AUBE '24

18th International
Conference on Automatic Fire Detection
&
Suppression, Detection and Signaling
Research and Applications Conference

SUPDET 2024

Preliminary Program

September 24-26, 2024
Duisburg
Germany

Ver. 3, 26.7.2024

First Day - 24.9.2024 - Room MD 162

08:30 Registration
10:30 Opening

Session 1: Performance of Fire Detection Systems I

10:50 **Smoke Detector Spacing in High Ceiling Spaces**
Larry Rietz, Donald Hopkins, Mishuk Datta
11:10 **Analyzing the Effect of Increasing Signal Correlation on Multi-Criteria Fire Alarm Performance**
Miaomiao Yu, Hongyong Yuan
11:30 **Performance of New Smoke Alarms to a Range of Nuisance Cooking Sources in a Mock Kitchen**
Amy Mensch, Thomas Cleary, Emma Veley
11:50 **Lunch**

Session 2: Performance of Fire Detection Systems II

13:20 **Enhancing the Motivation for Use of Voluntary Fire Alarming Systems by Integrating Smart Home Concepts**
Jörg Kelleter
13:40 **Fire Protection Requirements for IT Rooms and Data Centers**
Torsten Pfeiffer, Heike Siefkes, Bettina Bormann
14:00 **Investigation of Smoke Stratification and In-rack Detection**
Peter Massingberd-Mundy, Yun Jiang
14:20 **Integration of Operational Data and Suppression Methods to Advance Risk Quantification for Air Aspirated Very Early Warning Fire Detection Systems**
Ashley Lindeman, Gabriel Taylor
14:40 **Break**

Session 3: Batteries and Fire Detection

15:00 **An Experimental Study on Thermal Runaway Fire Detection and False Alarm Scenarios of Li-ion Battery Energy Storage Systems**
Ying Gao, Ying Cui, Hong-Sheng Yang, Feng Liu, Lei Xu, Ao Gao, Amaya Balaguer-Telleria, Hector Ortiz
15:20 **BLEVE, or no BLEVE, That is the Question – On the Superheat Limits of Solvents Commonly used in Li-ion**
Jiann C. Yang
15:40 **On the Development of Test Methods for Evaluation of Detection and Mitigation for Lithium Battery Failure**
Josh Dinaburg
16:00 **End of the First Day**
19:00 **Snack and Tour at Landschaftspark Nord (Steel Production Industrial Heritage)**

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SUPDET 2024

AUBE '24

Second Day - 25.9.2024 - Room MD 162
Session 4: Smoke Detection and Characterization I

Second Day - 25.9.2024 - Room MC 122
Session 5: Suppression I

09:10 **Two Scenario-Tailored Smoke Detector Approaches**

Thorsten Schultze

09:30 **Fire Detection Method Based on the Dual-Wavelength Light Scattering and Extinction**
Xiang Zhang, Yuxin Kang, Gang Liu, Yang Chen, Hongyong Yuan, Tao Chen, Lida Huang

09:50 **Smoke-Methane Composite Detector with Simultaneous Detection of Scattering and Extinction Signals**

Yang Chen, Hongyong Yuan, Songfeng Yin, Kedi Wang, Kaiyuan Li

10:10 **Break**

Session 6: Smoke Detection and Characterization II

10:30 **The Effect of Concentration and Particle Size Distribution from Cooking Nuisance Source on Smoke Alarms**
Emma Veley, Thomas Cleary, Amy Mensch

10:50 **The Impact of Soot Aging on Smoke Detector Response**

Thomas Cleary

11:10 **A Framework to Model Light and Smoke Interaction from Fire Simulation Data Using the Ray Tracing Methodology**
Kristian Börger, David Eduardo Teran Parrales, Alexander Belt, Lukas Arnold

11:30 **A Smoke Detection Method Based on Scattering Spectrum**

Xiang Zheng, Tian Deng, Shu Wang, WenBo Xu, Wei Liu

11:50 **Lunch**

Session 8: Fire Characterization

13:20 **Particle Property Parameters' Influence on Light Scattering: A DDSCAT Simulation Study**

Lu Yang, Jun Fang, Zhenhai Qin

13:40 **Research on Multi-Detector Device for Reconstructing Flammable Gas Concentration Distribution**

Gang Liu, Hongyong Yuan, Kaiyuan Li, Lida Huang, Yang Chen

14:00 **Prospects and Challenges of Radar-Enabled Fire Sensing**
Francesca Schenkel, Thorsten Schultze, Christoph Baer, Ilona Rolfes, Jan C. Balzer, Christian Schulz

14:20 **Prepriming of Fluorine-Free Foam Systems**

Jeremy Souza

14:40 **Break**

Session 10: Fire Detection in Special Applications

15:00 **Fire Detection and Fire Fighting Testing on Railway Vehicles – New Developments**

Peter Stahl

15:20 **Comparative Study of Smoke Generators for Aircraft Application**

André Freiling, Thorsten Schultze

15:40 **Novel Approach to Enhance Fire Protection in Aircraft Cargo Compartments using UHF-RFID Temperature Sensing Tags and Advanced Algorithmic Analysis**
Matthew Karp

16:00 **End of the Second Day**

19:00 **Boat Tour on the River Rhine and Conference Dinner**

09:10 **Detecting Firefighter's Tenability Utilizing Machine Learning**

Qi Tong, Hongqiang Fang, Eugene Yujun Fu, Wai Cheong Tam, Thomas Gernay

09:30 **Remote Monitoring and Testing of Fire Pump Systems – Practical Applications and Recent Changes to Codes & Standards**

Travis Montembeault

09:50 **Evaluation of the Impact of Foam Packaging Materials on Water-based Fire Suppression**

Dong Han, Gang Xiong

10:10 **Break**

Session 7: Suppression II

10:30 **A Comparative Case Study of Sprinkler Performance from Fire Tests of 18650 Lithium-ion Cells in Plastic Trays within Rack Storage Test Configurations**
Phil Friday, Ben Gaudet

10:50 **A Reduced-Scale Inert Gas Extinguishing Test**

Jon Zimak, Raphael Ogabi, Milosh Puchovsky, Albert Simeoni

11:10 **Detached Houses, For residents with Substance Abuse and Mental Disorders, with Installed 'State of the Art' IG-541 (Inergen®) Extinguishing System**
Gambhir Paudel, Arjen Kraaijeveld

11:30 **Evaluation of R-Bulbs for SMART Sprinkler Applications**

Yogish Gopala, Lorenz Boeck, Yibing Xin, Sergey Dorofeev, Juergen Teschner, Bodo Mueller

11:50 **Lunch**

Session 9: Suppression III & Fire Spread I

13:20 **Study on Fire Hazard and Smoke Flow of Rigid Polyurethane Foam in Construction Sites**

Hiromchi Ebata, Katsuya Okayasu, Shinji Nagasawa

13:40 **Reformulation of the Combustion Efficiency Measurement using a Phi Meter**

Ryan Falkenstein-Smith, Thomas Cleary

14:00 **Smoke Spread and Detector Layout under Different Ambient Pressures and Temperatures based on Numerical Simulation**

H.Y. Wang, Z.H. Sun, R. Pan, Y.H. Yuan, M.Y. Huang, S.F. Yin, X. Chen

14:20 **Modeling Sprinklers and Fire Control & Suppression in FDS**

Jennifer Wiley, Noah Ryder

14:40 **Break**

Session 11: Fire Spread II and Wildfires

15:00 **Effects of Heat Radiation and Fuel Surface Temperature on Mass**

Fengyuan Tian, Jun Fang, Lulu Fang, Hassan Raza Shah, Xuqing Lang, Zhijian Tian, Fei Tang

15:20 **Different Classification Solutions for Feature-based Algorithms for Early Wildfire Detection**

Julia Kunz, Kurt Winter

15:40 **SmokeFormer: Decision Ensemble Transformer for Early Wildfire Smoke Detection in Videos**
Chen Xu, Chong Wang, Qixing Zhang

16:00 **End of the Second Day**

19:00 **Boat Tour on the River Rhine and Conference Dinner**

Third Day - 26.9.2024 - Room MD 162
Session 12: Smoke Detector Replacement I

09:10 **Aging Impact on the Behaviour of Fire Detectors in an Office Environment – Test Results and Experiences**
Thorsten Schultze

09:30 **Enhancing Safety: Strategic Fire Detector Replacement for Risk Reduction**
Sebastian Festag

09:50 **Exchange of Smoke Detectors in Switzerland**
Kurt Girschweiler

10:10 **Break**

Session 13: Smoke Detector Replacement II

10:30 **Determining the Optimum Replacement Period of Optical Smoke Detectors and Alarms**
Gemma Sambells, Raman Chagger

10:50 **Aging Study on Smoke Alarms**
Karoliina Meurman

11:10 **Panel Discussion**

11:50 **Lunch**

Session 14: Fire Detection

13:20 **Early Detection of Electrical Failures due to Loose Connections in Small Enclosures**
Stanislav Kostka, Yibing Xin

13:40 **Fire Incident Type Detection Using a Simple Optical Cell**
Osman Özyurt

14:00 **Using Optical Probe for Composite Smoke and Gas in Situ Early Fire Detection**
Kaiyuan Li, Hongyong Yuan, Tao Chen, Lida Huang

14:20 **Early Fire Detection in Evolving Multivariate Time Series Data Using Anomaly Detection Techniques**
Pascal Vorwerk, Jörg Kelleter, Ulrich Krause

14:40 **Break**

Session 15: Algorithms and Maintenance

15:00 **Data-Driven Parameter Optimization for Fire Detection Algorithms**
Steffen Limmer, Martin Zimmermann, Aleksandar Duric

15:20 **DA-GRU: A Domain Adaptation and Gate Recurrent Unit based Multi-Parameter Fire Detection Method using Simulated and Combustion Experimental Dataset**
Xiaoyan Liu, Jiping Zhu, Yongming Zhang, Qixing Zhang

15:40 **Lead (Pb) Material Footprint in Europe due to the Maintenance of Fire Alarm System Battery Packs: Analysis of Causes and Order of Magnitude Estimation**
Amaya Balaguer-Telleria, Hector Ortiz, Ying Gao, Ying Cui, Hong-Sheng Yang, Feng Liu, Lei Xu, Ao Gao

16:00 **Conclusion and Closing of the Conference**

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Venue: The conference will take place in the M-Building of the Duisburg Campus of the University of Duisburg-Essen. The building can be reached via the address: Lotharstrasse 1, in 47057 Duisburg.

Hotel recommendation: There is no designated conference hotel. However, there are various hotels of different price categories in the vicinity of the university. Please inform yourself e.g. via the usual platforms such as HRS, Booking.com, Hotels.com, Hotel.de, airbnb, FeWo-direkt, etc.