

**Joel E. Sipe, Ph.D., CFEI**  
**Associate**

**Professional Profile**

Dr. Joel Sipe is an Associate in Exponent's Thermal Sciences practice. Dr. Sipe applies thermal science and fire protection engineering principles to the investigation of fires, explosions, and other thermal events, as well as to product liability issues. He has experience investigating chemical plant explosions, warehouse storage fires, and large commercial occupancy fires, and has performed dust explosion hazard calculations.

Dr. Sipe has experience solving complex fire-related problems by developing computer modeling solutions and customized experimental test procedures. He also has experience using computational fluid dynamics (CFD) software, such as Fire Dynamics Simulator (FDS) and Fluent, and computer zone models, such as the Consolidated Model of Fire and Smoke Transport (CFAST). He has experience instructing graduate students on the proper use of the computer fire models FDS and CFAST, and teaching the development and implementation of customized computer fire models.

Prior to joining Exponent, Dr. Sipe was a research and teaching assistant at Worcester Polytechnic Institute (WPI). At WPI, he conducted research to investigate the effects of fire sprinkler wetting by means of a numerical model for heat and mass transfer in porous media, and experimental validation using the cone calorimeter. He also conducted research, sponsored by the U.S. Navy, to investigate the performance of firefighter's protective clothing through the design and fabrication of heat flux transducers and the development of skin burn prediction algorithms for an instrumented mannequin test.

**Academic Credentials and Professional Honors**

Ph.D., Fire Protection Engineering, Worcester Polytechnic Institute, 2010

M.S., Fire Protection Engineering, Worcester Polytechnic Institute, 2004

B.S., Mechanical Engineering, Worcester Polytechnic Institute, 2003

**Licenses and Certifications**

Certified Fire and Explosion Investigator (CFEI), National Association of Fire Investigators  
Engineer in Training, State of Massachusetts

## **Publications**

Chernovsky MK, Sipe JE, Ogle RA. Evaluation of health care operating rooms as wet/dry locations. Fire Protection Research Foundation Report, National Fire Protection Association, October 2010.

Sipe JE, Dembsey NA. A porous media model for sprinkler wetting. Fire and Materials Conference 2011, San Francisco CA, February 2011.

Wu NP, Utiskul Y, Sipe JE. Consideration on the use of heat release data from the cone calorimeter. Proceedings, 4<sup>th</sup> International Symposium on Fire Investigation Science and Technology, National Association of Fire Investigators, pp. 629–640, 2010.

Rangwala AS, Raghavan V, Sipe J, Okano T. A new property evaluation scheme for mass transfer analysis in fire. Fire Safety Journal 2010.

## **Presentations**

Sipe JE. Study regarding the electrical classification of hospital operating rooms. Presentation to NFPA 99 Technical Committee on Electrical Equipment, San Antonio TX, October 2010.

Sipe J, Dembsey NA. A porous media model for sprinkler wetting. Paper presented Interflam, Nottingham, England, July 2010.

Sipe J. Heat and mass transfer in porous media. Poster presented at Interflam, London, England, September 2007.

## **Prior Experience**

Graduate Research Assistant, Worcester Polytechnic Institute, 2004–2009

Teaching Assistant Worcester Polytechnic Institute, 2004–2008

Graduate Research Assistant WPI Fire Test Facility at Alden Research Labs, 2003–2004

## **Professional Affiliations**

Society of Fire Protection Engineers—SFPE

National Fire Protection Association—NFPA

- Committee on Aerosol Products – responsible for NFPA 30B: Code for the Manufacture and Storage of Aerosol Products
- Committee on Automotive and Marine Service Stations – responsible for NFPA 30a: Code for Motor Fuel Dispensing Facilities and Repair Garages

International Association of Arson Investigators—IAAI

National Association of Fire Investigators—NAFI