

International Association for Fire Safety Science

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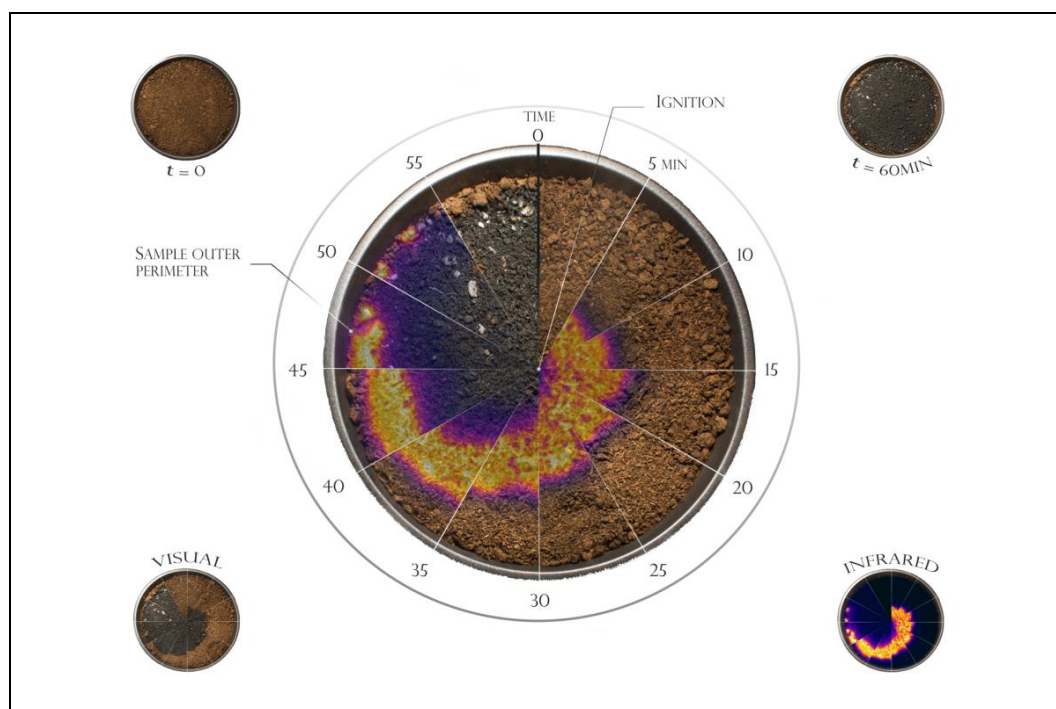
Fire Safety Science News

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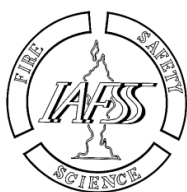
July 2015, Issue No. 38

Rita Fahy, Editor

Associate Editors: Michael Gollner (USA), Nils Johansson (Sweden), Naian Liu (China), Ai Sekizawa (Japan), and Michael Spearpoint (New Zealand).



Fire Watch Constellation, Best Fire Science Photo at the 11th IAFSS Symposium
Egle Rackauskaite (Imperial College London) See details on page 11.



IAFSS was founded in 1988 with the primary objective of encouraging research into the science of preventing and mitigating the adverse effects of fires and of providing a forum for presenting the results of such research

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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](#).

IAFSS Proceedings indexed by Google Scholar

The papers hosted in our publication archive have been included in some databases such as Microsoft Academic for some time, but now they are also included in Google Scholar. Citations to the publications in Google Scholar work well and many of the older IAFSS papers are showing hundreds of citations. These papers include proceedings from the past 11 IAFSS Symposia, Fire Research Notes from the UK Fire Research Station (FRS) and the first seven Asia-Oceania Symposium on Fire Science and Technology (AOSFST).

The inclusion of our publications in Google Scholar will increase the visibility of our large repository of open access fire safety science research, increasing citations for our members and making it easier to find related works for the whole community. Our publications have already been indexed with digital object identifiers (DOI) and included in the Crossref database for some time, facilitating citation tracking through a number of other databases.



We would like to thank Terry Fay of Jensen Hughes for the technical edits which facilitated our archive's recent inclusion. Note that Google Scholar indexes our papers using their "robots" or "crawlers", so we do not control how publications are represented once indexed. If you have questions about specific articles, please contact webmaster@iafss.org and we will do our best to resolve any issues.

Signed: Nils Johansson

LETTER FROM THE CHAIR



We are now finalising the last parts of our 11th IAFSS Symposium in Christchurch. The Proceedings received their DOI number and the accounts for the symposium were closed. Not only scientifically has the conference been a real success but also financially; we had a very positive balance. Thanks again to Prof. Fleischmann and his team. It means that the Association has a sound economical basis, which is important for the future.

At the same time we have launched the preparations for our 12th symposium in Lund. The Department of Fire Safety Engineering in Lund will host the 12th International Symposium on Fire Safety Science from June 12-16, 2017. Apart from the conference, there will be also workshops and meetings just before the conference week. Book the dates in your agenda and start considering your contribution to the conference either as authors, reviewers or participants. We will need a lot of helping hands for the conference. At the moment we are setting up the different committees for the conference so that we can start the preparations.

This brings me back to one of the visions I have for the organisation. In order to survive today, growth is an important factor. We have to grow in members, both student and full members. Our member fee is not of that amount that it should be a hindrance. All the benefits, even non-economic, are worth becoming a member. So look around your network and introduce IAFSS to your colleagues and network partners. During the summer we will start a first member drive to obtain new members as we have seen that the number of members decreases each time the year after the conference.

One of the actions the Executive Committee has already taken is to negotiate reductions for our members at our regional conferences. During this year, the 2nd European symposium was organised in Cyprus and the 10th AOSFST conference will be organised in Japan. In both cases, we were successful in negotiating reductions for our members to participate in the conferences. As a compensation for their kindness, we have offered grants for both conferences to be distributed at the conferences. For the AOSFST, there is a request for help in the English editing of the proceedings and articles. I would like to remind you again that anybody who is willing to help please can contact me. Also do not forget to attend both of the conferences, as they will be a perfect place to meet.

During the spring, we have sent a letter to the Institute for Scientific Information (ISI) to convince them to set up an 'area' called Fire Science and Engineering. The initiative was from Prof. Chow and I would like more key persons in our community to join this action. Please contact me or Prof. Chow in order to receive the template of the letter.

During the process of finalising the proceedings, we have tried to get our articles in Web of Science through publication of them in an open access journal. But after a number of discussions in the Executive Committee, we decided to stay with the actual publication strategy, i.e. to have them on our website. This caused some delay and I apologise for that. Today we are visible in Scopus but many universities and funding agencies use Web of Science-listed articles for promotion and for providing research funding. It is my opinion that the peer review system we have established is of very high quality and our articles from our symposia should be involved in the above-mentioned process. I see this as very important for our younger generation so that they will have the possibility and a solid basis for career development. Asst. Prof. Michael Gollner and Terry Fay have recently included our publications in Google Scholar. This will increase the visibility of our large repository of open access fire safety science research, increasing citations for our members and making it easier to find related works for the whole community. This is a big step forward but we still have to try to get into Web of Science catalogues. Later this year, we will try to discuss this matter in the overall committee of IAFSS officers and feedback from members is already welcome now.

Being active is also important and during the month of May there was a one-day Planning Meeting for a new Workshop series called the "IAFSS International Workshop on Measurement and Computation of Fire Phenomena" (abbreviated as MaCFP). This Planning Meeting took place on May 8, 2015, at the Four Points Hotel and Conference Centre in Boston. The Executive Committee of IAFSS endorsed the initiative. As you may remember, in the wake of the 11th Symposium of the International Association for Fire Safety Science (IAFSS), a Task Group was set-up to establish a series of workshops in the fire research community around the topics of experimental databases and CFD model validation. Such a workshop will take place in Lund, Sweden, in 2017. More information will follow.

One of the other visions I formulated was to have the activity flow both top-down and bottom up. We did a first survey for the publication of the proceedings of our 11th symposium and as a result it was clear to the Executive Committee that electronic publication of the proceedings is the best way to go forward. Another such survey will appear later this year to receive the opinion from the members on a two- or three-year cycle for the our conference.

A lot of activities as you can see but I would like to close by wishing you all a nice summer break or winter break depending on the place you are. Each of us needs time for reflections!

Signed: Patrick Van Hees, Chair IAFSS, Lund University, Sweden

OBITUARY Sven Erik Magnusson (1938-2014)



Professor Emeritus Sven Erik Magnusson passed away on December 15, 2014, leaving family, friends and colleagues in sorrow and grief. Professor Magnusson has been invaluable in the development of both research and education in fire science, fire safety engineering and risk management and societal safety at Lund University.

In the fire science world, he will be remembered as a pioneer and visionary in the area of parametric fires and for the introduction of risk management for fire safety design. Regarding fire engineering education, he will be remembered as one of the authors of the first curriculum for fire safety engineering published in the *Fire Safety Journal* in 1995. Together with the late Prof. em. Ove Petterson, he was one of the driving forces during the start-up of the IAFSS. He was a principal figure in the start-up of the MSc program in Risk Management and Safety Engineering at Lund University and in initiating and leading the Lund University Centre for Risk Assessment and Management (LUCRAM) together with Prof. Roland Akselsson.

Prof. Sven Erik Magnusson was born on January 3rd 1938 and he grew up near Lönsboda, in the northeast part of Skåne. He started his university career as a PhD student with Prof. Ove Pettersson and defended his PhD thesis in a joint session with Prof. em. Sven Thelandersson. Together they had three opponents for the discussion forum. The work of Magnusson and Thelandersson was later used as the basis for parametric fires in the Eurocodes and was considered pioneering work. He was also active as a researcher in the area of fire development where he was involved in a number of research projects dealing with early room fires in cooperation with SP in Borås. In the start-up phase of standardisation of the room corner test, he was chair of the working group on ISO TC92 SC1. After the retirement of Prof. Ove Petterson, he was appointed professor at the Department of Fire Safety Engineering. In the beginning of his academic career, he became heavily involved in the development of courses for the BSc program in fire protection engineering, together with Robert Jönsson and the staff at the Department of Fire Safety Engineering.

In the mid-90s, the focus of his research moved to the area of risk management and societal safety. He started activities such as LUCRAM and introduced multidisciplinary research in the department. Around the same time, he initiated and led the development of the MSc program in Risk Management and Safety Engineering. Furthermore, he led numerous research activities in this area that generated continuous growth of risk-related research at the university. At the end of his career, he always supported the younger generation by leading the development of larger research projects and serving as a mentor for many of the PhD students in risk research.

After his retirement, he still kept close links with the late Prof. Philip Thomas, also a founding member of the IAFSS, and felt a deep sorrow when Philip passed away earlier in 2014.

In addition to being a distinguished academic, Sven Erik was very interested in society and was keen on keeping up with current affairs as well as understanding history. His cultural interests included theatre and classical music, and he was keen on exercising not only the mind but also the body, mainly through spinning classes. He was very passionate about spending time in his country house with his closest family, his beloved wife Lisbeth, their children and grandchildren, and friends.

We will remember Sven Erik as a great researcher as well as a warm and caring person who many of us have to thank very much today. Many friends and colleagues from across the world will sadly miss Sven Erik.

Signed: Marcus Abrahamson and Patrick van Hees, with help from Lisbeth, Sven Eriks' wife

SAVE THE DATE -- IAFSS 2017

The 12th International Symposium on Fire Safety Science in Lund, Sweden



The 12th International Symposium on Fire Safety Science will be hosted by the Department of Fire Safety Engineering at Lund University June 12-16, 2017.

The Symposium is the premier fire safety science meeting in the world and has been organized triennially since 1985. The program will have parallel sessions for the presentation of fully peer-reviewed papers over the five days of the Symposium, including invited lectures from the world's top fire science researchers. The Symposium will also have poster sessions, which will provide an excellent opportunity to interact individually with researchers about their most recent work.

The planning of the Symposium is well underway and there are plans on both technical and social activities (workshops, PhD student sessions, etc.) during the days before and after the Symposium. There will also be a wide range of entertainment and tours in the companion program. Southern Sweden holds both rural and urban

areas as well as a marvellous nature within an easily accessible area. More information about the different arrangements will be presented as the planning of the Symposium progresses.

The Department is very honoured and proud to host this event! More information about the International Association of Fire Safety Science (IAFSS) symposium can be found on the IAFSS homepage.

NEWS FROM MEMBERS

News from Arup

Arup and University of Edinburgh

The Ove Arup Foundation, along with The Royal Academy of Engineering, are supporting Dr Graham Spinardi's Arup Foundation Lectureship in the Sociology of Fire Safety. This joint investment of £400,000 over five years will create an integrated sociological and engineering team to generate fresh ideas for the advancement of fire safety.

Arup Fire and the University of Edinburgh have a long history of successful collaborative research and education going back more than a decade. Our ongoing support of the university's Fire Safety Engineering Research Centre has been essential in creating and perpetuating world class fire safety engineering at the university.

In celebration of this successful collaboration, Her Royal Highness Princess Royal toured the state-of-the-art Fire Safety Engineering facilities on 16 January 2015. She met with Professor Barbara Lane (Arup Fire Director UKMEA), Alistair Murray (Arup Fire Associate Director Scotland), and Professor Luke Bisby (University of Edinburgh).



In a further update of the Arup and University of Edinburgh collaboration, Arup are sponsoring a further PhD at the University of Edinburgh. The research has a focus on the performance of timber structures in fire. Arup are sponsoring this research as part of the growing demand from our clients for tall timber design. The research shall be led by Dr Rory Hadden and shall provide a key platform for shaping Arup's timber fire design solutions.

SFPE Conference, Brisbane

Arup featured strongly at the recent 10th International Conference on Performance-Based Codes and Fire Safety Design Methods, sponsored by the US Society of Fire Protection Engineers, the Society of Fire Safety (Engineers Australia) and the University of Queensland. The conference was held on the Gold Coast from 10-12 November 2014. In addition to chairing two sessions of the conference, Peter Johnson (Melbourne) presented a paper he co-authored with Chris Gildersleeve (Brisbane) entitled "Performance Based Design and Fire Safety Engineering in Australia". Graham Timms (Brisbane) also presented a paper "Refuge Floors – History, Design and Implementation" co-authored with David Barber (Washington DC) and Peter Johnson (Melbourne).

Finally, Peter Johnson, Arup Fellow, was honoured at the conference Gala Dinner with induction into the Australian Society of Fire Safety Hall of Fame for his commitment to international fire engineering over a career spanning almost 40 years.

Arup Research

The "Invest in Arup" research and development fund has given approval for two international research projects. Both research projects require a global perspective to achieve objectives that extend beyond local code-compliance and legislation with the results applicable to all Arup Fire and Safety work.

The project titled "Integrating Fire Safety into the BIM Process" will co-ordinate Arup's fire engineering response to the Arup Building Information Modelling (BIM) strategy and facilitate the integration of fire engineering into BIM to execute and deliver projects in new ways to bring further value to Arup's clients. BIM is gaining maturity and integration across many disciplines with a drive for quality, efficiency and limiting the silo work approach as for traditional consulting building design methods. The objective of this project is to test the knowledge and processes that have been already defined by implementing fire engineering within BIM to facilitate feedback and learning for future projects and ultimately assist the role-out of BIM across fire engineering.

As is the case for the BIM integration research project, the "FlashOva Research Initiative" requires global collaboration. The aim is to correlate sprinkler and detector activation times as predicted by the Arup in-house software, FlashOva, with field modelling software (FDS) generated results. The expected result is that Arup fire clients with known fire hazards in their buildings shall be provided with more accurately predicted detection times.

Further Arup research involves the collaboration with HeidelbergCement Group. The company has developed a fire safe concrete floor especially for areas and spaces where (high) flammable liquids are being processed. By applying this "very open" concrete (Safety Crete[®]) it is possible to create a flat floor surface with high absorbing abilities. Because the fluids sink almost directly into the surface of the concrete, the evaporation is reduced significantly, which reduces the fire load. Starting fires can even be extinguished. To take the development to the next level, Arup and HeidelbergCement Group are looking for partners who wish to take part in large scale tests. With these large scale tests, it can be demonstrated to authorities and insurers that Safety Crete can actually achieve the level of fire safety that it promises.

Signed: Peter Johnson and Yvette McPhail, Arup

News from EU International Master of Science in Fire Safety Engineering

IMFSE welcomes a new sponsor: Fire Engineered Solutions Ghent (FESG)

Fire Engineered Solutions Ghent (FESG – www.fesg.be), a consultancy company specialized in Fire Safety Engineering, committed themselves to sponsoring of the International Master of Science in Fire Safety Engineering (www.imfse.ugent.be) for a period of at least three years.

As a reminder for recently joined IAFSS Members: IMFSE is commonly organized by the Universities of Ghent (Belgium, coordinator), Edinburgh (Scotland) and Lund (Sweden). The main objective of this two-year full time educational program is providing the required knowledge for a professional fire safety engineer in a Performance Based Design environment. Besides inter-university cooperation, student mobility in Europe is one of the main points of interest of the overall program. The mobility structure, with possible change in study location after each semester, gives the students the opportunity to gain from the strengths and expertise of each of the three universities. IMFSE is also very pleased with its two Associated Partners: The University of Queensland (Australia) and ETH Zürich (Switzerland).

Signed: Lies Decroos, IMFSE, Ghent University

News from L'Institut National de l'Environnement Industriel et des Risques (INERIS)

INERIS is delighted to announce a major improvement of its experimental facilities which have mainly consisted of adding a large scale testing hall designed for fires developing a thermal power up to 20 M. Those experimental facilities are associated with an innovative and mutualized gas/smoke cleaning system, which allows driving the ventilation in the test rooms.

The experimental fire facilities are now designed for fires from lab scale to 20 MW thanks to a Fire Propagation Apparatus (FPA), two twin testing rooms, 10 and 80 m³, a fire gallery, 10 m² section and 50 m long, and a 1000 m³ industrial room calorimeter.



One of the two major improvements was then the implementation of a new smoke cleaning system connecting all test facilities, which is designed to remove toxic gaseous components from exhaust gases and mainly acid gases, but also specific toxic components as dioxins or PAHs (Polycyclic Aromatic Hydrocarbon).



Such a system is clearly essential for dealing with current topic of fire safety as smoke toxicity. This allows us to:

- Understand the behavior on fire of simple products or complex systems ;
- Get a better understanding of the phenomenon themselves (fire, burst, dispersion, ventilation, flame propagation, etc.) ;
- Evaluate safety measures for prevention, as preventive inerting system, or protection, as Fixed Fire Fighting System;
- Manage experiments relative to fire and toxic gas dispersion in a third scale tunnel;
- Design source term for toxic product releases;
- Calibrate and validate the numerical tools that we are able to use or develop ;
- Supply data to apply these tools to any products that need it.

Signed: Benjamin Truchot, INERIS

News from University of Edinburgh

Updates on the Edinburgh Fire Digital Preservation Project

For over five years, the BRE Centre for Fire Safety Engineering at The University of Edinburgh has been taking forward the Edinburgh Fire Digital Preservation Project. This project comprises the cataloguing, indexing and scanning of some 40.000 documents which originally belonged to the BRE Fire Research Archive.

Back in 2009, the Archive was relocated from its initial location at the BRE headquarters in Watford, England to its new-found location at The University of Edinburgh, Scotland. The overall objective of the project is to make the Archive's content publicly available online. To date, documents uploaded to the online [Edinburgh Research Archive \(ERA\)](#) receive anywhere between 12.000 and 14.000 visits per year, not a negligible number for the modern Fire Science community. Many of these documents are not available anywhere else in the world, hence are not available online.

The Archive contains a wide range of topics related to Fire Science and Fire Safety Engineering (e.g. wildland fires, smoke behaviour, flame spread, fire dynamics, egress, structural behaviour, material science, combustion, and many, many more). To date, we have found some very interesting documents which include:

- [WWII Fire Safety Propaganda](#) was donated to the NFPA museum and nowadays is toured around the USA during Fire Prevention weeks.
- [Civil Defence Manual of Fighting Training](#) receives more than 3,000 visits every year.

This project is a venture undertaken by the Edinburgh Fire Group as a whole. On 9th December 2014, a huge indexing effort was undertaken by academics, postdocs, PhDs, master students, undergrads, alumni, and friends of the Edinburgh Fire Group. The Indexing Day comprised a full day of discovering and indexing documents from the Archive, leading to the indexing of 1.472 new documents, with fascinating new findings which will be soon be uploaded onto the [Edinburgh Research Archive \(ERA\)](#). Several other days will follow until we reach our objective of making the majority of the documents freely available on the Web. The Edinburgh Fire Digital Preservation Project is closely overseen by the Library Resources for the School of Engineering and the Edinburgh Research Archive, experts in indexing and cataloguing.



From more information, contact Dr Cristian Maluk at c.maluk@ed.ac.uk.

Tisova Fire Tests

In January 2015, the BRE Centre for Fire Safety Engineering co-led, along with SP, Sweden, the Tisova Fire Test, a large fire test conducted in a 4-storey building in the Czech Republic. The objective of the test was to provide real-world information about: (1) travelling fires in real buildings; (2) structural response during real fires, to be used as subsequent inputs to round robin studies; and (3) to provide much needed information about the post-fire damage and residual performance of buildings.

The test building was originally constructed in 1958 as a powdered coal boiler, and comprised a reinforced concrete frame and slab construction. In 1980 the building's use was changed to a combination of workshops and offices, and additional floors and slabs were added using composite steel-concrete slab construction tied-in to the original frame. The test compartment was on the ground floor with a fire compartment that had a total area of about 270m².

The numbers of the test:

- 504 – Thermocouples measuring the gas phase temperatures within the compartment
- 114 – Thermocouples measuring structural temperatures
- 65 – Plate thermometers attached to the structure within the fire compartment
- 26 – Thermocouples on intumescent protected steel plates within the fire compartment
- 16 – Deflection gauges on beams and floor slabs
- 15 – Plate thermometers measuring external façade temperatures
- 10 – Kilometres of extension cable used
- 1.5 – Thousands of person hours on site
- 7 – Tonnes of wood arranged as a single bed of fuel
- 6 – Webcams to supplement the measured data with visual data from the fire

The test started with a large crowd of spectators and Czech TV crews in attendance, and the much anticipated test began – unfortunately the fire travelled more slowly than anticipated, due to the moisture content of the wood being higher than intended. However, structurally significant temperatures were recorded within the compartment for a sufficient duration so as to cause noticeable damage to the structure. The building was scanned using a 3D laser scanner both prior to the test and a few days afterwards, to see whether 3D laser scanning technology can be used to credibly assess fire-damaged structures.



Figure 1: 7 tonnes of wood in one continuous fuel bed



Figure 2: Half way through the fire test

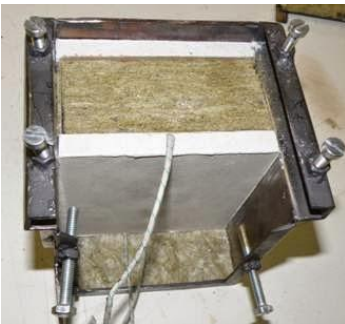
The data are now being analysed, and results will hopefully be presented in the near future. As part of the project a round-robin analysis of the structural response will be undertaken (hence no detailed results given in this short summary). Potential participants in the round robin will be contacted in the near future. Further questions regarding the tests and/or the round robin should be directed to Dr David Rush (d.rush@ed.ac.uk) or Dr David Lange (david.lange@sp.se).

Signed: Albert Simeoni, University of Edinburgh

News from the University of Cantabria

Fire Modeling in Nuclear Power Plants

Last October, the Spanish Nuclear Safety Council (CSN) and the University of Cantabria started a collaboration for the development of a series of works about modeling and simulation of fires in nuclear power plants. This collaboration will initially be for three and a half years. The goal of the project is to establish the basis for the analysis of new design proposals based on Risk Informed - Performance Based designs which permitted the use of fire computational tools based on the Instruction IS -30 (standard). This project not only covers research tasks related with fire modeling in power plants but also training to CSN members and dissemination of results obtained along the project. Furthermore, this project will support the involvement of CSN in PRISME II project (Propagation d'un pour des Scénarios Incendie Multi-locaux Élémentaires), funded by the Nuclear Energy Agency (NEA) of the Organization for Economic Cooperation and Development (OECD).



Patent 'Sample holder and method for fire testing of multilayer elements'

GIDAI Group has applied to the National Patent P201500024 to the Spanish Patent and Trademark Office with the patent 'Sample holder and method for fire testing of multilayer elements'. This invention has been obtained as a result of the work done by GIDAI research team under the Project "PYRODESIGN: Modeling of thermal and kinetic parameters for the characterization materials reaction to fire". This Project is being developed under the support of the Spanish Ministry of Economy and Competitiveness for the PYRODESIGN Project grant, Ref.: BIA2012-37890, co-financed by FEDER funds.

The invention belongs to fire safety field, and in particular to devices and methods employed to perform fire test of multilayer elements. This patent consists on a sample holder and method for fire test development, and presents an important progress by allowing to perform tests with multilayers samples, considering air chambers of a specific thickness between layers, and allowing to measure temperature using thermocouples in the sample interfaces, and in the lateral contour and/or the non-exposed face by using a thermographic camera.

Collaboration with RENFE Operadora

GIDAI group at the University of Cantabria will collaborate with RENFE Operadora (The Spanish railroad operator) to improve passengers' safety in rail transportation.

Unfortunately, emergencies in rail transportation systems can and do occur. In certain cases, a fast and effective evacuation of passengers is a key point in life safety. The collaboration agreement involves data collection of the evacuation process of different vehicles in several



conditions (upright, overturned and inclined cars to platform, track level, inside a tunnel, etc.). The research activities also include small scale components analysis (e.g. passenger and train crew performances such as negotiating single exits, opening doors manually, deploy the emergency ladder/ramp, etc.) and surveys (e.g. questionnaires and interviews designed to gauge the opinion of the participants, travelers and the personnel).

These activities form part of a research project to develop, validate and use a real-time stochastic evacuation model that specializes in rail vehicles. RENFE Operadora and the University of Cantabria have been working together in several research activities relating to in rail safety since 2006.

Virginia Alonso obtained the PhD

Virginia Alonso defended her PhD last December 2014. The thesis was entitled “Methodology for selecting an stochastic or deterministic approach in Evacuation Modeling”. The main supervisor was Daniel Alvear and Arturo Cuesta was co-supervisor. The doctoral thesis committee consisted of Juan José del Coz (University of Oviedo), Delfín Silió (University of Cantabria) and Enrico Ronchi (Lund University). The PhD document received international mention and it comprises four JCR papers. This thesis 1) proposes and validates a new methodology for the analysis of the uncertainty of a given evacuation scenarios and defines whether or not a deterministic approach is required, 2) establishes the general basis for the development of stochastic evacuation models and 3) presents two application cases showing the capabilities of stochastic evacuation modelling beyond the traditional simulation approaches.



Signed: Mariano Lázaro, Universidad de Cantabria

News from The Hong Kong Polytechnic University

Fire Asia 2015 was held at the Hong Kong Convention and Exhibition Centre from 3 to 6 February 2015. Dr. N.K. Fong, Associate Professor, Department of Building Services Engineering (BSE), The Hong Kong Polytechnic University (PolyU) gave a talk on “Concerns on applying fire engineering for fire safety design” on 4 February 2015. Other experts in Europe, Australia and USA including Professor Björn Sundström and Dr. Yaping He were invited to give talks.

Dr. Yaping He, Senior Lecturer, School of Computing, Engineering and Mathematics, University of Western Sydney, Australia gave a Continued Professional Development lecture “Analysis of structural fire hazards of heritage housings in Sydney” at PolyU on 5 February 2015. Over 60 local fire professionals attended.

Professor Björn Sundström, Head of Department SP Fire Research, SP Technical Research Institute of Sweden visited BSE-PolyU on 6 February 2015.



CPD lecture by Dr. Yaping He on 5 February 2015



Professor Björn Sundström visited in February

Two Incidents in China

A crowd disaster Shanghai New Year Stampede was reported [1] to happen on an 8 m wide stairway with 17 steps which leads to an elevated viewing platform at Chen Yi Square, in the riverside area the Bund of Shanghai, China. An analysis on the incident was reported [2].

A double-deck bus fire happened recently in the Hong Kong Special Administrative Region, China which emitted thick black clouds of smoke. The fire was extinguished in about 25 minutes and the bus was badly destroyed, leaving only a burnt frame [3]. As reported, the plume raised up to 30-storey as shown in the figure available at: <http://hk.apple.nextmedia.com/news/art/20150123/19012978>.

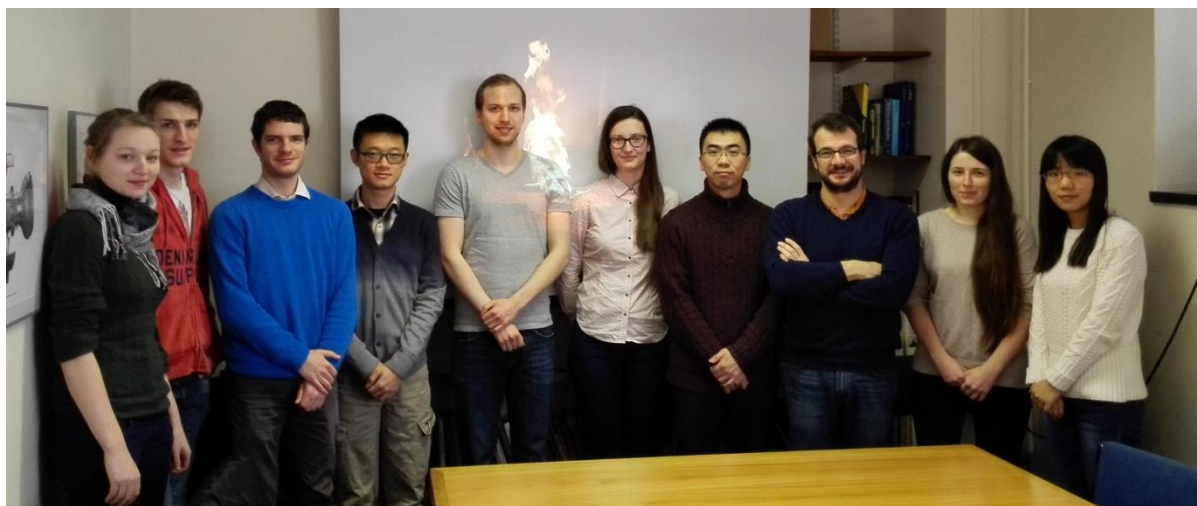
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3. The Standard, "Passengers flee as blaze destroys bus", p.16, 23 January 2015.

Signed: WK Chow, The Hong Kong Polytechnic University, Hong Kong, China

News from Imperial College London

The Imperial Hazelab continues to grow in number. Three full-time PhD students joined in 2014. Izabella Vermesi from Romania arrived in March and is working on computational pyrolysis and ignition under transient irradiation, funded by FM Global. Francesco Restuccia from Italy joined shortly after that in April and is researching the self-heating and smouldering of natural porous materials, funded by EPSRC. Nils Roenner from Germany started in July and is working on understanding the mechanisms in flame retardant polymers in a project funded by BASF. In addition, Supan Wang, a PhD student from China, has joined the team as an exchange student from the University of Science and Technology of China from September 2014 until March 2015. She does experimental and computational work on the ignition of building insulation materials by hot particles.



Hazelab members in Feb 2015 right after the biweekly Journal Club presentation

The senior PhD student of Hazelab, Xinyan Huang, has won the 2014 Qatar Petroleum Medal for Excellent Research in Clean Fossil Fuels. His work also won the Best Student Poster award at the 11th IAFSS Symposium in New Zealand with the poster titled "Computational Smouldering Combustion: Predicting the Roles of Moisture and Inert Contents in Peat Wildfires". He will defend his thesis, *Computational Modelling of Smouldering Wildfires*, in the end of 2015.

PhD student Egle Rackauskaite was leading author of the photo "Fire Watch Constellation", which won the award of *Best Fire Science Photo* in the 11th IAFSS Symposium (see newsletter cover). This composite shows a constellation of combined visual and infrared imaging of a smouldering combustion front spreading radially over a thin sample of dry peat. The central watch is created by a series of 12 wedges. Each wedge is extracted from a photo taken every five min from an elevated view looking down into the sample during the one-hour lab experiment. The circular peat sample ($D=22$ cm) was ignited on the centre by an electrical heater. The average radial spread rate was 10 cm/h and the peak temperature 600°C. The top figures show the virgin peat (left) and the final residue (right). The bottom figures show the wedges in visual (left) and infrared (right) imaging.

Dr. Rein continues to supervise final year projects of a number of MEng and MSc students from Imperial College London, which included industrial collaborations with companies such as AECOM, Arup, Bombardier, CERIB, Foster + Partners and Mott MacDonald. Also, four visiting undergraduate students from Imperial College,

University of Cambridge and University of Maryland stayed with the group during the summer of 2014, working closely with PhD students on experimental and computational projects.

Together with co-authors from ecology and biochemistry, Dr. Rein recently published a progress article in *Nature Geoscience* (vol. 8, 2014) on the carbon losses from peat fires: "Global vulnerability of peatlands to fire and carbon loss." The paper reviews how fire is a threat to the naturally stored carbon in peatlands and has the potential to drastically disturb their carbon stocks. Dry peat is very flammable, because it is a porous and carbon-rich material, and leads to the largest fires on Earth in terms of fuel consumption and carbon footprint. Peat fires are dominated by smouldering combustion, one of the main domains of expertise of Hazelab, which are ignited more readily than flaming fires but are more difficult to suppress. The combustion of deep peat affects older soil carbon that has not been part of the carbon cycle for centuries to millennia, and thus dictates how fire emissions affect the carbon cycle and feedbacks to the climate.

Signed: Izabella Vermesi, Imperial College London

News from Technical University of Denmark (DTU)

PhD thesis completion – Janne Gress Sørensen

In December 2014 Janne Gress Sørensen defended her PhD with the topic: "Evacuation of people with visual impairments". Janne's supervisor was associate professor Anne S. Dederichs. The aim of the PhD project was to carry out an empirical study on the evacuation of vulnerable parts of the population, specifically blind and visually impaired people, to increase the knowledge of their evacuation capabilities. Furthermore, the composition of the occupants was studied in a tunnel environment.

The main findings from the work are:

- The total evacuation time for mixed groups in a tunnel environment has shown to be larger compared to homogeneous groups of able-bodied people in the same experimental configuration.
- The free unimpeded walking speed horizontally for blind and visually impaired people is lower than prescribed in various guidelines. However, an increase in person density seems not to affect blind and visually impaired people to the same extent as for able-bodied people.
- The free unimpeded walking speed descending stairs for blind and visually impaired persons have shown to be comparable with values given in guidelines. However, at increasing densities the influence of the density on the walking speed is different than for able-bodied people. People with visual impairments are able to maintain a higher walking speed even though the density increases.
- The degree of visual impairment has shown to affect the walking speed. People with poorest vision have the lowest free walking speed but is least affected by increasing person densities. In addition, it was found that people accompanied by a guide dog had a higher walking speed compared to people using a cane.
- For reaction times there is found a correlation for people sitting in the vicinity of each other, indicating that there is a social influence that affect peoples' behavior in emergency situations.

Walking speeds for elderly people, children, hearing, cognitive and mobility impaired participants were also obtained from experiment with a mixed composition of the test.

Master in Fire Safety – A popular study

The Master in Fire Safety (http://www.brand.dtu.dk/english/About_MIB) started a new class of students in January 2015, and the capacity for the program was met with 30 new students participating. The interest has been so large, that we are about to reconsider the current uptake every second year. A waiting list is about to be filled for a possible yearly uptake. We look forward to follow our current students in the next two years.

For more information please consult the head of studies, Associate Professor Anne Dederichs (and@byg.dtu.dk).

Fire Investigation Education for the Danish National Police

Starting in March 2015, the fire group at DTU, together with the Danish Institute for Fire and Security Technology (DBI, www.dbi-net.dk), will provide an educational program for all of the fire investigators in the Danish National Police. The course consists of 20 days for training, lectures and project presentations, and the final module of the course (there is a written project at the end) will be spent in Revinge, Sweden where fire investigations of actual fires will be carried out on the testing grounds of the Swedish Civil Contingencies Agency (<https://www.msb.se/en/Training--Exercises/MSB-College-Revinge/>). These experiments are planned together with the experienced Swedish instructor Björn Totting. International experts from Combustion Science and Engineering (www.csefire.com) will be involved in the program to ensure state-of-the-art knowledge sharing on fire patterns and the scientific method of fire investigation.

For more information please consult Associate Professor Grunde Jomaas (grujo@byg.dtu.dk).

Fire Safety Day

On Tuesday June 9th 2015, the fifth Fire Safety Day took place at the Technical University of Denmark. Fire Safety Day is a yearly event carried out by the Fire Safety Group at DTU. The conference has grown to 150 participants from all over the world and is one of the largest of its kind in Scandinavia. The day puts focus on fire research in Scandinavia, but has gotten attention and participants worldwide.

Fire Safety Day is a meeting point for everyone with an interest in different aspects of fire. Producers, engineers, firefighters as well as people working with fire safety in the municipalities and government gather and discuss aspects of fire safety. Hence, the day gives a lot of opportunities to tie a band between fire industry, municipalities and University.

The topic of this year's event was fire risk management. Michael Havbro Faber, professor at DTU BYG was scheduled to give the key lecture. Fire risk management was also a topic for one of the two workshops.

Scientific committee: Javad Barabady, UIT, Norway; Anne Dederichs, DTU, Denmark; Bjarne Hagen, HSC, Norway; Simo Hostikka, VTT, Finland; Björn Karlsson, IU, Island; Ulf Wickström, LTU, Sweden

For more information, see the conference website at <http://www.conferencemanager.dk/FireSafetyDay2015> or email fsd@byg.dtu.dk.

Signed: Anne Dederichs and Grunde Jomaas, Technical University of Denmark

News from the University of Central Lancashire

UCLan Launches Major New Initiative in Fire Toxicity

The University of Central Lancashire (UCLan) has recognised the importance of fire chemistry and particularly fire toxicity in a major new investment initiative. Although the name of the new centre has yet to be announced, UCLan is seeking to appoint one lecturer, two post-doctoral researchers and one fully funded PhD student. In addition over £150k is being invested in new equipment, to be located in the purpose built 300m² fire laboratories. The links to the adverts is:

https://recruitment.uclan.ac.uk/itrentlive_webrecruitment/wrd/run/ETREC105GF.open?WVID=7461800Yms



Following the success of the UK EPSRC project on fire toxicity, the ongoing European Deroca project (seeking to ensure the safety of alternatives to brominated flame retardants), and a number of governmental and industrial collaborations, UCLan have seen the potential for growth in this important area, to consolidate its position as the world's leading authority in fire toxicity. In addition to significant external income, the publication of the 700 plus page reference work "Fire Toxicity", and over 50 peer reviewed papers on fire toxicity since the group was established at UCLan eight years ago, the group are leading a resurgence in this important aspect of fire safety science.

Link: http://www.uclan.ac.uk/research/explore/groups/centre_for_fire_and_hazard_science.php



Research: The main focus of the new Centre will be on research in collaboration with academic, industrial and governmental partners across the fields of fire toxicity and fire chemistry.

Consultancy: Our expertise is also available on a consultancy bases for individuals or organisations.

Short courses: Our group at the University of Central Lancashire has expertise in a number of fire related areas, particularly fire chemistry, fire toxicity, material flammability, and fire investigation. We will be offering a range of short courses tailored to suit the needs of particular organisations. Please contact us for further information.

Other UCLan news

We are delighted to report that our industrially based project on fire retardancy of wood was rated "Outstanding" by Innovate UK. Led by our colleague, Dr Laura Lowden, this puts it in the top 10% of such projects across the UK.

Congratulations

Congratulations to Dr Diana Suleiman Eid Rbehat, Dr David Crowder and Dr Laura Lowden on being awarded their PhDs.

Signed: Associate Professor Anna A Stec (Lead in Fire Toxicity), University of Central Lancashire

News from Lund University

The Department of Fire Safety Engineering has now moved back to the V-Building (Civil Engineering) at Lund University. We are now located in refurbished and modern offices, and our main lab is currently being reassembled after being packed up for two years.

Research

There are several on-going research projects and many of them are reported in open access Lund University reports. You can access our publications through our webpage: www.brand.lth.se/publications.

New project

The department has been granted a project on simulation of fires in virtual environment by the Swedish Fire Research board (Brandforsk). The project intends to develop and implement models for visualization of combustion gases and the interaction between gases and light sources. The objective is to couple fire simulation software with a visualization tool in order to create a tool for virtual reality. The tools will be written modular to facilitate for future visualization of result from e.g. FDS. If you have any questions about the project, please contact: jonathan.wahlqvist@brand.lth.se

Appointments and awards

In November, Associate Professor Håkan Frantzich was awarded the 2014 BIV-scholarship. Håkan received the scholarship for his significant contribution in respect to analytical fires safety design in the Swedish building code. BIV is the official Swedish chapter of the Society of Fire Protection Engineers (SFPE).

Dr Bjarne Husted has been appointed Senior Lecturer at the department. Bjarne's teaching activities involves the courses: "Simulation of Fires in Enclosures" and "Fire Detection and Suppression". Bjarne's research will involve experimental work on suppression and detection and modelling of suppression and detection in CFD.

Dr Enrico Ronchi has been appointed Associate Senior Lecturer in evacuation modelling at the department starting from the 1st of January 2015. Enrico's teaching and research activities will involve the simulation of human behaviour in fire and large-scale emergencies using computational models

Nils Johansson successfully defended his PhD thesis: "Fire Dynamics of Multi-Room Compartment Fires" on the 13th of April, 2015. The faculty opponent was associate professor Björn Karlsson, University of Iceland.

Upcoming events

A Water Mist Seminar organized by the International Water Mist Association will be held in Lund on the 12th of March 2015. The title of the seminar is: "Scandinavian Water Mist Seminar - Technical Update & Approval Status". The program and more information can be found [here](#).

The department will host a two-day FDS workshop on the 21st and 22nd of April 2015. More information about this will be posted on our website.

For more information about activities at the department, please visit our website (www.brand.lth.se) that is continuously updated with news from the department.

Signed: Nils Johansson, Lund University

News from University of Maryland

Stoliarov wins NSF Career Award

Assistant Professor Stanislav I. Stoliarov received a 5-year NSF CAREER Award for his proposal to quantitatively model how polymers produce char, the insulating layer of carbon that forms on the surface of an object as it burns. Applied to the design of flame-resistant materials, the model could improve safety while reducing development costs and the need for brominated flame-retardants (BFRs). Stoliarov believes that establishing a 3D, transient, multiphysics numerical model for char will enable industry to fine-tune materials for the right balance of safety, cost, and mechanical properties. To obtain data for the model, he and his team will conduct experiments that allow them to precisely record the effects of heat on the physical and chemical properties of

polymers. In a process called controlled condition pyrolysis, polymer samples are placed in a chamber with an inert atmosphere, and then gradually heated to high temperatures. This causes thermal degradation without starting a fire. The char is so fragile it crumbles if touched, so during and after the process Stoliarov's team uses non-intrusive temperature monitoring to record heat transfer, and high-resolution X-ray tomography to obtain cross-section images of the char and its cells. The team will test both well-known materials like PVC, and emerging materials such as biodegradable plastics.

Combustion Institute Honors Paper on Burning Rate Model

A paper from UMD's FPE department was selected as the Fire Research Colloquium Distinguished Paper by the International Combustion Institute. The paper is A.V. Singh and M.J. Gollner, *Estimation of local mass burning rates for steady laminar boundary layer diffusion flames*, Proc. Combust. Inst. 35 (2015) 2527-2534. The model describes a relationship between the temperature gradient above a burning fuel and the fuel's mass burning rate. Complemented by a new experimental methodology, the technique provides an unobtrusive means to understand what is happening on the surface of a burning fuel by measuring changes in the thin region between the fuel and flames.

Taylor Myers Named One of Maryland's "Innovators of the Year"

Taylor Myers was named one of the Maryland Daily Record's 2014 Innovators of the Year for his role in developing Mulciber, a 93% efficient wood-burning stove described by Popular Mechanics as having emissions "so low they were almost unmeasurable." Myers was among 28 award recipients recognized at the American Visionary Art Museum in Baltimore on October 15, 2014. The Mulciber stove has already won numerous awards, including the Energy Efficiency Track Prize and a People's Choice Award in the MIT Clean Energy Prize competition, second place in the national RECESS Pitch competition, and a TEDCO Maryland Innovation Initiative (MII) grant to develop the next prototype. The Mulciber Stove has been featured in Popular Mechanics, the New York Times, the Washington Post, and National Geographic. Stanislav Stoliarov is the faculty advisor for Mulciber. Myers is a Ph.D. student advised by Andre Marshall.

Trouvé selected as Symposium Co-Chair

Arnaud Trouvé has been invited to act as Co-Chair and Coordinator of the "Fire Research" Colloquium for the 36th International Symposium on Combustion, Seoul, Korea, August 2016. (For your information, the deadline to submit papers for presentation at the International Combustion Symposium has been set to December 3, 2015.)

WIFIRE Wins 3 HPCwire Awards at International High Performance Computing Conference

WIFIRE, the wildfire modeling system whose design team includes FPE faculty Michael Gollner and Arnaud Trouvé, received three of HPCwire's annual Readers' and Editors' Choice Awards at the 2014 International Conference for High Performance Computing, Networking, Storage and Analysis. Each year, HPCwire, which reports on the international high performance computing community, recognizes the most significant developments in the field in a variety of categories. WIFIRE received HPCwire's Readers' and Editors' Choice Awards for the Best Application of Big Data, and its Editors' Choice Award for Best Data-Intensive System.

Workshop on Wildfire Spread Modeling

On January 12-13, 2015, Michael Gollner and Arnaud Trouvé organized and chaired a two-day Workshop entitled "Towards Data-Driven Operational Wildfire Spread Modeling" at the University of California at San Diego. The Workshop was part of the WIFIRE project, a NSF-sponsored collaborative effort between the University of California at San Diego and the University of Maryland (see <http://wifire.ucsd.edu>). The objectives of the Workshop were to: (1) Identify technical barriers and milestones that need to be overcome in order to make data-driven wildfire spread models operational; (2) Bring together representatives of the wildfire research community, the geosciences community and the fire science community. The wildfire research community has relevant expertise on wildfire operations; the geosciences community has relevant expertise on large-scale effects in wildfires (e.g., the coupling with atmospheric phenomena); the fire science community has relevant expertise on flame-scale effects in wildfires (e.g., the response of the fire to changing local conditions). A report is in preparation and should be available on the website within the next few weeks.

WUSA-9 Consults Milke on Deadly Metro Smoke Incident

Reporter Bruce Johnson of Washington, D.C. CBS affiliate WUSA-9 consulted FPE professor and chair James Milke about a fire incident on a Washington, DC Metro train. This incident claimed the life of one passenger and sent 84 others to area hospitals. An excerpt of the interview was featured in the January 13, 2015, evening news.

Christmas Trees Burned on National Broadcast Television

Isaac Leventon initiated the department's high school program, An Introduction to Math and Physics through Fire Dynamics. For this program, he and the students burned both natural and artificial Christmas trees to teach

the students how to measure time to peak burning rate, burning duration, and maximum heat release rate. In December, 2014, the tests were televised by local and national television, including PBS Newshour, WJLA ABC-7, Washington, DC, and WJZ CBS-13, Baltimore. Leventon is a Ph.D. student advised by Stanislav Stolarov.

Signed: Peter Sutherland, University of Maryland

News from the National Institute for Standards and Technology (NIST)

Smart Firefighting Workshop

In partnership with the Fire Protection Research Foundation (FPRF), NIST hosted a workshop entitled *Smart Firefighting, Where Big Data and Fire Service Unite*, on March 24 -25, 2014 in Arlington, VA. The one-and-a half day event brought together about 70 experts in cyber physical systems (CPS) and firefighting from various industry, educational, and governmental organizations. The Workshop focused on identifying the R&D needs for implementation of smart firefighting, highlighting the use of existing technologies, development and deployment of emerging technologies, and use of standards for data collection, exchange, and situational awareness tools. The Workshop Report (see <http://dx.doi.org/10.6028/NIST.SP.1174>) summarizes the workshop findings including prioritization of research needs according to those that have the greatest potential to enhance the safety and effectiveness of fire protection and the fire service. The results of the Workshop will be used as input to a research roadmap for smart firefighting, providing stakeholder perspective on the scientific and technical basis for Smart Firefighting. The roadmap will identify and address high-priority measurement science research challenges, technical barriers, and related research and development gaps that hinder widespread application of Smart Firefighting technologies and systems. Please contact anthony.hamins@nist.gov for additional information.

NIST/CIB Workshop

NIST hosted a workshop on the development of an International R & D Roadmap for Fire Resistance of Structures on its Gaithersburg campus in Maryland, USA on May 21-22, 2014. This effort was carried out under the umbrella of International Council for Building Research and Innovation in Building and Construction (CIB). The one-and-a half day event focused on: (1) identifying research and development needs for large-scale experiments on fire resistance of structures (concrete, steel, and timber) to support performance-based engineering and structure-fire model validation;(2) prioritizing those needs in order of importance to performance-based engineering; (3) phasing the needed research in terms of a timeline, i.e. near term (less than 3 years), medium term (3 to 6 years) and long term; (4) identifying the most appropriate international laboratory facilities available to address each need; (5) identifying the potential collaborators and sponsors for each need; (6) identifying the primary means to transfer the results from each series of tests to industry through specific national and international standards, predictive tools for use in practice, and comprehensive research reports; and (7) identifying the means for the coalition of international partners to review progress and exchange information on a regular basis. Over fifty experts from academia, governments, industries, test laboratories, and standard and code development organizations from Asia, Australasia, Europe, and North America attended the workshop. Please contact jiann.yang@nist.gov for additional information.

Signed: Samuel Manzello, NIST

News from Main School of Fire Service (Warsaw, Poland)

Fire Safety Engineering (FSE) with its root in mechanical engineering in most cases strongly relies on hypothesis-driven analysis, i.e. hypothesis is assumed first and then validated against the data. The data set in this scenario is mostly crafted in the laboratory experiments.

An opposite approach would be the data-driven analysis, where the given set of data leads to defining of the possible hypotheses. This is the domain of Artificial Intelligence (AI) and can lead to building the systems with adapting abilities (machine learning). Data mining is the analysis of mostly large real data sets in order to find unknown relations or patterns and to reorganize the data to make them more useful to humans.

The real data sets may be criticized for all sorts of noise they carry. On the other hand, there are tools to handle this noise and the major benefit from using the real data is the fact that they are "real" thus provide the insight to the reality. This is especially important in new emerging and promising domain - Cyber-Physical Systems.

We are encouraging the FSE community to join the Complex Events and Information Modelling CEIM (<https://fedcsis.org/ceimworkshop>) where the practitioners from both worlds (hypothesis-driven and data-driven) may meet and share their experience. We would also gladly hear of the problems that are the scope of FSE researches.

Event modelling is a method of intelligent analyzing streams of information (data, percepts) about things that happen (events), and deriving conclusions from them. The goal of CEIM is to identify meaningful events and respond to them appropriately and quickly. We define the complexity of the event as both the complexity of the modelled physical phenomenon (fire, weather, chemical reaction, biological process) as well as the heterogeneity of the data (digital images, percepts, sensory data, natural language, semi-structured and structured data). In addition, the emphasis should be placed on the intelligent aspect of these models. This means that systems should semi- autonomously perceive their environment and take action.

Signed: Adam Krasuski, Main School of Fire Service

News from NFPA and Fire Protection Research Foundation

Report from SupDet 2015

The conference, hosted by the Fire Protection Research Foundation and held March 3-6 at the Wyndham Orlando Resort in Orlando, Florida, was split into two parts. The detection portion of the program was held March 3 and 4, and the suppression presentations took place March 5 and 6. More than 100 attendees and 30 presenters met over the four days to hear and discuss the latest research, developments and emerging issues in the fire detection and suppression world. Topics included smoke detection aboard the International Space Station; recycling center fires in the UK; issues with suppressing fire in electric vehicles; and much, much more. SupDet was greatly enhanced by sponsorships from Gentex, Potter Electric Signal Co., Reliable Automatic Sprinkler Co., Siemens, Tyco SimplexGrinnell, UL LLC, Victaulic, and Zurich Services.

The conference's presentations are now available at <http://www.nfpa.org/supdet2015papers>.

New Report: Carbon Monoxide Diffusion through Porous Walls: A Critical Review of Literature and Incidents

This Foundation report is the result of a literature review project on CO diffusion through walls. It has been reported recently that in laboratory conditions carbon monoxide (CO) diffuses through gypsum board at a surprisingly high rate (Hampson, et al., 2013). This project report includes detailed analysis of the data from the recent experiments with a mass transfer model and confirms the validity of the findings for gypsum board. It also documents a number of actual incidents and laboratory experiments which confirmed the transport of CO and other hydrocarbon gases through other types of porous walls. It was written by Izabella Vermesi, Francesco Restuccia, Carlos Walker-Ravena and Guillermo Rein of Imperial College London and was issued in February 2015.

<http://www.nfpa.org/~media/files/research/research-foundation/research-foundation-reports/detection-and-signaling/rfcarbonmonoxidediffusionthroughwalls.pdf?la=en>

Signed: Kathleen Almand, NFPA

News from SP

New hires

As of November 1st 2014 Karl Fridolf is working for SP at our office in Lund in the south of Sweden. Karl is finishing his thesis on rail tunnel evacuation which he will defend on June 12th at the Division of Fire Safety Engineering, Lund University, where he was previously employed. He is currently also the President of SFPE Sweden. The recruitment of Karl drastically expands SP's competence in evacuation modeling and experiments.

Chen Huang started working as a researcher on January 1st 2015 at SP Fire Research in Borås. Chen holds a PhD in thermo and fluid dynamics, and she defended a PhD thesis on modelling of stratified turbulent combustion using open source code in November 2014 at Chalmers University of Technology. Chen has strong background in computational fluid dynamics using both commercial and open source codes, and she has rich experience in turbulent combustion, Lagrangian sprays and code development. The recruitment of Chen substantially strengthens SP's competence in CFD simulations.

New book: Tunnel Fire Dynamics

Haukur Ingason, Ying Zhen Li, and Anders Lönnemark at SP Fire Research have authored a new Springer book on Tunnel Fire Dynamics. The aim of the book is to significantly improve the understanding of fire dynamics and fire safety engineering in tunnels. Chapters on fuel and ventilation control, combustion products, gas temperatures, heat fluxes, smoke stratification, visibility, tenability, design fire curves, heat release, fire suppression and detection, CFD modeling, and scaling techniques all prepare readers to create their own fire safety strategies for tunnels. This book is of great interest for any engineer or public official with responsibility

for tunnels. It would also be of interest to many fire protection engineers as an application of evolving technical principles of fire safety.

Awards

Michael Strömngren awarded the D. Peter Lund Prize

Each year SFPE, the Society for Fire Protection Engineers, awards the D. Peter Lund Prize to those who have contributed to enhancing the professional recognition of fire engineers. The prize for 2014 has been awarded, in international competition, to SP Fire Research's Michael Strömngren.

The citation reads: *"Michael is a leader in promoting professional recognition of fire protection/safety engineering in Europe, at both the local Swedish Chapter level and within the European Chapter Coordination Group. He conducted a survey that has identified the state of the fire safety engineering profession throughout Europe, led the development of a white paper on steps needed to further advance recognition of the profession in European countries, and is leading efforts to implement various components. He is a strong advocate for requiring fire protection education as a basis for professional recognition and the role that SFPE educational seminars can play. His work on behalf of SFPE has contributed to a significant expansion of the number of SFPE chapters in Europe."*

Ying Zhen Li awarded for excellent PhD-thesis, and for excellence in peer review

The doctoral dissertation by Ying Zhen Li has been awarded as 2013 Excellent Doctoral Dissertation of Sichuan Province of China. The province has a population of over 100 million and a number of universities. In English translation: *"Your doctoral dissertation 'Study of Fire Characteristics and Smoke Control in Super Long Tunnels with Rescue Stations' is awarded '2013 Excellent Doctoral Dissertation of Sichuan Province of China', by the Education Department and the Academic Degree Committee of Sichuan Province of China. The university therefore issues this certificate for encouragement."*

Li has also been recognized for Excellence in Peer Review by Elsevier in recognition of an outstanding contribution to the quality of the journal Fire Safety Journal

11th IAFSS Symposium Sheldon Tieszen Travel Award granted to Franz Evegren

Franz Evegren was selected as the winner of the Sheldon Tieszen Student Award, which is granted by the International FORUM of Fire Research Directors for the best student paper in a broad fire research area of Test Development, Diagnostics, and Large Scale Experiments. The title of Franz's paper is "Fire testing of external combustible ship surfaces".

Margaret McNamee wins the Jack Watts Award for Outstanding Reviewer

Fire Technology magazine has awarded the Jack Watts Award for Outstanding Reviewer of Fire Technology to Margaret McNamee, whose reviews have been of the highest quality. Margaret was one of four recipients of the award, from 254 reviewers.

2014 Best Case Study in Fire Safety award

Jonatan Gehandler, Haukur Ingason, Anders Lönnermark and Michael Strömngren from SP and Håkan Frantzich from Lund University were selected as the winner of the 2014 Best Paper Award from the Elsevier journal *Case Studies in Fire Safety*. The title of the paper is "Performance-based design of road tunnel fire safety: Proposal of new Swedish framework".

signed: Björn Sundström, SP

Projects on cascading effects and forest fire research

SP Fire Research leads the EU project CascEff (Modelling of Dependencies and Cascading Effects for Emergency Management in Crisis Situations) with Anders Lönnermark as the project coordinator. CascEff started on 1st April 2014 and has a three year duration. In total eleven organisations from five different countries are participating in the consortium.

The objective of this work is to improve understanding of the cascading effects arising from crisis situations, covering the entire sequence of events from initiators, dependencies, parties involved and critical stages when key decisions are made. Both physical relationships and human influence on events are analysed and modelled. One of the main objectives of the project is to improve the ability of incident commanders to manage complex events having cascade effects.

An example of an incident that will be included in the studies is the 2014 forest fire in the county of Västmanland, Sweden. SP will investigate the forest fire from a cascading point of view and analyse what kind of decisions that were made, how these decisions affected the outcome and how different organizations interacted.

SP has also investigated the 2014 Lærdal fire in Norway, in which the mechanisms for fire spread were studied, as well as the effects of different fire preventive measures and actions that limited further fire spread and material damage. In a related project, SP is investigating the ignition propensities of forest floor fuels under a variety of conditions.



Photo from the Lærdal fire in Norway, January 2014. Photo: Morten Sortland, Sogn Avis.

Signed: Anders Lönnermark, Johan Lindström, Anne Steen-Hansen, Francine Amon, SP

FSUW meeting on 4 December in Brussels

A meeting of FSUW - Fire Safe Use of Wood - was organized in Brussels on 4 December. About 15 representatives from 12 countries attended. The main topic being discussed is how to overcome the wide disparity in national regulations and insurance requirements throughout Europe that hinders the use of wood on a scale equivalent to concrete and steel. Ultimately it is hoped that the FSUW group will contribute to harmonization of the fire safe use of timber and wood products in buildings worldwide.

The European FSUW network started in 2002 as a result of an initiative from Finland and Sweden and is now being extended globally. The network has representatives from both industry and research in most countries. Previous work by the group resulted in the very first European guideline on Fire Safety in Timber Buildings published by SP in 2010.

The next FSUW meeting will be held in April 2015 in Barcelona in conjunction with the COST Action FP1404, see separate note.

signed: Birgit Östman, SP

New COST Action Fire safe use of bio-based building products

A new COST Action FP1404 *Fire safe use of bio-based building products* has been approved. COST is a program for European Cooperation in Science and Technology, further info at www.costfp1404.com. This new Action will create a platform for networking, exchange and collection of performance data, experiences, authority and climate requirements which affect the design with respect to the *Fire Safe Use of Bio-based Building Products*. By systematical organization of knowledge, this area will advance at a significant higher rate than before. The Action will exchange researchers (Short-Term Scientific Missions), organize Workshops and create comprehensive dissemination material. The COST Action will run from 2014 until 2018. Researchers and industry representatives are kindly invited to join this COST Action!

The first working group meetings will be held in Barcelona on 20-21 April 2015. Abstracts are welcome latest by 31st March. Contact Joachim.Schmid@sp.se

signed: Joachim Schmid, SP

News from State Key Laboratory of Fire Science

National Center for International Research on Large-scale Fires Approved

The China's Ministry of Science and Technology (MOST) recently released "2014 List of Approved National Centers for International Research", showing that the National Center for International Research on Large-scale Fires applied for by State Key Laboratory of Fire Science (SKLFS) together with four international partners has been approved officially. Among the 108 approved centers, the center applied for by SKLFS is the only one in the field of fire research in China. This center is also the only one National Center for International Research at the University of Science and Technology of China (USTC). Four international partners of the center include Engineering Laboratory of National Institute of Standards and Technology (NIST-EL) in USA, Institute of Chemical Kinetics and Combustion (ICKC) in Russia, Centro de Estudos sobre Incêndios Florestais-Associação para o



Desenvolvimento da Aerodinâmica Industrial (ADAI-CEIF, Center for Forest Fire Studies) in Portugal, and Imperial College of Science Technology and Medicine (Imperial) in UK. All the partners provided letters of support for the center.

During the past years, the group led by Prof. Naian Liu at SKLFS has promoted cooperation with the international partners in fundamental researches on large-scale fires, including the spot fire with NIST-EL, the wildland fire spread with ICKC, the eruptive fire and fire whirl with ADAI-CEIF, and the large-scale smoldering fire with Imperial. The ongoing international cooperation projects include 1) "Research on Key Scientific Issues Concerning Wildland-Urban Interface Fire Safety" (2012-2016), Major International (Regional) Joint Research Project, sponsored by Natural Science Foundation of China, with NIST-EL, ICKC and the University of Tokyo as the partners, and 2) "Cooperation Fundamental Research on Prevention Technology of Extreme Forest Fire Behaviour" (2014-2016), International Science & Technology Cooperation Program of China, sponsored by MOST, with ADAI-CEIF as the partner. A number of joint papers resulted from the collaborations concerning large-scale fires have been published in journals such as Proceedings of the Combustion Institute, Combustion and Flame, International Journal of Wildland Fire, Fire Technology, as well as IAFSS Symposium Proceedings.

Prof. Naian Liu, Head and Principal Scientist of the National Center for International Research on Large-scale Fires, introduced the significance for establishing this center: "Although large-scale fires occur much less frequently than small fires, they have a significant impact on natural, social and economic systems due to their potential for catastrophic consequences. According to US National Interagency Fire Center (NIFC) statistics, 97% of all wildfires are extinguished at less than 10 acres, and the 2-3% that get out of control cause 95% of all fire related costs, damages and home losses. However, many key problems, especially the mechanisms of extreme fire behaviours in large-scale fires, have not been fully solved. The center on large-scale fires will focus on elucidating the mechanisms and developing the physical models for the initiation and growth of large-scale fires."

The establishment of national centers for international research aims to upgrade the quality and level of international cooperation in science and technology, and to develop the centers into the pivotal forces in the world scientific circles, so as to act as pilots in relevant sectors regionally or globally. The MOST Special Support Programs for International Scientific Cooperation will give priority support for the approved centers so as to promote the development of the centers at a faster pace and to encourage cooperation research programs to yield high-level or world-front findings. More support will be provided for joint research, technical training, professional education and information service. Priority will be given in the funding of international projects sponsored by MOST, which will be included in the coming 13th national five-year development planning (2016-2020).

(Naian Liu, SKLFS; Anthony Hamins, NIST; Domingos Viegas, ADAI-CEIF; Oleg Korobeinichev, ICKC; Guillermo Rein, Imperial)

Signed: LIU Naian, State Key Laboratory of Fire Science

News from AECOM

Salt Water Modeling

Tom Layton, fire protection engineer based in AECOM's Arlington, Virginia, USA office, completed his MS thesis entitled "Detailed Measurements of Fire-Induced Mixing Phenomena," under Professor Andre Marshall at the University of Maryland. His work focused on improving the techniques of Planar Laser Induced Fluorescence (PLIF) and Particle Image Velocimetry (PIV) used in salt water modeling, which has applications in turbulent mixing behaviour of buoyant plumes, enclosure smoke filling, detector response times, and smoke layer properties. Tom's work improved upon previous measurements of plume and smoke layer velocity and density, and is currently being expanded into projects by Pietro Maisto with Professors Michael Gollner and Andre Marshall at the University of Maryland as well as Steffen Kahrman with Professor Jose Torero at the University of Edinburgh.

Pietro and Tom's research is a probe into sub-grid scale turbulent mixing of large fire plumes and will be presented at the 9th U.S. National Combustion Meeting in Cincinnati, Ohio this May. The presentation will discuss the research as it applies to the LES approach of CFD, where flow details are needed for sub-grid scale mixing (i.e. mixture fraction) because the spatial fluctuations within a cell are unknown and must be modeled. Salt water modeling is a method for taking high resolution measurements of these spatial fluctuations, which can improve the accuracy of CFD tools.

Research Collaboration with the University of Edinburgh

Holly Smith, a PhD researcher at present completing her thesis, is currently working at AECOM Edinburgh on a 6 month placement. The Engineering and Physical Sciences Research Council has awarded a grant to support the placement. Holly's PhD is on punching shear failure in reinforced-concrete under fire conditions.

Holly's research was mainly experimentally based, involving testing 15 slab-column specimens to failure in fire. One of the reasons concrete shear failure has had limited investigation, is the complexity of the topic. The shear behaviour of reinforced-concrete in fire is dependent upon the degradation of the individual material properties with temperature, their interaction, and the effects of restrained thermal expansion.

Recent developments in experimental methods, including the use of digital cameras, have allowed a deeper understanding of concrete structures carrying shear load during fires.



Tested slab-column specimen in The University of Edinburgh laboratory

The purpose of Holly's placement is to facilitate greater knowledge transfer between The University of Edinburgh and AECOM's Building Engineering business line. The aim of the placement is to build a mutually beneficial collaboration bringing fire engineering experts together.

Professional Registration

Ed Ang based in our Sydney Fire & Risk Team in Australia has recently been awarded his Chartered Professional Engineer (CPEng) registration and also registration on the Australian NPER (National Professional Engineers Register). The register is supervised by the Australian National Engineering Registration Board (NERB) and administered by Engineers Australia. Registration on the NPER is a demonstration of an engineer's competency to practice and is widely recognised by some State and Territory Governments. It forms part of the regulations relating to the design, certification, health and safety of buildings and building services. Ed Ang is one of the two Fire Safety Engineers in AECOM Australia, beside Jonathan Gormley to be on the NPER for Fire Safety Engineering.

Collaboration between Academia and Industry

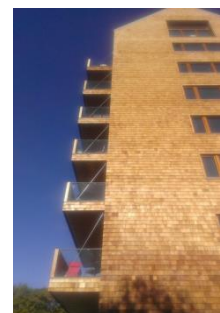
With the intent of fostering greater collaboration between Academia and Industry, Ed Ang (AECOM Australia) and Dr. Roger Harrison (AECOM UK) have recently collaborated with Dr. Guillermo Rein and Dr. Joaquim Peiro from Imperial College London on a research related to multi-scale modelling in long tunnels. The research was carried out during Ed's sabbatical at Imperial College London and the key objective of multi-scale modelling is to reduce the computational time for long tunnels while maintaining a reasonable fidelity by using a combination of CFD for complex regions and 1D for far-field regions where an area averaged representation of the variables is acceptable. A paper has been submitted to a major journal and is currently in the peer reviewing process. The second part of the paper is currently being prepared.

Signed: Roger Harrison, AECOM UK

CONFERENCE REPORTS

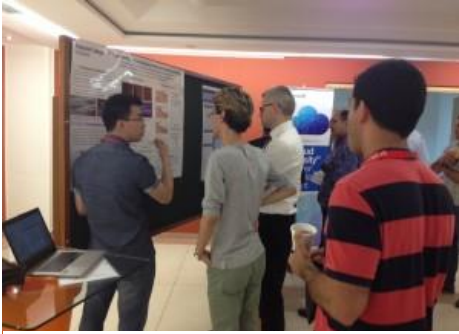
NIST/CIB Fire Resistance Workshop with White papers

NIST and CIB organized a workshop in May 2014 to develop a roadmap for Fire Resistance of Structures. The attempt was to identify and understand the research and development needs for implementation of technical solutions for Fire Resistance of Structures, which shall be achieved through greater use of existing technologies, deployment of emerging technologies, and use of standards for performance-based engineering design. Three White papers on concrete, steel and timber were presented. The timber paper was authored by Andy Buchanan University of Canterbury New Zealand, Birgit Östman SP Wood Technology Sweden and Andrea Frangi ETH Zürich Switzerland. These white papers will be included in the roadmap to be published at www.nist.gov



signed: Birgit Östman, SP

2nd European Symposium of Fire Safety Science



Poster award winner Xinyan Huang (Imperial College, London) presents his peat fire research to conference

The 2nd European Symposium of Fire Safety Science (ESFSS) was held June 15-18 at the European University of Cyprus in Nicosia, Cyprus. More than 70 posters were presented and discussed during five different sessions throughout the three-day symposium. An invited speaker opened each session with a keynote lecture. The five topics and speakers were:

1. Fire Hazards with New Energy Carriers - Guy Marlair (INERIS)
2. Fire Extinguishment in Large Facilities - Bert Yu (FM Global)
3. Fire Research for the Fire Service - Stefan Svensson (Lund University)
4. Forest Fire Research - Domingos Viegas (University of Coimbra)
5. Probabilistic Structural Fire Engineering - Luke Bisby (The University of Edinburgh)

Posters related to each topic were displayed after the keynotes, followed by an open discussion led by the keynote speakers. Both the open discussion and poster session made it possible to discuss the current state of the topic and on-going research in each topical area. Also, the poster presenters received valuable comments on their research from scholars that had come from around the world to Cyprus. The majority of the around 80 participants were from Europe but there were also participants coming from Australia, Canada, China, Egypt and the USA.

The IAFSS contributed with three poster awards that were handed out after the final poster session at the symposium. The competition was tough because the overall quality of the posters was high. The awards committee did however finally decide on the following three winners:

- Xinyan Huan (Imperial Collage): 'Smouldering Peat Fires'
- Juan P. Hidalgo (The University of Edinburgh): 'Thermal Barriers for Combustible Insulation Materials'
- Jorge Raposo (University of Coimbra): 'Fuel Spread Across a Fuel Break on a Ridge'
-

The IAFSS would like to congratulate the winners and thank everyone that submitted and presented posters at ESFSS! The IAFSS would also like to thank the organisation committee and especially George Boustras (European University of Cyprus) and Bart Merci (Gent University) for a very well organised and inspiring symposium.

The titles of all the presented posters can be found here: <http://2ndesfss.com/>

signed: Nils Johansson, Lund University

ASTM Workshop - Structure Ignition in Wildland-Urban Interface (WUI) Fires, June 18-19, 2015, Anaheim, CA USA

Wildfires that spread into communities, commonly referred to as Wildland-Urban Interface (WUI) fires, are a significant problem in Australia, Europe and the United States. WUI fire spread is extraordinarily challenging and presents an emerging problem in fire safety science. While it is accepted that WUI fires are an important societal problem, little understanding exists on how to contain and mitigate the hazard associated with such fires. From a simple point of view, the WUI fire problem can be seen as a structure ignition problem. Some building codes and standards already exist to guide construction of new structures in areas known to be prone to WUI fires in order to reduce the risk of structural ignition. These codes and standards have been developed based on best information at the time they were developed. Often this information was anecdotal. Based on current research, are these current codes and standards adequate? Proven, scientifically based retrofitting strategies are required for homes located in areas prone to such fires.

The list of accepted presentations can be found at <http://www.astm.org/MEETINGS/SYMPOSIAPROGRAMS/E05ID2612.pdf>. Accepted papers from the workshop will be submitted to special issue of Fire Technology, co-guest edited by the Co-Chairman of this workshop, Dr. Steve Quarles (IBHS) and Dr. Samuel Manzello (NIST). For more information, please contact: Samuel Manzello (samuelm@nist.gov)

UPCOMING CONFERENCE – 10th Asia-Oceania Symposium on Fire Science and Technology – 5-7 October 2015, Tsukuba, Japan

The 10th Asia-Oceania Symposium on Fire Science and Technology (10th AOSFST) is to be held on **October 5-7, 2015 in Tsukuba, Japan**. The 10th AOSFST will include presentations of peer-reviewed papers, key-note lectures by fire researchers invited from the world and poster sessions for a variety of topics and some exciting events. The symposium is organized by Building Research Institute (BRI), National Research Institute of Fire and Disaster (NRIFD), Tokyo University of Science (TUS) and Japan Association for Fire Science and Engineering (JAFSE).



The Symposium will be held at the Tsukuba International Congress Center, located in the central area of Tsukuba City. The city is conveniently accessed from central Tokyo by express train or highway bus and limousine bus from Narita International Airport. Travel information is available at the symposium website.

The first AOSFST was held in 1992 by the Asia-Oceania Association for Fire Science and Technology (AOAFST), which was established under the umbrella of the International Association for Fire Safety Science (IAFSS). The AOSFST has been held periodically about 3-year intervals at the midterm of the IAFSS international symposia. The two most recent Asia-Oceania symposia were held successfully in Melbourne, Australia and Hefei, China in 2010 and 2012, respectively.

Asia-Oceania region is among the areas where fire science and technology are developing most rapidly. We heartily invite your participation, not only from Asia-Oceania region but also from regions in the world.

Symposium Topics

- Fire/Explosion Physics and Chemistry
- Human Behaviour in Fire
- Fire Safety Design and Codes
- Fire Properties and Testing Methods of Materials
- Urban, Wildland/Urban Interface and Forest Fires
- Fire Investigation/Fire Services
- Fire Protection of High-rise Buildings
- Fire and Smoke Modelling and Experiment
- Fire Statistics and Risk Assessment
- Structural Behaviour in Fire
- Industrial Fires
- Fire Detection and Suppression
- Fire Protection of Cultural Heritages
- Fires of Recyclable Fuels and Renewable Resources
- Miscellaneous (open technical)

If you would like more information on the Symposium, please visit the symposium website (<http://aosfst2015.com>) or contact by email (contact@aosfst2015.com).

CALLS FOR PAPERS

ISTSS 2016

The 7th International Symposium on Tunnel Safety and Security will be held in Montreal, Canada, on March 16-18, 2016. The Call for Posters is still open, see: <http://istss.se/en/symposium/istss2016/call/Sidor/default.aspx>

signed: Anders Lönnemark, SP

Interflam 2016

The 14th International Conference and Exhibition on Fire Science and Engineering (Interflam 2016) will be held at Royal Holloway College, Nr Windsor, UK, from June 4-6, 2016. The Call for Papers is open until 1st November 2015. One author per technical paper will be entitled to register for the conference at a highly subsidised rate. See <http://www.intersciencecomms.co.uk/html/conferences/Interflam/If16/if16.htm>.

5th Fire Behavior and Fuels Conference

This conference will be hosted by the International Association of Wildland Fire in conjunction with Bushfire and Natural Hazard Cooperative Research Centre and Bureau of Meteorology. It will be held concurrently in two

locations: Portland, Oregon, USA and Melbourne, Victoria, Australia, from April 11-15, 2016. The Call for Papers is expected to open on October 1 and close December 1. See: <http://nrfirescience.org/event/international-association-wildland-fire-5th-fire-behavior-and-fuels-conference>

Fire Technology Special Issue – Fire Safety of High-Rise Buildings

The fire safety of high-rise buildings is an important topic which attracts attention due to modern architectural trends and recent high-profile fire incidents (e.g., the collapse of the WTC towers and the large fire in the TVCC tower). High-rise buildings pose some unique challenges related to their very tall configuration, the use of new materials and the complex evacuation procedures. Papers are invited as part of a special issue of *Fire Technology* devoted to both fundamental and applied research on the topic. Of interest are experimental, theoretical, computational investigations and case studies that contribute towards the understanding and improvement of fire safety in high-rise buildings, including

- flammability of high-rise building materials
- ignition, spread and fire growth
- detection and sensors
- human evacuation
- emergency management
- smoke transport and control
- fire suppression
- structural response

Guest editors for the issue are Prof. Longhua Hu, University of Science and Technology of China, Prof. James Milke, University of Maryland (USA) and Prof. Bart Merci, Ghent University (Belgium). Papers should be submitted to <http://fire.edmgr.com> by October 31, 2015.

UPCOMING EVENTS – 2015/2016

2015

- Aug 2-7 25th International Colloquium on the Dynamics of Explosions and Reactive Systems (ICDERS), Leeds (UK) - <http://icders2015.org/>
- Sep 2-4 CONFAB 2015 (The First International Conference on Structural Safety under Fire & Blast), Glasgow (UK) - <http://www.fireandblast.co.uk/>
- Sep 13-16 2nd Workshop on Complex Events and Information Modelling (CEIM'15) – Lodz (Poland) - <https://fedcsis.org/2015/ceim/>
- Sep 28-30 6th International Symposium on Human Behaviour in Fire 2015, Cambridge (UK) - <http://www.intersciencecomms.co.uk/html/conferences/hb/hb15/hb15.htm>
- Oct 4-8 ATEM'15: International Conference on Advanced Technology in Experimental Mechanics 2015 - Toyohashi (Japan) - <http://solid.me.tut.ac.jp/atem15/>
- Oct 5-7 10th Asia-Oceania Symposium on Fire Science and Technology (AOSFST 2015) – Tsukuba (Japan) – <http://aosfst2015.com/>
- Oct 28-29 15th International Water Mist Conference – Amsterdam (Netherlands) - <http://iwma.net/home/>
- Nov 16-20 6th International Fire Ecology & Management Congress - San Antonio, Texas (USA) - <http://afefirecongress.org>
- Dec 9-11 2nd International Conference on Performance-based and Lifecycle Structural Engineering (PLSE 2015) – Brisbane (Australia) - <http://plse2015.org>

2016

- Mar 16-18 7th International Symposium on Tunnel Safety and Security (ISTSS) - Montréal (Canada) - <http://istss.se/EN/Sidor/default.aspx>
- Apr 11-15 5th Fire Behavior and Fuels Conference – held concurrently in Portland, Oregon (USA) and Melbourne (Australia) – watch for details on <http://www.iawfonline.org/conferences.php>
- Jun 4-6 Interflam 2016 (14th International Conference and Exhibition on Fire Science and Engineering) – Windsor (UK) - www.intersciencecomms.co.uk/html/conferences/Interflam/If16/if16.htm

MEMBER ANNOUNCEMENTS

Jack Watts Awards for Outstanding Reviewers of *Fire Technology*

The Jack Watts Award for Outstanding Reviewers of *Fire Technology*, instituted in 2014, celebrates high quality and helpful reviewers, and will be presented annually to those whose reviews were considered most valuable in terms of their quality, depth, number and timeliness. The award includes an annual print subscription to *Fire Technology* and \$250 (USD) worth of Springer books. From among 254 reviewers, the four recipients for 2013, announced in 2014, were:

- Rita Fahy from NFPA, USA
- Steve Gwynne from University of Greenwich, UK
- Michael Gollner from University of Maryland, USA
- Margaret McNamee from SP, Sweden

The 2015 recipients, selected from among 398 reviewers in 2014 were:

- Elizabeth Blanchard from CSTB, France
- Marcos Chaos from FM Global, USA
- John Gales from Carleton University, Canada
- Xinyan Huang from Imperial College London, UK

JOBS

Research Officer, Fire Resistance, National Research Council, Canada

The National Research Council of Canada is looking to hire a research officer in the fire resistance area. The position requires a Ph.D. in Structural Engineering, but a Master's degree in Engineering combined with significant work experience in relevant research or technology development may be considered. Some travelling may be required. The position will be posted until filled. Complete details for this job posting can be found at: http://www.nrc-cnrc.gc.ca/eng/careers/competitions/145_14_0791.html.

Experience:

- Significant experience in the full spectrum of research activities including identification of research requirements, proposal writing, project management, data production and analysis, and reporting through written documentation, presentations and publishing.
- Experience in working in multi-disciplinary teams;
- Experience in business development, marketing activities, and/or the development of partnerships and collaborations;
- Significant experience in both numerical and experimental fire science for evaluating structural fire resistance of structural steel, wood and concrete frames, which includes assessment of the performance of structural members and assemblies under fire conditions;
- Experience in developing simplified design approaches for cost effective fire resistant construction is required, as well as experience in the design of structural elements, and with the construction industry practices in fire resistance area;
- Experience in the area of fire risk assessment modeling techniques could be considered an asset.

Compensation:

This position is classified as a Research Officer (RO), a group that is unique to the NRC. The RO group uses a person-based classification system instead of the more common duties-based classification system. Candidates are remunerated based on their expertise, skill, outcomes and impacts of their previous work experience. The salary scale for this group is vast, from \$49,670 to \$140,418 per annum, which permits for employees of all levels from new graduates to world renowned experts to be fairly compensated for their contributions.

Candidates are encouraged to provide, along with their résumé, a detailed covering letter explaining how they meet each of the requirements of this position (education, experience, language requirements) by providing concrete examples. Preference will be given to Canadian Citizens and Permanent Residents of Canada. Please include citizenship information in your application. This position is being advertised internally and externally simultaneously, however first consideration will be given to internal NRC applicants.

Contact Information: Telephone - (613) 991-2024 / Email - NRC.ExtHiring-EmbaucheExt.CNRC@nrc-cnrc.gc.ca

Various positions at the University of Central Lancashire (UCLan)

The University of Central Lancashire (UCLan) has recognised the importance of fire chemistry and particularly fire toxicity in a major new investment initiative. We have an immediate need to appoint one lecturer, two post-doctoral researchers and one fully funded PhD student. In addition we have just invested over £150k in new equipment, located in the purpose built 300m² fire laboratories.

The links to the adverts is:

https://recruitment.uclan.ac.uk/itrentlive_webrecruitment/wrd/run/ETREC105GF.open?WVID=7461800Yms

More details about our facilities can be found:

http://www.uclan.ac.uk/research/explore/groups/centre_for_fire_and_hazard_science.php

Job postings on the IAFSS Website

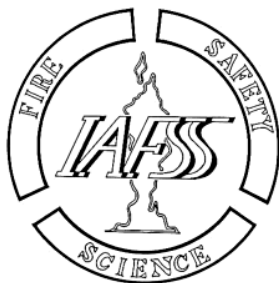
Remember, you can always check the website for current job postings.

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 offers related to fire safety science or IAFSS members. These could be collected from your department, institution, country or region. Please send your contributions to the Editor (Rita Fahy, rfahy@nfpa.org).

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

For the next issue (No. 39), the deadline for submissions is September 30, 2015.



<http://www.iafss.org>

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