chamber was approximately 4%.

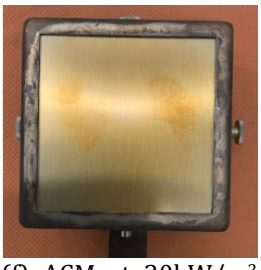
(a) PVC Wallpaper at 20kW/m^2 under air

(b) PUR at 20kW/m^2 under air

(c) ACM at 20kW/m^2 under air

(d) PVC Wallpaper at 20kW/m^2 under N_2

(e) PUR at 20kW/m^2 under N_2



(f) ACM at 20kW/m^2 under N_2

The results of PVC Wallpaper and PUR and ACM at 20kW/m^2

Based on the experimental results, fire dynamics simulations (FDS) will be carried out to develop predictive models. In addition, small-scale tests using the SDC method and medium-scale tests using the SBI method and Radiant Panel method are planned. The data obtained from the medium-scale tests will be used to create lagger scale models for fire behavior in buildings. The ultimate goal is to develop a simulation model to predict combustion-generated gases in real-scale fires. Following this, a case study on fire incidents in office environments will be also conducted to apply and validate the developed model.

Signed: Thomas Rogaume

University of Queensland

Amandeep Singh

Amandeep Singh is a PhD student enrolled in the UQ-IIT Delhi joint PhD program. He commenced his PHD at the start of 2025 on the topic of Fire performance of low carbon reinforced concrete with non-metallic reinforcement.

During his PhD, Amandeep will be studying the life cycle multi-hazard performance of low carbon concrete structures comprised of recycled or sustainable aggregates, combined with fibre, timber or bamboo reinforcement. The project contributes to decarbonisation and improved life cycle performance of concrete structures.

Amandeep completed his Bachelor of Engineering from Government College of Engineering and Technology, Jammu specializing in Civil Engineering. He also holds a Master of Technology in Structural and Construction Engineering from National Institute of Technology, Jalandhar (NITJ). His master's dissertation work focused on developing an innovative method to measure the carbonation shrinkage of concrete. During his masters, he developed a passion for sustainable concrete which is reflected throughout his master's dissertation work.

Harsh Jaiswal

Harsh is a PhD student enrolled in the UQ-IIT Delhi joint PhD program. He commenced his PHD at the start of 2025 on the topic of Physics-informed Machine Learning Approaches for Numerical Modelling of Structures Under Extreme Conditions.

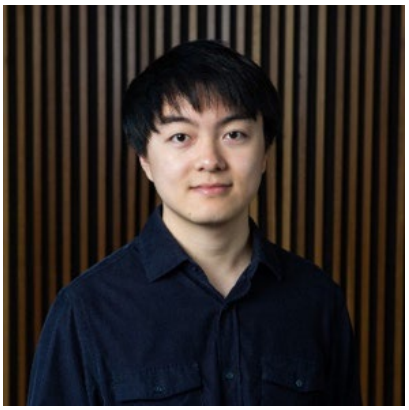
He'll be researching numerical modelling of structures under extreme loads, addressing the computational costly associated with the detail needed for capturing localised failure modes via a machine learning approach. The project aims to develop a hybrid physics-informed ML-finite element approach for efficient and cost-effective analysis of large structures under extreme loads.

Harsh completed his Bachelor of Engineering from Shri Govindram institute of Technology & Science (SGSITS), Indore specializing in Civil Engineering. He holds a Master of Technology in Structural Engineering from Indian Institute of Technology, Guwahati (IITG). His master's thesis was focused on Experimental and Numerical Investigation of Shock Tube Parameters for Reinforced Concrete Slab Subjected to Impact Loading. Harsh has worked as Structural Engineer in DAR-Al-Handashah, Pune on Infrastructure design projects, and Air Products & Chemicals inc, Pune on Plant design projects.

Recent Graduates and New Staff

One outstanding PhD student specialised in fire research graduated from UQ in 2025. Congratulations to Dr Wenxuan Wu.

Assessment of self-sustained smouldering in preservative-treated timber



Wenxuan Wu, supervised by Luis Yerman, Felix Wiesner, Juan Hidalgo, and Jeffrey Morrell

For his doctoral thesis, Wenxuan explored the catalytic effect of CCA treatment on smouldering of timber. He applied a range of analytical techniques to this problem and developed methodologies for testing the bench scale smouldering behaviour of a range of timber samples at a range of different scales.

In addition to his experimental and analytical work, Wenxuan also developed a computational model and framework that he validated against experimental data. The model aims to establish a foundation for conducting sensitivity analyses and for studying the smouldering risk under real-world conditions.

Wenxuan will be staying with UQFire as a Research Fellow, he will continue to contribute with his expertise to the group and frontiers of fire safety engineering. He is currently engaged in a wide array of keystone research projects on fire safety of timber, facades, and batteries!

Community Events at UQ

Fuelling the Future

As part of the upcoming World Conference on Timber Engineering, the SFPE student chapter at UQ is organising a student led event for undergraduate and postgraduate students, as well as Early Career Researchers, to meet and discuss their work on fire safety and timber. This exciting event is your chance to showcase your groundbreaking research, receive expert feedback, and connect with like-minded innovators from across the globe. Whether you're diving into fire science or timber research, this is your platform to shine, collaborate, and fuel the future of fire science! Limited spaces – register here: https://lnkd.in/giJeZVCy

World Conference on Timber Engineering 2025

UQ is hosting the World Conference on Timber Engineering where scientists, engineers, suppliers and other stakeholders from the timber industry come together to discuss and present key research and development on timber engineering. Dr Wenxuan Wu, Josh Madden, Stavaros Spyridakis, Zeinab Durabi, and many others current and former graduates from UQFire will be presenting on topics related to the fire safety of timber construction.

Signed: Anwar Orabi

SFPE Foundation

Board of Governor Appointments

The SFPE Foundation, a charitable non-profit organization focused on enhancing the scientific understanding of fire and its interaction with the social, natural, and built environments, announces the appointment of four new members to its Board of Governors.

The new Governors, whose terms take effect May 1, include:

- Sean Cutting, Director, Industry Relations, Water-based Suppression, Johnson Controls, Inc.
- Jonathan L. Hodges, PhD, Director of Modeling, Jensen Hughes
- Xinyan Huang, PhD, Associate Professor, The Hong Kong Polytechnic University
- Bryan Klein, Senior Support Engineer, Thunderhead Engineering

These leaders bring wide-ranging expertise in water-based suppression systems, computational fire modeling, wildland fire science, and fire safety engineering education and software development. Their combined experience reflects the global and interdisciplinary nature of the Foundation's mission.

Grants & Awards

Twice a year, the SFPE Foundation awards four student research grants of 5,000 USD. The most recent recipients (from the October 2024 round of submissions) are Hafizah Muhamad Azlan, PhD student, Universiti Teknologi Malaysia (Malaysia), Tadele Getu, PhD student, Queen's University (Canada), Maria Binte Mannan, PhD student, University of Maryland College Park (United States), and Samuel Ojo, PhD student, Case Western Reserve University (United States). 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

Signed: Amanda Tarbet

University of Sheffield

Just a very brief update this time to focus on the major news.

Departures

Dr Shan-Shan Huang has sadly chosen to depart University of Sheffield and left academia (as of February 2025). She joined the University in 2004 to study for an MSc, then stayed for a PhD, postdoc and finally an academic position. Her research mostly focused on the performance of concrete at high temperatures while continuing the work on steel that the Structural Fire Engineering group is renowned for. Shan-Shan has been the most active member of the group following the retirement of Prof. Ian Burgess and Prof. Roger Plank some time ago.

Shan-Shan's departure comes amid the continuing serious funding challenges in the Universities sector in the UK. After a long career in academia, she will take a well-deserved break to focus on other interests.

Publications

Julian's has published a journal paper on his final PhD chapter. Julian's PhD is a comprehensive work on the fire dynamics of in ventilated façade systems, and well worth a read! He has published each of his major thesis chapters, so you can also read the journal papers if you prefer.

Mendez, Julian E., Martyn S. McLaggan, and David Lange. "Upward flame spread behaviour of cladding materials on a medium-scale ventilated façade." *Construction and Building Materials* 478 (2025): 141047. doi:https://doi.org/10.1016/j.conbuildmat.2025.141047

Signed: Martyn McLaggan, University of Sheffield.

The Slovenian National Building and Civil Engineering Institute (FRISSBE)

Current and Future Activities in the FRISSBE Department at ZAG

The FRISSBE Department at the Slovenian National Building and Civil Engineering Institute (ZAG) is currently involved in many interesting projects – some of our activities are described below. Due to the many projects, the FRISSBE department is expanding with new members joining the team. Still, we are looking for new employees and PhD candidates, so express your interest (LINK).

On the topic of battery safety, FRISSBE is working with Fire & Risk Alliance LLC to investigate the fire hazards in energy storage systems in a project funded by The SFPE Foundation. The project consortium is currently looking into hazard estimation methods, mitigation approaches, and BESS failure incidents, as well as comparing ESS hazards against industrial fires and explosions. In another project that starts in September, Dr Ulises Rojas-Alva will co-supervise a PhD student enrolled at the University of Liverpool, where the principal supervisor is Dr Martina Manes. The student will work on characterising the fire hazards of EVs. Additionally, later in the year, Dr Rojas-Alva will make an official visit to USTC in Hefei, China, hosted by Prof Xiaoyu Ju. This research visit is funded by the Chinese Academy of Science, and they will work on the thermal runaway mechanism and fire risk assessment of LIB in transport scenarios.

The FRISSBE department will conduct mid-scale and large-scale facade experiments as part of a project funded by the Slovenian Research and Innovation Agency (ARIS). This involves completing the construction of a large-scale test that meets the requirements for the proposed European test setup. Also, in a consortium led by InnoRenew CoE (which is part of the FRISSBE Ecosystem), for the project ''*Innovative engineered wood products made from Thermo-hydromechanical densified wood with enhanced physical, mechanical and fire performance (WoDeFi)*'', FRISSBE researchers will conduct cone calorimeter experiments on densified samples to characterise their material behaviour. Finally, the project entitled "Framework for smart condition reassessment of reclaimed timber to extend the service life of long-lived wood products using non-destructive testing and automated data postprocessing - TiReX.'' will also involve numerous lab experiments.

FRISSBE & USTC: Collaboration at AOSFST 2024

As part of FRISSBE's continued commitment to international collaboration in fire safety science, Dr Ulises Rojas-Alva recently represented the project in two key Asian academic events.

The FRISSBE senior researcher presented at the 13th Asia-Oceania Symposium on Fire Science & Technology (AOSFST 2024), held from October 21st to 25th in Daegu, South Korea. His presentation, entitled "*A comprehensive evaluation of fire incident scenarios in secondary schools in England to develop a framework for the environmental analysis of fire safety solutions in the built environment*," is part of an internally funded project at ZAG involving Dr Andrea Lucherini, other FRISSBE-ZAG researchers, and Dr Martina Manes (University of Liverpool). Following the event, Dr Rojas-Alva visited the State Key Laboratory of Fire Science (SKLFS) at the University of Science and Technology of China (USTC), where Prof. Xiaoyu Ju invited him to deliver a guest lecture on lithium-ion battery fires in the built environment. The talk, attended by faculty members and over 3000 students online, was about lithium-ion battery risks associated with these batteries and the broader implications for fire safety engineering. In addition to the lecture, Dr Rojas-Alva participated in a workshop with students and engaged in meaningful discussions with USTC researchers, including Dr Zhizuan Zhou and team members Jiahui Xu, Xinyang Wang, Boxuan Wang, Weiheng, Yu Zhong, and Zeling. FRISSBE thanks USTC for the exceptional hospitality and fruitful exchange.

These events reflect FRISSBE's commitment to collaboration and contribute to evidence-based fire safety solutions for a more resilient built environment.

Dr Andrea Jurov Joins the FRISSBE Team

Dr Andrea Jurov joined the team in January 2025 as a postdoctoral researcher. Dr Jurov holds a PhD in Physics from the Jožef Stefan International Postgraduate School in Slovenia and an MSc in Physics from the University of Zagreb in Croatia. Her research experience spans several institutions, including the Jožef Stefan Institute, the Institute of Physics in Zagreb, the Faculty of Chemical Engineering and Technology in Zagreb, and Ghent University in Belgium. Her core expertise is related to atmospheric pressure plasmas, optical emission spectroscopy, and cold plasma-based nanomaterial synthesis. She has also worked on plasma applications in surface modification, advanced materials, and plasma–bio applications. Andrea is currently working on photovoltaic-related fire research and has recently started investigating battery fire behaviour, focusing on material response and thermal hazards. She is also exploring opportunities to apply her spectroscopy and materials experience to fire science, aiming to build interdisciplinary collaborations in future projects. Andrea is enthusiastic about contributing to fire safety research and enjoys the challenge of joining a new research field.

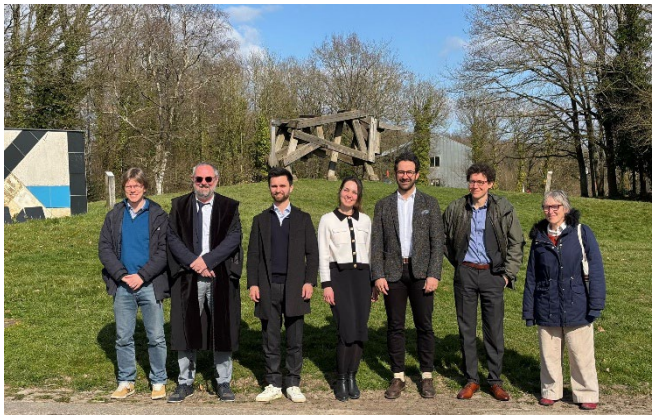
Dr Aleš Jug Advocates for Evidence-Based Fire Regulations

On April 3rd, 2025, the 10th edition of the IMFSE Fire Safety Engineering Day was held at the Universitat Politècnica de Catalunya (UPC) in Barcelona. This event, themed *"Bridging the Gap Between Science and Regulations in Fire Safety Engineering,"* reunited IMFSE students, academics from partner institutions (Ghent University, Lund University, University of Edinburgh, and UPC), and professionals across Europe.

Dr Aleš Jug, Head of the Fire Research and Innovation unit in the FRISSBE department, delivered a talk titled *"The Importance of Evidence-Based Regulations."* His presentation stressed the need for science-driven legislation and the role experimental data plays in shaping effective fire safety policies. Drawing on current research within the FRISSBE department, he outlined how aligning regulatory processes with research outcomes can ensure both safety and innovation in construction practices. Several former FRISSBE interns currently enrolled in the IMFSE programme — Rauan Adikey, Liliana Martinez, El Ghalia Serghini, Sameed Khan, and Akash Jyothivas — were also in attendance, which gave a great opportunity to stay in touch with them. Aleš also met with the incoming IMFSE interns who will spend the summer in the FRISSBE-ZAG fire laboratory in Logatec, Slovenia. We look forward to greeting Jawad Bashir Mustafvi, Hibat Allah Labhiri, Claretta Janice Suwarna and Hishe Negash in the lab in June. Hosting of interns and MSc thesis students, along with participating in IMFSE events are highlights of being an associated partner of the programme.

FRISSBE Researcher Engages in Global Fire Safety Dialogue

Dr Andrea Lucherini, senior researcher at ZAG, has recently collaborated with both academic and industry platforms, reinforcing FRISSBE's mission to promote fire-safe and sustainable built environments through research, teaching, and outreach.



On March 17th, Andrea Lucherini acted as an external examiner for the PhD defence of Aleksandra Seweryn at the University of Liège, Belgium. The thesis, titled *"Numerical Modelling of Fire-Resistant Glazing and Frame in a Full-Scale Fire Test"*, was supervised by Prof Jean-Marc Franssen and Julien Jeanfils (AGC), with Prof Ruben Van Coile (Ghent University) and Dr Anne Marie Habraken (University of Liège) as other jury members. Andrea and the entire FRISSBE team congratulates Dr Seweryn on the successful defence.

The following day, March 18th, Dr Lucherini delivered an invited lecture at Ghent University within the Master of Science in Fire Safety Engineering (MFSE) programme. His lecture, part of the Structural Fire Engineering course led by Dr Thomas Thienpont, focused on fire safety in timber structures, sharing research-based insights with future fire safety professionals.

New Flat Roof PV Fire Test Method by FRISSBE-ZAG

In their efforts to make rooftop PV systems safer, FRISSBE researchers Nik Rus and Kirils Simakovs, through the financial support of the FRISSBE project, have developed a new testing methodology aimed at evaluating the fire performance of photovoltaic (PV) systems on flat roofs. The newly published document, entitled *Fire Test Method for Flat Roofs with Photovoltaic (PV) Modules*, presents ZAG's structured approach to simulate realistic fire scenarios involving rooftop PV installations. Rather than focusing solely on individual PV modules, the method emphasises a holistic assessment of the entire system, including membranes, insulation, and structural materials. The test methodology includes:

Ignition beneath the PV modules to reflect common failure modes such as electrical faults.

Use of wood cribs as ignition sources to replicate natural fire development.

Evaluation of a wide range of component combinations across panels, membranes, and insulations through a forensic-type inspection after the tests.

A clear structure that includes scope, normative references, definitions, methods, procedures, observations, and reporting guidelines.

This method supports harmonised standards for PV fire testing, which are particularly relevant as rooftop solar continues to expand across residential and commercial buildings. FRISSBE invites feedback to support further refinement and potential standardisation of the approach.

PV + Timber: New Paper on Fire Safety Challenges

A recently published article in *BioResources Journal* examines the fire safety challenges arising from the integration of photovoltaic (PV) systems with timber structures. The paper *"Fire Safety of Timber Buildings – The Case of Photovoltaic Systems"* , Dr Andrea Lucherini, Prof Grunde Jomaas, and Prof Mohammad Derikvand. Nik Rus, Dr Andrea Lucherini, Prof Grunde Jomaas, and Prof Mohammad Derikvand (University of Primorska, which is part of the FRISSBE Ecosystem). As sustainable construction gains momentum, using PV systems to support low-carbon energy goals, alongside timber as a renewable building material, is becoming increasingly common. However, their combination presents specific fire safety concerns that have not yet been fully addressed in current practice or regulation.

The open access article discusses how the interaction between combustible structural elements and electrical energy generation systems introduces new risk profiles, especially in the event of roof fires. The authors review existing literature and identify key factors influencing fire behaviour in such configurations. They also highlight the need for dedicated experimental and modelling work to guide fire-safe design in this emerging area. The paper continues FRISSBE's research to support the development of fire-safe sustainable built environments. The authors encourage collaboration and further research to develop appropriate risk mitigation strategies. FRISSBE & FPRF Collaborate on Thermal Imaging Project

In a time where firefighter safety is of ever-increasing importance, the FRISSBE team, led by Martin Veit, is proud to collaborate with the Fire Protection Research Foundation (FPRF) on a project named "Measuring Thermal Image Quality for Fire Service Applications." The aim is to improve the existing methods within NFPA 1801 to quantify the image quality of thermal images taken by thermal imagers used in the Fire Service.

The project examines current image processing methods by investigating the current approaches used in image processing to evaluate if currently existing technologies can be used in this new context. Another objective is to improve thermal imager testing and the repeatability of the tests conducted further. The final report is expected to be finished by June 2025 and will be publicly available from the FPRF's report archive soon after.

IMFSE Thesis at FRISSBE: Timber in Fire Conditions

As an associated partner of the International Master of Science in Fire Safety Engineering (IMFSE), FRISSBE continues to support the academic development of future fire safety professionals. One recent example is the hosting of the MSc thesis research of IMFSE student Akash Jyothivas, who is supervised by Dr Andrea Lucherini. Akash submitted his thesis in May 2025.

Akash's thesis is entitled "Experimental study on the thermal penetration in structural timber elements exposed to the fire decay and the cooling phase of post-flashover fires." The work focuses on understanding the behaviour of timber during the late stages of compartment fires, a topic of increasing relevance for the fire-safe design of sustainable buildings. The project reflects FRISSBE's role in education and training to support international education and foster strong links between advanced research and academic training. FRISSBE contributes to shaping the next generation of fire safety engineers by hosting thesis projects and engaging with students from partner institutions.

Signed: Grunde Jomaas and Jonay Brito Garica

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

Workshop on Pedestrian Traffic and Evacuation Dynamics 2024 (PTED 2024) was held successfully

The 5th Workshop on Pedestrian Traffic and Evacuation Dynamics (2024) was held in Hefei, Anhui Province in China from December 13th to 15th. It was organized by Prof. Weiguo Song and Prof. Jun Zhang.

110 scholars from 40 institutions participated in the workshop. Prof. Majid Sarvi (University of Melbourne), Prof. Tiejun Zhou (Chongqing University) and Prof. Tao Chen (Tsinghua University) gave plenary speeches at the workshop. Prof. Xiao Han (Beijing Jiaotong University), Associate Prof. Shuchao Cao (Jiangsu University), Associate Prof. Yao Xiao (Sun Yat-sen University), Prof. Ming Fu (Hefei Institute of Public Safety at Tsinghua University) and Associate Prof. Qimiao Xie (Shanghai Maritime University) delivered keynote speeches. They shared the latest progress in experimental research, modelling and application of new technologies in pedestrian traffic and emergency evacuation and provided prospects for the future development of this field.

Besides, 33 scholars gave wonderful oral presentations. The attendees had in-depth exchanges and discussions on topics such as mixed traffic dynamics, pedestrian evacuation under disaster conditions, personnel safety protection technology, virtual reality technology, and personnel psychology.

Professor Huahua Xiao won the “Wu Chung-Hua Outstanding Young Scholar Award” from the Chinese Society of Engineering Thermophysics

On October 9, 2024, Prof. Huahua Xiao, a board member of the International Association for Hydrogen Safety, was awarded the “Wu Chung-Hua Outstanding Young Scholar Award” by the 17th Chinese Society of Engineering Thermophysics. Prof. Huahua Xiao received this award for his significant contributions to fire and explosion science as well as hydrogen safety research.

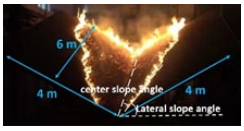
The "Wu Chung-Hua Reward Fund" was established in 2007 on the occasion of Mr. Wu Chung-Hua's 90th birthday. Mr. Wu Chung-Hua, the founder of the discipline of engineering thermophysics in China, successively established the Institute of Engineering Thermophysics of Chinese Academy of Sciences, and the Chinese Society of Engineering Thermophysics. The "Wu Chung-Hua Award Fund" was initiated by the Chinese Society of Engineering Thermophysics and the Institute of Engineering Thermophysics of Chinese Academy of Sciences, with the aim of promoting the patriotic, dedicated, and striving spirit of Mr. Wu Chung-Hua, advancing the development of the Engineering Thermophysics discipline, and rewarding outstanding young scientists and graduate students across China who have made remarkable scientific achievements and demonstrated innovative thinking in the field of engineering thermophysics.

The fund established the "Wu Chung-Hua Outstanding Young Scholar Award", which annually rewards 1-6 outstanding young scientists in China who are under the age of 40, hold senior professional titles, and have made exceptional scientific achievements and demonstrated innovative spirit in the field of engineering thermophysics.

SKLFS was specially reported by China Central Television International Channel (CCTV-4)

On December 20, 2024, CCTV-4's ''*Global Today*'' program specially reported State Key Laboratory of Fire Science (SKLFS) (https://tv.cctv.com/2024/12/19/VIDE9wXGYQQdFByp9bx9ztRt241219.shtml):

- Medium-scale Rotating Screen Fire Whirl Facility.
- It is the world's largest facility for fire whirl simulation of this kind, featuring a cylindrical wire-mesh screen (diameter: 2.0 m, height: 10.0 m) driven by a 0-50 RPM (±0.01) servo motor, and a 20 cm central gas burner (15-300 kW). The heat release rate and the imposed rotation strength are completely decoupled, which enables research of medium-scale turbulent fire whirl combustion behaviours, such as the various flame patterns and geometric characteristics of fire whirls under weak to very strong rotational conditions.



- Canyon Fire Spread Facility.
- It comprises two symmetrical 6 m × 4 m plates with independently adjustable center/lateral slope angles (0-40°), supporting research on canyon surface fire spread, such as eruptive fire dynamics.

- Forest Fire Spread Prediction System (FFSPS).
- It dynamically selects models (e.g., Rothermel) using terrain, fuel, ignition, and weather inputs to rapidly simulate surface fire spread with 3D visualization.
- Intelligent Fire Suppression Technologies and Equipment.
- Automatic Fire Cannon monitors fires 24/7 and activates water spray. Water Mist Fire Extinguishing Technology quickly absorbs heat to suppress flames. UAV-based platforms enable fast firefighting on high-rise building facades.

Prof. Jiao Lei indicated that the fire whirl's risks and the FFSPS integrate models of fire whirl formation and impacts, which can support forest fire suppression. Prof. Naian Liu stated that this system can support the AG600 aircraft in flight routing and firefighting decision-making.

Prof. Weiguo Song gave plenary speech in 13th Asia-Oceania Symposium of Fire Science and Technology (AOSFST 2024)

The 13th Asia-Oceania Symposium of Fire Science and Technology (AOSFST 2024) was held in Daegu, South Korea from October 21th to 24th, 2024. Prof. Weiguo Song was invited to give a plenary speech on Pedestrian and Evacuation Dynamics. In his speech, the complexity of pedestrian and evacuation phenomena and the common problems in current research were discussed, with a focus on the progress on multi-scenario pedestrian evacuation experiments and pedestrian detection and tracking. The basic laws of high-density crowd movement were analyzed, and the characteristics of vulnerable groups such as the elderly in pedestrian evacuation processes were explored. The progress of pedestrian detection and tracking research based on deep learning was introduced, and the future development trend of personnel evacuation direction was discussed.

Prof. Weiguo Song has long been committed to the research of pedestrian and evacuation dynamics. He has served as the convener and co-chair of the IAFSS Evacuation Forum, the topic leader of IAFSS Evacuation topic, the chairman of the Pedestrian and Evacuation Dynamics (PED) Conference Organizing Committee, and a member of the Steering Committee for PED and TGF (Traffic and Granular Flow) conferences.

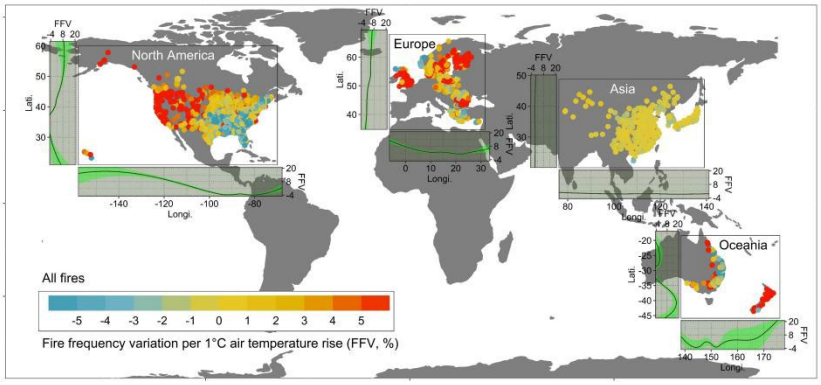
The first academic salon for young scholars of the Institute of Science and Technology for Public Safety was successfully held

The first academic salon for young scholars of the Institute of Science and Technology for Public Safety was co-sponsored by the Institute and the State Key Laboratory of Fire Science (SKLFS) at the University of Science and Technology of China (USTC). Notable participants included Prof. Weicheng Fan (Academician of Chinese Academy of Engineering, Honorary President of the Institute), Prof. Shifei Shen (Vice President of the Institute) and Prof. Hongyong Yuan (Executive Vice President and Secretary-General of the Institute). Prof. Jie Ji (President of the Young Scholars' Association at USTC and Deputy Director of the SKLFS) chaired the event. The salon gathered over 200 young researchers for cross-disciplinary dialogues.

During the salon, Prof. Wei Gao (Dalian University of Technology), Prof. Jue Liu (Peking University) and Prof. Jiao Lei (USTC) successively delivered thematic lectures entitled "Doing Planned Scientific Research", "Scientific Research: Original Intent and Mission", and "Focus on Persistence and Move Forward with Innovation". A panel discussion with Prof. Wei Gao, Prof. Jue Liu, Prof. Jiao Lei, Prof. Li Liu (Beijing Institute of Fashion Technology) and Prof. Xiangming Hu (Shandong University of Science and Technology) provided practical implementation perspectives. Organizing committee members included SKLFS scholars Jie Ji, Hanfeng Jin, Xiaoyu Ju, Haowei Hu, alongside Prof. Mengqi Yuan (Beijing Institute of Technology) and Prof. Chuangang Fan (Central South University). This event established a platform to facilitate professional development through methodological exchanges and collaborative problem-solving in public safety research.

Increasing fire risks in cities worldwide under warming climate

The frequency of some types of fires in cities as a result of climate change is projected to increase in the coming decades, according to a study published in Nature Cities. The findings are based on data from 2,847 cities in 20 countries and could be useful for future urban planning and emergency response strategies. Prof. Long Shi from the SKLFS at the University of Science and Technology of China and his colleagues gathered data from urban fire departments in 2,847 cities across 20 countries — including the USA, UK, Australia, and China — to establish a global database of city-level fire incidents for 2011–2020. They projected that, by 2100, there could be an 11.6% increase in vehicle fires and a 22.2% increase in outdoor fires, but a 4.6% decrease in building fires, under a high greenhouse gas emission scenario (SSP5–8.5). They also reported an estimated total of 335,000 fire-related deaths and 1.1 million fire-related injuries between 2020 and 2100, attributable to global warming, across all cities in this study.



Fire frequency variation per 1 °C rise in air temperature (FFV). The FFV (in %) of the 2,847 analyzed cities for all fire incidents. Each dot represents a city. "All fires" are a combination of all fire incidents collected by fire departments. Fire frequency corresponds to the annual number of fire incidents per thousand population.

The full text of this paper can be found at www.nature.com/articles/s44284-025-00204-2.

Progress in fire suppression and hazardous chemicals decontamination with long-range foam-water mist

It is well known that water mist had been regarded as an efficient and environmentally friendly fire suppression technology due to its merits of pollution-free, high efficiency and low cost. However, the conventional one is limited to relatively short spray range and radial coverage, while the turbojet-engine-based one has several shortcomings known as high costs, excessive power consumption and high noise, etc. So in order to meet the urgent need for efficient fire suppression of a large-scale fires and the safe long-distance decontamination of the leaked hazardous chemicals, the research group of Prof. Xishi Wang and Xiaolong Zhu from SKLFS, proposed and developed an advanced water mist generation method based on axial flow induction for range extension and rotation-precession jet coupling for spray enhancement, which enables the long-range and wide-area dispersion of water mist under standard power conditions.

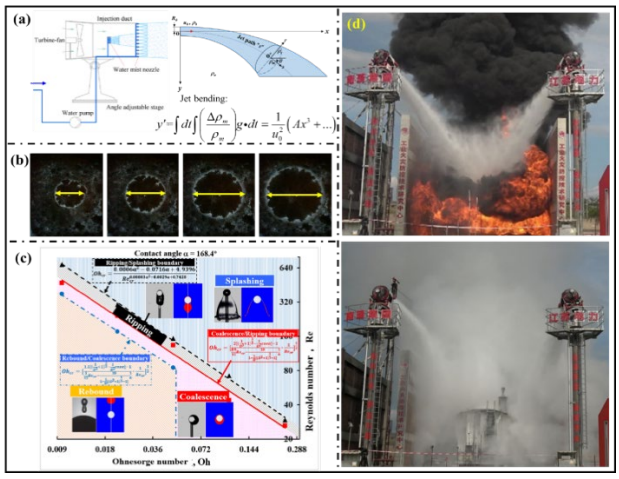


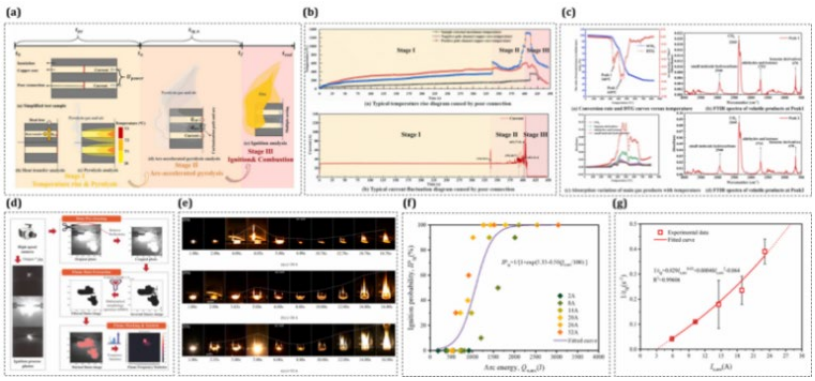
Chart of Long-Range Foam-Water Mist Firefighting Technology. (a) Axial Flow Induced long-range Spray Principle Schematic and Theoretical Analysis. (b) Optimization of Environmentally Friendly Film-Forming Foam. (c) Principle of Droplet Decontamination of Flue Gas. (d) Real Scene of Firefighting at 800 kV Substation.

With collaboration of Beijing Nari Yihe Co., Ltd., they developed a turbofan water mist system with spray distance up to 30 m, and an environmentally compliant film-forming foam agent tailored for transformer fire scenarios especially act as water mist additives for reducing mist droplet size, suffocating oil fires and efficiently washing away smoke particles. Full-scale verification tests were conducted via suppression of an 800 kV converter transformer fire, and the results well confirmed its high effectiveness. The theoretical/semi-empirical models on spray distance prediction and influencing factors analysis have also been developed.

Fault arcs and poor electrical contact: combustible ignition mechanism

In 2024, electrical fires accounted for nearly one-third of all fire incidents in China. Among them, fault arcs, poor contact, and overload are important causes. Understanding complex electrical fire ignition and evolution mechanisms can help take targeted measures to enhance fire prevention and control capabilities. Therefore, relevant topic has attracted extensive attention from scholars and engineering technicians over the world.

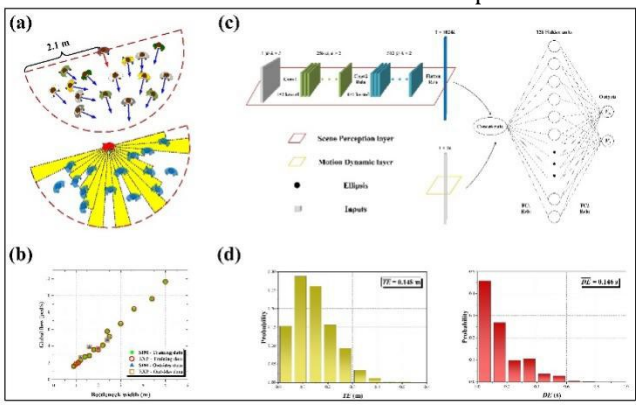
Prof. Shouxiang Lu's team, from SKLFS, constructed multiple electrical fault models and corresponding ignition test methods, elucidating the ignition behaviours of electrical components such as cables and connectors by fault arcs and poor contact. They revealed the ignition probability and dominant heat transfer mechanisms and established predictive models for ignition time and critical ignition power. And team member Dr. Jin Lin is currently working on formulating the IEC standard for arc ignition test method. The research provides a fundamental support for electrical fire risk assessment and prevention technology development. The associated work has been published in Process Safety and Environmental Protection (189 (2024): 1517-1526) and Fire Safety Journal (136 (2023): 103753), and five invention patents have been authorized.



Ignition by Poor Contact and Fault Arcs. (a) Analysis of a typical three-stage fault ignition process caused by poor connection of the electrical connector. (b) Typical temperature and electrical signal changes caused by poor connection. (c) TG-FTIR test results of the sample insulating material. (d) Image-based data cleaning algorithm process. (e) Snapshots of ignition with two-stage flaming by arc at supplied currents. (f) Flaming ignition probability with arc energy. (g) Effects of arc current on inverse of ignition time based on experimental results.

Artificial intelligence promotes the progress in pedestrian and evacuation dynamics modelling methods

The rapid acceleration of urbanization has led to higher concentrations of crowds in confined spaces including high-rise, underground, and large public structures. Especially in emergencies such as fires, the efficiency of evacuation procedures becomes critical for safeguarding human life. Initially, traditional pedestrian and evacuation dynamics (PED) models such as Social Force Model (SFM) and Cellular Automaton (CA) had brought insights inform the design of more efficient evacuation facilities and contribute to the development of effective emergency response protocols. However, the effectiveness of simulation conducted by traditional models is disputed due to the assumed rule defined to drive the pedestrian motion.



The model establishing and process. (a) The interaction data encoding module considering 'herd effect' and social distance (2.1m); (b) The simulated global flow versus exit width diagram from simulation of bottleneck scenario; (c) The deep neural network with two functional layer which combining the scene perception and motion dynamics of simulated pedestrian; (d) The evaluated quantitative prediction error – trajectory error and duration error from simulation of turning scenario (0.148 m and 0.146 s, respectively).

The research team of Prof. Lizhong Yang, from SKLFS, established novel PED modelling methods by incorporating data-driven approaches from the field of artificial intelligence. By encoding the 'herd effect' and scene perception module into the machine learning algorithms, learning-based PED models were trained using data from controlled pedestrian experiments. With the bless of real-world data participating in modelling phase, the simulated results of proposed models have been qualitatively and quantitatively evaluated to be those of superior to traditional models, and such successful trial will bring new perspectives to the study of PED models. The associated works were published in the IEEE Transactions on Intelligent Transportation Systems (24 (2023):7035-7047 and doi.org/10.1109/TITS.2025.3526183) and Expert Systems with Applications (262(2025): 125706).

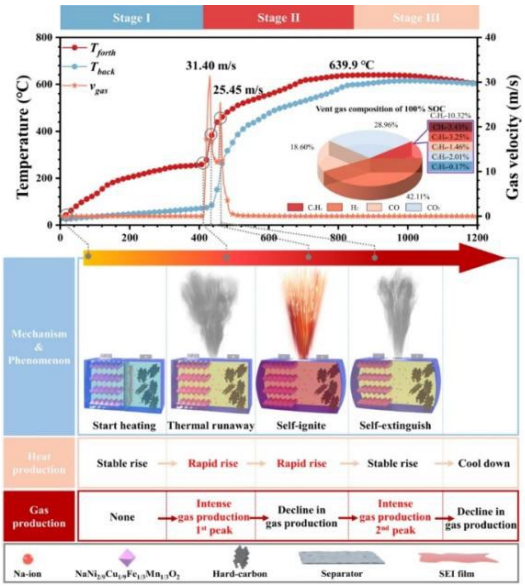
Workshop on Fire Safety of BIPV Façades held jointly by USTC and the University of Trieste

In October 2024, the annual workshop of the National Key Research and Development Program of China "Research on BIPV Photovoltaic Façades for Fire Spread Mechanisms, Structural Failures and Resilience Improvement Methodologies (3FiRES)" was successfully held in Trieste, Italy. Co-hosted by the University of Trieste and the SKLFS at the USTC, the workshop featured project leaders Prof.nin Yu Wang (China) and Prof. Chiara Bedon (Italy) and researchers from both countries, including Lorenzo Veronese, Riccardo Del Bello, Chengming Xiao, Yiyang Hu, Liaoying Zhou and Haonan Chen, shared their new findings. The event welcomed esteemed experts, including Prof. Jan Belis (Ghent University), Prof. Grunde Jomaas (Slovenian National Building and Civil Engineering Institute), Prof. Fabio Parolini (University of Applied Sciences and Arts of Southern Switzerland), and Dr. Nicola Blasuttigh (University of Trieste), who delivered invited presentations and provided valuable insights for this project.

Attended by over 80 scholars from Germany, France, Belgium, Switzerland, Italy, Portugal, Slovenia, and Slovakia, the workshop fostered meaningful academic exchange. The 3FiRES project, jointly led by USTC and University of Trieste, aims to establish a solid foundation for fire safety design and regulatory advancements for BIPV façades, contributing to international efforts in fire safety research and innovation.

Research progress in thermal runaway and gas venting behavior of large-format sodium-ion batteries

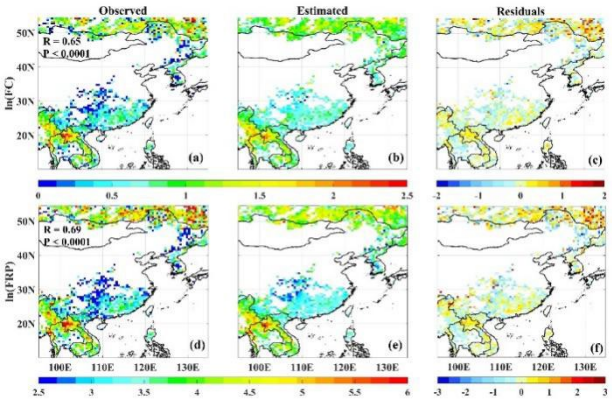
Sodium-ion batteries (SIBs) have emerged as a promising alternative to lithium-ion batteries for electrochemical energy storage applications, due to their cost-effectiveness, abundant resource availability, and excellent low-temperature performance. However, despite these advantages, the commercial deployment of SIBs is hindered by significant safety concerns. Battery safety incidents are predominantly attributed to thermal runaway (TR), which can not only damage individual cells but also trigger cascading failures across the battery module, posing a serious threat to energy storage systems. Consequently, a comprehensive investigation into the TR mechanisms of SIBs is essential for enhancing the safety of sodium-based energy storage systems.



Recently, Prof. Qingsong Wang from SKLFS conducted an in-depth investigation into the TR behavior of large-format commercial SIBs across different states of charge (SOCs). The findings indicated that as the SOC increases, the proportion of H_2 in the released gases increases significantly. At 100% SOC, H_2 constitutes 42% of the emitted gases, with a flammability range of 6.5%~69.0%, highlighting the increased explosion risk of SIBs under high SOCs. Furthermore, SIBs generate substantial amount of heat during TR, resulting in the ejection of hot particles as sparks. Nevertheless, the violent gas release facilitates heat dissipation inside the battery and isolates combustible gases from sparks and oxygen, ultimately leading to the self-extinguishing characteristic of SIBs. The associated work has been published in the Energy Storage Materials (77 (2025): 104197).

Progress in estimating fire counts and radiative power using satellite optical and microwave vegetation indices with random forest method

Fuel properties, such as fuel moisture content and availability, are critical determinants of fire counts (FC) and fire radiative power (FRP). This is because they directly influence fuel flammability, combustion efficiency, and radiant energy release. Satellite remote sensing is a powerful tool for monitoring fuel properties at large scales.



Mean estimations of FC and FRP based on established RF model over East Asia, (a) and (d) are the observations of ln (FC) and ln (FRP), (b) and (e) are the estimations of ln (FC) and ln (FRP), (c), and (f) are the residuals between observations minus estimations of ln (FC) and ln (FRP). R represents the spatial correlation coefficients between observations and estimations for ln (FC) and ln (FRP).

Prof. Rui Li, from the SKLFS and the School of Earth and Space Sciences at the University of Science and Technology of China (USTC), has utilized a machine learning method to gain a better understanding of continental fire properties. In this study, the random forest (RF) model was employed, with microwave-based Emissivity Difference Vegetation Index (EDVI) and optical normalized difference vegetation index (NDVI) serving as key fuel properties. These indices were used to unravel the physical driving mechanisms of forest fires and to estimate daily FC and FRP over East Asia. The results indicated a good agreement between the estimated FC and FRP and satellite observations. Specifically, the spatial R was 0.59 for FC and 0.63 for FRP, while the temporal R was 0.80 for FC and 0.81 for FRP. The study found that integrating EDVI and NDVI into the RF model enhanced model performance and reduced systematic errors compared to the model without vegetation variables. This research was published in the Journal of Geophysical Research: Atmospheres (130 (2025): e2024JD041680) and was selected by the editorial board to be featured on AGU's social media platforms, an honor bestowed on fewer than 2% of AGU papers.

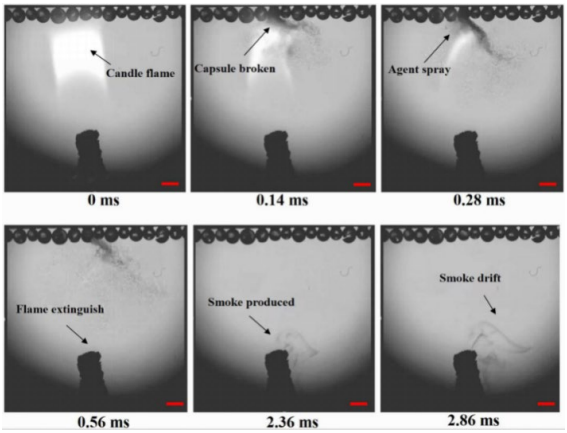
Prof. Jiao Lei delivered a popular science lecture titled *Fire Science* at Sijiaotian Primary School in Liuzhi, Guizhou

On January 9, 2025, Prof. Jiao Lei delivered a popular science lecture titled Fire Science for 50 fifth-grade students at Sijiaotian Primary School in Lianhe Village, Liuzhi Special District, which is located in the mountainous area of Guizhou Province and more than 1,500 km away. It is the counterpart support unit of the University of Science and Technology of China (USTC).

The lecture began with a historical perspective on fire and introduced the importance of fire science research. A series of serious fire cases were presented to trace the origins and development of fire science. Then, the formation and development mechanism of various fires including wildfires, structural fires, and industrial fires, along with extreme fire behaviors such as fire whirl, fire storm, crown fire, and multiple flame merging were introduced. Finally, firefighting technologies for today's society are described, as well as the current frontiers and challenges of fire science research. In the interaction session, the students actively raised their hands and bravely put forward their questions and ideas based on real life.

Smart fire suppression: Thermally responsive microcapsules for early-stage fire intervention

A research team led by Prof. Ting Si from SKLFS at University of Science and Technology of China (USTC) has pioneered thermally responsive fire-extinguishing microcapsules using droplet-based microfluidic technology with high productivity. These intelligent microcapsules (20–1000 μm in diameter) combine sensing and actuating functions. Their polymer shell encapsulates eco-friendly suppressants, rupturing precisely at critical temperatures to combat solid, liquid, and electrical fires. This innovation tackles the urgent need for timely intervention during early fire ignition.



Key Innovations and Advantages:

- Precise Firefighting – The microcapsules activate exclusively at the fire source, ensuring efficient suppressant deployment while minimizing waste.
- Exceptional Stability – Laboratory tests confirm >2 years of functional integrity under normal storage conditions, making them suitable for long-term integration into safety systems.
- Sustainable Design – The halogen-free, low-carbon suppressant formula eliminates toxic byproducts and secondary pollution, aligning with global environmental regulations.

Initial validation in lithium-ion battery modules demonstrates strong potential for electric vehicle and energy storage safety, where overheating poses significant risks. The team has successfully simulated thermal runaway scenarios, with microcapsules effectively suppressing fires before catastrophic propagation. Next-phase research focuses on industrial collaboration to test performance in real-world settings, particularly under high-current charging/discharging cycles. Further optimization will enhance reliability in extreme operational environments, paving the way for scalable manufacturing and commercial adoption. This technology represents a paradigm shift in fire safety, offering a smart, sustainable, and proactive solution to mitigate fire risks in critical infrastructure.

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

Tohoku University

Featured on Tohoku University Global Website

Samuel L. Manzello, a visiting professor at the Institute of Fluid Science, was honored to have his research featured on the Tohoku University's global website:

- News - Japanese and African Researchers Join Forces to Tackle Wildfire Threats | Tohoku University Global Site
- Research News - Generating International Testing Standards for Large Outdoor Fires | Tohoku University Global Site

Media Coverage

Ofunato City, in northern Japan, experienced record-setting wildland-urban interface (WUI) fires in March 2025. As a WUI fire expert, Samuel has spoken on this issue, discussing preparedness and potential spread. Samuel has provided insights and these have appeared in various outlets, as well as a message to all those impacted by these WUI fires. Read more below:

- Prof. Samuel L. Manzello responds to a media interview about a wildfire in Ofunato, Iwate Prefecture - Institute of Fluid Science, Tohoku University

With recent WUI fires also occurring in South Korea, also in March 2025, Samuel was also asked to comment on WUI preparedness in other countries, including the USA and Japan. Please see recent interviews:

- South Korea wildfires a wake-up call for global fire preparedness: Professor - CNA
- 「三陸フェーン大火記念碑」：64 年前にもあった岩手の惨事―山と人里の境界での火災に警鐘 | nippon.com

Invited Talks on WUI Fires

Samuel delivered invited talks on WUI fires to the EU Horizons 2020 TREEADS Project Meeting in Oslo, Norway on April 9th, 2025. The title of talk was:

- Wildland-Urban Interface (WUI) Fire Disasters: Is Europe Prepared?

Samuel delivered another invited talk to the European Commission Joint Research Center (JRC) on May 5th, 2025, also on WUI fires. The title of talk was:

- Progress to Develop Global Test Methods for Wildland-Urban Interface (WUI) Fires

Slides of these talks are available for anyone interested.

Special Issue on WUI Fires in Applications in Energy and Combustion Science

For those working on wildland fires and WUI fires, please consider to submit to a special issue is serving as Executive Guest Editor for *Applications in Energy and Combustion Science*. AECS is the sister journal of *Progress in Energy and Combustion Science*.

- Applications in Energy and Combustion Science | ScienceDirect.com by Elsevier - Applications in Energy and Combustion Science | ScienceDirect.com by Elsevier

Visit to Technical University of Munich (TUM)

On April 14, 2025, Samuel visited Technical University of Munich to discuss WUI fires. Thomas Engel of TUM was the host and Samuel, along with Thomas, and other TUM researchers delivered talks on current research activities. A photo the visit is included below; thanks to Thomas and all for hospitality:

Samuel Visiting Technical University of Munich in April 2025

IFS, Tohoku University Joins SFPE Grand Challenges Initiative

The Society of Fire Protection Engineers (SFPE) Foundation's Grand Challenges Initiative is a multi-year research and educational collaboration to develop a strategy for action in areas where the fire engineering community can have the greatest impact: Energy & Infrastructure, Resilience & Sustainability, Climate Change, and Digitalization,

Artificial Intelligence, & Cybersecurity. The GCI is comprised of industry, academic, government, non-profit, and other partners. GCI Home - GCI

Scientific Perspectives on Wildfire Risk Management at the WUI Property Scale

At the invitation of the Forest Fire Research Centre of ADAI (University of Coimbra, Portugal), Samuel was asked to coordinate and lead Chapter 4, Structure Ignition Mechanisms in WUI Fires, for the book Scientific Perspectives on Wildfire Risk Management at the WUI Property Scale. The book brings together researchers from 10 countries. For free download https://doi.org/10.14195/978-989-26-2687-1

Please contact Samuel L. Manzello for any questions on the above activities (manzello@tohoku.ac.jp)

Signed: Samuel L. Manzello (with IFS, Tohoku University, Japan)

Toyohashi University of Technology

The fire safety group, ECELAB (Energy Conversion Engineering Laboratory), located at Toyohashi University of Technology (TUT) in Japan, is experiencing continued growth and actively seeks both international and local students, as well as new opportunities for collaboration. The current members of ECELAB include Professor Yuji Nakamura, two Associate Professors - Tsuneyoshi Matsuoka, and Nobumasa Sekishita, Assistant Professor Daiki Matsugi, three postdoctoral researchers, secretary, and over 20 students, including international visitors.

Notable personal changes and promotions since the last newsletter

We are pleased to announce that: Dr. Yuyang Jiang from Wuhan, China has recently finished his studied at the University of Tsukuba and joined the ECELAB team as a postdoctoral researcher; MSc. Takafumi Yamazaki, a former ECELAB student, now continues at the lab as a research fellow; MSc. Yoshitoshi Matsushima currently working at Morita Group, has joined the lab as a PhD student working on fire suppression using water vapor; Dr. Yue Zhang successfully finished her JSPS fellowship and will continue in ECALAB as a research fellow; Dr. Vojtěch Šálek prolonged his previous contract and will continue as a part of the team.

New members from left to right in the pictures above: Dr. Jiang, MSc. Matsushima, and MSc. Yamazaki.

Recently received awards

Professor Nakamura was honored with the *Education Award* from The Japan Society of Mechanical engineers and the *Toyohashi University of Technology Social Contribution Activity Award* for his outstanding achievements in his lectures and activities contributing to the local community. Prof. Nakamura was also elected as an honorable Fellow of The Combustion Institute (class 2025) for his outstanding contribution to combustion. Dr. Daiki Matsugi received the *Excellent Presentation Award* for his poster at the 62nd Symposium (Japanese) on Combustion in Osaka. Under the supervision of Prof. Nakamura, Haruya Yata, Ryoki Okada, Daiki Matsugi, Takuya Yamazaki received the *Best Paper Award* by Japan Society of Mechanical Engineers for their paper in Transactions of the Japan Society of Mechanical Engineers. Dr. Yue Zhang received the *Certificate of Merit for Thermal Engineering Excellent Presentation from Young Researcher*, awarded by the Japan Society of Mechanical Engineers in 2025. Goki Kawai won the *Hatakeyama Award* from the Japan Society of Mechanical Engineers awarded to a single graduate each year for both his character and academic excellence. Dr. Vojtěch Šálek received a community *2024 Boris Stock Award* for his contribution to the development of FDS. And finally, master's students Taichi Ogawa and Haruhiko Goshu won the *Toyohashi University of Technology's 2024*

Student Awards for their academic excellence and off-campus activities, marking the fourth consecutive year that ECELABO has received this award. Congratulations to everyone!

From left to right in the pictures above: Goki Kawai (and Prof. Nakamura next to him) receiving *Hatakeyama Award*, Taichi Ogawa and Haruhiko Goshu receiving *Toyohashi University of Technology's 2024 Student Awards*, and Dr. Matsugi receiving *Excellent Presentation Award.*

Recent lab activities

ECELAB is active in both internal and external communication and in the popularization of science. The lab hosted a joint introduction session for all new bachelor's students followed by a joined pizza party and participated in a volleyball tournament against other laboratories. As usual, a traditional year-end party was held as well as a farewell gathering celebrating this year's 14 successful graduates and undergraduates. Congratulations!

This year's bachelor (left) and master (centre) students after successfully defending their title. Traditional end-year party (right).



To show that ECELAB's door are open to everyone, the ongoing research and demonstration experiments were showcased to numerous visitors at various events, including children and their parents during the University TECH Festival. Additionally, Prof. Nakamura has contributed to the JECTEC NEWS, gave an off-side lecture at the Toyohashi Audiovisual Education Center, participated in an interview about 'Powder introduction device for hybrid combustion' together with Ryoki Okada, or encouraged bold researchers in the Voices of University Professors.

Conferences & community contributions

Laboratory members have actively participated in various conferences, presenting their work through speeches and posters. Notably, 8 members presented their work at the 62nd (Japanese) Combustion Symposium in Osaka and Dr. Zhang with students Okada and Goshu gave their presentations at The 3rd Pacific Rim Thermal Engineering Conference (PRTEC2024) in Honolulu. Prof. Nakamura gave an invited lecture on 'Space fire research on earth: Power of scale modeling and its role as game changer' at the University of Science and Technology of China (USTC). Thank you to everyone for your valuable contributions to the fire safety community!

Beyond these visible contributions, ECELAB, under the leadership of Prof. Nakamura, is also engaged in a variety of other important and prestigious initiatives. Prof. Nakamura is currently the chair of JAFSE (Japan Association for Fire Safety Engineering) academic committee, and serves in committees for the 5th European Symposium on Fire Safety Science (ESFSS 2025), the 11th International Seminar on Fire and Explosion Hazards (ISFEH11), and other significant events. Toyohashi University of Technology will also host the annual 2025 JASFE symposium, with Prof. Nakamura as executive chair of the conference.

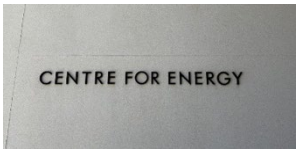



Dr. Matsugi (left), Dr. Zhang (center), and Dr. Šálek (right) delivering conference speeches.

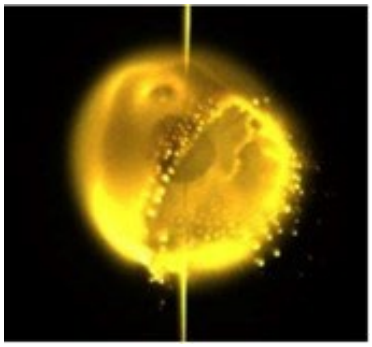
Research visits

A noteworthy set of experiments was conducted using the drop tower in Hokkaido, Japan, to investigate flammability of polymer materials under microgravity. Mr. Ogawa, Mr. Goshu, Dr. Matsugi, and Prof. Nakamura successfully conducted the precious experiments and obtained a very valuable dataset!

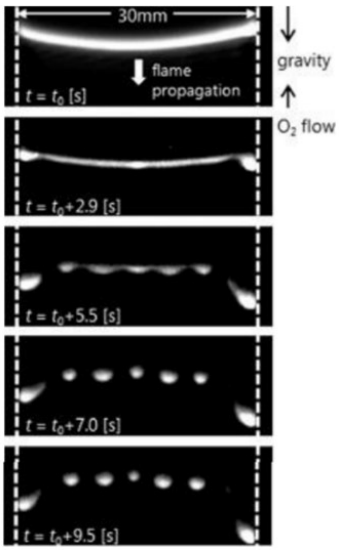
Dr. Matsugi also visited various experimental facilities at the Centre for Energy at The University of Western Australia (Perth, Australia), where Mr. Tayama (our master student) undergone his oversees training, to exchange valuable experience.



Researchers and their projects

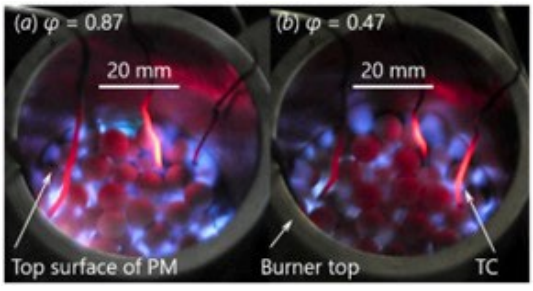


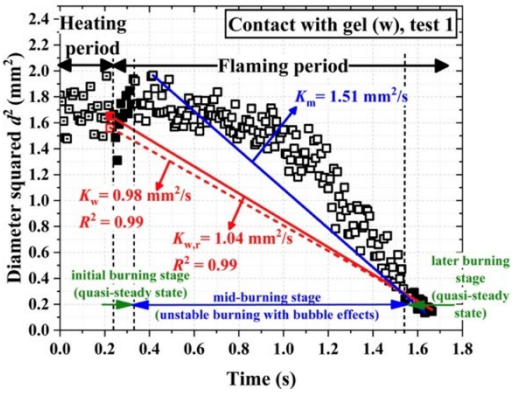
Professor Yuji Nakamura has devoted the past decade to fundamental (unique) researches on polymer combustion supported from various financial agencies (JSPS, JST). From April 2025, it is successfully awarded another JSPS fund (Kakenhi Kiban A) to continue next four year to summarize the series of works. In the figure to the right, you can see one of Prof. Nakamura's research concerns - burning of spherical polymer under microgravity environment. Also, two more major projects have been going on, such as, gas-powder hybrid combustion (awarded JSME paper award) and academic approach to figure out novel-effective suppression strategies of forest fires (supported by JSPS and Fire and Disaster Management Agency in Japan). If you have any interest for those research, you are welcome join in our PhD program applying or research staffs (postdocs) (do not hesitate to contact at yuji@me.tut.ac.jp).



Assoc. Prof. Tsuneyoshi Matsuoka has focused on research into the solid combustion. Using an in-house wind tunnel with precise control overflow velocity and channel height, he successfully observed the formation of fingering patterns within opposed flame spread over a thick solid combustible. As shown in the figure on the right, a continuous flame separates into small flamelets (see "T. Matsuoka et al., Proc. Combust. Inst., Vol. 36, Issue 2 (2017) 3019-3026"). This work has garnered significant attention from researchers in the field. Assoc. Prof. Matsuoka took a sabbatical leave for about 10 months, starting in June 2023. During this period, he stayed at IRPHÉ (Institut de Recherche sur les Phénomènes Hors Équilibre) in Marseille, France, where he initiated research on the dynamics of hydrogen combustion.

Dr. Daiki Matsugi's research centers around fundamental studies on burning characteristics of a solid combustible in combination with a liquid oxidizer or high concentrated oxygen gas, as well as the development of high-performance liquid-fueled premixed burner system. Also, he conducts in-depth research on combustion in microgravity environments and effective utilization of biomass fuels, contributing to the realization of a low-carbon society. His research outcomes have already garnered recognition through peer reviews, as evidenced, for example, by the very recent publication dealing with liquid-fueled high-performance burners accepted in Applications in Energy and Combustion Science. In the figure to the right, typical burning behavior observed for different equivalent ratios provided in "D. Matsugi et al., Appl. Energy Combust. Sci., Vol. 20, 100287 (2024)".



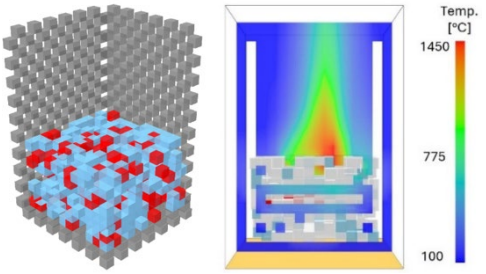


Dr. Yue Zhang continues her research at Toyohashi University of Technology (TUT) as a research fellow. Her current work focuses on flame spread over solid materials and polymer combustion, aiming to provide insights for better wildfire suppression and microgravity fire safety strategies. Her recent paper proposed a novel method to measure the burning rate constant of polymers has been published in Combustion and Flame, one of the leading journals in the field.

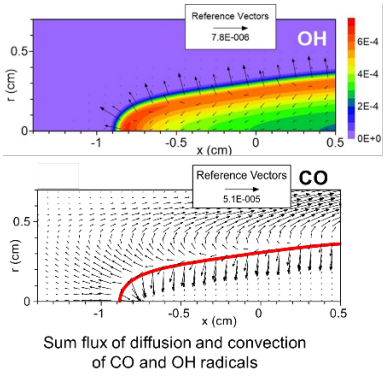
Dr. Vojtěch Šálek continues his previous work in pyrolysis modelling. He is developing a novel approach to simulate the

heating and thermal decomposition of various porous materials, extending the existing capabilities within FDS.

In the figure to the right, a Python generated porous material geometry used as a base of the new 'box' approach is shown next to a temperature profile predicted in the structure. During the development of the FDS model, numerous bugs related to current HT3D model were found, reported, and either fixed by the developers or worked-around.



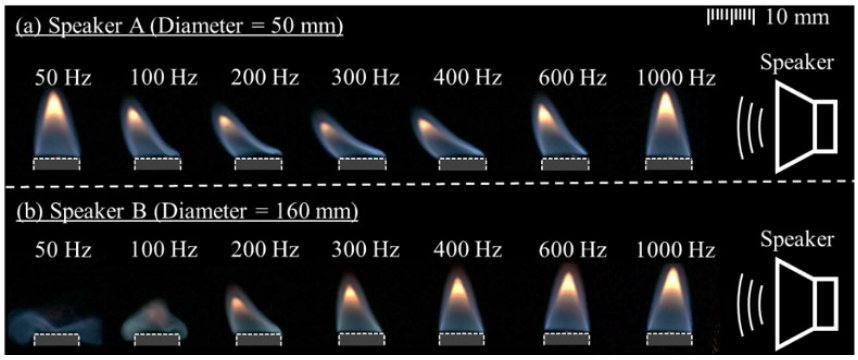
Dr. Yuyang Jiang has focused on the numerical simulation of laminar swirling premixed flames under ultra-lean conditions, in which the flame head located in the recirculation (backflow) zone. He has demonstrated the impact of thermal-diffusive imbalance (a Lewis number effect) and identified that the radical peaks are caused by the convective transport of CO and OH radicals on the flame head. (see "Y. Jiang et al., Combust. Sci. Technol, Published online: 17 Oct 2024").



Sum flux of diffusion and convection of CO and OH radicals

Currently, Dr. Jiang has expanded his research and focus on hybrid solid-gas combustion. This study investigates the combustion behavior of mixtures of powder materials and gas, with concentration controlled between the explosion limit and the flammability limit. The research enables the stable combustion of powder materials, which are treated as waste, for use as alternative fuels.

MSc. Takafumi Yamazaki focuses on the relationship between acoustic waves and flames, including the use of acoustic waves for temperature measurement. His research has shown that the flow field created by the acoustic waves and the sound source can also affect the flame. In the future, he plans to investigate the applications of this phenomena in fire extinguishing and sensing, within the range that does not affect the flame. The figure below shows the typical effect of acoustic waves on a flame. Previous studies have confirmed that the combustion state is affected by acoustic pressure.



Joining the ECALAB team

To summarize, ECELAB offers a unique environment filled with challenges and opportunities, where researchers are given the freedom to explore their ideas while receiving unwavering support. With a diverse range of research interests and a dedicated team, the lab fosters a culture that empowers young researchers 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 lab, please don't hesitate to get in touch (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.

Signed: Vojtěch Šálek and Professor Nakamura

University of Waterloo

New Faces

Our research group is growing! We welcome Keon Senez (MASc, Mass Timber Fire Risk), Braden Southern (MASc, Li-ion Battery Safety), Aaron Winter (MASc, Community Wildfire Risk), and Hannah Odia (Research Assistant, Community Wildfire Risk) to the UW Fire Safety Program.

Awards and Accomplishments

Prof. Vinny Gupta has been awarded the Distinguished Paper in the Fire Colloquium at the 40th International Symposium (Emphasizing Energy Transition) of the Combustion Institute in Milan. Titled 'Joint OH-PLIF and Mie scattering imaging of enhanced water mist suppression of buoyant fires', the paper investigates the near-field suppression mechanisms of fine water mists chemically enhanced with metal salt additives to improve turbulent fire suppression efficacy. The paper is available here.

UW Fire Research Facility members won several prestigious Canadian Federal Government research awards:

Prof. Gupta obtained a large NSERC Discovery Grant, and was invited to apply for CFI equipment funding, to establish a new research program in Li-ion battery safety (see below).

Keon Senez, MASc, was awarded a major scholarship, the NSERC CGS-M, to embark on his research in mass timber fire risk.

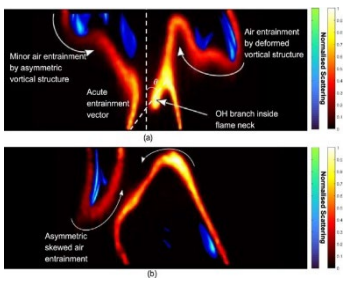
Undergraduate Design Teams

Each year, we have several undergraduate student teams working with us on their fourth-year design projects. We are proud to report that two groups won awards at the University and beyond.

The Emberforge project team of fourth-year mechanical engineering students Keon Senez, Liam Marshall, Ethan Sobkowich, and Trevor Birchenough designed and constructed a new prototype ember-generating device for wildfire testing. Their project won two awards: the GHL Fire Safety Award and the Jim Baleshta Special Merit Award.

The EV-TREx team designed a new safety system for EV batteries. Their project won 1st place for Innovative Design at the Ontario Engineering Competition, followed by 3rd place in Innovative Design at the Canadian Engineering Competition.

EV Fire Safety Studies



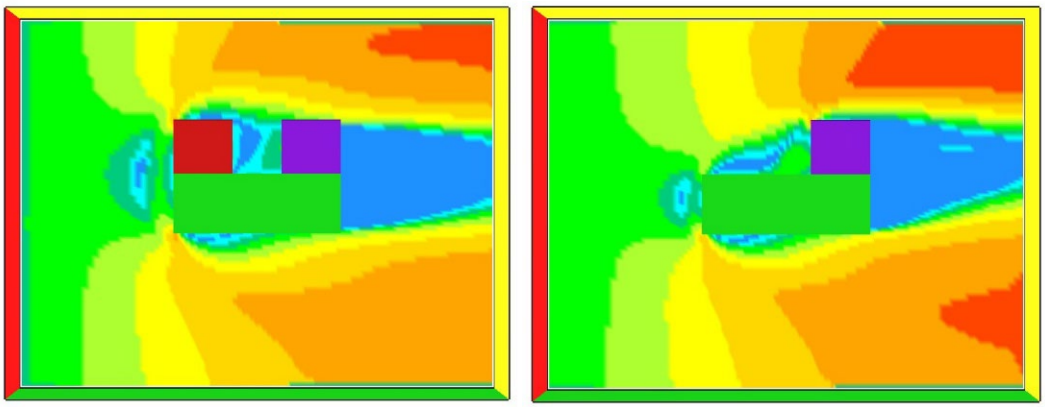
Dr. Vinny Gupta was recently awarded a five-year NSERC Discovery Grant titled ***Fire and explosion dynamics in Li-ion battery storage***. He is launching an exciting research program under this project aimed at advancing our understanding of fires and explosions within Li-ion battery storage modules. Together with Braden Southern, MASc student, Dr. Gupta will create a specialized testing platform instrumented with innovative, advanced optical diagnostic tools to explore the detailed physics of these systems.

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, is investigating the volatilization and transport of heavy metals during wildfires in remote regions. His early research highlights key gaps in current methodologies used to estimate emissions, largely due to limited validation data. This work is helping refine modelling approaches to better understand wildfire growth and its role in heavy metal release.

Andy Xu, a MASc student, is continuing his analysis of how building geometry and nearby obstructions influence wind pressure profiles on the building face and the infiltration of wildfire smoke contaminants using CFD0 and CONTAM. Some of his preliminary results are shown in Figures below.



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 reduction preparedness and mitigation strategies.

Human Response to Fire Exposure

Data collection for the impacts of fire gas exposure on older adult participants is now underway in the human exposure lab, led by PhD student Bronwyn Forrest. As in the earlier study on young adults, physiological measurements pertaining to cardiopulmonary function are paired with measurements of gait parameters and cognitive performance under egress protocols derived from data collected during large-scale ventilation-limited furniture fires conducted at the UW Fire Research Facility. Results reveal interesting implications for safe egress during fires.

Late last year, Bronwyn won a Michael J. Smith NSERC Travel Award and headed to New Zealand with a portable version of our human exposure equipment. She spent several months with Daniel Nilsson extending the University of Canterbury VR simulation studies of human behaviour during the MGM Grand Hotel Fire to include exposure of participants to simulated fire gases. Stay tuned for fascinating publications to come later this year!

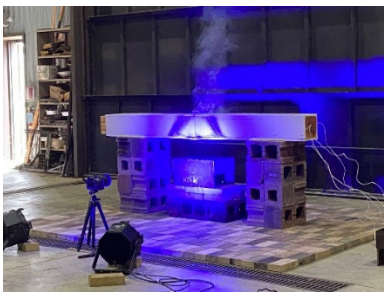
Canadian Wood Construction Research

Current building regulations often limit the use of mass timber in structural applications and in tall buildings. While some regions are expanding the use of mass timber, there are many gaps between standardized fire testing, real-world fire scenarios, and performance-based design approaches. One project explores the use of risk-based assessment for mass timber by synthesizing global best practices and creating guidelines to support innovative timber design aligned with evolving codes.

Experimental work at the UW Fire Facility looks to fill some critical research gaps. Researchers from Waterloo (Profs. Gupta, Weckman, and LaCroix), York (Prof. Gales), and Laval (Prof. Dagenais), with industry and government organizations across Canada, investigate fire behaviour of timber structures across scales.

At small scale, cone calorimeter studies probe the charring mechanics of different types of engineered timber under a range of heat flux exposures, and under well-ventilated through vitiated conditions.

Large-scale, well-instrumented studies probe details of fire dynamics with exposed timber elements in under-ventilated compartment fires and façade fires. Other studies explore the impact of localized fire exposures on timber and encapsulated timber beams and connections.

Under-ventilated Fires and Fire Patterns Based on Oxygen Availability

Full-scale experiments are underway in collaboration with UL Fire Safety Research Institute to study oxygen availability in post-flashover compartments, led by PhD student Nick Dow. Post-flashover fires are often defined by the presence of flames near open ventilation, which can generate fire damage remote from the area of origin, thereby providing a challenge for fire investigators. These experiments employ 24 gas analyzers paired with temperature measurements to characterize where flaming combustion can exist in post-flashover fires. Samples of the wood floor are collected post-fire to measure spatial variability in mass loss, which provides a quantitative measure of fire damage to compare with the oxygen and temperature time-histories. Nick presented a literature review on this topic in September 2024 at the International Symposium on Fire Investigation Science and Technology.

Signed: Beth Weckman

Victoria University

Victoria University's Fire Research Group (VUFRG) has been at the forefront of fire research and education since 1991, under the leadership of Professor Khalid Moinuddin, Professor Maurice Guerrieri, and Associate Professor Paul Joseph. With present three postdoctoral fellows and ten PhD students, the group is delivering cutting-edge research across a wide range 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 courses and research into active and passive fire protection strategies. His focus includes the use of environmentally friendly suppression agents and the development of advanced polymeric materials for fire resistance.

Wildland Fire Research

The Victoria University Fire Research Group is leading groundbreaking research to deepen the understanding of extreme bush/forest fire behaviours. The current studies under investigation include junction fires, surface-to-crown fire transition, grassland fires and firebrand dynamics. Using a fully physical modelling framework, researchers have explored the dynamics of junction fires, where two or more fires merge, resulting in accelerated fire spread and intensified burning. This work uncovers the mechanisms driving this intensification, examining the relationship between flame geometry, convective flows, and external environmental factors. The research quantifies the enhancement of fire spread rate due to merging events, providing critical knowledge for scaling laws that can be applied to large-scale wildfire prediction systems. These findings are instrumental in improving operational modelling tools and supporting more effective planning and response strategies for extreme fire events.

In parallel, advanced numerical simulations have been conducted to investigate the transition from surface fire to crown fire using the Fire Dynamics Simulator (FDS). The aim is to identify threshold conditions for fire transition, thereby informing the development of improved wildfire prediction tools and performance-based fire management strategies.

Additionally, the Fire Engineering Research Group is developing a dedicated experimental facility to study firebrand behaviour under diverse scenarios. Equipped with a firebrand generator, wind flow measurement systems, and a firebrand heater, this facility enables the generation of comprehensive experimental data. The data support the development of empirical and numerical models designed to forecast wildfire growth and propagation, further strengthening wildfire research and management capabilities. Through these innovative research initiatives, Victoria University continues to play a leading role in advancing global knowledge and practical solutions in wildland fire science.

Fire Suppression by Water Mist

In collaboration with industry partners and government agencies, the VU Fire Research Group has conducted a series of benchmark experiments and simulations on fire suppression using water mist. This research aims to support performance-based designs and certification processes for water mist systems, particularly in marine environments, offering a promising alternative to conventional fire suppression methods.

Thermal and Calorimetric Studies

Victoria University's research team is also advancing material performance studies through thermal and calorimetric analysis. Key investigations include the development of novel polymer-based electrolytes for hydrogen energy systems, the effects of fire-retardant additives on wood, and the flammability characteristics of aged polymers and photovoltaic panels.2

A collaborative project has focused on developing polymer-based electrolytes for electrolytic cells in hydrogen energy systems. This research supports advancements in sustainable energy technologies, offering improved materials for critical applications. Additionally, research into fire-retardant additives aims to enhance the fire resistance of timber products, contributing to the development of safer, more resilient construction materials. Another area of research involves assessing the flammability of aged polymers and photovoltaic panels, which is crucial for understanding the long-term fire safety of materials used in renewable energy systems and industrial applications. These studies offer valuable insights into the risks associated with materials used in various sectors, improving the design of safer products.

Concrete Behaviour in Fire Research

VU Sets Global Benchmark in Structural Fire Testing: Victoria University's NATA-accredited Structural Fire Testing Facility, led by Professor Maurice Guerrieri, has played a leading role in the development of the newly finalised EFNARC ENC 459 fire testing standard – a major advancement in international fire safety practice. The new standard, transitioning from a guideline to an ISO 17025-compliant benchmark, draws on over 150 full-scale fire tests and 500+ material samples conducted at VU's world-class Werribee facility. This update introduces several innovations – from realistic structural loading and reproducibility requirements to advanced testing techniques like 3D laser scanning and internal furnace endoscopy. EFNARC 132F r3 2025 is set to become a global reference point in fire testing, solidifying Victoria University's leadership in applied research and industry-focused standards development.

Signed: Siddharth Gupta

Worcester Polytechnic Institute

Current Research:

Inert Gas Extinguishing Research: The project, funded by Kidde, was successfully completed and the findings of the inert gas extinguishing experiments conducted in full and scaled enclosure were presented by Jon Zimak as a part of his Ph.D. thesis (defended). Jon will be staying at WPI through the summer to finish a handful of experiments to investigate how the standardized approval test for inert gas discharge systems translates to real-world property protection. Additionally, he presented a portion of his novel burning rate model for wood cribs exposed to the joint effects of flow and reduced oxygen concentration at the United States National Combustion Meeting.

Reliability of fire pattern indicator in forest fire investigation: Lab-scale experiments were conducted to evaluate how different artefacts respond to controlled fire conditions, with the goal of improving the scientific basis for interpreting fire scene evidence. Various artefacts such as PVC, bricks, rocks, wooden post, beer bottles, pine-cones, aluminium cans etc. were exposed to controlled fire and wind conditions. Each artefact's response such as soot deposition, charring, melting, or staining was analyzed to determine its effectiveness in indicating fire direction and intensity. For example, PVC showed reliable bending patterns aligned with wind flow, while bricks and rocks exhibited soot patterns dependent on wind exposure. Wooden posts showed consistent leeward charring, supporting their value in directional assessment. At the field scale, a series of 15 controlled burn plots were established to analyze real-world fire spread patterns and the corresponding damage on artefacts. Fire progression was mapped and compared to differential damage on artefacts to assess the consistency and reliability of each indicator. The findings aim to support forensic standards

and training, aligning with NWCG guidance and aiding fire investigators in accurately determining fire origin and behavior.

Quantifying firebrand generation: This project focuses on continuing to advance our understanding of the production and transportation of firebrands under conditioned windy environments. An intensive experimental testing was done using WPI's intermediate/large wind tunnel. We performed test measurements on a set of vegetation fuels, including bedding, chamise, and Douglas fir, with a controlled case utilizing a spark burner starter arrangement. The purpose was to quantify firebrand output for different materials under steady wind flow conditions. This campaign was one of the most diversified intermediate-scale tests undertaken, examining a wide range of firebrand behaviours to be studied. The results of this research were presented by Fernando (Ph.D. student), at the 14th US National Combustion Meeting in March 2025.

Graduated students

Abhinandan Singh successfully defended his Ph.D. thesis titled, Influence of wind on the mean and fluctuating behavior of flame spread and fire-dynamics-informed emission factors.

Jon Zimak successfully defended his Ph.D. thesis titled, Inert Gas Discharge and Extinguishing Dynamics of Total Flooding Systems.

Christian Vogt successfully defended his M.S. thesis titled, Quantifying the Wildfire Risk to Electrical Systems in Solar Farms.

Awards

Ph.D. candidates Jon Zimak and Jorge Valdivia were awarded the NFPA Graduate Support Fund in January 2025.

International/national conferences

Members of our department presented 16 papers at the 14th *US National Combustion Meeting* held in Boston, MA in March 2025 (https://members.combustioninstitute.org/news_archive_headlines.php?org_id=CMBI&snid=48877235&utm_source=BenchmarkEmail&utm_campaign=Q2_2025_NEWSLETTER&utm_medium=email#48877235). Eight of the presentations were invited to submit papers to a special issue of the Fire Safety Journal.

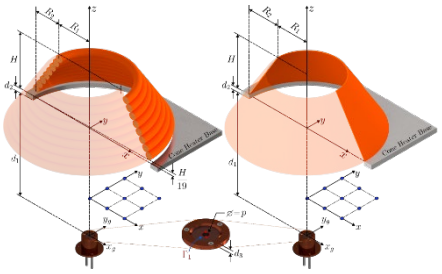
Prof. Simeoni was a member of the Host Committee of the Meeting and in addition, Prof. Urban and Prof. Simeoni co-organized a Wildland Fire Research Workshop with Prof. Trouvé and Prof. Ali Tohidi from UMD (https://combustioninstitute.wixsite.com/14th-usncm/satellite-workshops). Over 70 people participated to the workshop and a white paper based on the workshop findings is in the process of being compiled.

Our team presented at the 2024 meeting for *The American Society for Gravitational and Space Research (ASGSR)* in San Juan, Puerto Rico, and *NIJ Forensic Science Research and Development (R&D) Symposium*, held as part of the American Academy of Forensic Sciences (AAFS) 77th Annual Scientific Conference, in Baltimore, MD

Ph.D. students Rayna Vreeland and Jorge Valdivia will present their research at the NFPA conference and Expo this June in Las Vegas.

Publications

We are excited to share that a recent study characterized the spatial distribution of radiative heat transfer in cone calorimeter experiments was published. The study presents a new analytical view factor model was developed based on an idealized helical coil representation of the cone heater, offering improved accuracy compared to traditional truncated cone assumptions. The model was validated through experimental measurements of incident heat flux and color-ratio pyrometry thermograms of the heater surface. An uncertainty analysis was also performed to quantify the influence of spatial temperature variations on heat flux predictions. This work enhances the understanding of radiation heat transfer in standardized fire testing and supports improved interpretation of ISO 5660 and ASTM E1354 experiments. The results were published in the *International Journal of Heat and Mass Transfer*:



Schematic of the experimental setup and dimensions for the cone

P.E. Pinto, J. Valdivia, A. Singh, X. Xi, J. Cuevas, J. L. Urban, Investigating radiation heat transfer from the cone calorimeter heater: A new view factor model and uncertainty quantification, *International Journal of Heat and Mass Transfer* 245 (2025) 126976.

https://doi.org/10.1016/j.ijheatmasstransfer.2025.126976

The Python codes implementing the view factor calculations and experimental analysis are openly available on GitHub: https://github.com/javaldivia/Cone_Calorimeter_View_Factor, or by scanning the QR code.

Courses

WPI will host the first-ever Explosion Protection Engineering program in the U.S., along with a new course on Particle Explosion Analysis. See the posters below for more details.

Signed: Albert Simeoni

AWARDS

In June 2024, NFPA honored Dr. Vyto Babrauskas and Dr. Marc Janssens for the invention of the Cone Calorimeter by awarding their highest honor, the Philip J. DiNenno Prize.

This award recognizes that the Cone Calorimeter (standardized as ISO 5660) has become the most important tool in many fire research laboratories around the world.

Vyto was also honored by being given a Lifetime Achievement Award by the AOAFST, the Asia-Oceania Association of Fire Science and Technology in 2024.

During 2023, Vyto and Keith Parker completed and published the first-ever validation study of wildland fire directional burn indicators using point source ignitions. The results showed that this is an area where significant efforts need to be made to provide firm and reliable guidance for fire investigators. The Phase II of this research is now in progress.

When wildland fires originate due to electrical causes, in some parts of the world (notably California and Western US states, but also Australia, Canada, and other countries), there have been severe economic losses. This problem has been addressed up until now only by tort litigation actions. This is extremely inefficient and results in massive wealth redistributions which are not openly debated in society. Vyto has focused on this problem in depth and published a review article in the Fire journal (MDPI) at the end of 2024 which offers an improved solution. This i s to enact legislation which abolishes the tort-litigation system for wildland fire losses and replaces it with a no-fault system modeled after Workers Compensation programs. The next step will be to involve appropriate public-interest groups to actually start work towards making legislative changes.

Vyto continues to be associated with the Christian Regenhard Center at the John Jay College of Criminal Justice. In 2025, he will be teaching a course in explosions at the Worcester Polytechnic Institute, where an expanded program on explosions study is progressing.

Call for awards: 15th International Symposium on Fire Safety Science

The International Association fore Fire Safety (IAFSS)is delighted to announce that nominations are now sought for several awards and the Emmons Invited Plenary Lectureship to be presented at the 15th International Symposium on Fire Safety Science, June 8 to June 12, 2026 at the ESPACE ENCAN, Congress Center, La Rochelle, France. These awards are presented by the IAFSS and the International Forum of Fire Research Directors (FORUM) every 3 years at the IAFSS' triennial symposium. These awards recognize a range of substantial achievements in the field of fire science, recognizing researchers at all stages of their careers. Below, a summary of awards, nomination deadlines, and submission requirements are provided. All nominations can be submitted via e-mail: awards@iafss.org.

Nominations are now open for the following awards:

- The Howard W. Emmons Invited Plenary Lectureship – *Nominations due May 1, 2025*
- Kunio Kawagoe Gold Medal – *Nominations due June 1, 2025*
- Proulx and Magnusson Early Career Awards – *Nominations due May 15, 2025*
- Best Thesis Award "Excellence in Research" – *Nominations due June 1, 2025*

In addition, a number of other awards will be presented at the symposium but, by their nature, do not have nomination requirements:

- Philip Thomas Medal of Excellence
- Dougal Drysdale Award for Extraordinary Service to the IAFSS
- Sheldon Tieszen Student Awards Sponsored by the FORUM
- FORUM Sjölin Awards (nominations and selection by FORUM members)
- FORUM Mid-Career Awards (nominations and selection by FORUM members)
- Best Poster and Image Awards

More information on past recipients and the individuals commemorated with the awards is available on the IAFSS webpage: https://iafss.org/awards/

The Howard W. Emmons Invited Plenary Lectureship – *Nominations Due May 1, 2025*

The Howard W. Emmons Invited Plenary Lectureship is a prestigious recognition of life-long contributions to and career achievements in fire science and engineering. The Emmons Lectureship is presented for distinguished lifetime achievement in Fire Safety Science; it is not a best paper award. The award consists of an invitation to prepare a paper to be included in the Symposium proceedings and an associated plenary lecture at the Symposium. Symposium registration fees are waived, and a stipend provides travel support.

Nominations are sought from IAFSS members. *Please submit nominations, including a justification and contact details of the proposer via e-mail: awards@iafss.org, by May 1, 2025*. The justification should not exceed two pages in length and should describe the nominee's accomplishments and their significance. Self-nominations are not accepted. A nominee may or may not be a member of IAFSS, while the proposer must be a member. Nominations are confidential and should not be disclosed to a nominee. The awardee will be contacted by June 30, 2025. The awardee is to present the plenary lecture at the symposium. A written version of the lecture shall be provided in a timely fashion for inclusion in the proceedings.

The ideal lecturer will emulate the outstanding research qualities and contributions to fire science of the person in whose honor the award is named. In particular, the committee will seek those of high repute who have combined technical excellence with practical and humanitarian application in the selection and execution of their research topics. A prime criterion is that the recipient's contributions be widely recognized for their innovation and significance. The impact of the work shall be long-lasting, relevant for contemporary work, and inspiring for the on-going and future innovation. No restriction is made regarding the area of expertise within fire research.

About Professor Emmons

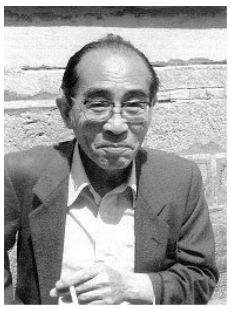
Professor Howard Emmons is considered by many to be "the father of modern fire science" for his contributions to the understanding of fire dynamics. While teaching at Harvard University from the 1940s until his death in 1998 at the age of 86, Emmons conducted pioneering studies of fire safety in buildings and documented how combustible materials interact and how fires spread and grow in phases. His measurements pushed the prediction of fire behavior into the world of precise mathematical modeling. Emmons pressed for reform of U.S. building and fire codes based on scientific and engineering insight. His efforts led to early computer models of fire spread in buildings and U.S. congressional passage of the 1968 Fire Research and Safety Act.

Kunio Kawagoe Gold Medal – *Nominations Due June 1, 2025*

The Kunio Kawagoe Gold Medal is awarded by the IAFSS as a prestigious recognition of life-long contributions to and career achievements in fire science and engineering. The past recipients of the Kunio Kawagoe Gold Medal made significant and lasting contributions to fire science and engineering through innovation and impact of their publications. Their research findings frequently led to paradigm shifts in fire regulations, in fire standards and in practical applications of fire safety science and engineering around the world. Some past recipients trained research students and young fire safety engineers, produced important textbooks and monographs, and often dedicated themselves to fire safety education. They were active in the international fire safety community.

Nominations are sought from IAFSS members. *Please submit nominations, including a justification and contact details of the proposer via e-mail: awards@iafss.org, by June 1, 2025*. The justification should not exceed two pages in length and should describe the nominee's accomplishments and their significance. Self-nominations are not accepted. A nominee may or may not be a member of IAFSS, while the proposer must be a member. Nominations are confidential and should not be disclosed to a nominee. The awardee will be contacted around August 1, 2025.

About Professor Kawagoe



Professor Kunio Kawagoe pioneered the development and use of scientifically based fire analysis, developing the relationship between the compartment burning rate and the size of an opening ($R_b = 5.5 \bullet A \bullet h^{0.5}$), in a seminal paper on compartment fire modelling published in 1958. His contributions, especially on fuel-controlled compartment fires and the structural analysis of the fire induced effects in columns and beams, laid foundation to modern fire science and engineering, and underpinned the early development of performance-based fire safety design, especially in Japan. Professor Kawagoe was the Director of the Building Research Institute between 1969 and 1973, when he was appointed Professor in the Faculty of Science and Engineering at the Science University of Tokyo.

Proulx and Magnusson Early Career Awards – *Nominations Due May 15, 2025*

The 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 two awards are distinguished by the period of time from completion of the candidates' most recent educational degree. Each of the awards consists of a grant of US $4000, a plaque, and free registration to the Symposium. Each recipient will also deliver at the Symposium a review paper drawn from their body of work.

For the Proulx Award, candidates must be within five years from completion of their most recent degree at the time of nomination. The award commemorates Dr. Guylene Proulx (1960-2009), an expert in human behavior in fire at National Research Council Canada, and IAFSS Board member at the time she passed away.

For the Magnusson Award, candidates must be within five to ten years from completion of their most recent degree at the time of nomination. The award commemorates Prof. Sven Erik Magnusson (1938-2014), pioneer of parametric fires and risk management at Lund University, Sweden, and a driving force in creating the first education curriculum for fire safety engineering.

Nominations must be made by an IAFSS member in good standing. Self-nominations will be considered too. A nominee may or may not be a member of IAFSS, while the proposer must be a member. *The following documents should be submitted via e-mail: awards@iafss.org*:

- Cover letter stating why the candidate is worthy of the award. This letter must also show that the candidate is eligible for the award based on the period of time from most recent degree. Letter must not exceed 2 pages.
- Curriculum Vitae of the candidate (excluding publication list).
- List of publications of the candidate. The list should be comprised of accepted journal articles and accepted conference publications. Publications submitted or in preparation or draft should not be listed.
- Recommendation letters, no more than two pages in length each, from two experts of international standing in the field. No more than two letters from experts will be accepted.

Nominations are due via e-mail: awards@iafss.org, by May 15, 2025. Awardees will be contacted around August 15, 2025. Each recipient will deliver at the Symposium a review paper drawn from his/her body of work. Each recipient will be asked to prepare a paper, as per submission guidelines of the Symposium. Papers will undergo peer review and if accepted will be presented during breakout sessions and included in the Symposium proceedings.

Best Thesis Award "Excellence in Research" – *Nominations Due June 1, 2025*

The IAFSS Best Thesis Award "Excellence in Research" recognizes the best research thesis at PhD and Masters levels, in all the fields related to fire safety science and engineering. There are three such Awards for the three IAFSS regions, Europe and Africa, Americas, as well as Asia and Oceania.

To be eligible for nomination, the nominee's thesis must have been officially submitted to the university granting the degree for examination between December 1st, 2022 and May 31st, 2025, and nominated for the Award by the nominee's supervisor, as described below.

Each recipient must deliver, at the 15th Symposium, a presentation including material from his/her thesis. While not required, the recipient will be strongly encouraged to prepare a paper, as per submission guidelines of the 15th Symposium, based on the material included in the thesis and/or further research, and not published in the Symposium or other peer reviewed archival publication. The Award consists of a plaque, a grant of US $2,000 to cover travel and sustenance related to the recipient's attendance at the 15th Symposium in La Rochelle, France and free registration for the Symposium.

The following documents need to be submitted via e-mail: awards@iafss.org, by midnight the 1st of June, 2025, UK time:

- A letter of recommendation by the nominee's supervisor not to exceed 2 pages;
- A pdf copy of the thesis (preferably in English; if not available, in its original language; however, a translated version for review is required);
- An abstract of the thesis in English (no longer than three pages);
- A list of publications. The list should comprise journal articles (including those that have been submitted for publication, whether accepted or not), and conference publications (indicating the form of review; no review, by Abstract, by full paper). Publications in preparation or draft should not be listed;
- Pdf preprints or reprints of up to three best papers derived from the nominee's thesis (conference papers can be included) can be submitted but are not compulsory.
- If the thesis is not written in English, at least one paper in English shall be submitted.
- Submission subject to confidentiality requirements should be accompanied by an explanation from the supervisor indicating which sections of the thesis cannot be made public or submitted for review. The requirement for the recipient to deliver a presentation at the 15th Symposium cannot be waived; therefore, this explanation has to include a clear indication of which sections will be presented at the Symposium.

Selection of the awardees will be driven by four criteria: the pertinence, quality, significance, and impact of the work. Awardees will be contacted around August 30, 2025. Only one thesis can be submitted for award from a given University or Institution. When more than one thesis is of sufficient quality for submission for the Award, a preliminary selection must be carried out locally and the nominee's supervisor needs to explicitly describe in the letter of recommendation the local selection process. If more than one thesis is submitted by a single institution the nominators will be asked to withdraw the submissions voluntarily and explain the reasoning behind the selection. If more than one thesis remains submitted by June 15, 2025 (midnight, UK time) then none of the submissions from that institution will be considered.

Philip Thomas Medal of Excellence

The Philip Thomas Medal of Excellence is awarded to the author(s) of the best paper presented at a previous IAFSS Symposium. The award consists of a silver medal for the first author and a plaque for each author. The medal is cast from the reverse of a silver tetradrachma minted in Athens in 400 BC, at the time of Socrates and Plato. The central images are an olive spring, symbolizing peace, and an owl, symbolizing wisdom. The international synergism of our Association is reflected in this Athenian design, suspended from a ribbon of Gosen white silk, presented in a medal box from the San Francisco mint. There is no nomination process, as the Award recognizes the best paper presented at the previous Symposium.

About Dr Philip H Thomas

Dr Thomas worked in fire safety research at the Fire Research Station (subsequently part of the Building Research Establishment) for over thirty years, from the early 1950s to the mid 1980s. In that time, he published numerous Fire Research Notes and over thirty journal papers on fire phenomena, many of which are still regularly cited today. Since retiring from the Fire Research Station in 1986 he has remained active in fire research and continues to publish in Fire Safety Journal and elsewhere. The importance of his contributions to the field cannot be overstated. It was once said that he worked on almost every problem related to fire from spontaneous ignition to wildland fires and from statistical analyses to fire modelling. He was a convener of TC 92 in ISO and W14 for the CIB. He was the founding Chair of IAFSS. He

worked at a time when journal publications were not so numerous, but his writing mostly contained in Fire Research Notes show his prolific nature and his boundless interests. A new fire researcher would be lacking not to have read the works of P H Thomas.

Dougal Drysdale Award for Extraordinary Service to the IAFSS

The IAFSS has many dedicated volunteers who contribute to the health and success of IAFSS. The Drysdale Award honors extraordinary service to IAFSS. The award is selected by the Chair of the IAFSS Committee and is presented at each IAFSS Symposium.

The award is named in honor of Dougal Drysdale, Professor Emeritus at the University of Edinburgh for his many contributions to IAFSS and the fire safety science community. As the author of three editions of An Introduction to Fire Dynamics, the long-time editor of Fire Safety Journal, a section editor of the SFPE Handbook of Fire Protection Engineering, a long-time member of the faculty of the University of Edinburgh, and as a member and chair of the IAFSS Committee, Dougal has provided technical, educational, and organizational leadership in our field over his long and productive career. In all his many contributions to our field, his generosity in helping others is always in evidence.

Sheldon Tieszen Student Awards Sponsored by the FORUM

These Awards are sponsored by the International FORUM of Fire Research Directors, a group composed of the Directors of fire research organizations throughout the world, which aims to reduce the burden of fire (including the loss of life and property, and effects of fire on the environment and heritage) through international cooperation on fire research. The award recognizes excellence in an IAFSS symposium paper in fire safety science by a student making a significant contribution to that paper.

The IAFSS Awards Committee decides on the number of award recipients and the award's selection criteria after the FORUM has decided on the allocation of funds for these awards. Each Sheldon Tieszen Student Award consists of a plaque and a cash payment to assist the recipient with symposium-related expenses toward their attendance at the IAFSS Symposium. For the recent symposia, the allocation of funds has been US$10,000 and the number of recipients has been eight, resulting in US$1,250 for each recipient.

To be eligible, a student needs to be enrolled in an academic course of study at the time the paper is submitted to the Symposium Program Committee. Recipients must present their papers at the Symposium. The student will normally be the first author on the paper accepted for presentation at the IAFSS Symposium.

OTHER CONFERENCES AND MEETINGS

Full Paper Submission and Deadlines

Six pages-papers will be asked to participants. Submitted papers will receive at least two independent peer reviews. Final decisions on acceptance or rejection of a manuscript will be made by the Symposium Co-Chairs. Authors will be notified of the preliminary decision. Notifications will include reviewers' comments and, if accepted, detailed guidelines for the final version of the paper.
Authors will then have to submit a revised version of the paper addressing all reviewers' comments.
Finally, authors will be notified by the Program Co-Chairs about the final decision. This final decision will be based on compliance of the revised papers with both the reviewers' comments and the formatting requirements of publication.

The submission, revision, acceptance, and publication process will follow this timeline:
- **21st March 2025** – Full papers submission deadline **(EXTENDED DEADLINE)**
- **5th May 2025** – Authors notified of preliminary paper accept/reject decision
- **30th May 2025** – Deadline for submission of the revised accepted papers
- **9th June 2025** – Authors notified of final accept/reject paper decision
- **27th June 2025** – Final submission deadline for photo-ready paper copy

Full Paper Submission Instructions

All 6-page paper submissions to the symposium will be submitted and peer-reviewed using the **Morressier platform:** the **ESFSS 2025 Call for Papers and submission link** is available here.
If this is your first time accessing the platform, you will need to register for an account.
All submitted papers must follow the Journal of Physics: Conference Series template and author guidelines.
Authors must prepare their papers using one of the following templates:
- Microsoft Word template
- LaTeX template

Authors must submit the papers in PDF. Indeed, IOP Conference Series uses author-supplied PDFs for all online and print publication.
The Scientific Committee reserves the right to reject submissions that do not adhere to the above-mentioned guidelines and templates.

Full Paper Publication

If accepted, whether for oral or poster presentation, the paper will be published in the **Journal of Physics: Conference Series** from IOP Publishing, an open access and Scopus indexed conference proceedings journal. This journal also published the conference proceedings of the 3rd European Symposium on Fire Safety Science (ESFSS 2018, Nancy, France) and the 4th European Symposium on Fire Safety Science (ESFSS 2024, Barcelona, Spain).

Additionally, authors of outstanding papers will be invited to submit an extended version for consideration in a **Special Issue of the Fire Safety Journal**.

4th International Symposium on Lithium Battery Fire Safety (ISLBFS 2025)

30 October – 2 November 2025

HONG KONG

Welcome message

Welcome to the **4th International Symposium on Lithium Battery Fire Safety (ISLBFS 2025)** on **30 Oct - 2 Nov 2025** in the vibrant Asia's world city of Hong Kong. The Symposium continues its mission to advance research and applications in lithium-ion battery fire safety. Since its inception in 2019, ISLBFS has become a biennial event that attracts experts, scholars, and professionals worldwide. https://batteryfire2025.com/

15 Apr 2025	**Deadline for abstract**
30 Apr 2025	Notification of acceptance
15 Jul 2025	**Deadline of paper/long abstract**
1 Aug 2025	Notification of presentation
31 Aug 2025	**Early Bird Registration**

SYMPOSIUM THEMES

Battery Fire Dynamics

- Heat generation, thermal runaway and propagation of battery
- Fire and explosive dynamics of battery crossing scales
- Fire in electric vehicles and battery energy storage systems
- Modelling of the ignition, spread, and extinction of battery Fire

Battery Fire Hazards, Regulations, and Environmental Impacts

- Gas emission and toxicity of Lithium-based battery
- Fire safety codes, test standards, and codes of practice
- Fire safety improvement and measures in battery production
- Fire Risk of battery transportation, storage, usage and disposal

Advanced Technologies for Battery Fire Safety

- Early warning, detection and prediction of battery fire
- Advanced materials for improving battery fire safety
- Novel fire suppression agents and technologies for battery
- Smart firefighting of EV and battery energy storage station

Organizer: The Hong Kong Polytechnic University 香港理工大學

Hosting Partners: SFPE Foundation, HKIE The Hong Kong Institution of Engineers, IAFSS, CNESA China Energy Storage Alliance, IADREM

Please contact the Secretariat of ISLBFS via: battery.safety@polyu.edu.hk

4th International Symposium on Lithium Battery Fire Safety: https://batteryfire2025.com/home

Reports from Conferences

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

The 13th Asia-Oceania Symposium on Fire Science and Technology (AOSFST 2024), hosted by the Korean Society of Fire Science and Engineering, was successfully held in Daegu, Korea, from October 21 to 25, 2024 with local organization handled by Professor Jun-Ho Choi. The symposium, themed "Fire Safety in a Changing World," brought together numerous experts, scholars, researchers, and industry practitioners in the field of fire safety from the Asia-Oceania region to discuss the latest research progress and applications in fire science and technology, as well as the ever-changing fire safety challenges in the context of globalization.

Professor W.K. Chow, President of AOAFST chaired a series of AOAFST meetings. The management also welcomed Professor Longhua Hu and Professor Khalid Moinuddin as new Vice Presidents while Professor Kazunori Harada continues to serve as Vice President. The committee thanked Professor Naian Liu (taking over as IAFSS Chairman in 2024) and Dr. Yaping He for serving as Vice President in the past years. Following symposium traditions, AOAFST President W.K. Chow called upon a regular meeting with experts from different parts in the Asia-Oceania regions attending the Symposium.

Life Contribution awards this year are presented to Professor Kazunori Harada, Professor Yinqing Li and Dr. Vyto Babrauska.

Professor W.K. Chow (President of AOAFST) was appointed as Advisor to President and Distinguished Chair Professor in Aviation Safety at Civil Aviation Flight University of China

On November 14, Civil Aviation Flight University of China held a signing ceremony to appoint Professor W.K. Chow as full-time Advisor to President and Distinguished Chair Professor in Aviation Safety. In this role, Professor Chow will provide guidance for national-level scientific research projects, deliver international courses, and offer professional support for establishing new doctoral and master's programs in Safety Science and Engineering. President Lixin Guan expected that under Professor Chow's guidance, the college would focus more closely on key aviation research challenges, and scientific achievements, nourish outstanding faculty members, and make new progress in doctoral program development.

Civil Aviation Flight University of China (CAFUC) has always been committed to shouldering social responsibilities and has been dedicated to supporting the safe operation of civil aircraft. In the field of civil aviation fire safety science and technology, the university has established five provincial-level platforms for aircraft fire safety, including the Sichuan Key Laboratory of Civil Aircraft Fire Science and Safety Engineering, the 10th Batch of Academician Workstations in Sichuan, and the Sichuan Engineering Research Center for Key Technologies of All-Electric General Aviation Aircraft.

The university has led more than 20 projects in this field, including National Key Research and Development Program projects, National Natural Science Foundation key projects, and major provincial science and technology innovation guidance fund projects. The discipline of Safety Science and Engineering has been rated as a first-class discipline in Sichuan. Both the undergraduate programs in Safety Engineering and Fire Protection Engineering have received support from the Ministry of Education's New Engineering Project, with one of the New Engineering projects achieving an excellent evaluation result.

Additionally, the university has independently developed the world's first all-electric fire engine, a fire engine simulator, and domestic aviation lubricating oil. Some of the aviation fire-safety-related R& D products have entered the stage of technology transfer and commercialization.

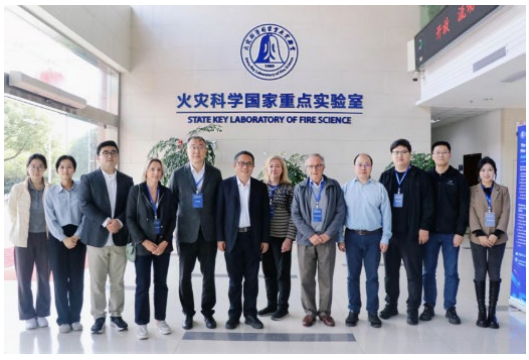
Civil Aviation Safety Symposium 2024 Held in Guanghan

With the support of the Discipline Evaluation Group for Safety Science and Engineering under the Academic Degrees Committee of the State Council, the Civil Aviation Safety Symposium 2024, hosted by the China Society of Public Safety Science and Technology and organized by the Civil Aviation Flight University of China (CAFUC), was held in Guanghan, Sichuan, on 8 December, 2024.The symposium brought together over 200 experts from renowned universities nationwide, including Tsinghua University, China University of Petroleum, Tongji University, Beihang University, Nanjing University of Aeronautics and Astronautics, Northwestern Polytechnical University, University of Electronic Science and Technology of China, Henan Polytechnic University, and City University of Hong Kong, as well as representatives from research institutions and leading industry enterprises. The event featured invited speeches by Professor Weicheng Fan (Academician of the Chinese Academy of Engineering), Professor Hongyong Yuan, Professor Hui Zhang and Professor W.K. Chow.

The International FORUM of Fire Research Directors Annual Meeting 2024 successfully held in Hefei

The International FORUM of Fire Research Directors Annual Meeting 2024, hosted by the State Key Laboratory of Fire Science (SKLFS) of the University of Science and Technology of China (USTC), was successfully held from October 29th to 31st in Hefei, Anhui Province. The hybrid meeting brought together directors and representatives from 16 renowned fire research institutions across 7 countries, including Tuula Hakkarainen, Principal Scientist of the VTT Technical Research Centre of Finland Ltd., Finland; Birgitte Messerschmidt, Director of Research at the National Fire Protection Association, USA; Eric Guillaume, General Manager of the Efectis France, France; Steve Kerber, Executive Director of the Fire Safety Research Institute, part of UL Research Institutes, USA; David Sheppard, Senior Technical Advisor of the Bureau of Alcohol Tobacco Firearms and Explosives, USA; Anne Elise Steen-Hansen, Professor of the Norwegian University of Science and Technology, Norway; Matthew Hoehler, Chief of the Fire Research Division at the National Institute of Standards and Technology, USA; Marc L. Janssens, Engineer at the Fire Technology Department of Southwest Research Institute, USA; Ahmed Kashef, Director of the Fire Safety & Civil Engineering Infrastructure at National Research Council Canada, Canada; Amanda B. Dodd, Senior Manager of the Computational Sciences and Analysis Group at Sandia National Laboratories, USA; Haruki Nishi, Director of the Fire and Disaster Investigation Division at National Research Institute of Fire and Disaster, Japan; Sergey Dorofeev, Research Area Director at FM Global, USA; Franco Tamanini, Senior Research Fellow at FM Global, USA; Tomohiro Naruse, Director of the Department of Fire Engineering at Building Research Institute, Japan; Valérie Gourvès, Managing Director of the Scientific and Technical Centre for Building, France; Bo Song, Head of the Tianjin Fire Research Institute (TFRI) of Ministry of Emergency Management, China; and Naian Liu, Director of the SKLFS, China.

At the opening ceremony, Prof. Yao Fu, Vice President of USTC, delivered a welcome speech. Prof. Kun Qu, Director of the Office of International Cooperation at USTC, then presented a report on USTC's international cooperation and exchanges. Prof. Naian Liu presided over the whole conference. To exchange thoughts, members of the International FORUM of Fire Research Directors gave presentations, including the liaison reports given by Naian Liu as Chairman of the International Association for Fire Safety Science (IAFSS), Luck Bisby as Editor-in-Chief of Fire Safety Journal, and Eric Guillaume as Chairman of the Standardization Committee ISO TC92. In addition, a members-only session was held, where FORUM members formulated development strategies for international fire safety research and reached multiple agreements on future collaborations. During the annual meeting, two workshops were also arranged: New Energy Fires Workshop, and Large-Scale Wildland Fires Workshop. At the workshop on new energy fires, thematic reports covering such topics as lithium-ion battery fire, PV fire, and hydrogen safety were presented by Prof. Qingsong Wang from USTC, Dr. Sergey Dorofeev from the FM Global, Dr. Shaoyu Zhang from the TFRI, Dr. Eric Guillaume from the Efectis France, Prof. Huahua Xiao from USTC, and Prof. Yu Wang from USTC. At the workshop on large-scale wildland fires, thematic reports on topics such as extreme fire behaviors, wildfire re-ignitions, fire whirls, and satellite remote sensing of fires were delivered by Prof. Naian Liu from USTC, Dr. Xinyan Huang from the Hong Kong Polytechnic University, Prof. Kuibin Zhou from the Nanjing Tech University, Dr. Jiuling Yang from the Sichuan Normal University, Prof. Jiao Lei from USTC, and Dr. Yuyun Fu from USTC. Through these workshops, international participants, domestic scholars, and students carried out extensive and in-depth discussions on trending research topics. On October 31st, the annual meeting concluded with visits to the SKLFS and National Synchrotron Radiation Laboratory (NSRL). The successful hosting of this year's annual meeting facilitated the exchange of the latest achievements in fire research, thus fostering high-level international collaboration in fire safety science.



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. 54) is Nov 15, 2025

http://www.iafss.org

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