

PROFESSIONAL SUMMARY

Dr. Lieberman specializes in failure analysis, microstructural characterization, and processing of metals, polymeric materials, and composites. He has over 18 years of experience conducting investigations for clients in the aeronautical, automotive, construction, consumer products, electronics, energy, fire protection, green building, marine, medical device, oil and gas, and petrochemical industries. He has specific expertise with optical and scanning electron microscopy, metallography, conventional and powder metallurgy, composite materials, fractography, and corrosion.

EDUCATION

- 2007 **Ph.D., Materials Science and Engineering**
Georgia Institute of Technology, Atlanta, Georgia
- 2001 **M.Sc., Composite Materials**
Imperial College of Science, Technology & Medicine, London, England
- 2000 **B.S., Materials Science and Engineering**
Massachusetts Institute of Technology, Cambridge, Massachusetts

EXPERIENCE

- November 2024
to Present **Engineering Design & Testing Corp.**
Brooklyn, New York
Director of Metallurgical and Materials Engineering
Conducts on-site inspections and metallurgical analysis investigations that have included: corrosion degradation evaluations; steel, stainless steel, cast iron, copper alloy, aluminum, titanium, polymeric, masonry, and ceramic component failures; fire protection system issues; industrial and construction accidents; manufacturing equipment failures; and plumbing and HVAC component failures for industrial clients, utilities, government authorities, and insurance companies. Directs and assists on investigations of a wide variety of consumer products for projects involving production quality control, field return units, litigation, and product recalls.
- June 2024
to November 2024 **Brooklyn Engineering Consulting P.C.**
Brooklyn, New York
Founder and Principal Engineer
Performed failure investigations, corrosion assessment and material compatibility evaluations, materials testing, and weldability evaluations.
- January 2014
to June 2024 **SOCOTEC Engineering, Inc. (formerly LPI, Inc.)**
New York and Brooklyn, New York
Principal Engineer
Responsible for failure investigations, corrosion assessment and material compatibility evaluations, materials testing, and weldability evaluations. Managed the non-destructive evaluation (NDE) program that included visual, ultrasonic,

magnetic particle, dye penetrant, and radiographic inspection projects. Served as the Facility Representative and Quality Assurance Manager for SOCOTEC's services as an Accredited Test Facility for the American Welding Society (AWS). Served as the Primary Director for SOCOTEC's services as a Special Inspection Agency (SIA) for the New York City Department of Buildings.

April 2007
to December 2013

**Exponent Failure Analysis Associates
Menlo Park, California and New York, New York**

Senior Engineer

Managed a variety of medical device projects, including failure analysis, R&D support, and litigation; and conducted investigations on surgical tools, orthopedic implants, and stents, made from materials including nitinol, titanium, cobalt-chrome, and stainless steel. Performed R&D support research on a variety of solar panel products, including investigations of thermal fatigue of welds, durability of copper interconnects, and processing and quality control of polymeric materials. Developed a metallographic technique for nitinol that does not induce a martensitic transformation, allowing for the visualization of microstructural features including grain size, welds, and heat affected zones. Developed and implemented durability testing schemes for smartcards and information documents.

REGISTRATIONS AND CERTIFICATIONS

Registered Professional Engineer, New York, #092702

Registered Professional Engineer, New Jersey, #24GE06182200

Registered Professional Engineer, Connecticut, #PEN.0038670

Registered Professional Metallurgical Engineer, California, #MT1954

Registered Professional Engineer, Georgia, #PE053426

Registered Professional Engineer, Massachusetts, #60699

Registered Professional Engineer, Michigan, #6201060256

Registered Professional Engineer, Minnesota, #63806

Registered Professional Engineer, Pennsylvania, #PE097559

Registered Professional Engineer, Texas, #157129

Certified Welding Inspector, American Welding Society, #13073371

U.S. Green Building Council, Leadership in Energy and Environmental Design Accredited Professional,
LEED AP, 2009

National Council of Examiners for Engineers and Surveying Record, #25-193-62

PROFESSIONAL ORGANIZATIONS

ASM International (member)

American Welding Society (member)

PUBLICATIONS

"*Metallurgical Failure Analysis Targets Corrosion in Aging Infrastructure*", Civil Engineering Source,
American Society of Civil Engineers, February 19, 2025

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- “Failure Analysis of Secondary Water Piping Systems”*, Lieberman SI. ASCE Forensic Engineering 8th Conference, Austin, TX, December 2018, in press.
- “Wherefor Aluminium? Materiality of Curtain Wall Systems”*, Arbour P, Gode A, Reed A, Lieberman S. Façade Tectonics Institute 2016 World Conference, Los Angeles, CA, October 10-11, 2016, in press.
- “Residual stress distribution in MP35N due to plastic deformation and comparison to finite element analysis”*, Briant P, Lieberman S, James B. International Medical Device Conference and Expo, Chicago, IL, October 5–6, 2011, in press.
- “Analysis of a brake cylinder failure”*, James BA, Lieberman SI. Journal of Failure Analysis and Prevention 2011; 11:193–196.
- “Ultrasonic cleaning-induced failures in medical devices”*, James B, McVeigh C, Rosenbloom S, Guyer E, Lieberman S. Journal of Failure Analysis and Prevention 2010; 10(3):223–227.
- “Three-dimensional microstructural characterization of discontinuously reinforced Ti64–TiB composites produced via blended elemental powder metallurgy”*, Lieberman SI, Gokhale AM, Tamirisakandala S, Bhat RB. Materials Characterization 2009; 60:957–963.
- “Computer simulations of “realistic” partially anisotropic microstructures statistically similar to real microstructures”*, Singh H, Gokhale AM, Sreeranganathan A, Mao Y, Lieberman SI, Tamirisakandala S. Computational Materials Science 2009; 44:1050–1055.
- “Image based computations of lineal path probability distributions for microstructure representation”*, Singh H, Gokhale AM, Lieberman SI, Tamirisakandala S. Materials Science and Engineering A 2008; 474:104–111.
- “Reconstruction of three-dimensional microstructures of TiB whiskers in powder processed Ti-6Al-4V-1B Alloys”*, Lieberman SI, Gokhale AM, Tamirisakandala S. Materials Characterization 2007; 58:527–533.
- “Realistic micromechanical modeling and simulation of boron modified titanium alloys”*, Sreeranganathan A, Lieberman SI, Singh H, Gokhale AM, Tamirisakandala S. Proceedings, ABAQUS Users’ Conference, pp. 546–548, Paris, France, 2007.
- “Microstructural characterization, visualization, and simulation of Ti-B materials”*, Lieberman SI. Doctoral Dissertation, Georgia Institute of Technology, 2007.
- “Characterization and simulation of microstructures of titanium alloys modified with boron”*, Lieberman SI, Singh H, Mao Y, Sreeranganathan A, Gokhale AM, Tamirisakandala S, Miracle DB. JOM 2007; 59:59–63. Invited paper.
- “Reconstruction of three-dimensional microstructures of TiB phase in a powder metallurgy titanium alloy using montage serial sectioning”*, Lieberman SI, Gokhale AM, Tamirisakandala S. Scripta Materialia 2006; 55:63–68. Invited paper.
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“Simulations of microstructural geometry for materials design”, Gokhale AM, Singh H, Lieberman SI, Tamirisakandala S. Proceedings, 12th International Conference on Plasticity and its Current Applications, pp. 262–264, Baltimore, MD, 2006.

“Bivariate stereological unfolding procedure for randomly oriented chopped fibers or whiskers”, Mebane DS, Lieberman SI, Gokhale AM, Gerhardt RA. Acta Materialia 2005; 53:4943–4953.

PRESENTATIONS AND PUBLISHED ABSTRACTS

“Metallurgical Failure Analysis Evaluation of a Hydroelectric Turbine Generator”, Lieberman SI, Traubert TD. International Materials Applications & Technologies 2022, New Orleans, LA, September 2022.

“Building Water System Failures: Recent Experience with Failures of Copper-Based Components”, Lieberman SI, Grogan JH, Chang W, Nugent M. International Materials Applications & Technologies 2020, October 2020.

“Failure Analysis of Secondary Water Piping Systems”, Lieberman SI. ASCE Forensic Engineering 8th Conference, Austin, TX, December 2018.

“Analysis of Surgical Tool Failures: Causes and Prevention”, James BA, Guyer EP, Hudgins AW, Lieberman SI, Kane WM. Materials Science & Technology 2014, Pittsburgh, PA, October 2014.

“Metallurgical Analysis of a Hydrostatic Pressure Test Pipeline Rupture”, Lieberman SI, James BA, Zednik RJ. Materials Science & Technology 2013, Montreal, QC, Canada, October 2013.

“Metallographic Techniques and Analysis of Nitinol Alloys”, Lieberman SI, James BA. Microscopy & Microanalysis 2013, Indianapolis, IN, August 2013.

“Fractography of Ti-B materials”, Lieberman SI. PowderMet 2009, Las Vegas, NV, June 2009.

“Development of materials design methodologies for boron-modified Ti-6Al-4V alloys”, Lieberman SI. TMS Annual Meeting, Orlando, FL, February 2007.

“Visualization, characterization, and simulation of microstructures of extruded boron-modified Ti-6Al-4V alloys with TiB reinforcement”, Lieberman SI. Materials Science and Technology, Cincinnati, OH, October 2006.

“Visualization of 3D microstructures reconstructed from serial sections in modified Ti-6Al-4V alloys with TiB whiskers”, Lieberman SI. TMS Annual Meeting, San Antonio, TX, March 2006.

“Computer simulations of realistic microstructures of Ti-TiB materials”, Lieberman SI. MRS Fall Meeting, Boston, MA, November 2005.

“Visualization of 3D microstructures reconstructed from serial sections in pre-alloyed Ti-6Al-4V-TiB”, Lieberman SI. A Workshop on Titanium Alloys Modified with Boron, Dayton, OH, October 2005.

“Tensile fractography of Ti-6Al-4V-TiB composite”, Lieberman SI. Materials Science & Technology, Pittsburgh, PA, September 2005.

“Montage-based serial sectioning to determine the spatial distribution of TiB whiskers in Ti-6Al-4V-TiB composite”, Lieberman SI. Materials Science & Technology 2005, Pittsburgh, PA, September 2005.

“First application of a novel stereological length-radius unfolding procedure to determine the three-dimensional bivariate size and shape distribution of TiB whiskers in Ti-6Al-4V-2.9B”, Lieberman SI. TMS Annual Meeting, San Francisco, CA, February 2005.

“Identifying Marcelling parameters of thick linear tapered laminates in a closed-mold curing process”, Ng SJ, Claus SJ, Lieberman SI. 44th International SAMPE Symposium and Exhibition, pp. 167–173, Long Beach, CA, 1999.

ACADEMIC APPOINTMENTS

Adjunct Professor, Department of Mechanical Engineering, Santa Clara University

ACADEMIC HONORS

Georgia Tech President’s Fellowship

Atlanta Chapter of ASM International Graduate Student Award, 2005, 2006

MIT Ilona Karmel Writing Awards, First Prize, Writing & Humanistic Studies Prize for Engineering Writing, 1999

PEER REVIEWER

Materials Characterization

Metallography, Microstructure, and Analysis