JAMES J. MASON, Ph.D., P.E.

PROFESSIONAL BIOGRAPHICAL OUTLINE

BACKGROUND

Dr. Mason received a Bachelor of Science in Mechanical Engineering and a Master of Science in Materials Science and Engineering from the University of California, Berkeley. He also received a Ph.D. in Solid Mechanics, Materials Science Minor from the California Institute of Technology. He is a Senior Engineer at ARCCA specializing in mechanical failures. He performs analyses of failed consumer and industrial products/equipment and machinery design/failure, as well as metallurgical laboratory analyses. He also conducts engineering evaluations and provides analyses and opinions on the fracture and fatigue of metals, plastics and welds. Dr. Mason has experience with medical devices and routinely conducts investigations of failed consumer medical devices, including fracture/fatigue crack analyses of orthopedic implants, plastics, and the complex interaction of materials with the human body. Dr. Mason is a Licensed Professional Engineer in five states and is an Accident Investigator accredited in Crash Data Retrieval and Commercial Vehicle Event Data Recorders. He performs motor vehicle accident reconstructions and conducts passenger and commercial vehicle inspections, as well as site investigations to gather photographic evidence and document conditions.

EDUCATION

Ph.D. Solid Mechanics, Materials Science Minor, California Institute of Technology, 1993

M.S. Materials Science and Engineering, University of California, Berkeley, 1988

B.S. Mechanical Engineering and Materials Science and Engineering, University of California, Berkeley, 1986

Professional Science Master's Degree in Biology, Illinois Institute of Technology, 2011

PROFESSIONAL EXPERIENCE

October 2016 – Present | ARCCA, Inc. | Senior Engineer

- Providing analysis and opinions on fracture and fatigue of metals, plastics and welds, corrosion and motor vehicle accident reconstruction to the legal professions and insurance industries. Performing engineering evaluations of failed consumer and industrial products, analyses of equipment and machinery design, and evaluations of industrial failures. Coordinating and participating in metallurgical laboratory analyses, including SEM, EDS, chemistry, and X-ray examinations. Providing analysis and opinions on biomechanics of injury, fracture and fatigue of metals, plastics and welds, corrosion and motor vehicle accident reconstruction to the legal professions and insurance industries. Completing vehicle accident reconstruction and vehicle mechanical failure reconstructions, including passenger and commercial vehicle inspections. Carrying out biomechanical analyses of injury. Preparing oral and written reports that document observations, analysis, and conclusions. Gathering photographic evidence, conducting investigations to document onsite conditions, overseeing laboratory testing by third parties, and delivering expert witness testimony in deposition and trial.

December 2011 – September 2016 | Rimkus Consulting Group, Inc. | Principal Consultant

- Provided analyses and opinions on biomechanics of injury, corrosion, fracture and fatigue of metals, plastics and welds, and motor vehicle accident reconstruction to the legal profession and insurance industry. Personally managed more than 110 files per year.

May 2010 – December 2011 | Michigan State University, Department of Mechanical Engineering | Adjunct Professor

- Served on thesis committees and advised PhD and MS students.

August 2009 – November 2011 | Van Andel Research Institute, & Spectrum Health Care | Associate Professor

- Scientific investigator and educator within the Translational Orthopedic Research Program (TORP) at the Van Andel Research Institute (VARI) jointly appointed to Spectrum Healthcare. Developed and participated in collaborative research programs with affiliated partner, TGen, in Arizona, as well as with Michigan State University, the University of Michigan and other entities. Conducted translational research on orthopedics, fracture healing and osteoarthritis with particular attention paid to the role of Wnt signaling and mechanotransduction in these processes.

October 2010 – November 2011 | Brach Engineering LLC | Failure Analysis and Accident Reconstruction Consultant

- Provided analyses and opinions on fracture and fatigue of metals and plastics, as well as motor vehicle accident reconstruction, to the legal profession and insurance industry.

January 2004 – October 2010 | OrthoX, LLC, formerly Granger Engineering LLC | Founder and President

- Raised over $1.2M in Phase I and Phase II STTR grants from the National Science Foundation and matching funds from the State of Indiana to develop a biomaterial for orthopedic applications. Established quality system and manufacturing. Produced pilot production of first product.

October 2007 – June 2009 | Zimmer Holdings | Associate Director of Trauma Research

- Managed operation of Trauma Research laboratory where materials and devices for repair of fractured bones were tested. Used problem-solving and decision-making skills to provide the leadership needed to keep product development on budget, on time and done correctly. Directed external research program funding outside researchers. Directed Emerging Technology effort to identify and evaluate new technologies for innovative trauma products. Directed internal research program focused on publishable research related to repair of fractured bones. Used oral and written communication skills to convey results to customers.

September 2006 – October 2007 | Zimmer Holdings | Manager, Research Library

- Managed operation of Research Library supporting US employees nationwide. Updated information technologies to include electronic document delivery, electronic cataloging, and electronic search databases. Also, updated website and access to resources improving internal customer service.

May 2005 – October 2007 | Zimmer Holdings | Manager of Biomechanical Test Laboratory

- Manager of Biomechanical Test Laboratory: Managed operation of Biomechanical Test Laboratory (BTL) where orthopedic materials and devices were tested in static loading, impact loading and biomechanical loading. Included Anatomic Testing Lab where cadaver testing of devices and testing of cadaver bone samples was performed. Implemented productivity improvement and consistently met performance expectations and criteria.

May 2005 – October 2007 | Zimmer Holdings | Principal Engineer, Project Manager (Cartilage Friendly Materials), & Project Team (NexGen Patellofemoral Implant)

- Principal Engineer: Responsible for engineering research support of new product development, which includes specification of testing for proof of concept, performance and reliability. Supported knee, hip, elbow, ankle, and shoulder implant development as well as trauma products and surgical instruments. Used oral and written communication skills to convey results, identify problems and propose solutions.
- Project Manager, Cartilage-Friendly Materials: Led and coordinated cross-functional team, including external researchers, who developed new polymer materials for articulation against cartilage.
- Project Team, NexGen Patellofemoral Implant: Led and coordinated efforts to prove safety and efficacy of new patellofemoral implant.

August 1999 – May 2005 | James Mason Consulting | Failure Analysis Consultant

- Performed engineering evaluations of failed consumer and industrial products, analyses of equipment and machinery design, and evaluations of industrial failures. Coordinated and participated in metallurgical laboratory analyses, including SEM, EDS, chemistry, and x-ray examinations. Prepared oral and written reports that documented observations, analyses, and conclusions. Delivered expert witness testimony in deposition and trial.

August 1999 – May 2005 | University of Notre Dame | Aerospace & Mechanical Engineer

January 2006 – December 2007	Adjunct Professor: Served on thesis committees of several PhD and MS students.
May 2005 – December 2005	Professor (tenured): Completed contracted research in machining, mechanics of hydrogels, and the performance of hydrogels in orthopedic implants.
May 1999 – May 2005	Associate Professor (tenured): Performed research in several areas, including orthopedic biomaterials and engineering, high-speed machining, fatigue of super-alloys, finite element analysis (FEA) and thermal fatigue of solder joints. Taught 26 courses.
September 2000 – May 2005	Director of Mechanical Testing Facility: Set up centralized mechanical testing facility for department. Oversaw scheduling, maintenance and operation of facility used by faculty, undergraduate students and graduate students.

August 1993 – May 1999 — Clark Equipment Assistant Professor: Performed research in adiabatic shear band formation, dynamic fracture of polymer composites, high strain rate deformation of materials, examination of failure and initiation events in explosives, finite element analysis (FEA) and fatigue crack propagation. Repeatedly taught 8 courses.

September 2003 - September 2004 | Indiana University, School of Medicine | Visiting Faculty

- Performed research on bone mechanics and bone cell mechanics.

June 2001 – August 2001 | London Centre, University of Notre Dame, London, England | Associate Professor

- Taught course on Engineering Ethics and Law.

LICENSES & CERTIFICATIONS

- ASM International, 2011-*present*
- Independent Metallurgical Engineering Consultants of California (IMECA), 2014-*present*
- Licensed Professional Engineer, State of Indiana, 1998- *present*, PE19800118
- Licensed Professional Engineer, State of California, 2012- *present*,#M36002
- Licensed Professional Engineer, State of Hawaii, 2012- *present*, #14968
- Licensed Professional Engineer, State of Washington, 2012- *present*, #49597
- Licensed Professional Engineer, State of Oregon, 2012- *present*, #86742
- Certified Accident Reconstructionist, Accreditation Commission for Traffic Accident Reconstructionists, 2018, #2525
- Orthopedic Research Society, 2008- 2013
  - *Member of the Corporate Affairs Committee,* 2009-2013
  - *Chairman of Corporate Affairs Committee,* 2012
- Industrial Advisor, Indiana University, Purdue University at Indianapolis (IUPUI) Bioengineering Department, 2005-2011
- Proposal Reviewer, National Science Foundation and National Institutes for Health
- Journal Reviewer for over 20 different journals

PROFESSIONAL RECOGNITION & HONORS

- Selected for membership in Independent Metallurgical Engineering Consultants of California
- Winner of MIRA Innovation of the Year Award (in the State of Indiana), 2010
- Appointed to the Corporate Affairs Committee of the Orthopedic Research Society, 2009-2013
- Listed in Marquis' *Who's Who in Science and Engineering*, 10th Anniversary Edition, 2007
- NIH Senior Faculty Fellow, Indiana Univ. School of Medicine, Oct 2003-Sep 2004
- Calgary Award in Orthopedics, IV World Congress on Biomechanics, Aug. 2002
- University of Notre Dame, College of Engineering, Teacher of the Year Award, 2001
- Selected to participate in the Loctite Summer Faculty Fellowship Program, 1999
- Department of Aerospace and Mechanical Engineering, Faculty Teaching Award, 1998
- Listed in Marquis' *Who's Who in Engineering*, 4th Ed., 1998-99
- Selected to participate in NAE's Frontiers of Engineering Symposium, 1997
- Office of Naval Research, Young Investigator 1996-99

- Clark Equipment Assistant Professor, University of Notre Dame 1995-96
- Achievement Rewards for College Scientists Foundation Fellow, 1992
- Charles Lee Powell Foundation Graduate Fellow, 1989
- Earl C. Anthony Fellow, California Inst. of Technology, 1988
- Tau Beta Pi Engineering Honor Society, UC Santa Barbara, UC Berkeley, 1983-86
- Pi Tau Sigma Mechanical Engineering Honor Society, UC Berkeley, 1985-86

PROFESSIONAL AFFILIATIONS

- ASM International, 2011-*present*
- California Association of Accident Reconstruction Specialists (CA^{2}RS), 2012-*present*
- Independent Metallurgical Engineering Consultants of California (IMECA), 2014-*present*
- Orthopedic Research Society, 2008- 2013
    - *Member of the Corporate Affairs Committee,* 2009-2013
    - *Chairman of Corporate Affairs Committee,* 2012
- Industrial Advisor, Indiana University, Purdue University at Indianapolis (IUPUI) Bioengineering Department, 2005-2011
- Proposal Reviewer, National Science Foundation and National Institutes for Health
- Journal Reviewer for over 20 different journals

PUBLICATIONS

Dr Mason has published 61 articles in peer reviewed journals, given 85 presentations at technical conferences, symposia and meetings, been granted 6 patents and delivered 64 invited lectures at companies, conferences and universities.

Journal Publications (Refereed/Reviewed)

1. Bart Williams, Travis Burgers, Juraj Zahatnansky, Andrew Vander Moren, Juan Vivanco, and James Mason, "Mice with a heterozygous Lrp6 deletion have impaired fracture healing," to appear in *Bone Research*, 2016
2. M. Hoffman, T. Burgers, J. Mason, B. Williams, D. Sietsema and C. Jones, "Biomechanical evaluation of fracture fixation constructs using a variable-angle locked periprosthetic femur plate system," *Injury*, **45**, 7, 1035-1041, 2014
3. Burgers TA, Hoffmann MF, Collins CJ, Zahatnansky J, Alvarado MA, Morris MR, Sietsema DL, **Mason JJ**, Jones CB, Ploeg HL, Williams BO, "Mice lacking Pten in osteoblasts have improved intramembranous and late endochondral fracture healing," PLoS One 8(5): e63857, 2013
4. B. Stulberg, T. Wright, A. Stoller, K. Mimnaugh, and **J. Mason**, "Bilateral patellar component shear failure of highly cross-linked polyethylene components: Report of a case and laboratory analysis of mechanisms," Journal of Arthroplasty;**27**, 5, 789-796, 2012
5. **Jim Mason** and Bart Williams, "SOST and DKK: Antagonists of LRP5 Signaling as Targets for Treating Bone Disease," *Journal of Osteoporosis*, Volume 2010, Article ID 460120, 9 pages, 2010
6. Pilcher, X. Wang, G. Niebur, **J. Mason**, B. Song, M. Cheng, and W. Chen, "High Strain Rate Testing of Bovine Cancellous Bone," *ASME Journal of Biomechanical Engineering,* **132**, 8, p. 081012, 2010

7. Robert J. Kane, Weimin Yue, **James J. Mason** and Ryan K. Roeder, "Improved Fatigue Life of Acrylic Bone Cements Reinforced with Zirconia Fibers." *Journal of the Mechanical Behavior of Biomedical Materials,* J Mech Behav Biomed Mater., **3**, 7 pp 504-11, 2010
8. Marlon O. Coulibaly, Debra L. Sietsema, **Jim Mason**, Bart Williams, and Clifford B. Jones, "Recent Advances in the Use of P1NP as a Biomarker in Fracture Healing," *Critical Reviews in Eukaryotic Gene Expression*, , **20**, 2, pp 105-127, 2010
9. Travis Burgers, **Jim Mason**, Matthew Squire, Heidi-Lynn Ploeg, "Time-Dependent Fixation and Implantation Forces for a Femoral Knee Component - An In Vitro Study," *Medical Engineering & Physics,* **32**, pp. 968-973, 2010
10. Jeffrey E. Bischoff , Justin S. Hertzler, and **James J. Mason**, "Patellofemoral interactions in walking, stair ascent, and stair descent using a virtual patella model," *Journal of Biomechanics,* **42**, 11, pp. 1678-84, 2009
11. Brian H. Thomas, J. Craig Fryman, Kaifeng Liu, and **Jim Mason**, "Hydrophilic-Hydrophobic Hydrogels for Cartilage Replacement," Journal of Mechanical Behavior of Biomedical Materials, **2,** 6, pp. 588-95, 2009
12. T.A. Burgers, **J. Mason** and H.L. Ploeg, "Initial fixation of a femoral knee component: an *in vitro* and finite element study," *International Journal for Experimental and Computational Biomechanics*, **1**, 1, pp 23-44, 2009
13. Yan Zhou, Weimin Yue, Chaodi Li, and **James J. Mason**, "Static and fatigue mechanical characterizations of variable diameter fibers reinforced bone cement," *Journal of Materials Science: Materials in Medicine,* **20**, 2, pp 633-641, 2009
14. Shiva Kotha, Chaodi Li, Steven Schmid, **James Mason**, "Reinforcement of bone cement using zirconia fibers with and without acrylic coating", *Journal of Biomedical Materials Research,* **88A**, 4, pp 898-906, 2009
15. Kimberly Mimnaugh, Jian Yao, Michel Laurent, Roy Crowninshield, **James Mason**, and Cheryl Blanchard, "The Effect of Entrapped Bone Particles on the Surface Morphology and Wear of Polyethylene," *Journal of Arthroplasty,* **24**, 2, pp 303-309, 2009
16. **J Mason**, F. Leszko, T Johnson and R Komistek, "Patellofemoral Joint Forces," *Journal of Biomechanics,* **41**, 11, pp. 2337-2604, 2008
17. T Burgers, **J Mason**, G Niebur and H Ploeg, "Compressive Properties of Trabecular Bone in the Distal Femur," *Journal of Biomechanics,* **41,** 5, pp 1077-85, 2008
18. RV Kazban, KM Vernaza-Peña and **JJ Mason**, "Measurements of Forces and Temperature Fields in High-Speed Machining of 6061-T6 Aluminum Alloy" *Experimental Mechanics,* **48,** 3, pp 307-317, 2008
19. K. Liu, T. C. Ovaert and **J. J Mason**, "Preparation and Mechanical Characterization of a PNIPA Hydrogel Composite," *Journal of Materials Science: Materials in Medicine,* **19,** 4, pp 1815-1821, 2008
20. RV Kazban and **JJ Mason**, "Fluid Mechanics Approach to Machining at High Speeds: Part II A Potential Flow Model," *Machining Science and Technology*, **11**, 4, 491 – 514, 2007
21. RV Kazban and **JJ Mason**, "Fluid Mechanics Approach to Machining at High Speeds: Part I Justification of Potential Flow Models," *Machining Science and Technology,* **11**, 4, 475 – 489, 2007
22. B Kincaid, **J Mason** and L Schroeder, "Measurement of Orthopedic Cortical Bone Screw Insertion Performance in Cadaver Bone and Model Materials," *Experimental Mechanics,* **47**, 5, pp 595-607. 2007
23. Kotha S.P., Li C., McGinn P., Schmid S.R. and **Mason J.J.**, "Improved Mechanical Properties of Acrylic Bone Cement with Short Titanium Fiber Reinforcement" *Journal of Materials Science: Materials in Medicine,* **17,** 8, pp 743-748, 2006

24. S. P. Kotha, M. Lieberman, A. Vickers, S. R. Schmid, **J. J. Mason**, "Adhesion enhancement of steel fibers to acrylic bone cement through a silane coupling agent" *Journal of Biomedical Materials Research, Part A,* **76A,** No. 1, pp. 111-119, 2006
25. Tovar, A, Gano, S.E., **Mason, J.J.,** Renaud, J.E., , "Optimum Design of an Interbody Implant for Lumbar Spine Fixation", *Advances in Engineering Software*, **36**, Issue 9, pp 634-642, 2005
26. Y. Zhou, C. Li and **J.J. Mason**, "Fiber-end deformation effects in enlarged-end, fiber-reinforced composites," *Engineering Fracture Mechanics,* **72**, Issue 12, pp. 1980-1992, 2005
27. Jennifer L. Schriefer, Alexander G. Robling, Stuart J. Warden, Adam J. Fournier, **James J. Mason**, Charles H. Turner, "A comparison of mechanical properties derived from multiple skeletal sites in mice," *J. Biomechanics,* **38,** pp. 467-475, 2005
28. Y. Zhou, C. Li and **J.J. Mason**, "Shape Optimization of Randomly Oriented Short Fibers for Bone Cement Reinforcement," *Materials Science and Engineering A,* **393**, Issues 1-2, pp. 374-381, 2005
29. Y. Zhou, C. Li, J.E. Renaud, and **J.J Mason,** "Improvement of Mechanical Properties of Bone Cement by Shape Optimization of Short Fibers," *Engineering Optimization,* **37,** No. 2, pp. 121-134, 2005
30. S.P. Kotha, C. Li, S.R. Schmid and **J.J. Mason**, "Fracture Toughness of Steel Fiber Reinforced Bone Cement," *J. Biomedical Materials Research Part A,* **70A,** No. 3, pp. 514-521, 2004
31. Li, Y. Wang, and **J. Mason**, "The Effects of Curing History on Residual Stresses in Bone Cement during Hip Arthroplasty," *J. Biomedical Materials Research Part B: Applied Biomaterials,* Vol. 70B, Issue 1, pp. 30-36, 2004
32. X.D. Wu, D.Z. Chen, **J.J. Mason** and S.R. Schmid, "Efficient Approximation Algorithms for Pairwise Data Clustering and Applications," *Int. J. of Computational Geometry and Applications,* Vol. 14, Nos. 1-2, pp. 85-104, 2004
33. Li, D. Yakimicki, and **J.J. Mason**, "Thermal Characterization of PMMA-based Bone Cement Curing," *J. Materials Science: Materials in Medicine,* **15,** No. 1, pp. 85-89, 2004
34. C.Li, S.Kotha, **J.J. Mason**, "Evaluation of the Effects of Implant Materials and Designs on Thermal Necrosis of Bone in Cemented Hip Arthroplasty," *Biomedical Materials & Engineering,* **13,** no. 4, pp. 419-428, 2003
35. Li, S.R. Schmid and **J.J. Mason**, "Effects of Pre-cooling and Pre-heating Procedures on Cement Polymerization and Thermal Osteonecrosis in Cemented Hip Replacements," *Medical Engineering and Physics,* **25**, no. 7, pp. 559-564, 2003
36. X. Wu, D.Z. Chen, **J.J. Mason**, and S.R. Schmid, "Pairwise Data Clustering and Applications," *Computing and Combinatorics Proceeding (COCOON 2003)*, **2697,** pp. 455-466, 2003
37. C. Li, S. Kotha, C.-H. Wang, **J. Mason**, D. Yakimicki, and M. Hawkins, "Finite Element Thermal Analysis of Bone Cement for Joint Replacements," *ASME J. Biomechanical Eng.,* **125,** no. 3, pp. 315-322, 2003
38. C. Rubio-Gonzalez and **J.J. Mason**, "Dynamic stress intensity factor due to concentrated loads on a propagating semi-infinite crack in orthotropic materials," *Int. J. Fracture,* **118,** No. 1, pp 77-96, 2002
39. K. Vernaza-Peña, **J.J. Mason** and M. Li "Experimental Study of the Temperature Field Generated During Orthogonal Machining of an Aluminum Alloy," *Experimental Mechanics,* **42,** no. 2, pp. 221-229, 2002
40. C. Rubio-Gonzalez and **J.J. Mason**, "Experimental Investigation of Dynamic Punch Tests on Isotropic and Composite Materials," *Experimental Mechanics,* **41**, no. 2, pp. 129-139, 2001
41. C. Rubio-Gonzalez and **J.J. Mason**, "Green's Functions for the Stress Intensity Factor Evolution in Finite Cracks in Orthotropic Materials," *Int. J. Fracture,* **108**, pp. 317-336, 2001

42. C. Rubio-Gonzalez and **J.J. Mason**, "Dynamic Stress Intensity Factor for a Propagating Semi-Infinite Crack in Orthotropic Materials," *Int. J. of Engineering Science,* **39,** no. 1, pp. 15-38, 2001
43. C.Y. Wang and **J.J. Mason**, "A Solution Method for Finding Dynamic Stress Intensity Factors for Arbitrarily Oriented Cracks in Transversely Isotropic Materials," *Int. J. of Fracture,* **106,** pp. 217-243, 2000
44. C. Wang, C. Rubio-Gonzalez and **J.J. Mason**, "Dynamic Stress Intensity Factor on Semi-infinite Cracks in Orthotropic Materials Due to Concentrated Shear Impact Loads," *Int. J. of Solids and Structures,* **38,** no. 8, pp. 1265-1280, 2000
45. C. Rubio-Gonzalez and **J.J. Mason**, "Mixed Mode Dynamic Stress Intensity factor Due to Applied Point Loads," *Computers and Structures*, **76,** nos. 1-3, pp. 237-245, 2000
46. C. Rubio-Gonzalez and **J.J. Mason**, "Dynamic Stress Intensity Factor Due to Concentrated Normal Loads on Semi-infinite Cracks in Orthotropic Materials," *J. Composite Materials,* **34**, no. 8, pp. 649-669, 2000
47. C. Rubio-Gonzalez and **J.J. Mason**, "Dynamic Stress Intensity Factor at the Tip of a Uniformly Loaded Semi-infinite Crack in an Orthotropic Material," *J. Mechanics and Physics of Solids,* **48**, No. 5, pp. 899-925, 2000
48. C. Rubio-Gonzalez and **J.J. Mason**, "Response of Finite Cracks in Orthotropic Materials due to Concentrated Impact Shear Loads," *ASME J. Applied Mechanics,* **66,** no. 2, pp. 485-491, 1999
49. K.M. Roessig and **J.J. Mason**, "Adiabatic Shear Localization in the Dynamic Punch Test: Part I, Experimental Investigation," *Int. J. Plasticity,* **15,** no. 3, pp. 241-262, 1999
50. K.M. Roessig and **J.J. Mason**, "Adiabatic Shear Localization in the Dynamic Punch Test: Part II, Numerical Modeling," *Int. J. Plasticity,* **15,** no. 3, pp. 263-283, 1999
51. R. Caspar, J.M. Powers and **J.J. Mason**, "Investigation of Reactive Shear Localization in Energetic Solids," *Combustion Science and Technology,* **136,** No. 1-6, pp. 349-371, 1998
52. K.M. Roessig and **J.J. Mason**, "Adiabatic Shear Localization in the Impact of Edge Notched Specimens," *Experimental Mechanics,* **38**, No. 3, pp. 196-203, 1998
53. K.M. Roessig and **J.J. Mason**, "Dynamic Stress Intensity Factors in a Two Dimensional Punch Test," *Engineering Fracture Mechanics,* **60,** No. 4, pp 421-435, 1998
54. **J.J. Mason**, J.A. Zimmerman, and K.M. Roessig, "The Effects of Aging Condition on Shear Localization from the Tip of a Notch in Maraging Steel," *J. Materials Science,* **33,** 6,pp. 1451-1460, 1998
55. **J.J. Mason** and R.O. Ritchie, "Fatigue crack growth resistance in SiC particulate and whisker reinforced P:M 2124 aluminum matrix composites," *Materials Science and Engineering,* **A231,** No. 1-2, pp. 170, 1997
56. **J.J. Mason**, A.J. Rosakis and G. Ravichandran, "Full Field Measurements of the Dynamic Deformation Field Around a Growing Adiabatic Shear Band at the Tip of a Dynamically Loaded Notch," *J. Mechanics and Physics of Solids,* **42,** No. 11, pp. 1679-1697, 1994
57. **J.J. Mason**, A.J. Rosakis and G. Ravichandran, "On the Strain and Strain Rate Dependence of the Fraction of Plastic Work Converted to Heat: An Experimental Study Using High Speed Infrared Detectors and the Kolsky Bar," *Mechanics of Materials,* **17,** pp. 135-145, 1994
58. **J.J. Mason**, A.J. Rosakis and G. Ravichandran, "The Conversion of Plastic Work to Heat Around a Dynamically Propagating Crack in Metals," *J. Mechanical Behavior of Materials,* **4,** No. 4, pp. 375-385, 1993
59. **J.J. Mason** and A.J. Rosakis, "The Effects of Hyperbolic Heat Conduction around a Propagating Crack Tip," *Mechanics of Materials,* **15,** pp. 263-278, 1993
60. **J.J. Mason** and A.J. Rosakis, "The Dependence of Dynamic Crack Tip Temperature Fields upon Velocity and Material Parameters," *Mechanics of Materials,* **16,** pp. 337-350, 1993

61. **J.J. Mason**, J. Lambros and A.J. Rosakis, "On the Use of a Coherent Gradient Sensor in Dynamic Mixed-Mode Fracture Mechanics Experiments," *J. Mechanics and Physics of Solids*, **40,** No. 3, pp. 641-661, 1992

Patents

1. **Mason, J.** and Yue, W., "Bone Cement Having Porous Fiber Reinforcement," Patent Application Number: 61/279,371, Filed 10/20/2009
2. Lozier, A., Parrott, R., Murphy, D., and **Mason, J.**, "Anisotropic Orthopedic Component," Patent Application Number: 61/309,066, Filed: 3/1/2010
3. Muratoglu, O., Yakimicki, D., Charlebois, S., Spiegelberg, S., Thomas, B., Braithwaite, G., **Mason, J.**, and McKinley, G., "Mosaicplasty Constructs," Patent Number: US09/051098, 7/20/2009
4. Lower, J., **Mason, J.**, Mimnaugh, K., and Thomas, B., "Fibrous Implants for Cartilage Repair or Replacement," Patent Number: US09/040621, 4/15/2009
5. Popoola, O., **Mason, J.**, Forstein, M., and Lozier, A., "Bone Fracture Fixation System," Patent Number: US09/032608, 1/30/2009
6. Charlebois, S., Yakimicki, D., Thomas, B., Popoola, O., **Mason, J.**, Abt, N., and Borgestede, L., "Chemical Composition of Hydrogels for use as Articulating Surfaces," Patent Number: US08/86817, 12/15/2008

Conference and Symposium Presentations, Posters and Papers

1. **Mason JJ**, "Failure Analysis," Claims Conference of Northern California, Annual Meeting, September 15, 2017
2. **Mason, JJ**, Morse, B, and Betz, A, "Vehicle Telematics and Infotainment Systems-- a New Era of Data Collection," Southern California Fraud Investigators Association, Annual Meeting, Palm Springs, CA, October 4, 2017.
3. Burgers TA, Xu J, Hoffman MF, Sietsema DL, Zismann V, Button B, Davidson P, Tao S, Tembe W, Kiefer J, **Mason JJ**, Williams BO, Trent J, Jones CB. "A Genetic Test to Predict Patient Response to rhBMP-2 for Lumbar Spinal Arthrodesis." American Society of Bone Mineral Research (ASBMR) Conference, Baltimore, MD. Oct. 2013.
4. Tanner JC, Burgers TA, Patthanacharoenphon C, Dubiel M, **Mason J**, Bohay JD, Anderson J. The effects of first ray instability on midfoot joint forces and forefoot ground distribution: a cadaveric study. American Academy of Orthopedic Surgeons (AAOS) Annual Meeting, Chicago, IL. March 2013.
5. Tanner JC, Burgers TA, Patthanacharoenphon C, Dubiel M, **Mason J**, Bohay JD, Anderson J. The effects of first ray instability on midfoot joint forces and forefoot ground distribution: a cadaveric study. American Orthopaedic Foot & Ankle Society (AOFAS) Annual Meeting, San Diego, CA. June 2012.
6. Tanner JC, Burgers TA, Patthanacharoenphon C, Dubiel M, **Mason** J, Bohay JD, Anderson J. The effects of first ray instability on midfoot joint forces and forefoot ground distribution: a cadaveric study. Michigan Orthopaedic Society Annual Scientific Meeting, Mackinac Island, MI. June 2012.
7. Burgers TA, Hoffmann MF, Morris M, Alvarado MA, Sietsema DL, **Mason J**, Jones CB, Williams BO. Mice lacking Pten in osteoblasts have improved intramembranous and late endochondral fracture healing. Oral presentation and poster. Van Andel Institute retreat, Thompsonville, MI. June 2012.
8. Tanner JC, Burgers TA, Patthanacharoenphon C, Dubiel M, **Mason J**, Bohay JD, Anderson J. The effects of first ray instability on midfoot joint forces and forefoot ground distribution: a

cadaveric study. Grand Rapids Medical Education Partners Research Day, Grand Rapids, MI. April 2012.

9. Hoffmann MF, Burgers TA, Zismann V, Tembe W, Liang W, Sietsema DL, Davidson P, Williams BO, Kiefer J, **Mason J**, Trent J, Jones CB. Whole exome sequencing of DNA from patients with abnormal responses to BMP-assisted spinal arthrodesis. American Academy of Orthopaedic Surgeons (AAOS) Conference, San Francisco, CA. Feb. 2012.
10. Burgers TA, Hoffmann MF, Sietsema DL, Williams BO, Jones CB, **Mason J**. Frzb is a dominant regulator of Wnt signaling during early fracture healing in mice. American Academy of Orthopaedic Surgeons (AAOS) Conference, San Francisco, CA. Feb. 2012.
11. McNerny E, Tantillo M, Burgers TA, Williams BO, **Mason J**, Kohn D. LRP5 function influences cortical bone tissue strength and toughness in addition to bone quantity. Orthopaedic Research Society (ORS) Conference, San Francisco, CA. Feb. 2012.
12. Burgers TA, Coulibaly MO, Sietsema DL, Williams BO, Jones CB, **Mason J**. PINP expression during femoral fracture healing in mice. American Academy of Orthopaedic Surgeons (AAOS) Conference, San Diego, CA. Feb. 2011.
13. Joiner, D M, Scholten II, D J, Less, K D, Morris, M, **Mason, J**, "The Effect of Mutations in Low-Density Lipoprotein Receptor Related Protein 6 (LRP6) on Osteoarthritis Progression in a Murine Injury Model," Orthopaedic Research Society (ORS), San Francisco, CA February 4-7, 2012
14. Burgers TA, Alvarado MA, Hoffmann MF, Sietsema DL, Williams BO, Jones CB, **Mason J**. Mice with Pten deleted in osteoblasts have improved fracture healing. Orthopaedic Research Society (ORS) Conference, San Francisco, CA. Feb. 2012.
15. Zylstra-Diegel CR, Burgers TA (presenting author), Baker JJ, Schumacher CA, Wang P, Teh BT, **Mason J**, Williams BO. Hrpt2 deletion in osteoblasts improves bone density, geometry and strength in mice. Orthopaedic Research Society (ORS) Conference, San Francisco, CA. Feb. 2012.
16. Burgers TA, Hoffmann MF, Sietsema DL, Williams BO, Jones CB, **Mason J**. Frzb is a dominant regulator of Wnt signaling during early fracture healing in mice. American Society of Bone and Mineral Research (ASBMR) Conference, San Diego, CA. Sept. 2011. ASBMR President's Poster Competition Award.
17. 1Danese Joiner, Michael Morris, Donald Scholten, Ben Staal, George Vande Woude, Clifford Jones, Debra Sietsema, Yu-Wen Zhang, **Jim Mason**, "Disruption of Mitogen Inducible Gene 6 (MIG6) in the Mouse Genome Accelerates Surgical Induced Osteoarthritis and Down Regulates Wnt Signaling," American Society of Bone and Mineral Research (ASBMR) Annual Conference, San Diego, CA. Sept. 2011.
18. [2]Burgers, TA, Hoffmann, MF, Sietsema, DL, Williams, BO, Jones, CB, **Mason, J.,** "Frzb is a dominant regulator of Wnt signaling during early fracture healing in mice," American Society of Bone and Mineral Research (ASBMR) Annual Conference, San Diego, CA. Sept. 2011.
19. Travis Burgers, Martin Hoffman, **James Mason**, Debra Sietsema, Bart Williams, Clifford B Jones, "FRZB and Other Canonical WNT Inhibitors Are Highly Up-Regulated During Fracture Healing in Mice," MOS Annual Scientific Meeting, June 24-26, Mackinac Island, MI, 2011
20. Danese Joiner, Michael Morris, Donald Scholten, Ben Staal, YuWen Zhang, James Mason and George Vande Woude, "Disruption of Mitogen Inducible Gene 6 (Mig6) in the Mouse Genome Accelerates Surgical Induced Osteoarthritis and Down Regulates Wnt Signaling," Grand Rapids Medical Education Partners, Research Day, April 27, 2011

[1] Plenary poster presentation

[2] ASBMR President's Poster Competition Award

21. Michael Morris, Danese Joiner and **Jim Mason**, "Development of Osteoarthritis of the Knee by Microsurgical Destabilization in murine Model," Grand Rapids Medical Education Partners, Research Day, April 27, 2011
22. Travis Burgers, Martin Hoffman, Debra Sietsema, Bart Williams, Clifford Jones and **Jim Mason**, "Frzb and Other Canonical Wnt Inhibitors are Highly Up-Regulated During Fracture," Grand Rapids Medical Education Partners, Research Day, April 27, 2011
23. Michael Morris, Travis Burgers, Marlon Coulibaly, **Jim Mason**, Debra Sietsema, Bart Williams and Clifford Jones, "PINP Expression during Femoral Fracture Healing in Mice," Grand Rapids Medical Education Partners, Research Day, April 27, 2011
24. Michael Morris, Travis Burgers and **Jim Mason**, "Production of a Standard Closed Midshaft Femoral Fracture in Mice," Grand Rapids Medical Education Partners, Research Day, April 27, 2011
25. Travis Burgers, Marlon O Coulibaly, **James Mason**, Debra Sietsema, Bart Williams, Clifford B Jones, "PINP Expression During Femoral Fracture Healing in Mice," American Academy of Orthopedic Surgeons, Annual Meeting, San Diego, CA, February 15-19, 2011
26. **Jim Mason**, Travis Burgers, Marlon Coulibaly, Bart Williams, Debra L Sietsema, Clifford B Jones, "PINP expression during femoral fracture healing in mice," Poster No. 1487, 2011 Annual Meeting of the Orthopedic Research Society, Long Beach, CA, January 13-16, 2011
27. T Burgers, M. Coulibaly, D. Sietsema, **J Mason**, and C Jones, "Preliminary Evaluation of Blood Serum levels of Procollagen Type I N-terminal Propeptide (PINP) as an Indicator of Fracture Healing," 26th Annual Meeting of the Orthopaedic Trauma Association, Baltimore, Maryland October 13 - 16, 2010
28. Danny Levine, Roger Kenyon, **Jim Mason** and Shaher Ahmad, "Simulation of Tibial Intramedullary Nail Fatigue Test Using Finite Element Analysis," 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 5-10, 2010
29. Jill Schmidt, **Jim Mason** and Heidi-Lynn Ploeg, "Implant Motion Measured at Tray does not Equal Motion of Stem for Modular Long-Stemmed Tibial Implant," 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 5-10, 2010
30. **Jim Mason** and Weimin Yue, "Innovative Reinforcement for Orthopedic Bone Cement," Investment in Innovation (IN3) Summit, San Francisco, CA, October 19-21, 2009
31. Kaifeng Liu, Brian Thomas, J Fryman, **James Mason**, and Timothy Ovaert, "Relaxation Time of a Biphasic Viscoelastic Hydrogel in Nano-indentation and Bulk Unconfined Creep Tests," 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, February 22-25, 2009
32. Kaifeng Liu, Brian Thomas, J. Craig Fryman, Jeff Bischoff, Timothy Ovaert, **James Mason**, "Optimization based inverse finite element analysis for material parameter identification of a biphasic hydrogel," ASME Summer Bioengineering Conference, Marco Island, FL, June 24-29, 2008
33. J.Schmidt, M. Dunbar, B. Kincaid, **J. Mason**, and H. Ploeg, "Validation of a finite element model developed from computed tomography scan data using 3D motion analysis system," 8th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Porto, Portugal, 27th February-1st March 2008
34. T. Burgers, **J. Mason**, and H. Ploeg, "Validation of a finite element analysis of the press-fit fixation of a bone-implant interface in the distal femur," 8th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Porto, Portugal, 27th February-1st March 2008
35. L Kirkpatrick, L Borgstede, T Johnson, **J Mason**, "Durability Test Method for Patella Implants," Materials and Processes for Medical Devices 2007 Conference and Exposition, Palm Desert, CA, September 23-25, 2007

36. T Burgers, **J Mason**, G Niebur and H Ploeg, "Compressive properties of trabecular bone in the distal femur," *Podium Presentation 17,* American Society of Biomechanics, 2007 Annual Conference, Stanford, CA, August 22-25, 2007
37. Lynn Kirkpatrick, Laura Borgstede, Todd Johnson, and **James Mason,** "Durability Test Method for Patella Implants," ASME Summer Bioengineering Conference, Keystone, CO, June 20-24, 2007
38. B. Kincaid, **J. Mason**, and L. Schroeder, "Novel Test Method for the Assessment of Self Tapping Performance of Bone Screws," *Proceedings of the 2006 SEM Annual Conference and Exposition on Experimental and Applied Mechanics*, St. Louis, MO, June 4-7, 2006
39. K. Liu, B. Thomas, K. Day, D. Yakimicki, and **J. Mason**; "Effect of Irradiation on the Tensile Properties of Injection Molded PVA Hydrogels," Annual Meeting of the Society for Biomaterials, *Poster 512*, Pittsburgh PA, April 26-29, 2006
40. S Kotha; C Li, S Schmid; and **J Mason**, "Reinforcement of Bone Cement using Zirconia Fibers with and without Acrylic Coating," *52nd Annual Meeting of the Orthopaedic Research Society*, Transactions Vol.31, *Poster 935*, Chicago, IL, 2006
41. B. Hunt, E. Corona, **J.J. Mason,** K. O'Neill, C. Turner and M. Groff, "Role of Anterior Fixation in the Stability of Titanium Cage Spinal Constructs," *Proceedings of the SEM XI International Congress and Exposition on Experimental and Applied Mechanics*, Paper No. 58, Portland. OR, June 7-9, 2005
42. E. Corona, T. Eisenhour, S. Yin and **J.J. Mason**, "Wall Curl in Bending of Laminated Steel," *NUMIFORM 2004, The 8th International Conference on Numerical Methods in Industrial Forming Processes*, The Ohio State University, Columbus, OH, June 13-17, 2004
43. Pilcher, X. Wang, G. Niebur, **J. Mason,** B. Song, M. Cheng and W. Chen, "High Strain Rate Testing of Bovine Cancellous Bone," *2004 SEM X International Congress and Exposition on Experimental and Applied Mechanics*, Costa Mesa, CA, June 7-10, 2004
44. Torres-Montoya, D. Duffek, E. Corona, **J. Mason**, M. Chengalva and M. Cavanaugh "Effects of Combined Cyclic Thermal and Mechanical Loading on Fatigue of Solder Joints," *ITHERM 2004, Ninth Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems*, Las Vegas, NV, Jun 1-4, 2004
45. Li, Y. Zhou and **J. J. Mason**, "Finite element simulations of thermal responses in femoroplasty," Paper No. 1439, *50th Annual Meeting of the Orthopaedic Research Society (ORS)*, San Francisco, California, March 7-10, 2004
46. Li, Y. Wang, **J. Mason**, "Residual stresses in self-curing bone cement during hip arthroplasty," *2003 ASME International Mechanical Engineering Congress and R&D Expo*. Paper No. IMECE2003-43003, Washington, D. C., Nov. 16-21, 2003
47. Pilcher, **J. Mason**, M. Cheng, and W. Chen, "Split Hopkinson Bar Testing of Cancellous *Bone*," *SEM Technical Conference on Mechanics of Biological and Biologically Inspired Materials and Systems*, Springfield, MA, October 2-3, 2003
48. Li, Y. Zhou, **J. J. Mason**, 2003. "Evaluations of bone cement augmentation in proximal femur." *27th Annual Meeting of the American Society of Biomechanics*, University of Toledo, Toledo, Ohio, September 25-27, 2003
49. Y. Zhou, C. Li, J. E. Renaud, J. J. Mason, 2003. "Threaded end short fiber reinforcement of bone cement." *27th Annual Meeting of the American Society of Biomechanics*, University of Toledo, Toledo, Ohio, September 25-27, 2003
50. Y. Zhou, C. Li, J.E. Renaud, **J.J. Mason**, "Strengthening of Bone Cement by Shape Optimization of Short Fibers," *Proceedings of DETC.03 ASME 2003 Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, Chicago, IL, September 2-6, 2003

51. Tovar, S.E. Gano, J.E. Renaud, **J.J. Mason**, "Topology and Shape Optimization of an Interbody Fusion Implant for Lumbar Spine Fixation," *Proceedings of DETC.03 ASME 2003 Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, Chicago, IL, September 2-6, 2003
52. X. Wu, D.Z. Chen, **J.J. Mason**, and S.R. Schmid ``Pairwise Data Clustering and Applications,'' *Lecture Notes in Computer Science*, Vol. 2697, Springer Verlag, *Proc. of the Ninth Annual International Computing and Combinatorics Conference (COCOON),* Big Sky, MT, July 25-28, 2003, pp. 455-466
53. K. M. Vernaza-Peña, **J.J. Mason**, T. Ovaert and M. Li, "Experimental Investigation of the Temperature Fields Generated During Orthogonal Machining," *NSF Workshop on Research Needs in Thermal Aspects of Material Removal Processes*, Oklahoma State University, Stillwater, OK, June 10-12, 2003
54. K. Vernaza, **J. Mason**, T. Ovaert and M. Li, "Temperature generation in cutting of aluminum at low and negative rake angles," *2003 SEM IX International Congress and Exposition on Experimental and Applied Mechanics*, June 2-4, 2003, Charlotte, NC
55. **J.J. Mason**, "Temperature Fields in Orthogonal Machining," *2003 NSF Design, Service and Manufacturing Grantees and Research Conference*, Birmingham, AL, Jan 6-9, 2003
56. Y. Zhou, C. Li, J. E. Renaud, J. J. Mason, 2003. "Shape optimization of short fibers for bone cement reinforcement." *2003 Midwest Graduate Student Biomechanics Symposium*, April 4-5, 2003, University of Toledo, Toledo, OH
57. Li, J. Mason, 2003. "Effects of pre-cooling and pre-heating procedures on bone cement polymerization in cemented hip replacements." *The 13th Interdisciplinary Research Conference on Biomaterials*. Johns Hopkins University, Baltimore, Maryland, March 14-15, 2003
58. S. Schmid, S. Yin, **J. Mason** and E. Corona, "Bending and Springback of Laminated Steel," *JSME/ASME Int. Conference on Materials Processing*, Honolulu, HI, Oct 15-18, 2002
59. **James Mason,** C. Li, Y. Wang and S. Schmid, "Predictions of Residual Stresses in Bone Cement for Joint Arthroplasty," *IV World Congress of Biomechanics*, Calgary, AB, Canada, Aug 5-9, 2002, ***Calgary Award Winning Presentation in Orthopedics***
60. K.M. Vernaza-Peña, **J.J. Mason,** and M. Li, "Temperature Fields in Aluminum during Orthogonal Cutting under Different Rake Angles," *2002 SEM International Congress and Exposition on Experimental and Applied Mechanics*, Milwaukee, WI, June 10-12, 2002
61. Li, D. Yakimicki, S. Schmid and **J.J. Mason,** "Effects of Preheating Stems Prior to Hip Implantation on Bone Cement Reaction and Void Development," *2002 SEM International Congress and Exposition on Experimental and Applied Mechanics*, Milwaukee, WI, June 10-12, 2002
62. C. Li, S. Kotha, D. Yakimicki, M. Hawkins, S. Schmid, and **J.J. Mason**. "Experimental Characterizations of Bone Cement Curing Setting Temperature and Time," *2002 SEM International Congress and Exposition on Experimental and Applied Mechanics*, Milwaukee, WI, June 10-12, 2002
63. S. Batill, S. Skaar, R. Nelson, B. Goodwine, **J. Mason** and M. Sen, "Development of a Curriculum for Mechanical Engineering Based upon Intelligent Systems and Automation," *Proceedings of the 2002 American Society for Engineering Education Annual Conference & Exposition,* Montreal, Quebec, Canada, June , 2002
64. C. Li, S. Schmid and **J. Mason**. "Effects of initial temperature conditions on cement polymerization and thermal osteonecrosis in cemented hip replacements," *The Tenth Annual Symposium of Computational Methods in Orthopaedic Biomechanics*, University of Texas Southwestern, Dallas, February 9th, 2002

65. C. Li, S. Kotha, C. Huang, S. Schmid, D. Yakimicki, M. Hawkins and **J. Mason**,. "Finite element simulation of thermal behavior of prosthesis-cement-bone system," *ASME 2001 Summer Bioengineering Conference*, June 27-July 1, 2001, Snowbird, Utah, in ASME.BED-50, pp. 235-236
66. S. Yi, D. Chen and **J.J. Mason**, "A New Graph Based Skeletonization Method," *9th Annual Symposium of Computational Methods in Orthopaedic Biomechanics*, University of California, San Francisco, February 24, 2001
67. S. Yi, D. Chen and **J.J. Mason**, "A New Automated 3D Finite Element Mesh Generation Method from Medical Images," *9th Annual Symposium of Computational Methods in Orthopaedic Biomechanics*, University of California, San Francisco, February 24, 2001
68. C. Li, S. Kotha, C.H. Huang, **J.J. Mason**, D. Yakimicki and M. Hawkins, "Numerical Simulations of In-Situ Polymerization Behavior of Bone Cement," *9th Annual Symposium of Computational Methods in Orthopaedic Biomechanics*, University of California, San Francisco, February 24, 2001
69. K. Vernaza, **J.J. Mason** and M. Li, "Experimental Study of the Temperature Field Generated during Orthogonal Machining of Aluminum," *The 37th Annual Technical Meeting of the Society of Engineering Science*, October, 2000, University of South Carolina, Columbia, SC
70. **J.J. Mason**, J. Lemski, T. Stuhldreher and D. Furrer, "Effects of Microstructure and Loading Parameters on Fatigue Crack Propagation Rates in AF2-1DA-6," *9th Int. Symposium on Superalloys, The Minerals, Metals and Materials Society*, Champion, PA, September, 2000
71. **J.J. Mason** and C. Rubio-Gonzalez, "Closed Form Solutions for the Dynamic Stress Intensity Factors in Composites," *20th Int. Conference of Theoretical and Applied Mechanics*, Chicago, IL, August, 2000
72. C. Rubio-Gonzalez and **J.J. Mason**, "Closed Form Solutions for the Dynamic Stress Intensity Factors at the Tip of Uniformly Loaded Semi-infinite Cracks in Orthotropic Materials," *Int. Conference on Composite Materials*, 12, Paris, France, July, 1999
73. K.M. Roessig and **J.J. Mason**, "Shear Dominated Fracture in High Speed Punch Tests on High Strength Metals," ASME/*JSME Joint Pressure Vessels and Piping Conference*, San Diego, CA, July, 1998
74. C. Rubio-Gonzalez and **J.J. Mason**, "Mixed Mode Dynamic Stress Intensity Factors Due to Applied Point Loads in Orthotropic Materials," *NATO Advanced Study Institute on Mechanics of Composite Materials and Structures*, Troia, Portugal, July, 1998
75. **J.J. Mason**, "Shear Dominated Fracture of Composites and High-strength Metals during Impact," *U.S. National Congress of Applied Mechanics*, Gainesville, FL, June, 1998
76. **J.J. Mason**, "Shear Localization in Punching and Blanking Operations," *U.S. National Congress of Applied Mechanics*, Gainesville, FL, June, 1998
77. **J.J. Mason** and K.M. Roessig, "Shear Dominated Fracture in Dynamic Punch Tests on High-strength Metals," *Society for Experimental Mechanics, Spring Conference and Exposition*, Houston, TX, June, 1998
78. **J.J. Mason**, "Shear Dominated Fracture of Composites and High-strength Metals during Impact," *Office of Naval Research 6.1/6.2 Workshop*, Carderock NSWC, Washington. DC, May, 1998
79. **J.J. Mason** and K.M. Roessig, "More Observations of Shear Localization and Failure in Maraging Steel," *High-Speed Photography and Photonics: 22nd Int. Congress*, D. L. Paisley and A.M. Frand Eds., SPIE, Vol. 2869, Santa Fe, NM, 1996
80. **J.J. Mason** and K. Roessig, "Failure in Dynamic Punch Tests," *Annual Joint Summer Meeting of the App. Mechanics and Materials Divisions of the American Society of Mechanical Engineers*, John's Hopkins Univ., Baltimore, MD, 1996

81. **J.J. Mason**, J. Mahon and J. McKale, "Finite Element Analysis of the Scaphoid," *Carroll Hand Club Annual Meeting*, Columbia Presbyterian Medical Center, New York Orthopaedic Hospital Sponsorship Affiliation, Sedona, AZ, 1996
82. J. Zimmerman and **J.J. Mason**, "Effect of Aging Treatment on Shear Localization in C300," *IMECE Meeting of American Society of Mechanical Engineers*, San Francisco, CA, November, 1995
83. **J.J. Mason**, A.J. Rosakis and G. Ravichandran, "Full Field Measurements of the Deformation Field around a Dynamically Growing Shear Band," *Society of Engineering Science31st Annual Meeting*, Texas A&M University, College Station, TX, 1994
84. G. Ravichandran, G. Subhash, **J.J. Mason** and A.J. Rosakis, "An Investigation of Thermomechanical Instabilities Using a Kolsky Pressure Bar," *114th Winter Annual Meeting of the American Society of Mechanical Engineers*, New Orleans, LA, November, 1993
85. A.J. Rosakis, **J.J. Mason** and G. Ravichandran, "On the Amount of Plastic Work Converted to Heat: An Experimental Study Using the Split Hopkinson Pressure Bar," *Society of Engineering Science 29th Annual Meeting*, La Jolla, CA, 1992

Invited Lectures, Presentations and Papers

1. **Brenden Morse and James J. Mason,** "Accident Reconstruction and Vehicle Data Systems," Sentry Claims Training, Salem, OR, May 15, 2018
2. **James J. Mason, PhD,** "Infotainment and Telematics Systems in Passenger Vehicles," Liberty Mutual SIU Meeting, Phoenix, AZ, March 29, 2018
3. **James J. Mason, PhD,** "Infotainment and Telematics Systems in Passenger Vehicles," East Bay Claims Association, Pleasant Hill, CA, February 14, 2018
4. **Wahlburg, T, McDevitt, A and Mason, J,** "Product Liability in Vehicle Accidents," San Francisco Trial Lawyers Association, San Francisco, CA, November 14, 2017
5. **Gerard W. White and James J. Mason, PhD,** "Crane Casualties and Recoveries", Annual Meeting, National Association of Subrogation Professionals, Austin, TX, November 6, 2017
6. **Brenden Morse and James J. Mason, PhD,** "Vehicle Telematics and Infotainment Systems**,"** Southern California Fraud Investigation Association, Palm Springs, CA, October4, 2017
7. **James J. Mason, PhD,** "" Claims Conference of Northern California, McClellan, CA, Sep 13, 2017
8. **James J. Mason, PhD,** "Accident Reconstruction and Vehicle Information Systems," Ardalan and Associates, Woodland Hills, CA, July 6, 2017
9. **James J Mason, PhD**, "Failure Analysis and Materials Science," Davis Rothwell- Earle & Xochihua, Portland, OR , May 5, 2017,
10. **James J. Mason, PhD,** "Accident Reconstruction and Medical Device Failure," Walkup, Melodia, Kelly & Schoenberger, San Francisco, CA, May 2, 2017
11. **James J. Mason, PhD,** "Materials Science in Fire Sprinkler Systems," Central Valley Claims Association, Stockton, CA, April 21, 2017
12. **James J. Mason, PhD,** "Accident Reconstruction: What Really Happened?," The Veen Firm, San Francisco, CA, January 25, 2017
13. **James J. Mason, PhD,** "Fire Suppression Systems," East Bay Claims Association, Pleasant Hill, CA, April 9, 2014
14. **James J. Mason, PhD,** "Moving Vehicle Accident Reconstruction," Allstate, Torrance, CA, March 7, 2014
15. **James J. Mason, PhD,** "Commercial Vehicle Accident Reconstruction," Low, Ball & Lynch, A Professional Corporation, Sacramento, CA, November5, 2013
16. **James J. Mason, PhD,** "Metallurgical Failures in Heavy Equipment," Exponent Inc., Palo Alto, CA, August 22, 2013

17. **James J. Mason, PhD,** "Phantom Vehicle Investigations," Allstate Insurance, Stockton, CA, August 21, 2013
18. **James J. Mason, PhD,** "Vehicle Inspection and Accident Reconstruction," Law Offices of Kelly J. Sweeney, Seattle, WA, June 20, 2013
19. **James J. Mason, PhD,** "Biomechanics of Low Velocity Impacts," American Automobile Association of California, Santa Ana, CA, June 18, 2013
20. **James J. Mason, PhD,** "Injury Biomechanics; How People Get Hurt," Rimkus Arizona 3rd Annual Continuing Education Event, Phoenix, AZ, May 7, 2013
21. **James J. Mason, PhD,** "Injury Biomechanics; How People Get Hurt," Sedgwick Claims Management, Seattle, WA, November 20, 2012
22. **James J. Mason, PhD,** "Injury Biomechanics; How People Get Hurt," King County Risk Management, Seattle, WA, August 29, 2012
23. **James J. Mason, PhD,** "Injury Biomechanics; How People Get Hurt," Geico Insurance: 4180 Lind Avenue SW, Renton, WA 98057, July 12, 2012
24. **James J. Mason, PhD,** "Injury Biomechanics; How People Get Hurt," Progressive Insurance Inc., Bothell, WA, April 19, 2012
25. **Jim Mason,** "Uncertainty Analysis in Vehicle Accident Reconstruction," Exponent Inc., Phoenix, AZ, June 27, 2011
26. **Jim Mason,** "Biomechanics versus Mechanobiology," Civil Engineering Department, University of Wisconsin, Milwaukee, March 16, 2011
27. **Jim Mason,** "Transitioning from Biomechanics to Mechanobiology," Mechanical Engineering Department, Michigan State University, East Lansing, MI, April 27, 2010
28. **Jim Mason**, "Building a Business in Life Sciences," The Medical Mile Resource Group Lecture Series Keynote Speaker, The DeVos Center at Grand Valley State University's Pew Campus, Grand Rapids, MI, Mar 23, 2010
29. **Jim Mason**, "Future Directions for Patellofemoral Implants," Grand Rounds, Blodgett Hospital, Grand Rapids, MI, Mar 17, 2010
30. **Jim Mason**, "Mechanics and Materials Related to Patella Resurfacing," Institute of Orthopedic Research & Education, The Methodist Hospital, Houston, TX, Jun 21, 2009
31. **Jim Mason**, "Mechanical Engineering Education and Research in the 21st Century," the Petroleum Institute, Abu Dhabi, UAE, Apr 21, 2009
32. **Jim Mason**, "In-vitro force measurements with energy harvesting," Indiana University, Purdue University, Indianapolis (IUPUI), Indianapolis, IN, Apr 17, 2009
33. **Jim Mason**, "New Directions in the Treatment of Patellofemoral Joint Pain," Florida International University, Mar 13, 2009
34. **Jim Mason**, "Patella Mechanics and Materials," Aerospace and Mechanical Engineering Department, University of Notre Dame, Feb 17, 2009
35. **Jim Mason**, "Engineering the Patellofemoral Joint; Present and Future," Indiana University School of Medicine, Indianapolis, IN, Jan 26, 2009
36. **James Mason**, Brian Thomas, Mike Wallick, Don Yakimicki, "Phase-Separated Hydrogels Comprised of Both Hydrophilic and Hydrophobic Segments," TMS 2008, 137th Annual Meeting and Exhibition, New Orleans, LA, Mar 11, 2008
37. **J.J. Mason,** "Careers in Engineering Industry," Aerospace and Mechanical Engineering, University of Notre Dame, Notre Dame, IN, Sep 18, 2007
38. **J.J. Mason,** "High Strain Rate Behavior of Cancellous Bone," Mechanical Engineering Department of the Ohio State University, Columbus OH, Mar 4, 2005
39. **J.J. Mason,** "Thermal and Mechanical Issues for Minimally Invasive Implant Materials," University of Missouri, Kansas City, School of Dentistry, Oral Biology Research Seminar Series, May 28, 2003

40. **J.J. Mason,** "Effects of Pre-Cooling and Pre-Heating Procedures on Bone Cement Polymerization in Cemented Hip Replacements," 13th Interdisciplinary Research Conference on Biomaterials, Baltimore, MD, Mar 14-15, 2003
41. **J.J. Mason** and E. Corona, "Effects of Cyclic Mechanical Loading on Thermal Fatigue of Solder," Diversified Systems, Inc., Indianapolis, IN, Mar 13, 2003
42. **J.J. Mason**, "Bending and Springback in Laminated Steels," University of Illinois, Urbana-Champaign, Materials Interest Group, Mar 7, 2003
43. K. Vernaza-Pena and **J.J. Mason,** "Experimental Temperature Fields in Aluminum during Orthogonal Cutting under Different Rake Angles," JSME/ASME Int. Conference on Materials Processing, Honolulu, HI, Oct 15-18, 2002
44. **J.J. Mason**, "Mechanics and Materials Issues in the Next Generation of Orthopedic Implants," California Institute of Technology, Pasadena, CA, Jan 29, 2002
45. **J.J. Mason**, "Recent Research in Dynamic Fracture Mechanics and High Speed Machining," University of Science and Technology, China, Hefei, China, Jan 11, 2002
46. **J.J. Mason**, "Dynamic Fracture Mechanics Solutions for Orthotropic Materials," Ningbo University, Ningbo, China, Jan 10, 2002
47. **J.J. Mason**, "Current Research in Aerospace and Mechanical Engineering at the University of Notre Dame," Beijing University of Aeronautics and Astronautics, Beijing, China, Jan 8, 2002
48. **J.J. Mason**, "Thermomechanical Issues in Total Hip Arthroplasty", Tsinghua University, Beijing, China, Jan 7, 2002
49. **J.J. Mason**, "Temperature Field Measurements During Machining of Aluminum Alloys," National Institute of Standards and Technology, Gaithersburg, MD, June 12, 2001
50. **J.J. Mason**, "Temperature Field Measurements During Machining of Aluminum Alloys," Theoretical and Applied Mechanics Department, Cornell University, April 4, 2001
51. C. Rubio-Gonzalez, C.-Y. Wang and **J.J. Mason**, "Dynamic Stress Intensity Factor Due to Concentrated Loads on Semi-infinite Cracks in Orthotropic Materials," The 2000 ASME Int. Mechanical Engineering Congress and Exposition, Orlando, FL, November 9, 2000, in *Dynamic Failure in Composite Materials and Structures,* Ed. Y. Rajapakse and C.T. Sun, ASME Int., Pub., AMD-Vol. 243, pp 119-128
52. C. Rubio-Gonzalez and **J.J. Mason**, "Dynamic Crack Propagation in Orthotropic Materials," The 2000 ASME Int. Mechanical Engineering Congress and Exposition, Orlando, FL, November 9, 2000
53. **J.J. Mason**, "Dynamic Deformation and Failure," Loctite Corporation, Rocky Hill, CT, June 5, 1999
54. **J.J. Mason**, "Dynamic Fracture Initiation in Orthotropic Materials," 6.1/6.2 Workshop, Naval Surface Warfare Center at Carderock, Bethesda, MD, April 28-30, 1999
55. **J.J. Mason**, "Dynamic Fracture Initiation in Orthotropic Materials," Department of Civil Engineering at Duke University, Raleigh, NC, March 10, 1999
56. **J.J. Mason**, "Dynamic Fracture Initiation in Orthotropic Materials," Department of Mechanical Engineering, University of Alberta, Canada, October 29, 1998
57. **J.J. Mason**, "Applicability of Dynamic Fracture Mechanics to the Initiation of Adiabatic Shear Bands," Los Alamos National Laboratory, Los Alamos, NM, August 19, 1998
58. **J.J. Mason**, "Shear Dominated Fracture in Dynamic Punch Tests on High Strength Metals," 6.1/6.2 Workshop, Naval Surface Warfare Center at Carderock, Bethesda, MD, May 4, 1998
59. **J.J. Mason**, "Application of Dynamic Fracture Mechanics to Shear Band Initiation in Impact of Metals," Department of Civil Engineering at Duke University, Raleigh, NC, March 11, 1998

60. **J.J. Mason**, "Shear Failure of Metals in Dynamic Punching and Blanking Operations," A.G. Simpson Co., Toronto, Ont., August 22, 1997
61. J. Zimmerman and **J.J. Mason**, "The Effects of Loading and Material Microstructure Upon Shear Localization in C300," 116th Winter Annual Meeting of the American Society of Mechanical Engineers, San Francisco, CA, November 21, 1995
62. **J.J. Mason**, "Issues Involved in the Experimental Investigation of Mechanical Initiation of Solid Explosives," Wright Laboratory, Armament Directorate, Eglin AFB, FL, July 26, 1995
63. **J.J. Mason**, "Mechanisms and Effects of Heat Generation in Dynamic Fracture," Department of Engineering Science at the Ohio State University in Columbus, OH, April 13, 1994
64. J. Lambros, **J.J. Mason** and A.J. Rosakis, "An Experimental Investigation of Dynamic Mixed-Mode Fracture Initiation," SPIE 1991 Int. Symposium on Optical and Optoelectronic Applied Science and Engineering, San Diego, CA, 1991

Press Coverage and Internet Publications

1. James J. Mason, "Investigating Carbon Bicycle Accidents," CLM, June 18, 2019, http://clmmag.theclm.org/home/article/Investigating-Carbon-Bicycle-Accidents?tick=1273931192933073012
2. James Mason and Jeffrey Bradshaw, "CPVC: Chlorinated Polyvinyl Chloride Piping," On CPVC Fire Sprinkler Pipe.com, http://cpvcfiresprinklerpipereport.com/cpvc-chlorinated-polyvinyl-chloride-piping
3. Monica Scott, "Innovative joint cement holds hope for economy, pain relief," *Detroit Free Press*, Detroit MI, June 13 2010, http://www.freep.com/article/20100613/NEWS06/6130446/1001/rss01
4. Tony Conley, Radio interview, *The Toney Conley Show*, WILS, Lansing MI, June 7, 2010
5. Alex Nixon, "Grand Rapids researcher's new bone cement would compete with Stryker Corp. products," *Kalamazoo Gazette*, Kalamazoo, MI, June 03, 2010, http://www.mlive.com/business/west-michigan/index.ssf/2010/06/grand_rapids_researchers_new_b.html
6. Monica Scott, "Van Andel Institute researcher discovers more durable cement for joint replacements," Grand Rapids Press, Grand Rapids, MI June 02, 2010, http://www.mlive.com/news/grand-rapids/index.ssf/2010/06/van_andel_institute_researcher_4.html
7. IBJ Staff, "OrthoX receives top Mira award," *Indiana Business Journal*, Indianapolis, IN, May 17, 2010, http://www.ibj.com/orthox-receives-top-mira-award-/PARAMS/article/19993
8. Joseph Jackmovich, "Local business recognized for innovation in orthopedics," *South Bend Tribune*, South Bend, IN, May 17, 2010, http://www.southbendtribune.com/article/20100517/THRIVE/305179999/1262/THRIVE

Proposals Funded at Granger Engineering, LLC (Total $1,224,798)

1. W. Yue and **J. Mason**, "Commercialization of fiber reinforced bone cements with antibiotics," National Science Foundation, STTR Phase IIB Grant, Oct 1, 2008 to Mar 31, 2009, $174,991
2. W. Yue and **J. Mason**, "Commercialization of a fiber reinforced bone cement," Indiana SBIR/STTR Commercialization Enhancement Program (ISCEP), State of Indiana, July 1, 2008 to June 30, 2010, $349, 982
3. **J. Mason**[3], "SBIR/STTR Phase II: Variable Diameter Fiber Reinforced Biopolymers for Minimally Invasive Orthopedic Implants," Oct 1, 2006 to Sep 30, 2008, NSF, $499,849

[3] Principal investigator changed to Weimin Yue, May 2008

Proposals Funded at Notre Dame (Total $6,234,689)

1. **J. Mason**, R. Roeder, and G. Niebur, "Mechanical Characterization of Synthetic Biomaterials and Biological Tissues," Equipment Renewal and Restoration Program, The University of Notre Dame, Jan 1 to Jun 30, 2004, $139,500
2. **J.J. Mason** and E. Corona, "Highly Integrated Multifunctional Structure with Embedded Subsystem Functionality," July 1, 2003 to Jan 31, 2005, Odyssian Technology, Inc., $306,000
3. **J.J. Mason** and E. Corona, "Circuit Boards for Delphi Automotive Applications," Jun 1, 2002 to May 31, 2003, Delphi Automotive Systems, $22,276
4. **J.J. Mason**, "Thermomechanical Investigations of High Speed Machining of Aluminum," Sep 2002 to Aug 2005, NSF, Design, Manufacture and Industrial Innovations Program, $124,309
5. E. Corona, S. Schmid, and **J.J. Mason,** "Bending and Springback of Laminated Steel,", May 2001 to May 2003, MSC Laminates, $30,000
6. **J.J. Mason**, S.R. Schmid, J.E. Renaud, B. Hilberry*, G. Bruer*, and C. Turner#, "Advanced Spinal Instrumentation," Mar 2001 to Feb 2003, Indiana 21st Century Research and Technology Fund, $1,998,987
7. S.R. Schmid, **J.J. Mason**, and S. Paolucci, "Modeling of Investment Casting at Zimmer," Oct 2000 to Sep 2001, Zimmer Orthopedics, $30,000
8. S.M. Batill, S.B. Skaar, J.W. Goodwine, **J.J. Mason** and M. Sen, "An Integrated Curriculum for Intelligent, Microprocessor-Based Mechanical Systems," Sep 2000 to Aug 2003, National Science Foundation, $499,947
9. S.R. Schmid, **J.J. Mason,** A. Marsan, B. Hilberry*, G. Bruer*, and C. Turner#, "Minimally Invasive Orthopedic Implants," Feb 2000 to Jan 2002, Indiana 21st Century Research and Technology Fund $2,200,000
10. J.E. Renaud, J.P. Thomas, **J.J. Mason** and A. Marsan, "Boeing Cooperative Research in Manufacturing," Boeing, Nov 1999 to Sep 2000, $15,000
11. **J.J. Mason**, " Fatigue of U720 and AF2-1DA-6," Sep 1999 to Aug 2000, Ladish Co., Inc., $5,000
12. **J.J. Mason**, "Machining of Aircraft Alloys," Jul 1998 to Jun 1999, NASA Space Consortium, University of Notre Dame, $3,000
13. **J.J. Mason**, "Experimental Analysis of Thermomechanics in High Speed Machining of Aluminum," Jul, 1998 to Dec, 1999, ALCOA Foundation Award, $40,000
14. **J.J. Mason**, "On the Application of Dynamic Fracture Mechanics to Continuous Fiber Reinforced Composite Materials," Jun, 1996 to May, 1999, Office of Naval Research: Young Investigator Program, $309,452
15. J. Powers, R. Caspar and **J.J. Mason**, "Initiation of Detonation," Nov, 1995 to Sep, 1996, AFOSR, Summer Research Extension Program, $25,000
16. **J.J. Mason** and K.M. Roessig, "The Initiation of Reactive Materials," Nov, 1995 to Sep, 1996, AFOSR, Summer Research Extension Program, $25,000
17. **J.J. Mason**, "Shear of Energetic Materials," Nov, 1995 to Sep, 1996, AFOSR, Summer Research Extension Program, $25,000
18. **J.J. Mason**, "Jump Start Proposal for AME 236—Mechanics of Solids," Aug, 1994 to Jul, 1995, Univ. of Notre Dame, Office of Univ. Computing, $1,000

* Purdue University
\# Indiana University

19. **J.J. Mason**, J. Powers and S. Schmid, "Acquisition of an Ultra-High-Speed Photographic /Microphotographic/Interferometric Equipment System," Sep, 1994 to Aug, 1997, NSF, Academic Research Infrastructure Program, $427,718
20. **J.J. Mason**, "Application of the Potential Drop Method to Measurement of Dynamic Crack Length," Jun, 1994 to May, 1995, Univ. of Notre Dame, Faculty Research Program, $7,500
21. **J. Mason**, Matching Funds for "SBIR/STTR Phase I: Variable Diameter Fiber Reinforced Biopolymers for Minimally Invasive Orthopedic Implants," Jun 1, 2004 to May 31, 2005, 21st Century Research and Technology Fund of the State of Indiana, $99,988
22. **J. Mason** "SBIR/STTR Phase I: Variable Diameter Fiber Reinforced Biopolymers for Minimally Invasive Orthopedic Implants," Jun 1, 2004 to May 31, 2005, National Science Foundation, $99,988

Courses Taught at Notre Dame

Undergraduate Level

Mechanics of Solids
Mechanics of Solids Laboratory
Mechanical Behavior of Materials
Finite Element Methods for Structural Analysis
Senior Design Project

Graduate Level

Mathematical Methods I
Elasticity
Advanced Mechanics of Solids
Advanced Measurements Laboratory
Mechanics of Metal Cutting
Dynamic Fracture Mechanics
Mechanics and Failure of Composite Materials
Mixed Boundary Value Problems in Solid Mechanics
Cell Mechanics
Topics in Advanced Mechanics of Solids

Laboratory and Facilities Development at Notre Dame

Materials Testing Laboratory

At Notre Dame, Dr. Mason developed a 1000 square foot laboratory for investigations into the mechanics of materials. Through funding from the National Science Foundation, Alcoa Foundation and the University of Notre Dame, the laboratory was equipped with the following items:

- A stress reversal split Hopkinson bar for dynamic, high strain rate testing of materials in compression or compression followed by tension
- A dynamic orthogonal cutting Hopkinson bar
- A torsional split Hopkinson bar for dynamic, high strain rate testing of materials in shear
- An ultra-high-speed infrared detector array for measuring surface temperatures during dynamic deformation
- A Cordin model 330 ultra-high-speed camera capable of 2 million pictures per second

- A Cordin model 607 high intensity white light source for use with the 330 camera
- A Coherent 15 watt argon ion laser for use in dynamic high speed interferometry
- Two air guns capable of launching a 1 kg projectile at velocity in the range of 10 to 300 m/s
- Explosives testing tank and storage containers for performing experiments with explosive materials and the explosive loading of materials
- Two workstations, associated high speed oscilloscopes, data acquisition systems and optics for proper instrumentation of experiments using the above equipment
- Polishing, lapping and sectioning equipment for metallographic specimen preparation
- Hydraulic press for the manufacture of composite materials

Solid Mechanics & Structural Mechanics Testing Facility

Dr. Mason also developed a 3500 square foot facility that contained most of the static and fatigue material testing equipment of the AME department and a small (500 square foot) class room area. In 2000, Jim saw a need for a centralized mechanical testing facility in the AME department. Until that time individual researchers had purchased and maintained a few servo-hydraulic mechanical testing machines on their own, while the department maintained screw-driven testing machines for the undergraduate courses. This was inefficient and resulted in the lack of certain capabilities with duplication of other capabilities. Dr. Mason was able to organize all these machines into a centralized facility where all researchers in the college could have access to them. In addition, he was able to secure funds to add significant capabilities including a combined tension/torsion machine, thermal control chambers, and the capability for testing soft materials, such as biological tissues at a cost of over $450,000. After the lab was developed, Dr. Mason oversaw this facility including maintenance and scheduling. The following is a list of equipment that was located in this lab:

Testing Machines

- 3-ATS +/-10,000lb. static mechanical screw test machines with control consoles
- 1-Instron+/-20,000lb. static mechanical screw testing machine with control
- 2-MTS +/- 22,000lb. static/dynamic hydraulic testing machines with control consoles
- 1-Instron +/-20,000lb. static/dynamic material testing machine with integral hydraulic power supply and control console
- 1-Instron +/-20,000lb. and 10kip-in. static/dynamic Torque-Tension hydraulic testing machine with controls and console
- 1-Enduratec +/-1000lb. static/dynamic and 500in.-lb. Torque-Tension electro-mechanical material test machine with control and console
- 4-Hardnes testers: 1 Wilson Rockwell, 1 Wilson Superficial, 1 Wilson Tukon Testor, 1 Brinell 3000kg. load/10mm ball

Accessories:

- 1-ATS oven 0-1800 oF w/controls
- 1-Instron oven -100 to +400 oF w/controls
- Fracture Technology Associates fatigue testing software
- 1-Thermotron Environmental Test Chamber (-65C to +180C in 15 min.)with two remote enclosures
- 1-Instron 50hp hydraulic power supply for the Instron torque/tension and MTS machines

- 1-Haskris heat exchanger for 50hp Instron power supply
- Misc. grips and attachments

POST-DOCTORAL RESEARCHERS SUPERVISED AT THE VAN ANDEL RESEARCH INSTITUTE

Travis Burgers	*Wnt Signaling and Fracture Healing*	2010-*present*
Danese Joiner	*Wnt Signaling in Osteoarthritis*	2010-*present*

DOCTORAL DISSERTATIONS SUPERVISED AT THE VAN ANDEL INSTITUTE GRADUATE SCHOOL

Donald Scholten, MD-PhD	*PTEN and Akt signaling in Fracture Healing*	2011-*present*

COURSES TAUGHT AT THE VAN ANDEL INSTITUTE

VAI 9006	Statistical Methods in Biology	Spring '11

UNIVERSITY OF NOTRE DAME SERVICE

- Aerospace and Mechanical Engineering Awards Committee, 2004-2005
- Mechanical Engineering Graduate Studies Committee, 2000-2002
- Mechanical Engineering Committee on Appointments and Promotions, 1999-2002, 2004-2005
- Mechanical Engineering Curriculum Committee, 1997-2000, ***Chair,* 1998-2000**
- Faculty Advisor to student chapter of American Society of Mechanical Engineers, 1997-2000
- Aerospace and Mechanical Engineering Instructional Labs Committee, 1994-1997
- Committee on the Role of Materials Science in the College of Engineering, 1995-1996
- Member of Faculty Senate, 1994-1997

POST-DOCTORAL RESEARCHERS SUPERVISED AT NOTRE DAME

Congyue Wang	*Dynamic Fracture of Composites*	1998-1999
Shiva Kotha	*Development of Reinforced Bone Cements*	2000-2002
Chaodi Li	*Thermal Finite Element Analysis of Bone Cement Curing* **Calgary Award Winner; Orthopedics,** IV World Congress on Biomechanics, 2002	2000-2003
Karinna Vernaza-Peña	*Temperature Fields in Orthogonal Cutting*	2002-2003

DOCTORAL DISSERTATIONS SUPERVISED AT NOTRE DAME

Keith Roessig	*Applicability of Dynamic Fracture Mechanics to the Initiation and Propagation of Adiabatic Shear Bands* **First Prize Winner;** Student Paper Competition at the Southeastern Conference on Theoretical and Applied Mechanics, 1998	May, 1998
Carlos Rubio-Gonzalez	*Dynamic Fracture Initiation in Composites*	Dec, 1999
Karinna Vernaza-Peña	*Temperature Fields in Orthogonal Cutting* **Second Prize Winner;** Society for Experimental Mechanics, National Student Paper Competition 2002	Dec, 2002
Yan Zhou	*Microdesigned Reinforcements for Biocomposites*	May, 2005
Roman Kazban	*Effect of Tool Parameters on Residual Stress and Temperature Generation in High Speed Machining of Aluminum Alloys*	Dec, 2005
Kaifeng Liu (co-advisor T. Ovaert)	*Mechanics of Hydrogels in Biomechanical Applications*	May 2009

MASTER'S THESES SUPERVISED AT NOTRE DAME

W. Rivera	*Stress Reversal Split Hopkinson Testing of Threaded Fasteners*	May, 1995

J. Zimmerman	*Effect of Aging Treatment and Loading Geometry on Shear Localization in Kalthoff Impact Tests of C-300 Steel*	Aug, 1995
L. Spicciati	*Finite Element Analysis of Dynamically Loaded Threaded Fasteners*	May, 1996
R. Caspar (co-advisor J. Powers)	*Shear Initiation of Explosives*	Aug, 1996
A. Rutten (co-advisor S. Schmid)	*Numerical Modeling of a Hip Stem Casting*	May, 2001
S. Long	*Finite Element Modeling of Bearing Cup Slip in an Aircraft Landing System*	May, 2001
Y. Wang	*Thermal Residual Stress Generation in Cemented Implants*	May, 2003
B. Torres	*Correlations between PC Board Strain and Solder Joint Fatigue Life*	May, 2003
A. Pilcher	*Mechanics of Spinal Injury During Impact*	May, 2004
D. Duffek	*Fatigue of Solder Under Combined Thermal/Mechanical Static/Dynamic Loading*	Aug, 2004
B. Hunt	*Hydrogels in Orthopedic Implants*	May, 2006

UNDERGRADUATE DESIGN AND RESEARCH PROJECTS DIRECTED AT NOTRE DAME

A Bi-Axial Split Hopkinson Bar: Design Synthesis and Feasibility Analysis	T. Ruddy, F. Brosnan, L. Bergman	Fall '93
A Biaxial Split Hopkinson Bar: Manufacture	T. Ruddy, F. Brosnan, L. Bergman	Spring '94
Finite Element Analysis of Scaphoid Bone Fracture	J. McKale	Spring/Fall '95, Spring '96
Design of a High Pressure Air Gun	D. Green,	Fall '95
Ultra-High-Speed Camera Support	E. Portune, D. Soykes	Fall '95
Manufacture of a High Pressure Air Gun	D. Green,	Spring '96
Ultra-High-Speed Camera Support	E. Portune, D. Soykes	Spring '96
Fatigue Testing of Mild Steel	S. Basu	Fall '96, Spring '97
Fatigue Testing of Super Alloys **Third Place Winner:** Old Guard Student Presentation Competition, ASME Region VI, 1999	T. Stuhldreher	Spring/Fall '98,
A 5 MPH Bumper Testing Apparatus	T. Stuhldreher, J. Knudsen	Summer '98
Examination of Void Formation Mechanisms During Bone Cement Curing	M. Hannon, J. Solis	Fall '01, Spring '02
Applications of Laser Peening in Orthopedic Implants	J. Hughes	Fall '01, Spring & Summer '02
Investigation of Hydrogels for Disk Replacement	T. Zawatsky	Summer '02
Calculation of 3D Object Skeletons by the Grass Fire Propagation Method	C. Dunstan	Summer '02
Thermal Measurements of Bone Cement Curing During Implantation in Sheep	A. Cienian, P. Stuhldreher, K. Bucci	Summer, Fall '02, Spring '03
Particle Image Velocimetry of High Speed Machining	R. Sharp, J. Blakely	Summer, Fall, '04

COURSES TAUGHT AT NOTRE DAME

UNDERGRADUATE LEVEL

AME/CE 236	Mechanics of Solids	Fall '93, Spring '94-

		'96, '98-'99, '01
AME 331	Mechanics of Solids Laboratory	Fall '97-'99
AME 442	Mechanical Behavior of Materials	Spring '97, '01,'03, '05
AME 446	Finite Element Methods for Structural Analysis	Spring '99-'00, '02-'03
AME 470	Senior Design Project	Fall '93,'95

GRADUATE LEVEL

AME 561	Mathematical Methods I	Fall '04
AME/CE 558	Elasticity	Fall '94-'96
AME/CE 559	Advanced Mechanics of Solids	Fall '01-'02, '05
AME 570	Advanced Measurements Laboratory	Spring '95
AME 698	Mechanics of Metal Cutting	Fall '04
AME 698	Dynamic Fracture Mechanics	Spring/Fall '97,
AME 698	Mechanics and Failure of Composite Materials	Spring '98
AME 698	Mixed Boundary Value Problems in Solid Mechanics	Fall '98
AME 698	Cell Mechanics	Fall '04
Short Course	Topics in Advanced Mechanics of Solids	Fall '99