

PROGRAMME MONDAY

Registration

9.00 OPENING – STEPHEN GRAYSON, Conference Chair

9.15 Keynote Paper - Patrick van Hees, Lund University, Sweden

The Urgent Need for System Thinking in Fire Safety – The Only Way Forward for Testing, Engineering and Education

A		B		C	
Fire Investigation <i>Chair: Kathleen Almand, NFPA, USA</i>		Flame Retardants & Coatings <i>Chair: Alex Morgan, Univ of Dayton, USA</i>		Fire Service & Building Fire Safety <i>Chair: Julian Parson, Buckinghamshire Fire & Rescue Service, UK</i>	
9.50	The Ammonium Nitrate Explosion at West, Texas: A Disaster that Could Have Been Avoided Vytenis Babrauskas , FSTI, US	9.50	Are Commercially Successful, Halogen-Free Back-Coatings for Textile Furnishings Possible within the Shorter Term? Richard Horrocks , S Eivazi, B Kandola, Univ of Bolton, UK	9.50	Humanoid Firefighting Robot for Structure Fires Brian Lattimer , Jensen Hughes, J Starr, J McNeil, C Nogales, J Peterson, J Ziglar, J Burnton, C Knabe, Y Sung, J Seminatore, R Griffin, J Newton, V Orekhov, M Rouleau, M Hopkins, Virginia Tech, D Hong, UCLA, D Lee, Univ of Pennsylvania, J Farley, Navel Research Lab, USA
10.10	Ignition and Burning Characteristics of Tea Light Candles and their Influence on Fire Investigation Mike Burroughs , Fire Investigations, UK	10.10	From the Synthesis to the Understanding: How to Design Flame Retardants for PBT Sophie Duquesne , R Duprez, G Fontaine, S Bourbigot, ENSCL, France, S Wagner, A Koenig, R Kramer, M Klatt, BASF SE, Germany	10.10	Techniques for the Offensive Exterior Attack in Fighting Ventilation Controlled Structure Fires Rijk van den Dikkenberg , R Weewer, K Groenewegen-ter Morsche, Fire Service Academy, Netherlands
10.30	Discussion	10.30	Discussion	10.30	Discussion
10.40	Break	10.40	Break	10.40	Break
A		B		C	
Heat Flux Measurements & Calculations <i>Chair: Ulf Wickström, Lulea Univ, Sweden</i>		Flame Retardants & Coatings <i>Chair: Serge Bourbigot, ENSCL, France</i>		Fire Service & Building Fire Safety <i>Chair: Anne Steen-Hansen, SP Fire Research, Norway</i>	
11.10	Measuring Heat Flux from a Fire to a Surface using IR Thermography Christian Rippe , B Lattimer, Jensen Hughes, USA	11.10	Gas-Phase Interactions of Phosphorus Retardants with Diffusion Flames Fumiaki Takahashi , Case Western Reserve Univ, V Katta, Innovative Scientific Solutions, G Linteris, V Babushok, NIST, USA	11.10	Robot Autonomous Fire Location Using a Weighted Confidence Algorithm Chris Nogales , T Furukawa, Virginia Tech, B Lattimer, Jensen Hughes, USA
11.30	A Study on Radiation Screens – A Comparison between Experiments and Different Numerical Models Jonathan Wahlqvist , M Runefors, P van Hees, Lund Univ, Sweden	11.30	Chemically Modified Lignin as Flame Retardant for Acrylonitrile-Butadiene-Styrene (ABS) Benjamin Prieur , G Fontaine, S Bourbigot, ENSCL, M Wittemann, R Klein, Fraunhofer Inst for Structural Durability & System Reliability LBF, Germany	11.30	An Analysis of Residential Building Fire Rescues: The Difference between Fatal and Non-Fatal Casualties Rijk van den Dikkenberg , M Kobes, Fire Service Academy, Netherlands
11.50	Resolving Obstructed Views using Multiple Thermography Digital Image Correlation Systems Jonathan Hodges , P Summers, S Case, N Cholewa, Virginia Tech, Z Mathys, Defence Science & Tech Org, Australia, A Mourtiz, RMIT Uni, Australia, C Rippe, B Lattimer, Jensen Hughes, USA	11.50	Numerical Prediction on Interacting Thermal-Structural Behaviour of Inorganic Intumescent Coating Sengkwan Choi , S Kang, Univ of Ulster, UK, J Yoon Choi, Korea Conformity Laboratories, Korea	11.50	How Can Fatal Fires Involving Vulnerable People Be Avoided? Karolina Storesund , A Steen-Hansen, C Sesseng, SP Fire Research, G Gjøsund, K Halvorsen, P Grytten Almklov, NTNU Social Research, Norway
12.10	A Comparison of Radiative Transfer Models in FireFoam and FDS Marcus Runefors , J Wahlqvist, B Husted, Lund Univ, J Anderson, C Huang, SP Technical Research Inst, Sweden	12.10	Intumescent Paint Systems Exposed to Different Heating Scenarios Robert Jansson McNamee , SP Technical Research Inst, Sweden, K Storesund, R Stølen, P Gunnar Nordlørke, SP Fire research, Norway	12.10	Towards a Sound Understanding of the Effectiveness of Smoke Detectors in Dwellings Karin Groenewegen-ter Morsche , M Kobes, K Dangermond, Fire Service Academy, Netherlands
12.30	Discussion		Discussion		Discussion
12.50	Lunch				
A		B		C	
Pyrolysis Modelling I <i>Chair: Richard Lyon, FAA, USA</i>		Furniture Flammability <i>Chair: Richard Gann, NIST, USA</i>		Detection & Suppression I <i>Chair: Christopher Jelenewicz, SFPE, USA</i>	
14.00	A Generalized Methodology to Produce Pyrolysis Models for Composite Materials Mark McKinnon , S Stoliarov Univ of Maryland, USA	14.00	Study: Reduced Ignition Propensity (RIP) Cigarettes – Theory and Reality Ida Larsson , A Bergstrand, SP Technical Research Institute, Sweden	14.00	Investigation of the Use of Smoke Detectors in Norwegian Dwellings Christian Sesseng , N Kristine Reitan, SP Fire Research, Norway
14.20	Burn: A 3D Model of Burning Materials Morgan Bruns , NIST, USA	14.20	Cone Calorimeter Studies of Foam and Fabric Assemblies Alexander Morgan , Univ of Dayton Research Institute, USA	14.20	Smoke Behavior Analysis with Multi-View Smoke Spread Data Florian Vandecasteele , B Merci, S Verstockt, Ghent Univ, Belgium
14.40	A Model for Thermal Decomposition of Solids out of Ellingham Assumption Aurélien Thiry , P Carloti, LCPP, P Boulet, LEMTA, France	14.40	Upholstered Furniture-Can Fire Behaviour Be Improved Without Adding Chemical Flame Retardants? Anne Steen-Hansen , K Storesund, SP Fire Research, Norway, A Bergstrand, SP Fire Research, Sweden	14.40	The Extinguishing Performance of Experimental Siloxane-Based AFFF Ralf Hetzer , F Kümmerlen, Bundeswehr Research Inst for Protective Technologies, Germany
15.00	Distributed Reactivity Model to Predict Multi-Stage Pyrolysis of Polymeric Materials and Sensitivity Analysis Abhishek Bhargava , Danish Inst of Fire and Security Tech, Denmark, P van Hees, B Andersson, H Sina, S Iyengar, Lund Univ, Sweden	15.00	Analysis of Heat Release Rate of Bed Mattress Installed at Different Heights Jong-Jin Jeong , M Mizuno, Y Ohmiya, Y-C Shin, Tokyo Univ of Science, Japan, K-W Park, FILK, Korea, M Delichatios, Univ of Ulster, UK	15.00	Smoke Layer/Water Spray Interaction – Thermal and Radiative Characterization Elizabeth Blanchard , S Renard, P Fromy, CSTB, G Parent, P Boulet, LEMTA, D Borgiallo, PROFOG, France
15.20	Discussion	15.15	Discussion	15.15	Discussion
15.40	Break	15.40	Break	15.40	Break

A	Pyrolysis Modelling II <i>Chair: Morgan Bruns, NIST, USA</i>	B	Large Outdoor Fires <i>Chair: Samuel Manzello, NIST, USA</i>	C	Detection & Suppression II <i>Chair: Sergey Dorofeev FM Global, USA</i>
16.10	Application of Fire Simulation within the Railway Industry Fabian Braennstroem , Bombardier Transportation GmbH, Germany	16.10	TBA	16.10	Efficiency of Water Spray System for Smoke Cooling in Confined and Mechanically Ventilated Compartment Hugues Pretrel , L Audouin IRSN, France
16.30	Pyrolysis Modelling of Composite Fabrics based on Individual Fabric Properties using Micro-Combustion Calorimetry Konrad Wilkens , P van Hees, Lund Univ, Sweden, S Hostikka, Denmark & Aalto Univ, Finland	16.30	Firebrand Ignition in Large Outdoor Fires: The use of Full-Scale Experiments to Guide the Development of Laboratory Standard Test Methods Samuel Manzello , NIST, USA, S Suzuki, NRIFD, Japan	16.30	Experimental and Numerical Modeling of Interactions between Sprinklers and Natural Smoke Vents Nicolas Trevisan , Z Acem, P Boulet, LEMTA, G Pianet, A Jenft, A Breton, A Muller, CNPP, France
16.50	Pyrolysis Model Properties of Engineered Wood Products and Validation Using Transient Heating Scenarios Gaurav Agarwal , M Chaos, Y Wang, FM Global, USA, D Zeinali, Ghent Univ, Belgium	16.50	Experimental Investigation of Wood Decking Assemblies Attacked by Firebrand Showers Sayaka Suzuki , NRIFD, Japan, S Manzello, NIST, USA	16.50	Optimization of In-Rack Automatic Sprinkler Protection Using a Coupled Modeling-Testing Approach Karl Meredith , K Jamison, J de Vries, Y Wang, S Dorofeev, FM Global, USA
17.10	Power Law Modelling of Simple Pyrolysis Kinetics Pierre Carlotti , A Thiry, S Dupont, LCPP, P Boulet, LEMTA, France	17.10	Computationally Efficient Wildland Fire Spread Models Alan Lattimer , J Borggaard, S Gugercin, K Luxbacher, Virginia Tech, USA, B Lattimer, Jensen Hughes, USA	17.10	Cost Benefit Analysis for Sprinklers in Tall Buildings above 30m for Life Safety Corinne Williams , J Fraser-Mitchell BRE Global, UK
17.30	Discussion	17.30	Discussion	17.30	Discussion
17.50	POSTER SESSION A				
19.00	Social Evening – Founders Building				

TUESDAY

A	Predictions of Soot Generation & Visibility <i>Chair: Marc Janssens, SwRI, USA</i>	B	Fire Resistance I <i>Chair: Robert Jansson McNamee, SP, Sweden</i>	C	Codes & Regulations <i>Chair: Marcelo Hirschler GBH Intl, USA</i>
8.40	A Numerical Investigation on the Impact of Modeling Aerosol Behaviors on the Prediction of Soot Density in a Compartment Fire Jason Floyd , Jensen Hughes, USA	8.40	Temperature Assessment of a Vertical Member Subjected to Localized Fire Christophe Thauvoye , B Zhao, CITICM, France, F Hanus, O Vassart, Arcelor Mittal R&D, Luxembourg	8.40	Codes & Standards Development in the USA: How Does It Work? Marcelo Hirschler , GBH International, USA
9.00	Experimental and Numerical Analysis of the Influence of the Soot Yield when Conducting CFD Analysis for the Estimation of the Available Safe Evacuation Time Gabriele Vigne , JVVA Fire and Risk, Spain, W Węgrzyński, ITB, Poland	9.00	Design at the Interface—Developing a Structural Fire Strategy for an Exposed Weathering Steel Frame Danny Hopkin , S Anastasov, B McColl, E O'Loughlin, Trenton Fire Ltd, D Illingworth, AKT II, UK	9.00	Comparing National Fire Regulations in EU for 3 Different Buildings Birgitte Messerschmidt , S Hughes, J Albiac Fire Safe Europe, Belgium
9.20	Full-Scale Fire Tests to Obtain Optical Density Data for Validation of Compartment Fire Models Jason Huczek , M Janssens, SwRI, USA, K Onaka, TEPCO, Japan, S Turner, Leidos, USA	9.20	Post Fire Guidance for the Critical Temperature of Prestressing Steel Lucie Robertson , David Narro Associates, UK, J Gales, Carleton Univ, Canada	9.20	Compartment Sizes, Resistance to Fire and Fire Safety – Construction Details Tom Lennon , BRE Global, UK
9.40	Model Uncertainty of Predictions of the Soot Concentration in the Hot Gas Layer of Compartments Fires Marc Janssens , SwRI, USA, Jason Huczek, SwRI, USA, K Onaka, TEPCO, Japan, S Turner, Leidos, USA	9.40	A Conceptual Framework for a Design Travelling Fire for Large Compartments with Fire Resistant Islands Xu Dai , J Maclean, S Welch, BRE Centre for Fire Safety Eng, Univ of Edinburgh, L Jiang, A Usmani, Brunel Univ, UK	9.40	Fire Statistics: What Is the Current Situation and What Can Be Expected? Dominique Parisse , PlasticsEurope, Belgium
10.00	Discussion	10.00	Discussion	10.00	Discussion
10.20	Break	10.20	Break	10.20	Break
A	Rack Storage Fire Modelling and Testing <i>Chair: Karl Meredith, FM Global USA</i>	B	Fire Resistance II <i>Chair: Luke Bisby, Univ of Edinburgh, UK</i>	C	Fire Risk <i>Chair: Debbie Smith, BRE, UK</i>
10.50	The Impact of Object Shape on Rack Storage Fire Simulations Charles Fleischmann , Univ of Canterbury, New Zealand	10.50	Mechanical Properties of Gypsum Plasterboard Exposed To Standard Fires Blanca Andres , P van Hees, Lund Univ, Sweden	10.50	Effects of Performance of Active Fire Protection Systems on Life Risks Due to Fire in a Mid-Rise Residential Building X Zhang, George Hadjisophocleous , Carleton Univ, Canada
11.10	An Experimental Study on the Freeburn Characteristics of Complex Fuels Sai Thumuluru , Y Xin, A Gupta, FM Global, USA	11.10	Behaviour of Char Layer in Fire-Damaged Box Section Timber Beams Hailey Quiquero , J Gales, G Hadjisophocleous, Carleton Univ, Canada	11.10	Efficient Method for PROBABILISTIC Fire Safety Engineering Ruben Van Coile , Ghent Univ, Belgium, G Balomenos, M Pandey, Univ of Waterloo, Canada
11.30	Complex Fuel Experiments Using the Characteristic Fuel Unit (CFU) Method for Cartonized Commodities Yibing Xin , Y Wang, M Chaos, S Dorofeev, FM Global, USA	11.30	Development of a Thermomechanical Model on Behaviour of Cellulose Based Material under Fire Resistance Test Guillaume Cuffe , V Drean, G Auguin, Efectis France, J-C Mindeguia, D Breyse, Inst of Mech and Eng of the Univ of Bordeaux, France	11.30	Standardized Probabilistic Model for Allowable Fire Compartment Size Peter van de Leur , DGMR, K Jan de Boer, C Cieraad, Antea Group / Consulting Group Save, The Netherlands
11.50	Modeling of Large-Scale Fires in Cartonized Plastic Commodity Rack-Storage Ankur Gupta , G Agarwal, K Meredith, S Thumuluru, Y Xin, M Chaos, Y Wang, FM Global, USA	11.50	Full-Scale Fire Test of CLT Structure Used for Student Housing Kristian Hox , Greg Baker, SP Fire Technology Norway	11.50	Maximum Fire Compartment Sizes Jeremy Fraser-Mitchell , T Lennon, BRE Global, UK
12.10	Discussion	12.10	Discussion	12.10	Discussion
12.30	Lunch				

13.40	POSTER SESSION B				
A	Model Validation Chair: Tuula Hakkarainen, VTT, Finland	B	Façades I Chair:Anja Hofmann, BAM, Germany	C	Fire Safety Engineering I Chair: Daniel Joyeux, EFECTIS France
14.40	Novel Full-Scale Atrium Fire Experiments and Numerical Validation Under Steady and Transient Venting Conditions Alexis Cantizano, P Ayala, Universidad Pontificia Comillas, Spain, G Rein, Imperial College London, UK, G Vigne, C Gutierrez-Montes, Universidad de Jaen, Spain	14.40	Fire Safety of Façades Anja Hofmann, BAM, Germany	14.40	Uncertainties in Relationships Used in Smoke Management Engineering El Mehdi Koutaiba, E Blanchard, P Fromy, CSTB, O Vauquelin, Université d'Aix-Marseille, France
15.00	Comparison of Partially Lined Timber Room Experiments With The Modified B-Risk Flame Spread Capability Harriet Peel, Olsson Fire & Risk, M Spearpoint, Univ of Canterbury, C Wade, BRANZ, New Zealand	15.00	Development of the Advanced Technical Method and the Test Standard for The Purpose of The Fire Safety of Facade Materials In Buildings Kye-Won Park, Fire Insurers Labs of Korea, M Smolka, Rockwool Int, Denmark, L Boström, SP Tech Research Inst, Sweden, Y Yoo, KICT, Korea, H Yoshioka, Nat Inst for Land and Infrastructure Management, Japan	15.00	Make-Up Air Effects on the Smoke Interface Height in Atrium Fires Amir Rafinazari, George Hadjisophocleous, Carleton Univ, Canada
15.20	Temperature Measurements and Modelling of Flashed Over Compartment Fires Ulf Wickström, A Byström, Luleå Univ of Tech, J Sjöström, SP Tech Research Inst, Sweden	15.20	Modeling of Fire Exposure in Façade Fire Testing Johan Anderson, L Boström, R Jansson, SP Technical Research Inst, Sweden, B Milovanović, Univ of Zagreb, Croatia	15.20	Comparison Between Experimental Tests and Computer Models of a Smoke-Proof Enclosure Safety Vestibule Fabio Alaimo Ponziani, P Cancelliere, M Mazzaro, M Caciolai, D De Bartolomeo, A Tinaburri, Ministry of Interior, Italian National Fire Services, G Gai, E Cartapati, Sapienza University of Rome, Italy
15.40	Discussion	15.40	Discussion	15.40	Discussion
15.55	Break	15.55	Break	15.55	Break
A	Fire Testing Chair: Brian Lattimer, Jensen Hughes, USA	B	Façades II Chair: Patrick van Hees, Lund Univ, Sweden	C	Fire Safety Engineering II Chair: George Hadjisophocleous, Carlton Univ, Canada
16.25	A Buoyancy Driven Fire Calorimeter James Quintiere, Univ of Maryland, R Lyon, S Crowley, FAA, USA	16.25	A Full-Scale Fire Test to Investigate the Fire Behaviour of the "Ventilated Façade" System Dionysios Kolaitis, E Asimakopoulou, M Founti, National Technical Univ of Athens, Greece	16.25	Development and Validation of a Method to Validate Extensions of Performance of Fire Resisting Cable Wraps Subjected to Non-Standard Fire Conditions Daniel Joyeux, A Blanguemont, Efectis France, B Gautier, EDF, B Marquez, T Cerosky, NUVIA Protections, France
16.45	Electronic Gas Sensors in Fire Testing Matt DiDomizio, E Weckman, Univ of Waterloo, Canada, N Ryder, Fire & Risk Alliance, USA	16.45	Determination of Fire Performance of Ventilated Façade Systems On Combustible Insulation Using LEPIR2. Extended Applications Approach Based on Multiscale Tests Roy Weghorst, Kingspan Insulation Ltd, B Heuze, LNE, E Guillaume, France	16.45	Fire Spread and Tenability in Single Family Dwellings: Combining Live Fire Experiments and FSE-modeling Lieuwe De Witte, H Hazebroek, R Weewer, Fire Service Academy, The Netherlands
17.05	Combustion Products of Polymers at Constant Fuel/Oxygen Ratios Richard Walters, L Speitel, R Lyon FAA, USA	17.05	Fire Safety of Façades with Polystyrene Foam Insulation Anja Hofmann, S Kaudelka, BAM, Germany	17.05	What We Recently Learned About Performance Based Design Bill Koffel, Koffel Associates, USA
17.25	Development of a Dynamic Shrinkage/Collapse Measurement Method for Cellular Polymer Foams Karlis Livkiss, DBI, Denmark, P van Hees, Lund Univ, Sweden	17.25	Protection Against External Fire Spread – Horizontal Projections or Spandrels? Markus Nilsson, A Mossberg, Brandskyddslaget., B Husted, Lund Univ, J Anderson, SP Technical Research Inst of Sweden, Sweden	17.25	The Role of Quantitative Risk Analysis Models in Performance-Based Fire Safety Engineering Greg Baker, SP Fire Research, Norway, M Spearpoint, C Fleischmann, Univ of Canterbury, C Wade, BRANZ, New Zealand
17.45	Discussion	17.45	Discussion	17.45	Discussion
19.00	Coaches depart for Conference Dinner				

WEDNESDAY

A	Ignition & Extinction <i>Chair: Eric Guillaume, Efectis, France</i>	B	Composites <i>Chair: Bernhard Schartel, BAM, Germany</i>	C	Human Behaviour I <i>Chair: Karen Boyce, Univ of Ulster, UK</i>
8.40	Emerging Risks in Smoldering Fires: Initial Results from the EMRIS Project Dan Madsen , B Husted, Lund Univ, Sweden, C Wanke, U Krause, Otto-von-Guericke-Uni, Germany, I Haraldseid, E Villacorta, G Kleppe, B Hagen, V Frette, R Mikalsen, Stord/Haugesund College, Norway	8.40	Composites In Fire: Intermediate-Scale Testing of Sandwich Panels and Shells Bernhard Schartel , S Timme, A Hörold, V Trappe, M Korzen, BAM, Germany	8.40	An Experiment on Ascending Evacuation on a Long, Stationary Escalator Silvia Arias , E Ronchi, K Kuklane, A Halder, Lund Univ, J Noren, Briab Brand & Riskingenjorena AB, M Delin, DeBrand Sverige AB, K Fridolf, WSP Sverige AB, Sweden
9.00	Modelling of Self-Heating Behaviour During Storage of Torrefied Biomass Fuel Tengku Noor Tg Azhar , Y Wu, Univ of Sheffield, UK	9.00	Analysis of Delamination Onset and Growth Induced By Laser Decomposition Within Carbon/Epoxy Composite Laminates Gillian Leplat , C Huchette, A Mavel, P Nunez, ONERA, France	9.00	Individual and Group Response Behaviours during Evacuation of a Public House Nigel McConnell , K Boyce, Ulster Univ, UK
9.20	Experimental Assessment of Bench-Scale Ignitability Parameters Frida Vermina Lundstrom , P van Hees, Lund Univ, Sweden	9.20	Modeling Anisotropic Effects of Carbon Fiber Reinforced Epoxy Composites In Fire Environments Adrian Kopacz , R Bozinoski, J Hewson, A Dodd, A Brown, Sandia National labs, USA	9.20	An Analysis of Human Flow Composition in Various Types of Buildings Dmitry Samoshin , Academy of State Fire Service, Russia

9.40	Auto-Extinction of Engineered Timber: The Application of Firepoint Theory Alastair Bartlett , R Hadden, L Bisby, The Univ of Edinburgh, B Lane, ARUP, UK	9.40	Virtual Fire Resistance Furnace: Heat Transfer Predictions of A Composite Panel Gilda Auguin , V Drean, Efectis, France	9.40	Relationship between Specific Flow and Opening Width Considering Pedestrian Shoulder Twist Mineko Imanishi , T Sano, Waseda Univ, Y Omiya, Tokyo Univ of Science, Japan
10.00	Discussion	10.00	Discussion	10.00	Discussion
10.20	Break	10.20	Break	10.20	Break
A	Fire Dynamics I Chair: Björn Sundström, SP, Sweden	B	Thermal Insulation & Fibres Chair: Christine Lukas, Dow Chemicals, Europe	C	Human Behaviour II Chair: Steve Gwynne, NRCC, Canada
10.50	Modeling of Flame to Surface Heat Feedback from Laminar Wall Fires Isaac Leventon , S Stoliarov Univ of Maryland, USA	10.50	Fire Safe Use of Polyurethane Insulation in Hall Buildings Tuula Hakkarainen , M Nissilä, T Ojanen, VTT, Finland	10.50	Modification of Interaction Force between Smoke and Evacuee Sungryong Bae , H S Ryou, Chung-Ang Univ, J-H Choi, Pukyong National Univ, South Korea
11.10	Radiative Characteristics of Fires with Different Sooting Propensities Dong Zeng , M Chaos, Y Wang, FM Global, USA	11.10	Fire Performance of Plasterboard-Insulation Assemblies Consisting of Closed-Cell Charring Insulation Materials Juan Hidalgo , S Welch, Univ of Edinburgh, José L. Torero, Univ of Queensland, Australia	11.10	Variation of walking speed and decision-making time at various junctions Young-Hoon Bae , W-H Hong, Kyungpook National Univ, S-H Lee, National Fire Service Academy, R-S Oh, S-N Baek, J-H Choi, Pukyong National Univ, South Korea
11.30	Numerical Prediction of Liquid Pool Fires Burning Rate with A CFD Approach Siaka Dembele , M Alam, Kingston Uni, V Madhav Rao, J Wen, University of Warwick, UK	11.30	On The Contribution of Foam Plastic Insulation to Life Safety in Residential Building Fires Marc Janssens , A Joyce, SwRI, USA	11.30	Development of Flow Model in Staircase by Considering Mechanism of Flow Stop by Congestion with People Masayuki Mizuno , H Sendo, N Tanaka, A Sekizawa, Tokyo Univ of Science, H Kadokura, Tokyo Research Inst Inc., K Fujii, National Research Inst of Fire and Disaster, T Sano, Waseda Univ, Japan
11.50	An Experimental Study of Water Transport on Vertical Paper Surfaces for Sprinkler Protection Xiangyang Zhou , FM Global, USA	11.50	Natural Plant Fiber Flammability: A Microcombustion Calorimetry Survey Alex Morgan , Univ of Dayton Research Inst, USA, R Horrocks, Univ of Bolton, UK	11.50	Urban Scale Evacuation Simulation Using buildingEXODUS Nitish Chooramun , Univ of Mauritius, P Lawrence, P.J. E Galea, Univ of Greenwich, UK
12.10	Discussion	12.10	Discussion	12.10	Discussion
12.30	Lunch				
13.40	POSTER SESSION C				
A	Fire Dynamics II Chair: Charles Fleischmann, Univ of Canterbury, New Zealand	B	Electrical Fires Chair: Vytenis Babrauskas, FSTI, USA	C	Human Behaviour III Chair: Edwin Galea, Univ of Greenwich, UK
14.40	Intermediate-Scale Controlled-Atmosphere Calorimeter CADUCEE Mickaël Coutin , IRSN, D Alibert, B Porterie, AMU, France	14.40	Energetics of Lithium Ion Battery Failure Richard Lyon , R Walters, FAA, J Quintiere, Univ of Maryland, USA	14.40	Pros and Cons of Egress Drills Steve Gwynne , NRCC, Canada, K Boyce, Univ of Ulster, UK, E Kuligowski, NIST, USA, D Nilsson, Lund Univ, Sweden, A Robbins, Jensen Hughes, Canada, R.Lovreglio, Politecnio di Bari, Italy
15.00	The Effect of Reduced Oxygen Concentration Environments on Material Fire Performance for Hypoxic Air Venting Systems John Barton , P van Hees, Lund Univ, Sweden	15.00	Thermally-Induced Failure of Lithium Ion Batteries: Experimental Investigation and Modeling Stanislav Stoliarov , X Liu, Univ of Maryland, USA	15.00	Representing Egress Data for Engineers Karen Boyce , Univ of Ulster, UK, S Gwynne, NRCC, Canada
15.20	The Flammability of Smoke in Under-Ventilated Compartment Fires Sahand Rasoulipour , C Fleischmann, M Spearpoint, Univ of Canterbury, New Zealand	15.20	Fire Spreading From a Real Open-Doors Electrical Cabinet to Overhead Multiple Cable Trays into a Confined and Mechanically-Ventilated Facility Pascal Zavaleta , L Audouin, IRSN, France	15.20	A Proposed Framework for Managing Evacuation Model Uncertainty Considering Verification & Validation Tim Roberts , N Swailes, M Kinsey, G Walker, Arup, UK
15.40	Discussion	15.40	Discussion	15.40	Discussion
15.55	Final Wrap-Up				
16.10	Conference Close and Refreshments				

INTERFLAM POSTERS

POSTER SESSION A – MONDAY

Transportation

Fire Spread over the Sedan Type Passenger Cars with the Emphasis on the Origin and Cause of the Fire
Lucie Hasalova, O Šafránek, V Vystrčil, Technical Institute of Fire Protection in Prague, M Jahoda, University of Chemistry and Technology Prague, Czech Republic

B-Layers: The Role of Each Layer in Systemic Fire Protection of Buses
Virginia Alonso-Gutierrez, G Rein, Imperial College London, UK

Heat Release and Lethal Combustion Product Evaluation of Rail Coach Materials
B Nageshwar Rao, R Arunjothi, Central Power Research Institute, India

Heat Flux Measurements & Calculations

An Assessment of the Weighted-Sum-Of-Grey-Gases Approach in Fire Simulations
Ivan Sikic, J Wen, University of Warwick, S Dembele, Kingston University London, UK

Spatial Distribution of Thermal Radiation – Verification of the finite volume method

Piotr Tofilo, R Porowski, The Main School of Fire Service, W Wegrzynski, Building Research Inst, Poland

Comparison of Experiments and Numerical Simulations of a High Pressure Water Mist Curtain as a Radiation Shield

Bjarne Husted, Lund University, Sweden, J Ho, ARUP, UK, D Martin, Jensen Hughes, USA

Mapping of Incident Radiation with Plate Thermometers from a Propane Flame - Free and Adjacent to Walls

Ulf Wickstrom, O Lind, P Troedson, Lulea University of Tech, Sweden

'Heat Flux' is an Ill-suited Boundary Condition in Fire Safety Engineering. Adiabatic Surface Temperature is Better
Ulf Wickstrom, Lulea University of Tech, Sweden

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Pyrolysis

An Experimental Study for the Radiant Heat Reduction Effect About the Low-E Coating Glass in Fire

Kazuyuki Suzuki, T Hisada, Nippon Sheet Glass Co Ltd, Y Ohmiya, Tokyo Univ of Science, Japan

A Contribution to Pyrolysis Modeling

Corinna Trettin, F-W Wittbecker, R Goertz, University of Wuppertal, L Arnold, Research Centre Julich GmbH, Germany

Mathematical Modeling of Highly-Filled Halogen-Free Cable Compound Burning in Cone Calorimeter

Mikhail Shuvalov, M Kamenskiy, A Kryuchkov, T Stepanova, A Frik, D Savin, VNIIPK, Russia

Compartment Fire Testing & Modeling

Application of Monte-Carlo Propagation Methods for Uncertainty Assessment of Large Scale Fire Tests Outputs

Hugues Pretrel, P Querre, IRSN, France

Assessment of the Thermal Properties of Insulation Materials

Nicole Nagy, M DiDomizio, E Weckman, University of Waterloo, Canada

Burning Rate and Time to Flashover in Wooden 1/4 Scale Compartments as a Function of Fuel Moisture Content

Arjen Kraaijeveld, A Gunnarshaug, B Schei, T Log, Stord/Haugesund University College, Norway

Study on Mechanism of Fire Spread Between Rooms -Simple Temperature Prediction Model for Two Rooms

Yi-Chul Shin, Y-H Yoo, Korea Institute of Civil Engineering and Building Technology, K-W Park, Fire Insurers Laboratories, Korea, Y Ohmiya, Tokyo University of Science, K Tashima, Tokyo Fire Department, K Himoto, Building Research Inst, Japan

Fire Service

Incidents and Accidents at Interior Firefighting in Sweden 2002-2014

Stefan Sardqvist, A Jonsson, Swedish Civil Contingencies Agency, J Nordstrom, Rescue Service of Ostra Gotaland, Sweden

Water-Based Fire Suppression

Delay of Wood Ignition Owing to Attenuation of Radiation by Water

Masaki Noaki, A Saito, T Sato, S Hayashi, T Akieda, Y Ohmiya, Tokyo Univ of Science, M Delichatsios, Ulster University, UK

Simulation of Water Based Suppression of Pre-Mixed Methane-Air Fire and Explosion in Long Straight Duct

Benjamin Pitkin, M Shirzaei, J Zanganeh, B Moghtaderi University of Newcastle, Australia

Visibility Through Smoke

Effect of Acute Yaw Angles With Sight Line on Visibility of Emergency Sign through Fire Smoke

Kosuke Fujii, National Research Institute of Fire and Disaster, T Sano, Waseda Univ, Y Ohmiya, Tokyo Univ of Science, Japan

Visibility of Emergency Signs Derived from Numerical Smoke Spread Simulation

Volker Schneider, R Konnecke IST GmbH, Germany

POSTER SESSION B – TUESDAY

Model Validation

BRE Global Office Fire 2014: A Comparison of Experimental and CFD Modelling Data From a Fire in a Full Scale Section of an Open Plan Office

C McIntosh, N Cole, BRE, UK

A Tridimensional Numerical Study of the Flumilog Warehouse Fire Experiment

Shihab Rahman, B Truchot, INERIS, France

Testing

Influence of Different Igniters Used in Single Smoke Chamber on Smoke and Gas Measurements

Koichi Yoshida, Yokohama National Univ, K Araya; JECTEC, H Yoshioka; NILIM, T Hayakawa; TSV, T Fukaya; JECTEC, Japan

Use of LED for Measuring Smoke Density in Fire Tests as Potential Alternative to Halogen Lamp

Hideki Yoshioka, NILIM, T Hayakawa, Tokyo System Vac, K Yoshida, Yokohama National Univ, T Noguchi, Univ of Tokyo, Y Hase, Mitsubishi Plastics, Japan

Study on Gas Sampling Probe in Cone Calorimeter

Jungmin Choi, FILK, Fire Insurers Labs, Korea, E Guillaume, Efectis Group, France

Fire Resistance & Façades

Behaviour of Cavity Barriers in Modular Houses – A Revised Test Methodology

Daniel Brandon, Alar Just, R Jansson McNamee, SP Technical Research Inst, Sweden

Does UK Guidance on Small Service Penetrations Prejudice the Performance of Fire Rated Floor Constructions?

Bill Hay, I Sanderson, Glasgow Caledonian University, UK

Design Goals - Fire Resistance Demands for Tall Residential Buildings

Danny Hopkin, A Ballantyne, E O'Loughlin, B McColl, Trenton Fire Ltd, UK

Qualitative Assessment of the Fire Hazards Beneath Bridges

Panagiotis Kotsovinos, G Flint, G Walker, B Lane, Ove Arup & Partners, UK

Resistance to Jet Fires of Passive Protection Materials: Numerical Evaluation of Thermal Loads

Virginie Drean, R Chiva, H Leborgne, G Auguin, Efectis France

Experimental Assessment of Repeatability in Façade Fire Testing

Johan Anderson, L Boström, R Jansson, SP Technical Research Inst of Sweden, B Milovanović, Univ of Zagreb, Croatia

Principles of Testing and Regulating Fire Safety of Facades

Miroslav Smolka, B Messerschmidt, Rockwool International, Denmark, L Boström, SP, Sweden, T Crimi, A C Consulting Solutions Inc, V Dowling, Fire Science and Tech Australia, K-W Park, Insurers Fire Labs of Korea, H Yoshioka, NILIM, Japan

Fire Risk

Fire Risk Assessment with a Stochastic Approach – Model Development and Application to an Auditorium

Elizabeth Blanchard, S Haouari Harrak, P Fromy, CSTB, P Boulet, R Mehaddi, LEMTA, France

Development of a Fire Risk Index to Evaluate Fire Safety in Taiwanese Small Scale Hospitals

Chia Lung Wu, Univ of Edinburgh, UK, W W Tseng, Central Police Univ, Taiwan

A Probabilistic and Time Dependant Approach to External Fire Spread and Building Separation Distances

Sung-Han Koo, BRE Global, UK

Quantitative Risk Assessments for Existing Rail Tunnels – Explicitly Calculating the Consequences for Every Occupant in Every Scenario

Andrew Addinsell, F Gamon, Arup, Australia

Fire Safety Engineering

Fire Engineering Platform - A New Concept of Calculation Tool Package Designed for Fire Science Education and Engineering

Piotr Tofilo, The Main School of Fire Service, Poland

How Successfully Ventilate The Underground Garages Dedicated for Cars Powered by LPG - Evaluation on Real Scale Tests and Computer Modelling

Dorota Brzezinska, Lodz University of Technology, Poland

Smoke and Heat Extraction in Underground Stations

B Shroeder, Lukas Arnold, A Meunders, S Schmidt, Jülich Supercomputing Centre, Germany

Study on Smoke Behavior in the Station Underpass

S Mafune, O Suzuki, East Japan Railway Company, Daiuki Sato, Y Ohmiya, Tokyo Univ of Science, Japan

POSTER SESSION C

Fire Dynamics

Experimental and Numerical Investigation of Downward Smoldering Combustion in Paper Stacks

Alberto Tinaburri, *F Ponziani, V Ricci, Ministry of the Interior, Italy, M Angelino, Univ of Loughborough, UK*

Influence of Duct Geometry on Flame Propagation for Flammable Gas-Air Mixtures

Mohammadreza Shirzaei, *B Pitkin, S Kundu, J Zanganeh, B Moghtaderi, Univ Of Newcastle, Australia*

Influence of Initial Ignition Source on Flame Front Velocity of a Methane/Coal Dust Explosion in a Smooth Detonation Tube

Mohammed Ajrash, *J Zanganeh, B Moghtaderi, University Of Newcastle, Australia*

Prediction of Flammability Limit of a Thin Solid Material in Microgravity Environments

Shuhei Takahashi, *K Tsuboi, K Maruta, Gifu University, Japan*

Temperature Attenuation Above A Fire Source With A Simple Harmonic Oscillation In Horizontal Direction

Yasushi Oka, *M Iizuka, Yokohama National University, H Oka, National Maritime Research Inst, Japan*

Study on Ignitability of Cellulose Based Materials

Jadwiga Fragrat, *Instytut Techniki Budowlanej, Poland*

Composites

Improving Fire Safety of Glass Fibre Reinforced Polymers for Bridge Infrastructures

John Gales, *C Gaudreault, Carleton University, N Nagy, E Weckman, Univ of Waterloo, Canada, H Smith, Univ of Edinburgh, UK*

Electrical Fires

Understanding the Limits of Thermal Runaway in Lithium-Ion Battery Systems

John Hewson, *Sandia National Labs, USA*

Fire Ignition and Spread Analysis on Photovoltaic Building Roofs

Vincenzo Puccia, *M Caciolai, P Cancelliere, Ministry of Interior, Italy*

Human Behaviour

Evacuation Dynamics under Consideration of Vulnerable Pedestrian Groups,

Paul Geoerg, *A Hofmann, BAM, A Pulm, Werkstatt Lebenshilfe I Berg land GmbH, Germany*

Design for Elderly Egress in Fire Situations

Lauren Folk, *J Gales, Carleton University, S Gwynne, NRCC, Canada, M Kinsey, Arup, China*

Affordance-Based Evaluation of Signage Design for Areas of Refuge

Elisabetta Carattin, *Arup Fire UK, R Lovreglio, Politecnico di Bari, Italy, E Ronchi, D Nilsson, Lund Univ, Sweden*

Evacuation Concept of a High Rise Ministry Building - Findings Four Years After Completion

Michael Haas, *DGMR, The Netherlands*

Characteristics of Evacuation Behavior Based on Observation of a Theater Evacuation Drill

Tomonori Sano, *Y Hatakeyama, M Imanishi, Waseda University, Japan*

Experimental Study of the Crowd Flow Affected by Straight Corridor and with a Bottleneck

Akihide Jo, *Takenaka Corporation, T Sano, Waseda Univ, Y Ohmiya, Tokyo Univ of Science, Japan*

Field Observations and Experiments on the Evacuation of Children with Disabilities in the Buildings with their Mass Stay

Sergey Slyusarev, *D Samoshin, State Fire Academy of EMERCOM, Russia and P Anh, The University of Fire Fighting & Prevention, Vietnam*

Validation of Pre-movement Time Distribution for Evacuation

Modelling Using Real Data from Evacuation Drill

Giordana Gai, *E Cartapati, Sapienza University of Rome, P Cancelliere, F Alaimo Ponziani, D De Bartolomeo, M Mazzaro, M Caciolai, Ministry of Interior, Italian National Fire Service, Italy*

Validation Study on the Use Of Evacuation Models for Simulation of Long Ascending Stair Evacuation

Johan Norén, *Caroline Eriksson Lantz, Briab Brand & Riskingenjörerna AB, Mattias Delin, DeBrand Sverige AB and Enrico Ronchi, Lund University, Sweden*

Evacuation Modelling in the Fire Safety Industry: Quo Vadimus?

Rodrigo Machado Tavares, *EXOVA Warrington Fire*

An Emergency Egress Model Based on a Macroscopic Continuous Approach

Thomas Gasparotto, *A Collin, P Boulet, LEMTA, G Planet, A Muller, CNPP, France*

The programme is correct at time of print but the organisers reserve the right to make amendments if and when necessary