



Exponent[®]
Engineering & Scientific Consulting

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Professional Profile

Dr. Lemberg is a licensed Metallurgical Engineer specializing in failure analysis, fracture mechanics, metallurgy, and materials science engineering with a particular emphasis on understanding the fracture behavior of materials. Dr. Lemberg has consulted on pipeline failures, storage tank failures, heavy equipment failures, brass systems for potable water, medical devices, corrosion issues in the transportation industry, as well as various other materials issues. Dr. Lemberg has experience diagnosing failures in both ferrous and non-ferrous metal systems, ceramics, glasses and polymeric materials. He has expertise in mechanical testing, especially in the area of crack-growth resistance testing, as well as optical and electron microscopy, metallography, and fractography.

Prior to joining Exponent, Dr. Lemberg was a graduate research assistant at the University of California, Berkeley, where he studied the fracture behavior of Mo-Si-B alloys at ambient and ultra-high (1300 °C) temperatures, the fracture behavior of carbon-nanotube-impregnated, Nb-toughened nanocrystalline alumina, and the fracture behavior of alumina/silicon nitride functionally-graded joints at elevated temperatures. Dr. Lemberg also has experience studying the fatigue properties of tree-resistant cross-linked polyethylene insulation of underground power distribution cables.

Academic Credentials & Professional Honors

Ph.D., Materials Science and Engineering, University of California, Berkeley, 2011

M.S., Materials Science and Engineering, University of California, Berkeley, 2009

B.S., Materials Science and Engineering, Cornell University, 2005

National Defense Science and Engineering Graduate Fellow, 2006-2009

Licenses and Certifications

Licensed Professional Engineer, Alabama, #34215-E

Licensed Professional Engineer, California, #MT1974

Licensed Professional Engineer, Georgia, #PE039760

Licensed Professional Engineer, New York, #098605

Licensed Professional Engineer, North Carolina, PE#041149

Licensed Professional Engineer, Texas, PE#122823

Professional Affiliations

ASM

Failure Analysis Society

Tau Beta Pi

Publications

Lemberg, J, Guyer, E, Seidel, S, Garry, M, Tsuji, J, Valenty, S. Utilizing a combination of TGA and GC-MS to estimate health-based risks from off-gassed volatile compounds. *Journal of Failure Analysis and Prevention* 2018; 18(2): 246-249.

Lemberg JA, Ellis BD, Guyer EP. Failure of a trunnion axle on a hard suspension multi-axle trailer. *Journal of Failure Analysis and Prevention* 2017; 17(2): 189-194.

Ames N, Lemberg J, Caligiuri R. Fatigue failure of a 2500-ton forge press. *Journal of Failure Analysis and Prevention* 2017; 17(1): 15-22.

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Lemberg JA, Ritchie RO. Mo-Si-B alloys for ultrahigh-temperature structural applications. *Advanced Materials* 2012; 24(26):3445-3480.

Wang Z, Marcolongo P, Lemberg JA, Panganiban B, Evans JW, Ritchie RO, Wright PK. Mechanical fatigue as a mechanism of water tree propagation in TR-XLPE. *IEEE Transactions on Dielectrics and Electrical Insulation* 2012; 19(1):321-330.

Lemberg JA, Middlemas MR, Weingärtner T, Gludovatz B, Cochran JK, Ritchie RO. On the fracture toughness of fine-grained Mo-3Si-1B (wt.%) alloys at ambient to elevated (1300 °C) temperatures. *Intermetallics* 2012; 20(1):141-154.

Lee CS, Lemberg JA, Cho DG, Roh JY, Ritchie, RO. Mechanical properties of Si₃N₄-Al₂O₃ FGM joints with 15 layers for high-temperature applications. *Journal of the European Ceramic Society* 2010; 30:1743-1749.

Thomson KE, Jiang D, Lemberg JA, Koester KJ, Ritchie, RO Mukherjee AK. In-situ bend testing of niobium-reinforced alumina nanocomposites with and without single-walled nanotubes. *Materials Science and Engineering A* 2008; 493:256-260.

Presentations

Lemberg, JA, Guyer, EP. Failure of a trunnion axle on a hard suspension multi-axle trailer. *MS&T 2016*. Salt Lake City, UT, 2016.

Lemberg JA, Ames N, Caligiuri R. Fatigue failure of a 2500-ton forge press. *MS&T 2015*, Columbus, OH, 2015.

Lemberg JA, Gibbs J, Birringer R, James B, Eiselstein L. Fire cracking of lead-free brasses for use in water, oil and gas applications. *MS&T 2014*, Pittsburgh, PA, 2014.

Lemberg JA, Guyer EP, Eiselstein LE. Possible microbiologically-induced corrosion (MIC) of stainless steel weld used in domestic water risers. MS&T 2014, Pittsburgh, PA, 2014.

Lemberg JA, Middlemas MR, Cochran JK, Ritchie RO. Fracture behavior of Mo-Si-B alloys at elevated temperatures in air and inert atmospheres. TMS 2011 140th Annual Meeting and Exposition, San Diego, CA, 2011.

Lemberg JA, Ritchie RO. Fracture toughness of Mo-Si-B alloys at ambient and elevated temperatures. 12th International Conference on Fracture, Ottawa, Canada, 2009.