

Curriculum Vitae

David V. Niebuhr, Ph.D.
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Academic Preparation

- Ph.D. Materials Science and Engineering, 1997
Oregon Graduate Institute of Science and Technology, Portland, Oregon
Concentrations: Tribology (Wear) and Materials Characterization
Dissertation: Self-Lubricating Composite Plasma Sprayed Coatings
- B.S. Materials Engineering, 1993
California Polytechnic State University, San Luis Obispo, California
Senior Project: Hydride Kinetics in Zirconium lined, Zircaloy (UO₂) Fuel Rods

Professional Experience

- President, Niebuhr Metallurgical Consulting, 2005 – Present
San Luis Obispo, California
- Industrial consultant for metallurgy, materials degradation and failure analysis
 - Projects range from simple mechanical property evaluation to complex multi-component failures
 - Expert Witness Testimony in both civil and criminal court
- Professor of Materials Engineering, 1999- 2006
Materials Engineering Department
California Polytechnic State University, San Luis Obispo, California
- Developed and taught >12 courses at undergraduate and graduate level, including numerous laboratories
 - Research focus in Tribology, Failure Analysis and Metallurgy
- Visiting Scholar, (ASEE Summer Faculty Fellowship Program), Summer 2003
Jet Propulsion Laboratory (California Institute of Technology), Pasadena, California
- Research project to characterize CdSe Quantum Dots (QD) utilizing Atomic Force Microscopy (AFM)
 - Analysis of shape and morphology as a function of QD synthesis parameters
 - Measurement of photoluminescence
 - Analysis and characterization of TiC coating with AFM

Visiting Scholar, (ASEE Summer Faculty Fellowship Program), Summer 2002
Jet Propulsion Laboratory (California Institute of Technology), Pasadena, California

- Research project to evaluate wear and friction in low pressure CO₂ environments
- Atomic Force Microscopy project investigating friction in several inert atmospheres as compared to ambient conditions.

Tribologist / Materials Engineer, HDB (fluid bearing) Team, 1997-1999
Quantum Corporation, Milpitas, CA,

- Materials / wear consultant responsible for testing, reporting, and recommending new materials for a wide variety of cross-departmental projects
- Wear consultant to vendors, managers, and drive engineers for new materials / coatings for disk drive hydrodynamic bearing (HDB) spindle motors on three drive programs
- Purchased \$100k materials analysis lab which streamlined HDB wear evaluation
- Assignment in Japan to solve critical solder failures which directly affected multi-million dollar mass production program

Ph.D. Candidate, 1993-1997

Oregon Graduate Institute of Science and Technology, Portland, Oregon,
Association of American Railroads (Sponsor), Portland, Oregon

Metallic Coating development for Rails

- Designed repeatability experiments to be performed by technicians
- Researched wear and tribological behavior of metal and polymer coatings
- Developed and tested self-lubricating surface coatings for extreme wear applications
- Implemented new coating analysis procedure using SEM, EDX, and optical image analysis

Undergraduate Research Student, Summer 1992

General Electric Nuclear Energy, Pleasanton, California

Project: The Effect of Zirconium Hydride on the Corrosion of Zircaloy™ Fuel Rods

- Performed corrosion experiment of Zircaloy™ fuel rods utilizing input from team
- Conceived and executed minor element diffusion experiment

Selected Consulting Projects

Litigation / Expert Witness

Adamski, Moroski, Madden & Green LLP, San Luis Obispo, CA

- Evaluation and determination of root cause failure for above ground storage tank (AST). Emphasis on corrosion, metal failure and fluid flow through concrete /soil. Analysis included metallography, corrosion kinetics and environmental evidence of gasoline, simulated testing was also done to repeat alleged failure conditions.
- Represented Defense. Ruling in favor of defense, case appealed by plaintiff

Martin Jacobson, Attorney at Law, Los Angeles, CA

- Determination of probable failure mode of small aircraft landing gear following crash during landing. Emphasis on heat treating/thermal history affect on mechanical properties
- Represented Plaintiff. Settled out of court

Robert Gundert, Attorney at Law, San Luis Obispo, CA

- Evaluation of corrosion of recreational vehicle (mechanical structure, drive train). Emphasis on corrosion rates and environment
- Represented Plaintiff. Settled out of court

Hogan, Holmes & Usoz, LLP, Attorneys at Law, San Jose, CA

- Evaluation of ATV handlebar corrosion failure resulting in injury. Emphasis on crevice corrosion, fracture mechanics and mechanical behavior
- Represented Plaintiff. Settled out of court

District Attorney, County of San Luis Obispo, CA

- Evaluation of hinge failure in horse trailer which resulted in 3 deaths (felony vehicular homicide). Emphasis on corrosion, fracture mechanics, vehicle dynamics and materials characterization (SEM / EDS)
- Represented District Attorney, Hung jury, 2nd trial avoided by plea agreement

Metallurgical Expert

Thermo-fusion, Hayward, CA

Failure Analysis of brazed copper and stainless steel cracking

Peter R. Thom and Associates Inc. Automotive Consulting and Engineering, Orinda, CA

Listed as expert no cases to date

Garing Taylor & Associates, Arroyo Grande, CA,

Failure analysis of a corroded stainless steel rod

Gaiser Tool, San Diego, CA

Mechanical testing and analysis of ceramic bearing materials

Performance Structures, Oakland, CA

Materials selection for artistic "Blob" by Amish Kapuur

Selected Technical Publications

Niebuhr, D. "Cavitation erosion behavior of ceramics in aqueous solutions," Submitted to the Journal *Wear*, 8/06

Niebuhr, D., "Friction and wear behavior of engineering alloys in a simulated martian (CO₂) environment, a preliminary study," Submitted to the Journal *Wear*, 8/06

Niebuhr, D. "Metallurgical Failure Analysis of a Horse Trailer: A Criminal Investigation," Journal of Failure Analysis and Prevention, Volume 6(4), August 2006. pp. 25-30.

Niebuhr, D. "Teaching Failure Analysis as an Independent Design Experience," Proceedings of the ASEE Annual Conference, Portland, OR, 2005.

Niebuhr, D. and M. Scholl, "Performance of Steel / Polymer Plasma Sprayed Coatings," Journal of Thermal Spray Technology, ASM International. Volume 14, No. 4, December, 2005, pp. 487-494.

Niebuhr, D., "Abrasive Wear as a Function of Microstructure in Metals," Proceedings of the 19th Annual National Educators Workshop, October 2004.

Niebuhr, D., "Cavitation / Erosion Wear as a Function of Microstructure in Metals," Proceedings of the 19th Annual National Educators Workshop, October 2004.

Niebuhr, D. and W.D. Forgeng, "Age Hardening of Aluminum Alloys," Proceedings of the 19th Annual National Educators Workshop, October 2004.

Niebuhr, D., Smith H., "Integrated Laboratories vs. Traditional Laboratories, Is there a difference?" Proceedings of the ASEE Annual Conference, Salt Lake City, CA, 2004.

Niebuhr, D. "Discovering the Source of Properties in Alloys: Metallographic Examination," 17th Annual National Educators Workshop. 2002.

L. Vanasupa, H. Smith, B. London, K. Chen, D. Niebuhr, L. Griffin, and J. Jones, "The Foundation Series on Corrosion: Integrating Science, Math, Engineering & Technology in a Lab Setting," ASEE Annual Conference Proceedings, 2001.

Li, M., Niebuhr, D., Atteridge, D., and Mekeesho, L. "A Computational Model for the Prediction of Steel Hardenability," Metallurgical and Materials Transactions, Vol. 29B. No. 3, June 1998.

Niebuhr, D., Scholl, M., and Clayton P. "Self-Lubricating Composite Plasma Sprayed Coatings," Proceedings from the 9th National Thermal Spray Conference, ASM International, 1996.

Li, M., Niebuhr, D, Atteridge, D., and Mekeesho, L. "Computing Jominy Hardness Curves of Steels," Proceedings of the International Symposium on Phase Transformations during the Thermal/Mechanical Processing of Steel, CIM, Montreal, 1995

Selected Grants

Research has been sponsored by both private and public entities including:

National Science Foundation

NASA / Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA

General Atomics, San Diego, CA

Valex, Inc.

Olympus Integrated Technologies, San Jose, CA

Professional Affiliations

American Society of Metals (ASM)
American Society of Engineering Education (ASEE)
National Association of Corrosion Engineers (NACE)

Professional Service

National Science Foundation Panel Reviewer
Metallurgical and Materials Transactions Reviewer
American Society of Engineering Education, Conference moderator

Honors and Awards

ASEE Summer Faculty Fellowship Program 2003
ASEE Summer Faculty Fellowship Program 2002
National Eagle Scout Association Life Member

References and additional information regarding professional activity available upon request