

**Daniel Lieberman, Ph.D., P.E.**  
**Managing Engineer**

**Professional Profile**

Dr. Daniel Lieberman is a Managing Engineer in Exponent's Thermal Sciences practice. Dr. Lieberman performs investigation and analysis related to fires, explosions, and equipment failures. His research focuses on combustion, as well as fundamental issues involving fluid and thermodynamic processes, with an emphasis on detonation and deflagration related phenomena. Dr. Lieberman has investigated damages caused by blast waves and other impulsive loading including water hammer and supersonic flight. Dr. Lieberman has carried out studies on synthetic gas production, gas explosion safety, and industrial furnace safety design, as well as fire cause and origin analyses in residential and industrial structures. He has investigated damages associated with wildfires including spontaneous combustion, and smoke damage to inhabited structures. Dr. Lieberman also has extensive experience with experimentation, flow visualization techniques, and pressure and temperature instrumentation.

Prior to joining Exponent, Dr. Lieberman worked as a research assistant at the California Institute of Technology. He has experience with mechanical design, strength of materials, and mechanical systems, as well as the design of air handling, refrigeration, and sprinkler systems. Dr. Lieberman was an adjunct professor at École des métiers de l'aérospatiale de Montréal – an aerospace trade school. He taught courses in mathematics and fundamental aviation principles.

**Academic Credentials and Professional Honors**

Ph.D., Aeronautics, California Institute of Technology, 2005

M.S., Aeronautics, California Institute of Technology, 2001

B.Eng., Mechanical Engineering, McGill University (*honors*), Montreal, Canada, 2000

The William F. Ballhaus Prize—Outstanding doctoral dissertation, Caltech, 2006; National Science and Engineering Research Council, NSERC (Canada) Postgraduate scholarship, 2000, 2001; Fonds de Recherche sur la Nature et les Technology (Canada) Postgraduate scholarship, 2000, 2001; Donald Wills Douglas Fellowship, 2000; NSERC undergraduate summer research scholarship, 1999; J.W. McConnell Award, 1998; Clifford Wong Scholarship, 1998; Dean's Honor List, McGill University, 1998, 1999; Golden Key National Honors Society member

**Languages**

French

## **Licenses and Certifications**

Registered Professional Mechanical Engineer, California, #M34477  
Hazardous Waste Operations and Emergency Response training (29 CFR 1910.120)  
PADI advanced open water scuba certified  
AIARE level I avalanche training

## **Publications**

Krauss D, Lieberman DH, Grossman H, Ray R, Scher I. An evaluation of perceptual experience of skiers using quantitative image processing. *Journal of ASTM International* 2008; 5(4).

Lieberman DH, Shepherd JE. Detonation interaction with a diffuse interface and subsequent chemical reaction. *Shock Waves* 2007; 16(6):421–429.

Lieberman DH, Shepherd JE. Detonation interaction with an interface. *Physics of Fluids* 2007; 19, 096101.

Lieberman DH. Detonation refraction at sharp and diffuse interfaces. Ph.D. thesis, California Institute of Technology, Pasadena, CA, November 2005.

## **Presentations and Published Abstracts**

Lieberman DH. Shock wave induced mixing and reaction. 20<sup>th</sup> International Colloquium on the Dynamics of Explosions and Reactive Systems, Montreal QC, August 2005.

Lieberman DH. Characterization of a corona discharge initiator using detonation tube impulse measurements. 43<sup>rd</sup> AIAA Aerospace Sciences Meeting, Reno, NV, January 2005.

Lieberman DH, Singh S, Shepherd JE. Combustion behind shock waves. Combustion Institute, Western States Section, Los Angeles, CA, October 2003.

Lieberman DH. Detonation initiation by hot turbulent jet for use in pulse detonation engines. 38<sup>th</sup> AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Indianapolis, IN, July 2002.

Lieberman DH. Photographic study of the transition between the quasi-detonation and choking regimes. 18<sup>th</sup> International Colloquium on the Dynamics of Explosions and Reactive Systems, Seattle WA, July 2001.

## **Invited Presentations**

Lieberman DH. Engineering consulting—For mechanical engineers. Presented at the University of Southern California Viterbi School of Engineering, Los Angeles, CA, November 28, 2007.

Lieberman DH. Explosion investigations and failure analysis. Presented at the University of Southern California Viterbi School of Engineering, Los Angeles, CA, November 3, 2008.

## **Peer Reviewer**

- *Shock Waves*
- *Combustion Science and Technology*
- *Fuel—The Science and Technology of Fuel and Energy*
- *SAE International*

## **Professional Affiliations**

- Member Technical Committee on Explosives, NFPA 495 *Explosive Materials Code*, National Fire Protection Association
- Canadian Aeronautics and Space Institute (junior member)
- American Institute of Aeronautics and Astronautics (junior member)
- National Fire Protection Association (member)