Daniel Lieberman PhD, PE

Sr. Consultant

Dr. Daniel Lieberman is a Sr. Consultant at ESi and specializes in combustion, fluid mechanics, thermodynamics, and heat transfer. He performs origin and cause investigations of fires and explosions, ranging from small residential fires to large-scale industrial incidents.

Dr. Lieberman has investigated numerous vehicle related fires, as well as fires in marine vessels. He also has investigated thermal related failures of a broad range of consumer appliances; commercial and residential cooking equipment; heating, ventilation, air-conditioning, and refrigeration (HVAC&R) systems; and photovoltaic systems. His experience also includes evaluation of failures in natural gas and propane equipment and systems, oxygen equipment, hot work activities, industrial ovens, furnaces and boilers, burn injuries, carbon monoxide (CO) exposure and damages caused by blast waves and other impulsive loading including water hammer and supersonic flight.

Prior to joining ESi Dr. Lieberman held several positions, including conducting forensic investigations at Colwell Consulting. Dr. Lieberman also has extensive experience in innovation and product development. He has over a decade of experience developing and scaling impactful products and services (novel supply chains, medical devices, and consumer products) for underserved markets in developing countries.

Dr. Lieberman has also held positions in the Explosion Dynamics Laboratory at the California Institute of Technology and as a part-time faculty member in the Aerospace and Mechanical Engineering department at the University of Southern California and at École des Métiers de l'Aérospatiale de Montréal – an aerospace trade school. Dr. Lieberman has testified as an expert witness.

Licenses & Certifications

- Registered Professional Mechanical Engineer, California, #M34477
- Hazardous Waste Operations and Emergency Response training (29 CFR 1910.120)
- Introduction to design control for medical devices. Medical Devices HQ

Patents

- Nucleic Acid Amplification Testing Devices And Methods. US Patent App No 2024/0399359 A1
- Management of a therapeutic oxygen delivery system. Issued Mar 3, 2020. Patent number US 10,576,235 B2
- Containers for liquid nitrogen storage of semen straws. Issued Dec 24, 2019. Patent number US 10,512,261 B2

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Education

Ph.D., Aeronautics, California Institute of Technology

M.S., Aeronautics, California Institute of Technology

B.Eng., Mechanical Engineering, McGill University (Honors), Montreal, Canada

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Publications

Retrofitting stoves with forced jets of primary air improves speed, emissions, and efficiency: Evidence from six types of biomass cookstoves
2022, Energy for Sustainable Development 71, 104-117

Development of wood-burning rocket cookstove with forced air-injection
2021, Energy for Sustainable Development

A feasibility study evaluating a reservoir storage system for continuous oxygen delivery for children with hypoxemia in Kenya
2021, BMC Pulmonary Medicine

Efficacy and safety of oxygen-sparing nasal reservoir cannula for treatment of pediatric hypoxemic pneumonia in Uganda: a pilot randomized clinical trial
2020, BMC pulmonary medicine

Oxygen insecurity and mortality in resource-constrained healthcare facilities in rural Kenya
2020, Pediatric Pulmonology

Using on-demand dry ice production as an alternative cryogenic cold chain for bovine artificial insemination outreach in low-resource settings
2020, Translational Animal Science

Veterinary Parasitology An alternative cold chain for storing and transporting East Coast fever vaccine
2020, Veterinary Parasitology

Assessment of a storage system to deliver uninterrupted therapeutic oxygen during power outages in resource-limited settings
2019, PLoS ONE

Maintaining semen quality by improving cold chain equipment used in cattle artificial insemination
2016, Nature Scientific Reports

An Evaluation of Perceptual Experience of Skiers Using Quantitative Image Processing
2008, J. ASTM International

Detonation Interaction with a Diffuse Interface and Subsequent Chemical Reaction
2007, Shock Waves

Detonation Interaction with an Interface
2007, Physics of Fluids

Detonation initiation and propagation, 2002, Proceedings of the 15th Office of Naval Research Propulsion Conference
Washington DC

Presentations

Analysis of a bowstring truss roof collapse by a sonic boom
Lieberman DH, Tang S. (2010), 4th International Conference on Engineering Failure Analysis, Cambridge, England, July 2010.

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

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

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

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

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

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

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