

Andrew D. Ellison, CFEI
Associate

Mr. Andrew Ellison is an Associate in Exponent's Thermal Sciences practice. Mr. Ellison specializes in applying fire protection engineering principles to the investigation and analysis of fires and explosions. He is a Certified Fire and Explosion Investigator and has investigated fires and explosions involving consumer products, residential and commercial buildings, and industrial facilities. Mr. Ellison has analyzed incidents in a variety of thermal-related fields, including allegations of boiler malfunctions, gas explosions, skin burn injuries, and thermal runaway reactions.

Additionally, Mr. Ellison has provided testimony in the areas of fire fighter injury causation and fire fighter tactics. As a firefighter since 2000, Mr. Ellison has unique skills that allow him to pair a technical understanding of fire dynamics hands-on fire suppression experience.

In the laboratory, Mr. Ellison conducts experimental testing and analysis related to heat transfer, fluid mechanics, and fire dynamics. Specifically, his testing experience includes fuel gas systems and their individual components, consumer products, home heating equipment, self-heating and spontaneous ignition. Additionally, he has experience in textile flammability testing, both on the bench-top and system level scales.

Mr. Ellison has particular interest in the thermal protective properties of clothing items and the causes of thermal burn injuries. He has supported the U.S. Armed Services in development and revisions of skin burn injury prediction models, as well as the implementation of such models in both bench-scale and large scale tests. Additionally, he has worked with the department of defense in developing large scale garment test methods for burn injury evaluation, and has provided testimony regarding the cause of skin burns. Mr. Ellison has also conducted extensive testing using Exponent's thermesthesiometer (ASTM C1057), a device for measuring the burn injury potential of heated surfaces.

Prior to joining Exponent, Mr. Ellison was an engineer with the U.S. Navy, where he conducted textile flammability and thermal performance evaluations at the U.S. Army Laboratories in Natick, MA. While at Worcester Polytechnic Institute, he conducted performance-based, system level fire evaluations on thermal protective garments for fire fighters.

Academic Credentials and Professional Honors

M.S., Fire Protection Engineering, Worcester Polytechnic Institute, 2008

B.S., Mechanical Engineering, Worcester Polytechnic Institute, 2006

Licenses and Certifications

- Fire Fighter I/II, Massachusetts Fire Training Council
- Emergency Medical Technician, Massachusetts Department of Public Health: Office of Emergency Medical Services
- 40-Hour OSHA Training in Hazardous Waste Operation and Emergency Response (HazWOpER) Certification, 29 CFR 1910.120
- Certified Fire and Explosion Investigator (CFEI) in accordance with the National Association of Fire Investigators (NAFI)
- Basic and Advanced Arson Investigation, Massachusetts Department of Fire Services

Publications

Davis S, Ibarreta A, Kessel A, Ellison A. Flammability of nylon used as insulation in electrical connectors. Proceedings, International Symposium on Fire Investigation Science and Technology, Cincinnati, OH, 2008.

Ibarreta A, Clevenger J, Ellison A. Changes in flammability of nylon used as insulation in electrical connectors. American Bar Association Tort Trial & Insurance Practice Journal, Summer 2009.

Invited Presentations

Ellison A, Somandepalli V. Fire service's effects on fire investigation. New England Chapter of the National Association of Subrogation Professionals (NASP). September 2010.

Ellison A, Ibarreta A. Investigation of explosions using engineering analysis. Worcester Polytechnic Institute (WPI), Department of Fire Protection Engineering, Worcester, MA, April, 2011.

Reports

Ellison AD, Culver W, Schott C, Ochs M. Exploring potential opportunities for the Fire Equipment Maintenance Program. Interactive Qualifying Project, Worcester Polytechnic Institute, 2005.

Ellison AD, Groch T, Higgins B, Verrochi M. Thermal manikin testing of fire fighter ensembles. Major Qualifying Project, Worcester Polytechnic Institute, 2006.

Prior Experience

Engineer, Navy Clothing and Textile Research Facility, 2006–2007
Firefighter, Hamilton Fire Department, 2000 to Present

Professional Affiliations

- American Society of Testing and Materials – ASTM (member)
 - D13 – Textiles – Technical Committee Member
 - F23 – Personal Protective Clothing and Equipment – Technical Committee Member
 - C16 – Thermal Insulation – Technical Committee Member
- National Fire Protection Association—NFPA (member)
 - Technical Committee on Flash Fire Protective Garments – Alternate Member
- National Association of Fire Investigators—NAFI (member)
- Society of Fire Protection Engineers—SFPE (affiliate member)
- International Association of Arson Investigators – IAAI (member)