



# Combustion

Science & Engineering, Inc.

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## **JAMIE FERRINO-MCALLISTER, P.E., C.F.I, Ph.D.**

### **EDUCATION:**

Ph.D., Toxicology, University of Maryland, Baltimore, MD, 2010.  
M.S., Fire Protection Engineering, University of Maryland, College Park, MD, 2002.  
B.S., Fire Protection Engineering, University of Maryland, College Park, MD, 2000.

### **MASTER THESIS:**

Ferrino, J. "An Investigation of Fire Phenomena in Residential Electrical Wiring and Connections", University of Maryland, College Park, December 2002.

### **DOCTORAL THESIS:**

Ferrino-McAllister, J. "Fire Victim Blood Cyanide Stability and the Development of a Cyanide Uptake Model", University of Maryland, Baltimore, May 2010.

### **PROFESSIONAL EXPERIENCE:**

#### **Principal Engineer, Combustion Science & Engineering, Inc., Columbia, MD, 2011 to present.**

Responsible for managing the fire investigations unit and acting as a lead scene investigator. Direct, manage, and conduct residential, commercial, and industrial fire, combustion, and toxicological incident investigations. Direct, manage, and conduct engineering fire hazard analysis and forensic failure investigations to prevent and/or explain fires, explosions, and toxicological incidents. Direct, manage, and conduct post-fire reconstruction analysis, victim toxicological analysis, computational fluid dynamics fire modeling, fire dynamics analysis, case related large and small-scale experimentation, and building/fire code review and analysis. Direct, manage, and conduct investigations of carbon monoxide poisoning incidents from combustion devices. Additional areas of focus: fire department operations as it related to fire spread, damage, and pattern development, and drug and alcohol effects as it related to victim impairment. Litigation experience spans a broad range of both criminal and civil cases involving residential, commercial, and industrial fires and toxicological incidents.

#### **Facilitator, Eastern Kentucky University, Richmond, KY, August 2010 to present.**

Online facilitator for Fire Protection Administration and Fire Protection and Safety Engineering Technology Programs. Responsibilities include educating undergraduate students on topics related to fire behavior and combustion sciences.

#### **Assistant Professor, University of Maryland, Adelphi, MD, April 2008 to present.**

Instructor for the Fire Science and Mathematics Departments. Responsibilities include educating undergraduate students on topics related to fire origin and cause investigation, fire behavior, fire ignition, fire growth and spread, and legal considerations in fire investigation, as well as, mathematics.

**Senior Engineer, Combustion Science & Engineering, Inc., Columbia, MD, 2006 to 2011.**

Conduct, direct, and manage residential, commercial, and industrial cause and origin fire and combustion investigations; Conduct, direct, and manage engineering fire hazard analysis and forensic failure investigations to prevent and/or explain fires and explosions. Conduct, direct, and manage post-fire reconstruction analysis, fire victim toxicological analysis, computational fluid dynamics fire modeling, fire dynamics analysis, case related large and small-scale experimentation, and building/fire code review and analysis. Conduct, direct, and manage investigations of carbon monoxide poisoning incidents from combustion devices. Expertise in fire department operations analysis as it related to fire spread, damage, and pattern development. Litigation experience spans a broad range of both criminal and civil cases involving residential, commercial, and industrial fires

**Project Engineer, Combustion Science & Engineering, Inc., Columbia, MD, 2003 to 2006.**

Perform residential, commercial, and industrial cause and origin fire investigations; Conduct engineering fire hazard analysis and forensic failure investigations to prevent and/or explain fires and explosions; Responsible for overseeing post-fire reconstruction and laboratory testing. Expertise in code review, fire modeling (CFAST and FDS), fire dynamics analysis, fire victim toxicological analysis, and small and full-scale fire testing. Additional expertise combustion device carbon monoxide poisoning incidents and fire department operations analysis. Litigation experience spans a broad range of both criminal and civil cases involving residential, commercial, and industrial fires.

**Staff Engineer, Combustion Science & Engineering, Inc., Columbia, MD, 2000 to 2003.**

Assist in the investigation of residential, commercial, and industrial fires; Conduct engineering fire hazard analysis and forensic failure investigations to prevent and/or explain fires and explosions; Responsible for designing and conducting post-fire reconstruction analysis, code review, fire modeling (CFAST and FDS), fire dynamics analysis, and small and full-scale fire testing for litigation support.

**Engineering Technician, Combustion Science & Engineering, Inc., Columbia, MD, 2000.**

Assist in the investigation of residential, commercial, and industrial fires; Conduct laboratory experiments for the purposes of post-fire reconstruction analysis and product failure analysis in conjunction with fire litigation; Conduct laboratory experiments for the purposes of fire modeling validation; Conduct laboratory experiments for government or corporate funded research and development; Responsible for designing data acquisition programs, constructing small and large-scale test compartment, and instrumenting compartments with thermocouples, heat flux gauges, and gas probes.

**Engineering Technician, Stanton Engineering, Laurel, MD, 1999 to 2000.**

Used National Fire Codes, specifically NFPA 13, 72, and 101. Performed life safety analysis, fire alarm and sprinkler system design, fire modeling, and fire risk assessment. Notable projects: The Pentagon, United States Naval Academy, The Smithsonian Institute. Used *Microstation*

**Fire Laboratory Technician, University of Maryland, College Park, MD, 1999 to 2000.**

Used the cone calorimeter, performed flammability characteristics calculations. Conducted research project in conjunction with the National Institute of Standards and Technology studying burning characteristics of gypsum wallboard with varying layers of paint (over 150 tests). Research was published in "Flammability of Oil-Based Painted Gypsum Wallboard Subjected to Fire Heat Fluxes" by Dr. Mowrer and presented at the 2001 NFPA World Fire Safety Congress and Exposition.

**Sprinkler System Designer, Tilley Fire Equipment Company, Doylestown, PA, 1999.**

Used National Fire Codes, specifically NFPA 13, 13D, and 13R. Designed retrofit, tenant finish, and new sprinkler systems. Performed field checks, surveyed installation and fabrication. Assessed blueprints, cut sheets, fabrication reports, and hydraulic calculations. Used *Autocad 14 w/ SprinkCad*

## **RELATED EXPERIENCE:**

Volunteer Firefighter, Colmar Volunteer Fire Company (July '95- December '00)  
Volunteer Firefighter/EMT, Station 41, Prince George's County Fire Department (Oct '98-Jan '03)  
Volunteer Firefighter/EMT, Station 48, Prince George's County Fire Department (Jan '03-June '03)  
Volunteer Firefighter/EMT, Driver, Station 27, Prince George's County Fire Department (June '03-Present);  
Highest Rank Held: Lieutenant  
Related Training: Firefighter Level I & II, Emergency Medical Technician, Hazardous Materials Technician, Rescue Technician (Vehicle, Trench, Structural Collapse), Emergency Vehicle Operator, Pump Operator, Fire Service Instructor I & II

Reviewer, Fire Technology  
Reviewer, International Association of Fire Safety Science  
Reviewer, Brady Publishing

## **PRESENTATIONS/LECTURERS:**

"Electrical Fire Research" presented at NFPA 921 Committee Meeting, Tucson, AZ, February 2002.

"Comparison of Gasoline Weathering on Carpet Samples Exposed to Various Thermal Environments", presented at International Symposium on Fire Investigation Science and Technology, Cincinnati, OH, June 2006.

"The Extent of Evaporation of Ignitable Liquids Under Exposure to Compartment Fires, Non-Fire Thermal and Non-Thermal Environments" presented at Fire and Materials, San Francisco, CA, January 2007.

"Smoke Detection Systems, Fire Modeling, and Fire Toxicology: Useful Tools in Fire Investigation and Reconstruction," presented at Cozen O'Connor Continuing Legal Education seminar, Philadelphia, PA, April 2007.

"Application of Fundamental Principles", presented at International Association of Arson Investigators Conference, Denver, CO, April 2008.

"Applications of Forensic Toxicology in Fire Origin and Cause Determination", presented at the Society of Fire Protection Engineers Professional Development Conference, Charlotte, NC, October 2008.

"The Use of Forensic Toxicology in Fire Origin and Cause Determination", presented to the Advanced Fire Investigation Class, Montgomery College, Rockville, MD, February 2009.

NFPA 921: Guide to Fire and Explosion Investigation; Session 1: Electricity and Fire, Session 2: Fire and Explosion Deaths and Injuries, presented to the Office of the Maryland State Fire Marshal, February 17, 2010 and March 3, 2010.

"Forensic Toxicology in Fire Investigation: The Kristine Bunch Case Study", presented to the Society of Fire Protection Engineers, Beltsville, MD February 8, 2011.

"The Scientific Method and a Case of Arson-for-Hire", presented at the Circumstantial Arson Case: Investigative Techniques and Strategies Seminar, King of Prussia, PA, February 9, 2011.

"Fire Related Deaths and Injuries: The Use of Toxicological Data in Fire Origin and Cause Determination", presented at the National Fire Academy, Emmitsburg, MD, March 19, 2011, April 19, 2011, June 28, 2011.

## **PROFESSIONAL CERTIFICATIONS:**

Registered Professional Engineer (Fire Protection), State of Delaware, License # 13162 (awarded 2004)

Registered Professional Engineer (Fire Protection), State of Maryland, License #39570 (awarded 2010)  
Certified Fire and Explosion Investigator, National Association of Fire Investigators, Registration # 10121-4644 (awarded 2004)  
Certified Fire Investigator, International Association of Arson Investigators, Certification #53-120705 (awarded 2009)

## PROFESSIONAL AFFILIATIONS:

Alumni Member, Salamander Honorary Fire Protection Engineering Society, Beta Chapter  
Friend, NFPA 921, Guide for Fire and Explosion Investigations  
Member, International Association of Arson Investigators (IAAI)  
Member, International Association for Fire Safety Science (IAFSS)  
Member, International Code Council (ICC)  
Member, International Organization for Standardization (ISO), TC92 Committee on Fire Safety  
Member, National Association of Fire Investigators (NAFI)  
Member, National Fire Protection Association (NFPA)  
Member, Society of Forensic Toxicology (SOFT)  
Member, Society of Toxicology (SOT)  
Member, Society of Fire Protection Engineers (SFPE)  
Member, Technical Working Group for Fire and Explosives (TWGFEX)

## PUBLICATIONS:

- Ferrino-McAllister, J., Roby, R.J., Milke, J., □ Heating of Electrical Contacts □ Characterizing the Effects of Torque, Contact Area, and Movement on the Temperature of Residential Receptacles □, Fire Technology, Volume 42, No.1, January 2006, pp. 49-74.
- Ferrino-McAllister, J.L., Roby, R.J., Klassen, M.S., Milke, J., □ Heating of Electrical Conductors □ Characterizing the Deformation of Cable Exposed to External Radiant Heating and Internal Overload □, Fire and Arson Investigator, Volume 56, Number 2, October 2005.
- Ferrino-McAllister, J.L., Carpenter, D., Roby, Richard, □ Comparison of Gasoline Weathering on Carpet Samples Exposed to Various Thermal Environments □, Proceedings from the 2<sup>nd</sup> International Symposium on Fire Investigation Science and Technology, Cincinnati, OH, 2006.
- Ferrino-McAllister, J.L., Carpenter, D., Roby, R., Torero, J., □ The Extent of Evaporation of Ignitable Liquids Under Exposure to Compartment Fires, Non-Fire Thermal and Non-Thermal Environments □, Proceedings from the 10<sup>th</sup> International Conference, Fire and Materials, San Francisco, CA, 2007.
- McAllister, J.L., Roby, R., Levine, B., Purser, D., □ Stability of Cyanide in Cadavers and in Postmortem Stored Tissue Specimens, a Review □, Journal of Analytical Toxicology, Volume 32, Number 8, pp. 61-620, October 2008.
- Goodman, A., Schooler, C., McAllister, J.L., □ Physical Characteristics of Non-Energized and Energized Cables in Scaled Compartment Fires □ Proceedings from the International Symposium on Fire Investigation Science and Technology, College Park, MD, 2010.
- McAllister, J.L., Roby, R., Levine, B., Purser, D., □ The Effect of Sodium Fluoride on the Stability of Cyanide in Postmortem Blood Samples from Fire Victims □, Forensic Science International, Volume 209, pp. 29-33, May 2011.
- McAllister, J.L., Roby, R., Carpenter, D., Purser, D., □ The Importance of Fire Victim Toxicology in the Investigation of Fires □, Fire Technology (under peer review), submitted May 2011.