

Exponent®
Engineering & Scientific Consulting

Jon Zimak, Ph.D., CFEI

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Professional Profile

Jon Zimak is an Associate in Exponent's Thermal Science Practice specializing in Fire Protection with multidisciplinary expertise in fire protection, mechanical, and chemical engineering. Dr. Zimak has conducted extensive research work with large- and medium-scale experimentation, fire suppression systems, clean agent systems, and standardized fire testing. Dr. Zimak investigates and analyzes residential, commercial, and industrial fires and explosions and has experience evaluating the compliance of a myriad of products, materials, processes and systems according to national and international codes and standards including NFPA, ICC, EN, ISO, ANSI, OSHA, FM, and UL.

During his industry sponsored Ph.D. work in the Department of Fire Protection Engineering at Worcester Polytechnic institute, Dr. Zimak developed standardized testing to certify inert gas discharge systems and their components though over 200 large-scale experiments. He focused on how standardized testing translates to real world system performance. Through this work, Dr. Zimak analyzed, scaled, and developed multiple representative- and real-world- fire threats for suppression testing. His work led to developments in the fields of fire suppression, fire scaling, material burning rates, and reignition.

In addition to his inert gas research, Dr. Zimak has experience in leading multinational field-scale experimental campaigns, fire testing of intact battery electric vehicles, and wildfire litigation. He is also an actively serving engineering officer in the Massachusetts Army National Guard.

Academic Credentials & Professional Honors

Ph.D., Fire Protection Engineering, Worcester Polytechnic Institute, 2025

M.S., Fire Protection Engineering, Worcester Polytechnic Institute, 2022

B.S., Chemical Engineering, Worcester Polytechnic Institute, 2020

Best Thesis Award, International Association for Fire Safety Science (2026)

Best Student Presentation, International Seminar on Fire and Explosive Safety (2025)

WPI-NFPA Graduate Fellowship (2025)

Best Paper, NFPA Suppression and Detection Conference (2024)

Crimson and Grey Award (for Outstanding Leadership), Worcester Polytechnic Institute (2023)

Best Student Presentation, International Seminar on Fire and Explosive Safety (2022)

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Licenses and Certifications

40-Hour Hazardous Waste Operation and Emergency Response Certification (HAZWOPER)

DoD Fire and Emergency Services Hazardous Materials Awareness Certificate

DoD Fire and Emergency Services Hazardous Materials Operations Certificate

Certified Fire and Explosion Investigator (CFEI)

DoD Fire and Emergency Services HazMat Ops - Personal Protective Equipment Certificate

US&R Extractor (Level 1)

Professional Affiliations

Society of Fire Protection Engineers

Publications

Zimak, Jon, and Albert Simeoni. "Inert gas extinguishing systems: Standard and non-standard suppression testing." Fire Safety Journal (2026): 104835.

Zimak, Jon, et al. "Fire and Life Safety of Viking-Age Reconstructed Turf Houses." Fire Technology 62.3 (2026): 72.

Madrzykowski, D., Fleischmann, C., Gong, W., Valdivia, J., Zimak, J., & Neumann, D. (2026). "Battery Powered Electric Vehicle Fire Development and Extinguishment Pilot Experiment," (D. Madrzykowski & C. Fleischmann, Eds.). UL Research Institutes.

Zimak J, Simeoni A. Inert gas extinguishing systems: preventing reignition. Fire Safety Journal 2026; 104813.

Zimak J, Cuevas J, Simeoni A. The burning rate of wood cribs under forced flow and variable oxygen concentration: a B-number approach. The Proceedings of The Combustion Institute 2024; 40(1-4):105732.

Zimak J, Cuevas J, Senecal J, Pierce J, Penden F, Puchovsky M, Simeoni A. Inert gas discharge time effects on full and reduced scale wood crib extinguishing experiments. Fire Safety Journal 2023; 138: 103781

Presentation

Zimak J, Simeoni A. Inert Gas Extinguishing Systems: Emphasizing Extinguishment. 11th International Seminar on Fire and Explosion Hazards (ISFEH), Rome, Italy, 2025.

Zimak J, Simeoni A. A Revised Burning Rate for Wood Cribs Utilizing the B-Number, 14th United States National Combustion Meeting, Boston, USA, 2025.

Zimak J, Ogabi R, Puchovsky M, Simeoni A. A Reduced-Scale Inert Gas Extinguishing Test. Suppression, Detection and Signaling Research and Applications Conference (SUPDET), Duisburg, Germany, 2024.

Zimak J, Cuevas J, Simeoni A. The Burning Rate of Wood Cribs Under Forced Flow and Variable Oxygen Concentration: A B-number Approach. Poster Presentation, International Symposium on Combustion.

Milan, Italy, 2024.

Gong W, Valdivia J, Zimak J, Puchovsky M. Full-Scale Lithium-Ion Battery Electric Vehicle Fire Testing. National Fire Protection Association Conference and Expo, Orlando, USA, 2024.

Zimak J, Cuevas J, Puchovsky M, Simeoni A. How Inert Gas Extinguishing Test Systems are Tested: Full-Scale Results. Poster Presentation, National Fire Protection Association Conference and Expo. Orlando, USA, 2024.

Zimak J, Cuevas J, Puchovsky M, Simeoni A. Characterizing the Standard: How Inert Gas Discharge Systems are Tested. National Fire Protection Association Suppression and Detection (SUPDET), Northbrook, USA, 2023.

Setti G, Zimak J, Cuevas J, Simeoni A. Investigation of Firebrand Production from Douglas-fir. IX International Conference on Forest Fire Research, Coimbra, Portugal, 2022.

Zimak J, Cuevas J, Puchovsky M, Simeoni, A. Effect of Inert Gas Discharge Time on Wood Crib Fires Used in Extinguishing Approval Testing. Society of Fire Protection Engineers Annual Conference & Expo, Detroit, USA, 2022.

Zimak J, Cuevas J, Puchovsky M, Simeoni, A. Effect of Inert Gas Discharge Time on Wood Crib Fires used in Extinguishing Approval Testing. National Fire Protection Association Suppression and Detection (SUPDET), Atlanta, USA, 2022.

Zimak J, Cuevas J, Puchovsky M, Simeoni A. Effect of Inert Gas Discharge Time on Wood Crib Fires Used in Extinguishing Approval Testing. Poster Presentation, National Fire Protection Association Conference and Expo. Boston, USA, 2022.

Zimak J, Cuevas J, Senecal J, Pierce J, Penden F, Puchovsky M, Simeoni A. Effect of Inert Gas Discharge Time on Wood Crib Fires in Reduced-Scale and Full-Scale Experiments, 10th International Seminar on Fire and Explosion Hazards (ISFEH), Oslo, Norway, 2022.

Peer Reviews

Fire Technology