

Curriculum Vitae

James R. Dobbs, Ph.D., P.E.

(850) 558-3135 · jdobbs@becind.com

Dr. Dobbs has extensive experience in failure analysis, including corrosion, fracture, and fatigue of metals, plastic, glass, wood and other materials. He has conducted numerous of product failure evaluations, including automobile restraints, medical devices chairs, tree stands and man-lift devices. Dr. Dobbs is experienced in the areas of vehicular accident reconstruction, including automobile, trucks, trains and motorcycles as well as pedestrian accident reconstruction. Dr. Dobbs is a member of the ASTM F13 committee and has extensive experience with slip, trip and fall accidents. He has also conducted many industrial accident reconstructions, including forklift and crane accidents and machinery failures.

EDUCATION

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|-------------|---------------------------------------------------------------------------------------------------------|
| 1997 | Ph.D. in Materials Science and Engineering
University of Florida, Gainesville, FL |
| 1991 | M.S. in Materials Science and Engineering
University of Alabama at Birmingham, Birmingham, AL |
| 1985 | B.S. in Materials Engineering
University of Alabama at Birmingham, Birmingham, AL |

PROFESSIONAL EXPERIENCE

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|------------------------|--------------------------------------------------------------------------------------------------|
| 1997 to Present | BEC Consulting, LLC, Tallahassee, FL
Consulting Engineer |
| 1994 to 1997 | General Electric Corporate Research & Development Center, Schenectady, NY
Engineer |
| 1987 to 1994 | General Electric Aircraft Engines, Cincinnati, OH
Lead Engineer |
| 1991 to 1992 | University of Florida, Gainesville, FL
Graduate School Research Assistant |

LICENSES, REGISTRATIONS & CERTIFICATIONS

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| No. 53916 | State of Florida Professional Engineer
Certified Counter Balanced Forklift Operator
Private Pilot |
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PROFESSIONAL ASSOCIATIONS

- Aircraft Owners and Pilots Association (AOPA)
- American Society of Safety Engineers (ASSE)
- American Standards for Testing of Materials (ASTM)
 - A4 Committee on Medical and Surgical Materials and Devices
 - F30 Committee on Forensic Sciences
 - F13 Committee on Traction for Footwear
 - E17 Committee on Vehicle-Pavement Systems
 - E58 Committee on Forensic Engineering
- American Welding Society (AWS)
- Florida Engineering Society (FES)
- National Society for Professional Engineers (NSPE)
- The Minerals, Metal and Materials Society (TMS)
- Society of Automotive Engineers (SAE)

WORK EXPERIENCE/COURSEWORK

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|------|------------------------------------------------------------------------------------------------------------------|
| 2011 | “ARAS 360 3D Computer Diagramming for Crash Reconstruction”
ARAS 360 Technologies Inc., Tallahassee, FL |
| 2011 | “Safe Operation of Powered Industrial Truck”
BEC Consulting, Tallahassee, FL |
| 2004 | “Analysis of Collisions Involving Pedestrians or Bicyclists”
Collision Safety Institute, Inc. Tallahassee, FL |
| 2001 | “Biomedical Engineering & Physiology II”
University of Florida, Gainesville, FL |
| 2000 | “Commercial Vehicle Accident Reconstruction”
Texas A&M University, TX |
| 2000 | “Biomedical Engineering & Physiology I”
University of Florida, Gainesville, FL |
| 1999 | “Bone Mechanics”
University of Florida, Gainesville, FL |
| 1998 | “Traffic Accident Reconstruction”
Northwestern University, Evanston, IL |
| 1995 | “Diesel Engine Overhaul School:
General Electric Locomotives, Eric, OH |

- 1991 “Mechanical Metallurgy”
University of Florida, Gainesville, FL
- 1991 “Lock-out, Tag-out training”
General Electric, Schenectady, NY
- 1990 “HAZCOM Training”
General Electric, Cincinnati, OH
- 1990 “Welding Safety”
General Electric, Cincinnati, OH
- 1990 “Respirator Training”
General Electric, Cincinnati, OH
- 1984 “Failure Analysis”
University of Alabama, Birmingham, AL
- 1983 “Welding Metallurgy”
University of Alabama, Birmingham, AL
- 1983 “Welding Processes”
University of Alabama, Birmingham, AL

PUBLICATIONS

- Dobbs, J.R., “Effect of Coating and Exposure on the Oxidation and Mechanical Properties of Ti-22Al-26Nb.” PhD Dissertation, University of Florida, 1997.
- Dobbs, J.R., A.M. Ritter, P. L. Dupree, et al. “Processing of a Ti-22Al-23Nb Foil by Direct HIP Consolidation of Powder.” Proceedings, Tenth International Conference on Composite Materials II. Metal Matrix Composites, Whistler, B.C., August 14–18, 1995.
- Dobbs, J.R., J.A. Graves, and S. Meshkov. “Dispersion Strengthened Sheet Alloys for Exhaust Component Applications.” Proceedings, Eighth International Symposium on Superalloys, Champion, PA, September 26–30, 1993.
- Walston, W. S., R. D. Field, J. R. Dobbs, et al. “Microstructure and High Temperature Strength of NiAl Alloys.” Proceedings, International Symposium on Structural Intermetallics, Champion, PA, September 26-30, 1993.
- Darolia, R., D. F. Lahramn, R. D. Field, J. R. Dobbs, et al. “Overview of NiAl for High Temperature Structural Applications.” In *Ordered Intermetallics—Physical Metallurgy and Mechanical Behavior*, edited by C.T. Liu, et al, 679–698. Netherlands: Kluwer Academic Publishers, 1992.

Thompson, R. G., J.R. Dobbs, D.E. Mayo. "The Effects of Heat Treatment on Micro fissuring in Alloy 718." *Welding Journal Research Supplement* 65, no. 11 (1986).

Thompson, R. G., J. J. Cassimus, D.E. Mayo, and J.R. Dobbs. "The Relationship Between Grain Size Micro fissuring in Alloy 718." *Welding Research Supplement* 64 (1985).

PRESENTATIONS

Dobbs, James. "Failure Analysis of Products and Evidence Preservation."
FLCC, Orlando, FL June 2009.

Dobbs, James. "Failure Analysis of Products and Evidence Preservation." ALJA Summer Meeting,
Sandestin, FL, June 2007.

Dobbs, James. "An Analysis for the Litigation of a Tractor-Trailer Accident." The Absolute Litigators
Conference, Las Vegas, NV, April 2005.

Dobbs, James. "Tractor-Trailer Accident Reconstruction." ATLA Summer Meeting,
Destin, FL, June 2003.

Dobbs, James. "How to Manage Engineering Intensive Cases." ADLA Summer Meeting,
Destin, FL, June 30, 2001.

Dobbs, James. "How to Manage Engineering Intensive Cases." AFTL Winter Ski Seminar,
Snowmass, CO, December 16, 2001.

Dobbs, James. "How to Manage Engineering Intensive Cases." ATLA CLE
Seminar, Mobile, AL, November 10, 2000.

Dobbs, James. "Reconstruction of a Rail-Highway Grade Crossing Accident."
ATLA 2000 Mid-Winter Conference, Birmingham, AL, January 28, 2000.

Dobbs, James. "Reconstruction of a Rail-Highway Grade Crossing Accident."
AFTL 1999 Winter CLE Ski Seminar, Vail, CO, December 12, 1999.

Dobbs, James. "Analysis of Slip, Trip & Fall Accidents." 3rd Annual Florida Liability Claims
Conference, Orlando, FL, July 30, 1999.

Dobbs, James. "The Accident Reconstruction Expert: Defense of the Auto Case." 2nd Annual
Florida Liability Claims Conference, Orlando, FL, July 17, 1998.

Dobbs, James. "Effect of Exposure and Coating on the Tensile and Fatigue Behavior of
Orthorhombic Titanium Aluminides." 126th TMS Annual Meeting, Orlando, FL, February 10,
1997.

- Dobbs, James R., M.F.X. Gigliotti, and M.J. Kaufman. "Effect of Exposure on the Microstructure of Coated and Uncoated Orthorhombic Titanium Aluminides." Paper presented at the TMS Annual Meeting & Exhibition, Cincinnati, OH, October 9, 1996.
- Dobbs, James. "Effect of Exposure on the Microstructure of Coated and Uncoated Orthorhombic Titanium Aluminides." ASM Materials Week, Cincinnati, OH, October 9, 1996.
- Dobbs, James. "Advanced Airfoil Fabrication." 8th Annual HITEMP Review, Cleveland, OH, October 24, 1995.
- Dobbs, James. "Processing of a Ti-22Al-23Nb Foil by Direct HIP Consolidation of Powder." ICCM 10, Vancouver, B.C., August 13, 1995.
- Dobbs, James. "Effects of the Addition of Hf and Ti on the Mechanical Properties of NiAl." ASM Materials Week, Cincinnati, OH, October 11, 1991.
- Dobbs, James. "Phase Relationships in NiAl + X (X=Zr, Hf, Nb, Ta) Alloys." ASM Materials Week, Detroit, MI, October 9, 1990.
- Dobbs, James. "Enhanced High-Speed Differential Thermal Analysis for Welding Application." AWS Annual Meeting, Chicago, IL, 1987.
- Dobbs, James. "Effects of Heat Treatment on Weldability of Cast Alloy 718." TMS-AIME Fall Meeting, Orlando, FL, 1986.

PATENTS & PATENTS PENDING

- Benedict, Charles E., Scott K. Bladen, James R. Dobbs, et al. "Automated Material Handling System With Load Transportation Vehicles." US Patent No. 7,931,431 B2, filed September 5, 2006 and issued April 26, 2011.
- Benedict, Charles E., Scott K. Bladen, James R. Dobbs, et al. "Overhead Vehicle Storage System." US Patent No. 7,909,558 B2, filed May 2, 2007 and issued March 22, 2011.
- Benedict, Charles E., Scott K. Bladen, James R. Dobbs, et al. "Overhead Boat Storage System." US Patent No. 7,850,412 B2, filed May 2, 2007 and issued December 14, 2010.
- Benedict, Charles E., Scott K. Bladen, James R. Dobbs, et al., "Material Handling And Storage/Warehousing System (w/ 3-D AGV)." U.S. Patent Application No. 12/854990, filed August 12, 2010.
- Benedict, Charles E., Scott K. Bladen, James R. Dobbs, et al., "Automated Automotive Vehicle Parking/Storage System." U.S. Patent Application No. 12/855017, filed August 12, 2010.

- Benedict, Charles E., Scott K. Bladen, James R. Dobbs, et al. "Port Storage and Distribution System for International Shipping Containers." US Patent No. 7,753,637, filed March 1, 2007 and issued July 13, 2010.
- Benedict, Charles E., Scott K. Bladen, James R. Dobbs, et al. "Port Storage and Distribution System for International Shipping Containers." U. S. Patent Application No. 12/833324, filed July 9, 2010.
- Benedict, Charles E., Scott K. Bladen, James R. Dobbs, et al. "Automated Shipboard Material Handling and Storage System." U.S. Patent Application No. 12/767560, filed April 26, 2010.
- Benedict, Charles E., Scott K. Bladen, James R. Dobbs, et al. "Warehouse Storage System." US Patent Application No. 11/743585, filed May 2, 2007.
- Benedict, Charles E., William P. Thompson, Stephen R. Corbett, James R. Dobbs, et al. "Track Mounted Stanchion and Clamp Assemblies for Storage and Dunnage Systems." U.S. Patent No. 6,749,383, filed January 9, 2002, and issued June 15, 2004.
- Benedict, Charles E., James R. Dobbs, Christian A. Yates, and Perry L. Ponder. "Adjustable porous structures and method for shoreline and land mass reclamation." U.S. Patent No. 6,722,817, filed November 18, 2001, and issued April 20, 2004.
- Benedict, Charles E., William P. Thompson, Stephen R. Corbett, James R. Dobbs, et al. "Stanchion and Clamp Assemblies for Storage and Dunnage Systems." U.S. Patent No. 6,705,812, filed January 9, 2002, and issued March 16, 2004.
- Benedict, Charles E., James R. Dobbs, and Perry L. Ponder. "Permanent and Semi-Permanent Groyne Structures and Method for Shoreline and Land Mass Reclamation" U.S. Patent No. 6,558,075, filed May 10, 2001, and issued May 6, 2003.
- Benedict, Charles E., James R. Dobbs, Christian A. Yates, and Perry L. Ponder. "Adjustable porous structures and method for shoreline and land mass reclamation." U.S. Patent No. 6,481,926, filed April 9, 2001, and issued November 19, 2002.
- Zhao, Ji Cheng, J.R. Dobbs, et al. "Method of Forming Hollow Channels within a Component." U.S. Patent No. 6,321,449 filed May 31, 2001 and issued November 27, 2001.
- Blake, James A., Jamie E. Lazarro, and James R. Dobbs. "Glass to Metal Interface X-Ray Tube." U.S. Patent No. 5,795,207, filed October 31, 1995, and approved August 18, 1998.
- Darolia, Ramgopal, James R. Dobbs, Robert D. Field, et al. "NiAl Intermetallic Alloy and Article with Improved High Temperature Strength." U.S. Patent No. 5,516,380, filed October 14, 1994, and approved May 14, 1996.

REPRESENTATIVE EXPERIENCE

Vehicular:

- Time, speed and distance calculations involving head-on, side-impact, and rear-end collisions using physical evidence, such as skid marks and damage to the vehicles.
- Light bulb analysis to determine if the bulbs were illuminated at the time of collision.
- Determination of speeds at impact from crush levels and movement of vehicles post impact.
- Simulation and reconstruction of accidents using ESMAC and EDCRASH.
- Visibility and conspicuity determination for accidents occurring at night.
- Analysis and documentation of seat-belt failures, including passive restraint, retractor spool-out and inertial unlatching.
- Airbag failure investigations, including failure to inflate, explosion on inflation, and death caused by inflation.
- Review of roof crush and intrusion into the occupant compartment of automobiles and tractor-trailers.
- Evaluation and testing of seat backs and the forces leading to failure.

Railroad:

- Determination of the cause for several failures in diesel engines, including piston crowns and fuel injectors, for GE Locomotives.
- Attended Diesel Engine Teardown School to learn about the design and operation of diesel engines and locomotives.
- Site-distance triangle determination based on AASHTO recommendations for several highway grade crossing accidents.
- Evaluation of sign configuration at highway grade crossings based on MUTCD recommendations.
- Operation and failure modes assessment for signals, including back-up schemes.
- Analysis of accidents occurring to railroad employees while on the job.

Tractor-Trailer:

- Reconstruction of truck-automobile collisions, including rear-end and intersection accidents.
- Ability to download and analyze engine monitoring information.
- Analysis of airbrake systems and operation to determine efficiency and compliance with DOT.
- Evaluation of truck and driver behavior for compliance with FMCSR.
- Evaluation of mechanical component of trucks to determine compliance with FMVSS.
- Driver for a tractor-trailer trucking company involved in over-the-road and local operations.
- Participation in Florida Trucking Association annual courtesy truck inspection.

Motorcycle:

- Accident reconstruction involving motorcycles and automobiles.
- Determination of headlight illumination prior to collision by conducting filament analysis of the bulb.
- Motorcycle speed calculations using perception/reaction, length of skid, and damage to the motorcycle.
- Motorcycle owner and operator and off-road motorcycle racer.

Pedestrian:

- Determination of pedestrian-to-driver visibility, particularly at night.
- Calculations of pedestrian walking speed and automobile impact speed based on physical evidence, including damage to the vehicle and the final rest position of the pedestrian.
- Determination of the initial point of pedestrian impact to the vehicle based on damage to the vehicle and injury to the pedestrian.

Construction:

- Analysis of foundations of structures to determine the cause of cracking.
- Evaluation of collapsed buildings to determine cause of collapse.
- Evaluation of the building products such as Dry-Vit and Bonsal, for proper installation and application.

Industrial:

- Accident investigations involving forklifts and heavy machinery such as bulldozers and backhoes.
- Testing of back-up alarm sound level and perception.
- Investigation and documentation of industrial accidents involving catwalk failure and the collision of overhead cranes.
- Evaluation of fall protection equipment and safety at job sites.

Failure Analysis:

- Determination of the cause of spray nozzle failure, including metallography and reconstruction.
- Evaluation of weld defects on a split ring truck tire that leaked and caused a catastrophic failure.
- Investigation of the failure of internal prosthetic devices, including knee and hip implants and spinal fixation devices.
- Evaluation of surgical and medical instrument failures.
- Determination of lead-acid battery explosion causation.
- Analysis of ladder failures including material hardness testing.
- Analysis of chair failures including plastic, metal and wood.

Product Development & Design:

- Development of automated parking garage and dry storage for boats.
- Development of device to mitigate beach erosion.
- Interaction with design and manufacturing, including external vendors, to determine scale-up capability and costs of MMC components.
- Fabrication of turbine-engine exhaust-nozzle components that went to engine test.
- Determination of the best procedures for limiting porosity during laser, gas tungsten arc, and electron-beam welding of high-temperature aluminum alloys.
- Development of an innovative turbine blade material with two-thirds the weight of conventional materials and twice their thermal conductivity.
- Development of an external prosthesis device.

Process Development:

- Project leader of a program aimed at developing a new method for making airfoils via EBPVD.
- Evaluation of environment-resistant coatings for T1-21Al-26Nb, including mechanical properties effects.
- Assessment of the feasibility of producing foils from difficult-to-roll materials via powder processing.
- Project leader of an initiative to produce sapphire fiber reinforced metal matrix composites.
- Development of new matrix alloys for MMCs, based on Ni and Fe base alloys.
- Development, testing and analysis of a high-wear TaC strengthened Ni-base sheet alloy.
- Development of alloys and process parameters for spray-formed sheet material.
- Evaluation of Nb-Ti alloys for high-temperature application.
- Development of vacuum-brazed and diffusion-bonded Ni-base and intermetallic alloys.