

**Todd M. Hetrick**  
**Associate**

**Professional Profile**

Mr. Todd M. Hetrick is an Associate in Exponent's Thermal Sciences practice. Mr. Hetrick applies his knowledge of fire protection engineering principles and fire science to the study and investigation of fires and explosions. He has extensive experience in clean extinguishing agent technologies and the validation of theoretical fire and fluid flow models. He has experience designing and conducting small- and medium-scale fire tests and is skilled in the fabrication and installation of common fire test instrumentation.

Mr. Hetrick has extensive experience in total flooding clean extinguishing agent technologies and applications. Prior to joining Exponent, Mr. Hetrick supported the National Fire Protection Association and the International Standards Organization in an effort to characterize the transient behavior of clean extinguishing agents in total flooding applications. He has worked with the U.S. Federal Aviation Administration and the U.S. Air Force Research Lab in efforts to evaluate the effectiveness of candidate halon-replacement agents for passenger and cargo aircraft with an emphasis on suppression of engine nacelle fires. Additional research in this area includes the study of clean agent material compatibility, ambient pressures developed during agent discharge/flooding, agent retention times or hold times, effectiveness of clean agents to suppress smoldering, deep-seated fires, and products of thermal and environmental degradation.

While a student at the Worcester Polytechnic Institute, he served as a teaching assistant and specialized in measurement methods with the cone calorimeter, fire propagation apparatus, and large-scale combustion products collector. Mr. Hetrick has experience with prevalent fire modeling software including Fire Dynamics Simulator and CFAST.

**Academic Credentials and Professional Honors**

M.S., Fire Protection Engineering, Worcester Polytechnic Institute, 2009  
B.S., Mechanical Engineering, Worcester Polytechnic Institute, 2005

Percy Bugbee Scholarship, 2007; William M. Carey Award, 2007; Maatman Fellowship, 2005

**Licenses and Certifications**

Engineer-in-Training, State of Minnesota, #132522  
Certified Fire and Explosion Investigator (CFEI), #14595-7479  
Hazardous Waste Operations and Emergency Response (HAZWOPER) training in accordance with OSHA 29 CFR 1910.120  
Hazardous Material Regulations (HMR) training in accordance with 49 CFR Subchapter C

## **Publications and Presentations**

Morrison DR, Dillon SE, Hetrick TH. A review of the hypotheses of low-temperature self-ignition of wood. Conference Proceedings, 2011 Fire and Materials Conference, San Francisco, CA, Interscience Communications Limited, London, January 2011.

Hetrick TM, Rangwala AS. A modified hold time model for total flooding fire suppression. Fire Saf Journal 2010 Jan; 45(1):12–20.

Gollner MJ, Hetrick TM, Rangwala AS, Perricone J, Williams FA. Controlling parameters involved in the burning of standard storage commodities: A Fundamental Approach towards Fire Hazard Classification. Conference Proceedings, 6th U.S. National Combustion Meeting, Ann Arbor, MI, May 17–20, 2009.

Hetrick TM, Rangwala AS, Rivers PE. Development and validation of a modified hold time model for total flooding fire suppression. Conference Proceedings, Suppression and Detection Research and Applications – A Technical Working Conference (SUPDET 2009), Orlando, FL, February 24–27, 2009.

Hetrick TM. Development and validation of a modified clean agent draining model for total flooding fire suppression systems. Master's Thesis, Worcester Polytechnic Institute, Department of Fire Protection Engineering, 2009.

Hetrick TM, Rangwala AS. Validation study on hold time models for total flooding clean extinguishing agents. Poster presentation, 32<sup>nd</sup> International Symposium on Combustion, Montreal, Canada, August 3–8, 2008.

Hetrick TM. Analysis of hold time models for total flooding clean extinguishing agents. Fire Technol 2008; 44(3):239–261, September.

Hetrick TM, Rangwala AS. Validation study on clean extinguishing agent hold time calculation methodologies. Proceedings, 2008 Spring Technical Meeting of the Central States Section of the Combustion Institute, Tuscaloosa, AL, April 20–22, 2008.

Hetrick TM, Rangwala AS. Analysis of hold time models for total flooding clean extinguishing agents. Conference Proceedings, Suppression and Detection Research and Applications – A Technical Working Conference (SUPDET 2008), Orlando, FL, March 11–13, 2008.

Hetrick T, Rivers PE. Investigation of hold time calculation methodologies for total flooding clean extinguishing agents. Conference Proceedings, Suppression and Detection Research and Applications – A Technical Working Conference (SUPDET 2007), Orlando, FL, March 5–8, 2007.

## **Professional Affiliations**

International Association of Fire Investigators—IAAI

International Association of Fire Investigators, Illinois Chapter

National Association of Fire Investigators—NAFI

National Fire Protection Association—NFPA

– Technical Committee on Transportation of Flammable Liquids

Society of Fire Protection Engineers—SFPE