



Curriculum Vitae of Mark F. Horstemeyer, Ph.D.
Dean of School of Engineering

Research Expertise

Integrated Computational Materials Engineering (ICME), multiscale materials modeling, microstructure-property constitutive modeling, finite deformation inelasticity, damage evolution, fracture, fatigue, penetration and impact mechanics; atomistic simulations, finite element analysis, crashworthiness, high-rate deformation, biomechanics, geomechanics, cosmology, and bio-inspired design optimization.

Education

- PhD 1995 Georgia Institute of Technology, Mechanical Engineering, G.P.A. 4.0/4.0
 Advisor: David L. McDowell
- MS 1987 Ohio State University, Engineering Mechanics, G.P.A. 3.6/4.0
- BS 1985 West Virginia University, Mechanical Engineering, G.P.A. 3.7/4.0, *Magna Cum Laude*

Employment

- 2019-present Dean of School of Engineering, Liberty University
- 2017-present Founder, President, and CEO of *Yobel Technologies, LLC*
- 2015-2018 Adjunct Professor of Physics, MSU
- 2013-2018 Adjunct Professor of Materials Science and Engineering Dept, Tuskegee Univ.
- 2010-2018 Honorary Professor of Mechanical Engineering, Xihua University, Chengdu, China
- 2010-2018 Adjunct Professor of Agricultural and Biological Engineering, MSU
- 2009-2018 Chief Technical Officer, CAVS/MSU
- 2007-present Founder, President, and CEO of *Predictive Design Technologies, LLC.*
- 2006-2012 Founder and Director of the DOE Southern Regional Center for Lightweight Designs (SRCLID)
- 2006-2012 Senior Scientist of DoD Simulation Based Reliability and Safety Center (SimBRS)
- 2004-2018 Professor in Computational Engineering, Mississippi State University
- 2002-2018 Chair Professor, Mechanical Engineering, Mississippi State University
- 2002-2008 Sr. Manager, Computational Manufacturing and Design, Center for Advanced Vehicular Systems, Mississippi State University
- 2002 Manager of Fluid/Thermal Modeling Dept., Sandia National Laboratories, Livermore, CA (15 PhD staff members)
- 2001-2002 Manager of Chemistry and Materials Process Modeling Dept., Sandia National Laboratories, Livermore, CA (12 PhD staff members)
- 1999-2001 Principle Member of Technical Staff, Sandia National Laboratories, Livermore, CA
- 1989-1999 Senior Member of Technical Staff, Sandia National Laboratories, Livermore, CA
- 1987-1989 Member of Technical Staff, Sandia National Laboratories, Livermore, CA
- 1986-1987 Engineering Intern, Owens Corning Fiberglas, Granville, OH
- 1984-1985 Engineering Intern, DOE-METC, Morgantown, WV

1983-1984 Engineering Intern, WV Dept of Highways, Weirton, WV

Honors/Awards:

Mechanical Engineering at Mississippi State University Senior Research Award (2018)
European Union Academy of Sciences (2017)
Southeastern Universities Research Association (SURA) Scientist of the Year Award-MSU Nominee (2015)
SouthEastern Conference University (SECU) Faculty of the Year Award-MSU Nominee (2015)
American Association for the Advancement of Science (AAAS) Fellow (2013)
Society of Automotive Engineering (SAE) Fellow (2012)
West Virginia University Distinguished Alumni Award (2012)
Giles Professor (Highest Honor at the University), Mississippi State University (2011)
Plasticity Research Award for Young Investigator, International Conference on Plasticity, Puerta Vallarta, Mexico (2011)
Honorary Professor at Xihua University, Sichuan Province, Chengdu, China (2010)
American Society of Metals (ASM) Fellow (2010)
Thomas French Alumni Achievement Award, Ohio State University (2009)
Ralph Powe Award Mississippi State University (highest university research award) (2008)
ASME Materials Division Chair (2007)
Society of Automotive Engineering (SAE) Teeter Award (2007)
National Leadership Entrepreneurial Award (2007)
American Society of Mechanical Engineering (ASME) Fellow (2006)
Baseball Hall of Fame Physics of Baseball Panel (2004)
Appointed to ASME Materials Executive Board (2004)
Columbia Accident Investigation Board Consultant (2003)
American Foundry Society "Best Paper Award" (2003)
Chair Faculty position MSU (2002)
DOE Recognition Award (2000) USCAR work
R&D100 Award (2000) microstructure-property modeling
American Foundrymen's Society Award (2000) casting modeling
Society of Automotive Engineers (SAE) (1996) technical recognition award
Sandia Doctoral Study Program (1993-1995) internal state variable plasticity
Sandia Award For Excellence (1992) finite element lethality studies
Sandia Award For Excellence (1990) weapons experiments
Sandia Award For Excellence (1989) weapons design

Program Development (\$44.0 M)

80. DOE BES: Understanding Multiscale Defect Formation Process and Phase-Switching Behavior in Shape Memory Functional Oxides, 2018-2021, \$190K
79. ERDC/TARDEC, Advanced Modeling and Simulation of Multi-Physics Material Response in Geo-environments- Topic 2, 2017-2020, \$356K
78. ERDC/TARDEC Advanced Modeling and Simulation of Multi-Physics Material Response in Blast Environments-Topic 4, 2017-2020, \$276.6K
77. NASA Numerical Coupling of Eulerian and Lagrangian Finite Element Code, 2017, \$100K, with Youssef Hammi and Rick Weed
76. NSF Solidification Modeling, 2017-2020 \$386,689 with Lei Chen and Yucheng Liu
75. DoD ERDC \$600K Multiscale Damage and Fragmentation Modeling Ultra High Strength Concrete 2016-2017
74. DoD ARL \$400K ICME Metals Modeling 2015-16

73. DoD ERDC \$482K SimBRS Multiscale Cement Fracture Modeling 2015-16
72. DoD ERDC \$98K CEED Multiscale Fracture Modeling 2015-16
71. DoD ERDC \$191K CEED Multiscale Cement Modeling 2015-16
70. DoD ERDC \$184K CEED Multiscale Polymer Modeling 2015-16
69. NSF \$1000K Collaborative Research: Fundamental Investigation of Zinc-Coating of Advanced High Strength Steels Directed by Multiscale Modeling and Experiments with Bin Li and Mohsen Zaeem (MFH: \$289) 2015-18
68. DoD ERDC \$233K CEED Multiscale Fracture Modeling 2014-15
67. DoD ERDC \$415K CEED Multiscale Cement Modeling 2014-15
66. DoD ERDC \$309K CEED Multiscale Polymer Modeling 2014-16
65. DOE Lightweight Metals \$312K Multiscale Modeling of Corrosion, 2013-15
64. DoD ERDC \$176K CRES Multiscale Modeling 2013-15 with Youssef Hammi
63. DoD SimBRS \$250K Weld Joint Fatigue of RHA Steel 2013-14 with Hongjoo Rhee
62. DoD SimBRS \$200K High Strain Rate Modeling and Testing 2013-14 with Hongjoo Rhee
61. DOE INL \$297 MOOSE Modeling 2012-2014
60. DoD ONR \$197K Plasticity/Damage Modeling 2011-2014 with Bin Li
59. DoD ERDC \$118K Structure-Property Quantification of a Paddlefish 2011
58. DoD ERDC \$230K High Rate Damage Modeling of Bridge Steels 2011
57. PNNL \$70K Radiation Damage MD Simulations 2011
56. DoD ERDC \$207K High Rate Response of Steel Alloys 2010
55. DoD TARDEC \$500K SimBRS Multiscale Modeling 2009-2012
54. DOE Idaho National Lab \$75K for Radiation Damage Modeling 2010
53. DOE Southern Regional Center for Lightweight Innovative Designs (SRCLID) (\$3960K) with multiple co-PIs (Phase 3) 2009-2011
52. DoD Metal Reliability (\$1.2M) 2008-2010
51. DOE Southern Regional Center for Lightweight Innovative Designs (SRCLID) (\$3960K) with multiple co-PIs (Phase 2) 2008-9
50. PNNL Multiscale Modeling of Radiation Damage (\$210K: 100%) 2009
49. NSF Creating a Green Composite by Modeling, (\$230K: 50%) with S. Shi 2009
48. DoD An Integrated Approach to Develop Cyberinfrastructure Technology (\$418K: 50%) with Tomasz Haupt 2008
47. Miltech, Fracture Mechanics (\$105K: 100%) 2007-8
46. DoD Composite Feasibility Study (\$146K: 100%) 2007-8
45. CAE Solutions: Composite Fabrics (\$51K :100%) 2007-8
44. DOE Southern Regional Center for Lightweight Innovative Designs (SRCLID) (\$4000K) with multiple co-PIs (Phase 1) 2006-7
43. ORNL Center for Manufacturing and Design (\$3960K) with multiple co-PIs 2007-8
42. DoD Polymer Modeling (\$660K:50%) with Esteban Marin 2007-8
41. NSF Virtual Organization for Cyber Design (CBET0742730-08010004) (\$140K: 50%) with Tomasz Haupt 2007-10
40. DoD Run Flat Tires (\$700K: 100%) 2007-8
39. DoD Bio-Inspired Design (\$420K: 50%) with Lakiesha Williams 2007-8
38. DoD High Rate Phenomena (\$700K: 50%) with Phil Gullett 2007-8
37. DoD TARDEC Development of PM Alloys Model, (\$750K: 50%) with Sergio Felicelli 2007-8
36. CAE Solutions SBIR: Modeling Improvements for Warhead Designs (\$130K: 50%) with Gabriel Potirniche 2006

35. General Dynamics: Robotics Lightweight Design (\$400K: 100%) 2007
34. NSF REU High Rate Phenomena (EEC0647924)(\$300K: 10%) PI:Gullett, Co-PI:Horstemeyer 2007
33. MS Community Action Team (\$50K: 100%) K-PhD program development 2007
32. NAC/DoD Physics Based Reliability Model (\$750K: 100%) 2006-07
31. Halter Marine Design (\$200K:100%) 2006-07
30. Drive Dynamics Modeling of Viscoelastic Behavior (\$700K: 100%) 2006-07
29. NAC/DoD Modeling High Rate Phenomena (\$500K: 50%) with Phil Gullett 2006-07
28. NAC/DoD Lens Prognostic Modeling (\$600K: 50%) with Sergio Felicelli 2006-07
27. CAE Solutions SBIR: Experimental Validation of Composites Failure (\$100K: 50%) with Gabriel Potirniche 2006
26. Miltech: Materials Modeling and Airborne Validation Support (\$255K: 100%) 2006
25. Wade Services: crash modeling (\$50K: 100%) truck crash scenario 2005
24. NAC/DoD: high rate modeling (\$240K: 50%) multiscale modeling 2005-06
23. Viking Range (\$10K: 100%) finite element simulations 2005
22. Mueller Copper Fittings (\$50K: 100%) hydroforming modeling 2005
21. Sandia Grant (\$110K:100%) magnesium modeling 2005-2006
20. DoD DURIP In-Situ Fatigue Scanning Electron Microscope (\$337K: 33%) 2005
19. NAC/DoD: Cyclic Modeling for Laser Engineered Net Shaping (LENS) (\$960K: 100%) 2005-06
18. Chalk River National Laboratory of Canada (\$20K:100%) Stress Evaluations for Al 7075 using Neutron Diffraction (with Y. Xue and C. Burton) 2004
17. MilTech Fatigue (\$80K:100%) History and optimization modeling of forgings 2004
16. MilTech Forging (\$105K: 100%) History and optimization modeling of forgings 2004
15. NAC/DoD: Internal State Variable Model for Powdered Metal (PM) / Laser Engineered Net Shaping (LENS) Components (\$600K:100%) 2004-05
14. USCAR/USAMP Lightweight Metals Group (\$540K:100%): modeling of Powder Metallurgy Process 2004
13. GM-DOE Challenge X Grant (\$50K:50%) with Marshall Molen Crossover Redesign of a GM Equinox 2004
12. AISI (Ford) Grant (\$25K:50%) Optimization of Steel Structures in Design 2003
11. DARPA Grant (\$1600K: 30%) with Jim Newman, Steve Daniewicz, Development of Tools for Prognosis of Aircraft Metals 2003
10. NASA Grant (\$36K: 100%) Columbia Accident Investigation Board (CAIB) external review panel 2003
9. Sandia Grant (\$280K: 100%) magnesium modeling 2003-2006
8. LIGA/MEMS (\$1500K: 20%) process-structure microcasting modeling 2001-2004
7. Sandia LDRD (\$450K: 50%): Atomistic modeling for multi-scale damage analysis 2000-2001
6. USCAR/USAMP Lightweight Metals Group (\$875K: 100%): microstructure-property modeling of a cast AM60B magnesium alloy 2000-2005
5. Sandia ASCI Materials, Physics, and Mechanics (\$800K: 33%): friction modeling of small scale MEMS devices 1999-2004
4. DoD/DOE MOU for Material Modeling (\$1400K: 50%): plasticity and damage modeling 1997-2002
3. Sandia LDRD (\$800K): Atomistic modeling for multi-scale plasticity analysis 1997-2000
2. USCAR/USAMP Lightweight Metals Group (\$1200K: 100%): microstructure-property modeling of a cast A356 aluminum alloy 1995-1999
1. Naval Surface Warfare Center (\$600K: 33%): analysis to evaluate failure in hull welds and implementation of state-of-the-art constitutive models 1995-2000

Teaching Experience:

Taught "Mechanical Engineering Seminar for Graduate Students" Fall 2013, 2014, 2015, 2016, 2017, 2018

Taught "Continuum Mechanics" Fall 2014 (Evaluation 4.5/5.0)

Introduced/taught "Integrated Computational Materials Engineering (ICME)" Fall 2012 (Evaluation 4.8/5.0), Fall 2013 (Evaluation 4.9/5.0), Spring 2015 (Evaluation 4.8/5.0),

Spring

2017 (Evaluation 4.2/5.0)

Initiated Distance Learning Graduate Degrees for Mechanics and Materials for BCOE 2011

Taught "Finite Element Analysis" Spring 2012 (Evaluation 4.2/5.0), Fall 2015 (Evaluation 4.3/5.0), Fall

2018 (Evaluation: 4.1/5.0)

Introduced "Automotive Certificate" with Molen, Jones, Steele, George, Bowden Fall 2007

Introduced "Automotive Engineering Course" with Molen, Jones, Steele, George, Bowden Spring 2008

Introduced and taught "Inelasticity" Course MSU Spring 2005 (Evaluation: 4.4/5.0), Fall 2006 (Evaluation: 4.5/5.0), Spring 2014 (Evaluation: 4.6/5.0), Spring 2016

(Evaluation:

4.8/5.0)

Coordinated Mechanics Courses with Working Group in ME, ASE, CE 2004-2018

Taught "Advanced Mechanics of Materials" Course MSU Spring 2004 (Evaluation: 4.1/5.0), Spring 2013

(Evaluation 4.3/5.0)

Introduced and taught "Failure of Engineering Materials" Course at MSU 2003 (Evaluation:

4.42/5.0, 2005 (Evaluation: 4.42/5.0), 2007 (Evaluation: 4.42/5.0), 2008

(Evaluation: 4.4/5.0), 2009 (Evaluation: 4.5/5.0), 2010 (Evaluation: 4.4/5.0),

2011 (Evaluation: 4.4/5.0), 2016 (none), 2017

Restructured graduate course curriculum at MSU for solid mechanics in ASE, ME, and CE 2003

Taught graduate level continuum mechanics course at GT 1995

Taught strength of materials course at OSU 1986-87

Taught instrumentation course at WVU 1985

Mentoring Graduate students (32 Post Docs: 59 PhD: 60 MS; 46 UG: 197 total)

Primary Advisor Undergraduates (40 total)

1. Drew Stahr (2003) "New Design of Harley Davidson Engine"
2. Jeremy Mowry (AFS award and 2nd in ASME Southeast Region Website Design) (2004) "Comparison of LS-Dyna simulations with Analytical Wave Equation"
3. Justin Crapps (4th place in ASME SouthEast Region Technical Presentation) (2004) "Dodge Neon Side Impact Simulations"
4. Lindsay Assumption (2004) "Powertrain Design of GM Equinox"
5. Matthew Tucker (2004) "Ballistic Impact Simulations using CTH"
6. Alex Howard (2004) "Atomistic Simulations of Void Growth"
7. Jesse Hearndon (2004) "Crystal Plasticity Simulations of Various Grain Misorientations with Void Growth"
8. Enrique Escobar (2004) "Crash Simulations for Head-on Dodge Neon"
9. Justin Green (2004) "Development of Crash Test Kits for K-12 Grades"
10. Tommy Thompson (2004) "High Speed Machining using an Internal State Variable Model"
11. Laura Arias (2004) "Brake Drum Analysis"
12. Shad Haynes (2004) "Atomistic Simulations Showing Subgrain Cell Formation"
13. Christopher Witt (2004) "Analysis of Multi-Objective Optimization Methods"
14. Marvin Haynes (2004) "Multiaxial Fatigue of 7075 al alloy"
15. Jesse Hearndon (2004) Senior Design Projects on Challenge X Hybrid Vehicle Competition
16. Justin Crapps (2004-5) Senior Design Projects on Challenge X Hybrid Vehicle Competition

17. Bo Murphy (2004-6) "Machining and Surface Roughness"
18. Arthur Marble (2004-6) "Employing Optical Imaging for A Dodge Neon"
19. Mary Hall Dale (2005) "Micromechanical Finite Element Simulations in Fatigue of 7075 Al Alloy"
20. Kyle Thompson (2005) "Copper Hydroforming"
21. Jamala Rule (2005) "Crashworthiness K-12 Kit Development"
22. Dion Sanders (2005) "SEM analysis of 7075 Al alloy"
23. Doug Ansel (2005-6) "SEM Analysis of 7075 al alloy in fatigue"
24. Josh Van Landingham (2005-6) "Uniaxial Tension Tests of OFE Cu"
25. Cory Lee (2005) "Solid Modeling of Challenge X Equinox structural support"
26. John Gibson (2005) "Optimization Modeling of Cu Hydroformed T Sections"
27. Isha Carresquel (2005) "Structure-Property Quantification of Automotive Components"
28. Luke Cantrell (2005) "Finite Element Analysis of EA6B Jet Wing"
29. Cassie Bennett (2014) "High Entropy Alloy Development"
30. Taylor Thoms (2014) "Football Helmet Liner Study"
31. Ben Jamerson (2014) "Molecular Dynamics of Polymers"
32. Jeremy Young (2015) "Helmet Foam Compression Testing"
33. Morgan Green (2015) "Dodge Neon Crash Simulations"
34. George Stubblefield (2015) "Heterogeneous Microstructure Crash Simulations"
35. Richie Brown (2016) "Study of Stainless Steel Football Facemask"
36. Jacob Moore (2015-17) "Football Helmet CAD Design"
37. George Stubblefield (2016-17) "Car Crash Simulations with a Human THUMS Model: Dyna"
38. Megan Thornton (2016-17) "Car Crash Simulations: ABAQUS"
39. Caleb Gwaltney (2016-2017) "Recrystallization Experiments"
40. Armin Yazdanzhanez (2016-2017) "Post Processing Scripting of Codes of TERRA3D"
41. Zhen Liu (2016-2017) "Bio-Inspired Design Examining Sutures in Animals"
42. Jordan Hoyer (2018) "Football Helmet Drop Tower Experiments"

MS Students (grad date)(62 total)

Primary Advisor (graduation date) (46 total)

1. Matthew Jones (Spring 2005) "Micromechanical Simulations of Coalescence of Voids"
2. Andrew Oppedal (Fall 2005)-Bagley Fellowship Award: "Temperature Dependence on Void Growth and Coalescence: An Experimental Study"
3. Tonya Stone (Spring 2006)-Bagley Fellowship Award, NSF Graduate Fellowship Award: "Multiple Sphere Interactions of Voids Using Atomistic Potentials"
4. Brian Jordon (Spring 2006)-CAVS Fellowship Award: "Modeling of a 7075 al alloy Employing an Internal State Variable Model"
5. David Oglesby (Fall 2007) "Design of Magnesium Corvette Cradle"
6. Christy Burton (Fall 2007) "History Effects of 6022 al alloy"
7. Matt Tucker (Fall 2006) "Hopkinson Bar work on Mag alloys"
8. Christopher Whitt (Spring 2007) "Engine Design"
9. Jesse Hearndon (Spring 2007) "Crack Growth Using a New Superelement"
10. Roxanna Alvarez (Spring 2007) "Experimental Corrosion Pitting Rate Study on Mg Alloys"
11. Rodolfo Gomez (Spring 2007) "LENS experimental microstructure-property relations"
12. Justin Crapps (Spring 2007) "Integration of Web Portals with Optimization and ISV modeling of Hydroformed T Section"
13. Jeremy Mowry (Spring 2007) "Impact Dynamics"
14. Osama AbuOmar (Spring 2007) "Application of Artificial Neural Networks (ANNS) in Modeling the
Microstructure-Property Relationships of Materials"
15. Kenny Brister (Spring 2007) "Optimization of Control Arm"
16. Jesse Sherburn (Fall 2007) "Ice Flow Modeling"

17. Laura Tucker (Fall 2007) "Powder Metal Structure-Property Relations Throughout the Processing Steps"
18. Joel Stinson (Spring 2008) "Magnesium Twinning in Crystal Plasticity"
19. Isha Carresquel (Spring 2008) "Structure-Property Relation Effects within FEA of Crash Scenarios"
20. M. Wesley Trim (Spring 2008) "Turtle Shell Designed Armor"
21. Harpreet Grewal (Spring 2009) "Finite Element Simulations of the Powder Metal Process"
22. Paul Taylor (Spring 2010) "Polymer Structure-Property Relations"
23. John Gibson (Spring 2010) "Multiscale Modeling/Exps of Mg Alloys"
24. Jason Fountain (Fall 2010) "Multiscale modeling of Viscoelastic Fatigue: Polyurethane"
25. Jason Simmons (Spring 2011) "Recrystallization of Magnesium Related to Friction Stir Welding"
26. Abdul Parkar (Summer 2011) "Modeling of Extrusion"
27. Michael Kistler (Fall 2011) "Structure-Property Quantification of Mg Alloys"
28. Adam Mayatt (Spring 2012) "High Rate Behavior of an A36 Steel Alloy"
29. Brian Denton (Summer 2012) "Viscoelasticity in Polymers"
30. Matt Jones (Fall 2012) "Structure-Property Relations of High Strength Duplex Steels"
31. Nayeon Lee (Fall 2013) "Finite Element Analysis of Suture Lines and the Associated Shock Mitigation"
32. Matthew Doude (Fall 2013) "Eco-Car Design"
33. Tom Goddette (Fall 2013) "Eco-Car Structural Design"
34. Michael Barr (Fall 2014) "Eco-Car Energy Efficiency Design"
35. Matt Holmer (Fall 2015) "Shear Localization of Concrete Structures"
36. Dylan Scott (Fall 2017) "Structure-Property Quantification of Portland Cement Based Materials"
37. Megan Burcham (Summer 2016) "Multiscale Modeling of Concrete"
38. Jacob Tobey (Fall 2016) "Innovative Design"
39. Michelle Price (Spring 2018) "Multi-Objective Design Optimization for a Subframe"
40. Lydia Jordan (Spring 2018) "Corrosion of a Titanium alloy and a 3rd Generation Steel"
41. Sakhare Pushkaraj (Spring 2018) "Automotive Design"
42. Gustavo Emmanuelli (Fall 2018) "Large Deformation High Rate Simulations in HPC Environments"
43. Nolan Hoffman (Fall 2018) "Structure-Property Relationships of an Aluminum Alloy for Aircraft Matting"
44. Katie Bryan (Spring 2019) "Multiscale Modeling of Cementitious Materials"
45. Tate Fonville (Spring 2019) "Robust Design and Multi-Objective Design Optimization for Topology, Geometry, and Materials"
46. Brian Sprow (Spring 2020) "Stress Corrosion Cracking of High Hard Steel"

Co-Advisor (16 total)

1. Austin Leach (Spring 2004) "Fatigue Crack Growth in the Small"
2. Aaron Daniel (Spring 2004) "Crack Closure in 7075 Al Alloy: An Experimental Study"
3. Stephen Johnston (Fall 2005) "Using Crystal Plasticity to Analyze Misorientation Effects in Fatigue of a 7075 Al Alloy"
4. Joseph Querin (Fall 2005) "An Experimental Study of 6022 Al Alloy under Large Strain Behavior"
5. Alan Hammeck (Fall 2005) "Compression Preloading on Fatigue Crack Threshold Tests"
6. Jim Larue (Spring 2005) "Fatigue Cracks at the Threshold"
7. Bobby Williams (Fall 2005) "Microstructural Analysis of Cast Engine Parts"
8. Srinath Subramaniam (Summer 2005) "Tension, Compression, and Shear of Viscoelastic Tendons"

9. Enrique Escobar (Fall 2007) "Solidification Modeling of Powder Metals"
10. Philip Pratt (Fall 2008) "LENS Microstructure-Property Analysis"
11. Janit Kapil (Fall 2010) "Texture and Microstructural Analysis of an AZ61 Mg Alloy"
12. Nick Bratton (Fall 2011) "Texture and Microstructural Analysis of an AZ31 Mg Alloy"
13. Ken Sullivan (Spring 2014) "Plymouth Tube Microstructure-Property Analysis"
14. Zach McClelland (Spring 2015) "Magnesium Extrusion Structure-Property Quantification"
15. Reda Nacif El Alaoui (Summer 2016) "Varying Strain Rate Effects on Damage Progression on 4140 Steel"
16. John Wood (Fall 2017) "Analysis of a Shark's Tooth"

PhD Students (grad date)(59 total)

Primary Advisor (39 total)

39. Paul Savas (Spring 2023) "
38. Tate Fonville (Spring 2021) "Multi-Objective Optimization of a Football Helmet"
37. Jaton Wince (Spring 2021) "Failure of Composites Materials"
36. Jody Woods (Spring 2021) "History Modeling of Plasticity Followed by Fatigue"
35. Caleb Younesah (Spring 2021) "Phase Field Modeling of Solidification Events"
34. Mounia Malki (Spring 2020) "Constitutive Modeling of Magnetism Using an Internal State Variable Model"
33. Andrea (Karen) Persons (Spring 2020) "Fatigue of Bone Materials"
32. Brandon Everett (Fall 2019) "Concrete Process Modeling"
31. Brad Huddleston (Summer 2019) "Multiscale Modeling of Fragmentation"
30. Andrew Bowman (Spring 2019) "Multiscale Modeling of Polymers"
29. Luke Peterson (Spring 2019) "High Rate Modeling of Damage and Fracture"
28. Heecheen Cho (Spring 2019) "Geodynamics Modeling of Earth"
27. Imran Aslam (Fall 2018) "Zinc Coating of Steels"
26. Tichomir Tenev (Fall 2018) "General Theory of Relativity and Solid Mechanics"
25. Denver Seely (Spring 2018) "LENS Modeling/Experiments"
24. Ali "Allen" Bagheri (Fall 2017) "MultiStage Fatigue (MSF) Modeling of the Texture, Grain Size, and Misorientations," Research Scientist at Arconics (Austin, TX)
23. Jeremiah Deang (Fall 2017) "Paddlefish Structure-Property Relationships," Asst Prof at Bob Jones University
22. Shane Brauer (Fall 2016) "High Strain Rate Effects on Steel" presently Asst Professor at Mississippi State University at Gautier, MS
21. Justin Hughes (Fall 2016) "Multiscale Fatigue and Uncertainty" presently post-doc at Los Alamos National Laboratory
20. Alston Rush (Summer 2016) "Football Helmet Liner Study" presently Engineer at Navair
19. William Lawrimore (Summer 2016) "Multiscale Modeling of Fatigue" presently Research Engineer at the Army ERDC Laboratory
18. Kyle Johnson (Spring 2016) "Bio-Inspired Design of Helmets" presently Principal Engineer at Sandia National Laboratories
17. NaYeon Lee (Spring 2016) "Bio-Inspired Design: Woodpecker" presently post-doc at CAVS at Mississippi State University
16. Wilburn Whittington (Fall 2015) "Thermal Aspects of High Strain Rate Phenomena" presently Asst.

Professor at Mississippi State University

15. WeiWei Song (Summer 2015) "Corrosion-Fatigue Modeling:" presently Research Engineer at Jhong

Wang Incorporated (aluminum rolling)

14. Chris Walton (Fall 2013) "Multiscale Modeling of Chemomechanics:" presently Engineer at British

Petroleum

13. David Francis (Spring 2013) "Multiscale High Rate Behavior of Polymers:" presently Research Engineer at CAVS at Mississippi State University

12. Jarius Bernard (Spring 2013) "Multiscale Modeling of Small Crack Fatigue:" presently Research

Engineer at Eglin Air Force Base

11. Wesley Trim (Summer 2011) "Bio-inspired Design:" presently Research Engineer at the Army ERDC

Laboratory

10. Raj Prabhu (Summer 2011) "Constitutive Modeling of the Brain:" presently Assistant Research Professor in the Agricultural and Biological Engineering Dept at MSU

9. Andrew Oppedal (Summer 2010) "Multiscale Modeling of Magnesium Alloys:" presently Research

Faculty at CAVS at MSU

8. Jesse Sherburn (Spring 2010) "Development of Internal State Variable Modeling in Geophysics:"

presently researcher at Army ERDC Laboratory

7. Paul Allison (Fall 2009) "Powder Metal Structure-Property Relations:" presently assistant Professor at

the University of Alabama

6. Matthew Tucker (Spring 2009) "Multiscale Modeling of High Rate Phenomena": Engineer at Los

Alamos National Lab

5. Tonya Stone (Spring 2009) "Multiscale modeling of Powder Metals": presently Assoc Prof Miss. State

Univ

4. Lakiesha Williams (Fall 2008) "Stress State Dependence on Tendon," presently Assoc Prof Univ. Florida

3. Kiran Solanki (Fall 2008) "Introduction of Uncertainty and Physically-Based Distribution Functions into

a Continuum Damage Mechanics Formulation for Ductile Metals:" presently Assoc Prof Arizona. State Univ.

2. Brian Jordon (Fall 2008) "Multiscale Experiments on Fatigue:" presently Assoc Prof Univ. Alabama

1. Mei Chandler (Spring 2007) "Environmentally Induced Chemomechanics Modeling:" presently researcher at Army ERDC Laboratory

Co-Advisor and committee member (20 total)

20. Vahid Gahigh (Fall 2019) "Composite Experiments using Pistachios as fibers"

19. Ge He (Fall 2018) "Polymer Based Composites Modeling Using an Internal State Variable Model for

Damage Rate Equations"

18. Suby Dou (Spring 2018) "Molecular Dynamics of High Rate Damage"

17. Nikolay Dimitrov (Fall 2018) "ISV Multiphysics Theory for Thermal-Mechanical-Chemical-Electrical-Magnetism"

16. Hamid Bakhtiari (Fall 2018) "ISV Modeling of the Brain"

15. Nitin Sukhija (Fall 2015) "ICME Cyberinfrastructure"

14. Vivek Dixit (Fall 2015) "Nanoscale Modeling of Phase Transformations"
13. James Crawford Baird (Fall 2012) "Mg Microstructure-Property Relations"
12. Laalitha Liyanage (Spring 2012) "Electronics-Atomistic Simulations of Iron-Carbon Systems"
11. Jinshu Shi (Summer 2011) "Kenaff Based Strengthening in Natural Fiber Composites"
10. Marta Guerra (Spring 2010) "Electronic Spins and Monte Carlo Methods"
9. Amitava Moitra (Spring 2010) "Atomistics of Carbon Alloys"
8. Neil Williams (Fall 2009) "Stereological Modeling Algorithms"
7. Marcos Lugo (Fall 2009) "Multiaxial Fatigue"
6. John Ehrgott (Fall 2009) "Structural Collapse" ERDEC
5. Jeff Houze (Fall 2009) "Atomistic Modeling of Plasticity Phenomena"
4. Dangale Robinson (Spring 2009) "Nano-composites studies" Tuskegee Univ.
3. Bohumir Jelinek (Fall 2008) "Bridging Scales from the Quantum to the Atomistic Level Employing
Computational Methods"
2. Jeremy Yancey (Spring 2008) "Parallel Monte Carlo Simulations Employing Atomistics"
1. Rick Liu (Fall 2005) "Large Scale Crash Simulations of a Ford 8000 Series Truck into a
Concrete
Barrier"

Post-Doctoral Fellows (32 total)

32. David Francis, Miss. State Univ., (2017-2018) "Modeling of Polymers"
31. Nayeon Lee, Miss. State Univ., (2016-2018) "Atomistic Modeling of Titanium"
30. Haley Doude, Miss. State Univ., (2014-2016) "Creation of New Steel Alloys"
29. Ted Dickel, Clemson, (2014-2018) "Multiscale Modeling of Fragmentation"
28. Sungkwang Mun, Miss. State Univ., (2014-2018) "Multiscale Modeling of Polymer Materials"
27. Bhasker Paliwal, Georgia Tech, (2014-2018) "Multiscale Microstructure-Based Modeling of
Cementitious Materials"
26. Quancang Ma, Beijing Institute of Technology (2011-2014) "Magnesium Process-Structure-
Property Relations"; presently Research Professor at University of Kentucky
25. Sasan Nouranian, Miss. State Univ., (2011-2014) "MEAM of Polymers"; presently Asst Prof at
University of Mississippi
24. Marcos Lugo, Miss. State Univ. (2010-2015) "MultiStage Fatigue Modeling and NDE
Methods": presently Asst Prof at University of Texas at Permian-Basin
23. Max Mao, Georgia Tech (2010-2012) "Stereological Analysis of Imaging and Mesh Creation;"
presently Research Engineer at Predictive Design Technologies
22. Holly Martin, Miss. State Univ. (2009-2013) "Corrosion of Magnesium;" presently Asst
Professor at
Youngstown State Univ, Oh
21. Tian Tang, Utah State Univ (2009-2013) "Multiscale Fatigue Modeling;" presently Asst
Professor at
Akron Univ, Oh
20. Mohsen, Zaeem Washington State University, (2010-2012) "Phase Field Modeling"; presently
Assistant
Prof at Missouri S&T
19. Amitava Moitra, Miss. State Univ (2010-2011) "Atomistic Magnesium Modeling"; presently
post-doc at
VIT-University, Vellore, Tamil Nadu, India
18. Jean Luc Bouvard, ONERA (2007-10) "Viscoelastic Fatigue": presently Asst Prof at CEMEF
(Sophea-
Antopolis, Univ Mines Paris Tech, France)
17. Sebastien Groh, Brown Univ (2006-10) "Atomistic-Dislocation Dynamics Bridging"; presently
Asst Prof at Univ Freiburg, Germany
16. Donald Ward, Brown Univ (2008-10) "Atomistic Modeling"; presently at Sandia National Labs

15. Hongjoo Rhee, Michigan State Univ (2006-09) "Bio-Inspired Armor Design"; presently research prof at MSU
14. Adrian Pascu, Sibiu Romania (2007-08) "Elastic-Plastic Fracture and Fatigue of LENS 316L Stainless Steel"; presently Professor at Sibiu University, Romania
13. Xuchun "Jack" Ren, Harbin Univ (2006-07) "Multi-Objective Optimization": presently research prof. at North Dakota State Univ.
12. Reza Yasser, Washington State University (2005-07) "Internal State Variable Modeling of Recrystallization and Particle Growth": presently Assoc. Prof at Michigan Tech
11. Haitham El Kadiri, University Ecole Des Mines Paris (Spring 2004-5) "In-Situ SEM Mechanical Property Analysis": presently Assoc. Prof at Miss. State Univ.
10. Xianwu Ling, UNC Charlotte (2003-05) "Crystal Plasticity Formalisms": presently at ABAQUS
9. Gabriel Potirniche, Mississippi State Univ (2003-05) "Atomistic Simulations": presently Asst Professor at Idaho Univ.
8. Bin Zhang, University of Arizona (Fall 2002-Fall 2003) "Microstructure Evaluation of an A356 Al Alloy used in an Engine"; presently at Meridian, Canada
7. Phil Gullett, UC Davis (2001) "High Rate Finite Element Simulations": presently Assoc. Professor in Civil Engineering at Mississippi State University
6. Youssef Hammi, Univ. Troy, France (2001) "Internal State Variable Damage Modeling": presently Research Professor at Mississippi State University
5. Esteban Marin, Georgia Tech (2000) "Internal State Variable Modeling": presently at Michelin Tire Corp., SC
4. Joel Philliber, UC Santa Barbara (2000) "Atomistic Simulations of Nickel": presently at start-up company in San Jose, Ca
3. Ken Gall, Univ. Illinois (1999) "Multiscale Modeling of Fatigue": presently Mechanical Engr Dept Head at Duke University
2. Ganesh Ramaswamy, Univ. Penn (1997-1998) "Damage Mechanics": presently at GE Research and Development, Schenectady, NY
1. Ashish Kumar, Cornell (1996-1997) "Electromigration," presently at investment firm in Chicago, IL

Research Professors (15 total)

- Sara Adibi (2018-2019) Atomistic Modeling: presently Asst. Research Prof at Miss State Univ
- Min Liao (2012-2013) Atomistic Modeling: presently Assoc. Prof. at Xihua University, China
- Sam Wang (2011-2012) Phase Field Modeling of Mg: presently Assoc. Prof. at Xihua University, China
- Sheldon Deng (2011-2012) Structural Crashworthiness: presently Assoc. Prof. at Xihua University, China
- Bin Li, Johns Hopkins (2010-2014) Mg Structure-Property Quantification: presently Asst. Prof at University of Nevada at Reno.
- Jean Luc Bouvard, ONERA (2010-2012) multiscale modeling of polymers: presently Asst Prof at CEMEF
(Sopheia-Antopolis, Univ Mines ParisTech, France)
- Mark Tschopp, Georgia Tech (2009-2013) Grain Boundary Studies Employing MD: presently Researcher
at Army Research Laboratory
- Ric Carino, (2008-present) Computer Science : presently Assoc. Research Prof at Miss State Univ
- Sungho Kim, MSU (2008-2012) Density Functional Theory: presently Asst. Research Prof at Mississippi State University

Hongjoo Rhee, Michigan State Univ. (2007-present) Bio-Inspired materials characterization: presently

Associate Director at CAVS at Mississippi State University

Howie Fang, Purdue (Fall 2002-2005) Crashworthiness Optimization: presently Assoc. Professor at UNC

Charlotte

Anna Xue, Georgia Tech (Spring 2003-2008) Multistage Fatigue Modeling: presently Asst Prof at Utah

State

Gabriel Potirniche, MSU (2005-2008) Multiscale Modeling: presently Asst Professor at Idaho Univ.

Youssef Hammi, University of de Troy Paris (Spring 2003-present) presently Asst Res Prof at Miss State

Univ.

Haitham El Kadiri, Ecole Des Mines (2005-2008) Materials Science: presently Asst Prof at Miss State Univ.

Sandia Students (21 total)

Undergraduate Summer Interns: Michele Matalanis (Cornell), Matt Botos (Cornell), Doug Bahr (Cornell), Brett Degner (UC Berkeley), Sam Vonderheide (Cornell), Kendyl Ann Paulus (Cornell), Mike Harbeck (Cornell)

Graduate Summer Interns: Dave Pattillo (Illinois), Matt Negrete (UC Davis), Brian Corff (Colorado), Brian Rasmussen (Alabama), Randy Settgast (UC Davis)

PhD Advisor: Shichen Yang (Georgia Tech), Manish Dighe (Georgia Tech)

Service

BCOE P&T committee 2015-6

MSU Anti-Bullying Committee, 2015-2017

Manufacturing and Materials Innovation Committee, TMS, 2015

Mechanical Engineering Dept New Hire Committee 2014

MSU Athletic Council (2013-2018)

TMS ICME Chair of Publications Committee (2012-2015)

Physics Dept (MSU) Review Panel member 2010-2011

BCOE P&T committee 2010

BCOE Committee on Professorships/Chair Positions 2009-2011

State of Mississippi Nuclear Planning Committee 2009-2011

Mechanical Engineering New Hire Committee 2008

Mechanical Engineering Graduate Committee 2007-2018

SAE Formula Race Team Advisor 2007-09

SAE Reliability Committee 2007-2016

TMS Computational Materials Science Committee 2007-2016

TMS Integrated Computational Materials Engineering (ICME) Technical Coordination Group 2006-2018

VP Research Faculty Advisory Committee 2006-09

Bagley College of Engineering SAE Advisor 2006-2018

Mechanical Engineering Dept PhD Qualification Exam Committee (Oversight of Mechanics) 2006-2018

Mechanical Engineering Dept PhD Qualification Exam Committee (Materials, Mechanics) 2005-2018

ASME: Henry Thurston Awards Committee 2005-2014

Mechanical Engineering Faculty Advisor to Challenge X Program 2004-2006

President Charles Lee Brainstorming Group 2003-2006

Mississippi State University advisory board for Physics Dept ABET Accreditation 2004

Mississippi State University Mechanical Engineering undergraduate committee 2003-2006

Mechanical Engineering Dept PhD Qualification Exam Committee (Oversight of Math) 2003-2006
ASME: AMD Materials Executive Committee 2003-2007
ASME: Constitutive Modeling Committee 1996-present
2004 ASME Winter Program Chair

Editorship

Editorial Board: International Journal of Theoretical and Applied Multiscale Mechanics (IJTAMM)
2009-2018

Associate Editor: ASME Journal of Engineering Materials and Technology 2003-12

Advisory Editorial Board: Metallurgical and Materials Transactions 2002-12

Journal Reviewer: JEMT, Acta Met, IJP, Applied Mech., MSMSE, Met Trans, IJSS, FFEMS

Editorial Board for Handbook of Materials Modeling, Springer, 2005

Review Committee: World Congress on Computational Congress (WCCM), "Multiscale Modeling",
2003

Societies (12 total)

American Association for the Advancement of Science (Fellow)

American Society of Mechanical Engineers (Fellow)

American Society of Metals (Fellow)

Society of Automotive Engineers (Fellow)

American Academy of Mechanics

Materials Research Society

European Society on Computational Science and Engineering

Minerals, Metals, and Materials Society (TMS)

National Science Teachers Association

Phi Kappa Phi

Pi Tau Sigma

Sigma Xi

Review Panels

Served on NSF CMMI Panel for Mechanics of Materials 2014

Served on Army ERDC Nanotechnology Research Planning Committee 2011

Served on AFOSR Multiscale Modeling Strategic Planning Committee 2009

Served on NSF STC Panel for Climate Modeling 2009

Served on NSF manufacturing review Panel Jan 2004

Served on internal MSU review panel for Physics Dept Accreditation Feb 2004

Served on Baseball Hall of Fame Physics of Baseball Panel for Electronic
Communication Feb 2004

Served on Columbia Space Shuttle Accident Investigation Board External review panel 2003

Served on Technical review board for Air Force Office of Scientific Research – Multidisciplinary
University 2002

Invited Lectures (166 total)

Integrated Computational Materials Engineering (ICME: Multiphysics, Dassault Systemes, Providence, RI,
Dec 2019.

Integrated Computational Materials Engineering (ICME): Past, Present, and Future, Aristotle University,
Thessaloniki, Greece Oct 2019

Catastrophic Plate Tectonics Using a Recrystallization ISV Model within TERRA3D, Cyprus, Greece, Oct
2019

The Cosmic Fabric within the General Theory of Relativity is a Proof of God's Existence, Cyprus, Greece,
Oct 2019

Integrated Computational Materials Engineering (ICME) Pedagogy Class, Hyderabad, India, July 2019

Integrated Computational Materials Engineering (ICME): Past, Present, Future, ICME Conference Indianapolis,

In, June 2019

Internal State Variable (ISV) Modeling of Armor Penetration, Army Research Lab, March 2018

Earth Mantle Dynamics Modeling, American Geophysical Union, New Orleans, LA, Dec 2017

Overview of Chemistry-Process-Structure-Property-Performance Sequence, Los Alamos National Laboratory, Nov

2017

History Modeling of a Steel Tubing Process Using Internal State Variable Theory, Int Plasticity Conference, Puerto

Vallarta, Mexico, Jan 2017

Past, Present, and Future of ICME, 70th Anniversary of India Institute of Metals (IIM) at IIT Kanpur Nov 2016

ICME Examples, Tata Consulting Services, Pune, India Nov 2016

ICME for Armor, Army Research Laboratory (ARL), Aberdeen, Md July 2016

ICME for Gears, Workshop on Creating Robust Designs for Complex Engineered Systems, Beijing Institute of Technology, Beijing, China, June 2016

Invited Lecture at the University of Oklahoma, Norman, OK April 2016

ICME modelling of History Effects in a 1010 Steel from a Plate to a Tube, Int J. Plasticity, Kona, Hawaii, 2016

Conducting Research for Graduate Students, Xihua University, Chengdu, China, June 2014

Integrated Computational Materials Engineering for the Classroom, Univ. Alabama, October 2012.

Integrated Computational Materials Engineering, Michigan State University, Lansing, MI May 2012

Creating a Stress-Strain Curve and Forming Limit Diagram Without an Experiment, MIT, Boston, MA April 2012

Interest is the Best Teacher....Einstein, Xihua University, Chengdu, China, March 2012

Bio-Inspired Design Creations, Army ERDC, Vicksburg, MS, Sept 2011

Crashworthiness and Multiscale Modeling, SKKU, Suwon, Korea, May 2011

Multiscale Modeling of Nuclear Materials, INL, Idaho Falls, ID, May 2011

MD Simulations of Magnesium Fracture, TMS, San Diego, Ca, March 2011

Multiscale Modeling of Biomaterials, Baylor University, Waco, Tx, March 2011

Defining the Bridge for Void Coalescence, Int. J. Plasticity Conf., Puerto Vallarta, Mexico, Jan 2011

Multiscale Modeling of Damage, Xihua University, Chengdu, China, Sept 2010

Multiscale Modeling of Radiation Damage, Idaho National Labs, Idaho Falls, ID, Aug 2010

Multiscale Modeling of Geomaterials, CAVS Extension, Jackson, MS May 25, 2010

Predictive Engineering and Design, Hyundai, Seoul, Korea, May 13, 2010

Multiscale Modeling of Steel, POSCO-GIFT, Pohang, Korea, May 12, 2010

Bio-Inspired Design: An Overview, Postech Univ, Pohang, Korea, May 11, 2010

The Next Generation Graduate Student, Handong Univ., Pohang, Korea, May 10, 2010

Investigation on the Compressive Behavior of Turtle's Shell: Experiment, Modeling, and Simulation, 2010 KSME, Jeju Korea, May 1, 2010

Multiscale Modeling of Powder Metals, Univ. Arkansas, April 5, 2010

Continuum Plasticity-Damage Modeling, Army TARDEC, March 3, 2010

Multiscale Modeling of Polymers, Composites Workshop, CAVS, Starkville, MS, Dec 8, 2009

Nanoscale Cyclic Plasticity, ASME Winter Meeting, Orlando, FL, Dec 7, 2009

Multiscale Modeling of Nuclear Radiation on Materials, Pacific Northwest National Laboratory, Aug 10, 2009.

Multiscale Modeling, Michigan Tech, April 8, 2009

From Atoms to Autos for Polymers, Miss. State Univ., Society of Plastics Meeting, March 12, 2009, Starkville, MS

From Atoms to Autos for Metals, Univ. North Texas, March 7, 2009, Denton, TX

On Computational Multiscale Modeling and Simulation, Notre Dame, South Bend, In, Jan 15, 2009

Multiscale Modeling of Magnesium Alloys (Plenary), Int. J. Plasticity Conf, St. Thomas, Virgin Islands, Jan 3-8, 2009

Applications of Multiscale Modeling, Workshop on Industry Needs, Univ North Texas, Denton, TX Dec 15-16, 2008

Atomistic Scale Study on the Effect of Crystalline Misalignment on Densification during Sintering of Nanoscale Tungston Powder, Sintering 2008, LaJolla, Ca, Nov 16-20, 2008.

Materials, Mechanics, and a Marriage (plenary), Workshop on Multiscale Issues, Mississippi State University, MS, June 23-25, 2008

Bridging Atomistics and Continuum Mechanics and Associated Length Scale Issues (plenary), Horstemeyer, AAM, New Orleans, LA, June 17, 2008

Structural Health Prognosis Using Mechanistic Multistage Fatigue Model, Xue, Jordon, Horstemeyer, McDowell, Newman, International Conference on Fatigue Damage of Structural Materials VII, Sept. 14-19, 2008, Hyannis, MA

Pitting Corrosion Study in an AE44 Magnesium Alloy, Alvarez, Horstemeyer, and Ruiz, NACE 2008 Corrosion Conference, March 2008, New Orleans, LA.

A physically motivated uncertainty-based higher order plastically and damage model, Plasticity Conference, Alaska, June 2-6, 2007

Uncertainty-Based Internal State Variable Modeling of Structure-Property Relationships in Deformed Microstructures, Kiran Solanki and M.F. Horstemeyer, The 5th International Conference on Materials Processing Defects, Cornell Center for Materials Conference, July 2007.

Overview of Southern US Regional Automotive Corridor and Research Opportunities, Hyundai-Kia, Korea, May 2007

Bio-Inspired Design and an Overview of Graduate Research Hangyang University, Korea

SafeSim Research, SangKyunKwan University, Korea

Integrated Computational Materials Engineering (ICME), TMS, Orlando, FL 2007

Microstructure-Property History Modeling of 6022 Al, TMS, Orlando, FL, Feb 2007

Multistage Cyclic Plasticity, DARPA Workshop, Bethpage, NY Jan 2007

Parameter Identification in Fatigue, DARPA Fatigue Workshop, Cornell Univ., June 2006

NanoFatigue, Fatigue2006, Atlanta, GA, May 2006

Multistage Fatigue, TMS, San Antonio, TX April 2006

Polycrystalline Atomistic Fatigue, LSU, Summer ASME, June 2005

Anisotropic Damage and Uncertainty, LSU, Summer ASME, June 2005

Industry Simulation Workshop, Worcester Polytech Institute, May 2005

Powder Metals Workshop, Penn State Univ, April 2005

Powder Metal Pressing Modeling, SAE, Detroit, MI, April 2005

Multistage Fatigue and ISV modeling, DARPA, Sedona, AZ Feb 2005

Uncertainty and ISV modeling, Int. J. Plasticity, Hawaii, Jan 2005

Cradle Finite Element Simulations, USCAR/USAMP, Detroit, MI, March 2004

Multi-objective Crashworthiness, ASME Winter Meeting, Anaheim, CA Nov 2004

Fatigue and Fracture in the Small, ASME Winter Meeting, Anaheim, CA Nov 2004

Multi-objective crashworthiness optimization with radial basis functions, Proceedings of the 10th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Paper No. AIAA-2004-4487, Albany, NY, Aug. 30 - Sept. 1, 2004.

An integrated design optimization framework using object-oriented programming, Proceedings of the 10th

Uncertainty with Internal State Variables, DARPA, New Orleans, LA Sept 2004

Multistage Fatigue for 7075 al alloy, TMS, New Orleans, LA Sept 2004.

A Non-iterative Hybrid-regularization Method for Inverse Heat Conduction Problems, Metal Forming Conference, Columbus, OH, June 2004

Multiscale Powder Metallurgy Modeling, Powder Metallurgy Conference, Chicago, IL June 2004

On Hydroforming Modeling, Mueller Copper Fittings, Memphis, TN May 2004

On the New C6 Corvette Cradle Design, USCAR/USAMP, Detroit, MI, March 2004
Chemomechanics, Northrop-Grumman, Bethpage, NY, Jan 2004.
Multiscale Fatigue of 7075 Al alloy, Alcoa, Pittsburgh, Pa, Nov 2003.
Application of Multi-objective Stochastic Methods for Crashworthiness Evaluation of Side-Impact Finite Element Model, Pamcrash Conference 03, Detroit, MI, Oct 2003.
Prognosis using internal state variables, Northrop-Grumman, Bethpage, NY Oct 2003.
High Rate Compression Responses of Single Crystal Copper, ASME Summer Meeting, Phoenix, AZ June 2003
Integration of Microstructure-Property Modeling of Fatigue with Notch Root Radius Effects, USAMP Board, Detroit, MI June 2003
Optimization of High Rate Dynamic Impacts Related to Crash, USAMP Board, Detroit, MI June 2003
In-Situ SEM of a Cast Magnesium Alloy in Corrosive Environments, Freedom Car, Detroit, MI Mar 2003
Crashworthiness and Optimization, GM, Detroit, MI, March 2003
Overview of Reverse Engineered Materials Design Using Multiscale Perspective, National Automotive Center, TACOM, Detroit, MI, Feb 2003
Multiscale Impact, Naval Surface Warfare Center, Washington DC, Feb 2003
Crystal Plasticity and Fatigue, Alcoa, Pittsburgh, Pa Dec 2002
In-Situ SEM of a Cast Magnesium Alloy, Freedom Car, Detroit, MI Dec 2002
High Rate Mesoscale Finite Element Simulations, USCAR, Pittsburgh, PA Sep 2002.
Modeling Plasticity and Fracture of Ductile Metals, Nissan, Smyrna, TN Aug 2002.
Modeling Plasticity and Fracture of Ductile Metals, Mississippi State University, Starkville, MS July 2002.
Atoms to Continuum Modeling, Univ. Minnesota, Minneapolis, MN June 2002.
Overview of Sandia Computing Capabilities, General Motors, Warren, MI June 2002
Finite Element Simulations and Optimization of a Control Arm, American Foundry Society, Kansas City, MO May 2002
Microstructure-Based Modeling of Aluminum Alloys, Intermag, Toronto, Canada, March 2002.
Using Multiscale Analysis for Modeling of a Control Arm, Washington State University, Feb 2002.
Optimization Calculations for an Automotive Control Arm, Int. Conf. Plasticity, Aruba, Jan 2002.
Nanoscale Plasticity Using Atomistic Simulations, Int. Conf. Plasticity, Aruba, Jan 2002.
Fatigue of a Magnesium Cast Alloy, USCAR QRM, Detroit, MI Dec 2001.
Microstructure-Property Modeling Using Finite Element Models, ASM, Nov 2001.
Complex Damage Modeling on ASCI machines, DOE ASCI Validation Conference, Bodega Bay, Ca Oct 2001.
Notch Tensile Test Analysis of Aluminum and Magnesium Cast Alloys, USCAR/USAMP Quarterly Review Meeting, Pittsburgh, Pa Sept 2001.
Atomistic Simulations and Experiments of Large Deformation Processes, 6th US National Congress on Computational Mechanics, Detroit, MI, Aug 2001.
Nanoscale Evaluation of Stress States in the Presence of Defects, Int. Congress Engin. Sciences, Puerto Vallarta, Mexico, Aug 2001.
Multi-scale Material Modeling of Automotive Components, GM Technical Center, Warren, MI, July 2001.
Atomistic Damage Modeling, ASME Summer Meeting, San Diego, Ca, June 2001
Modeling of Magnesium, USCAR/USAMP Quarterly Review Meeting, Toronto, Canada, March 2001.
Microstructure-Property Modeling of a cast A356 Aluminum Alloy, University of Arizona, Tucson, AZ, Jan 2001.

Damage Modeling at the Atomic, Micron, and Macroscale, DoD/DOE MOU Task Coordinating Group, Sandia National Laboratories, Albuquerque, NM, Dec 2000.

Atomistic Modeling and Yielding of Small Specimens, MRS, Boston, MA, Dec 2000.

Monotonic and Cyclic Fatigue Modeling of Automotive Components, GM Technical Center, Warren, MI, Dec 2000.

Modeling of MEMS structures, Sandia National Laboratories, Livermore, Ca, Dec 2000.

Modeling of Cadmium-Zinc-Telluride X-ray Detectors, eV Products, Pittsburgh, PA, Dec 2000

Automotive Control Arm Optimization, USCAR/USAMP Quarterly Review Meeting, Placida, FL, Nov 2000.

Solid Mechanics Relation to LIGA Materials, DOE Complex, Nov 1990.

Computational Materials Science in Multi-Length Scale Analysis of Inelastic Dissipative Metals, Stanford University, Stanford, CA, Nov 2000.

Computational Multi-Length Scale Analysis for Plasticity and Damage," University of Nevada, Reno, Oct 2000.

Physical Length Scale Observations Used for Nonlocal Modeling, Engineering Sciences Summer Institute, Sandia National Laboratories, Livermore, CA, Aug 2000.

Overview of Continuum Damage Mechanics, Engineering Sciences Summer Institute, Sandia National Laboratories, Livermore, CA, Aug 2000.

Mechanics in Design, UCLA, Army Research Office Future Research, Los Angeles, CA, June 2000.

Atomistic Simulations and Plasticity at the Nanoscale, MRS, San Francisco, CA, April 2000.

Final Modeling Review of Monotonic and Fatigue Models of Cast A356 Aluminum Alloy, USCAR/USAMP Quarterly Review Meeting, Peoria, IL, April 2000.

Damage Mechanics Modeling of a Cast A356 Aluminum Alloy, American Foundry Society, Pittsburgh, Pa, April 2000.

Multi-scale Modeling of Plasticity and Damage, Alcoa Technical Center, Pittsburgh, PA, April 2000.

Cyclic Fatigue of a Cast A356 Aluminum Alloy, American Foundrymen's Society, Pittsburgh, PA, April 2000.

Comparison of Control Arm Analyses and Tests, USCAR/USAMP Quarterly Review Meeting, Detroit, MI, Jan 2000.

Multiscale Modeling of Inelastic Dissipative Materials, Georgia Tech, Atlanta, Ga, Dec 1999

A Strain Tensor at the Atomic Scale, MRS, Boston, MA, Nov 1999.

Micromechanical Fatigue Modeling of crack incubation, USCAR/USAMP Quarterly Review Meeting, Detroit, MI, Nov 1999.

Microstructure-Property Modeling, ASM, Cincinnati, Oh, Nov 1999.

Multiscale Modeling of Inelastic Deformation, Johns Hopkins Univ., Baltimore, Md, Oct 1999.

Multiscale Modeling of Damage, University of Maryland-Baltimore County, Baltimore, Md, Oct 1999.

Multiscale Modeling of Inelastic Deformation and Damage, Army Research Lab, Aberdeen Proving Ground, Aberdeen, Md, Oct 1999.

Multiscale Modeling of Inelastic Dissipative Materials, Carnegie Mellon, Pittsburgh, Pa, Sept 1999.

Multiscale Modeling of Inelastic Dissipative Materials, University of Kentucky, Ky, Aug 1999.

Overview of Continuum Damage Mechanics, Engineering Sciences Summer Institute, Sandia National Laboratories, Livermore, CA, Aug 1999.

Atomistic simulations of aluminum-silicon interface, USCAR/USAMP Quarterly Review Meeting, Detroit, MI, Aug 1999.

Damage progression in 304L Stainless Steel, DOE/DoD MOU Task Coordinating Group, Eglin Air Force Base, June 1999.

Finite Element Analysis Modeling Using Internal State Variables, GM, Warren, MI, Mary 1999.

Length Scale Issues in Plasticity, MRS Special Conference, Argonne National Lab, April 1999.

Material Modeling and Optimization Schemes, USCAR/USAMP Quarterly Review Meeting, Placida, FL, March 1999.

Fatigue Modeling of a Cast A356 Aluminum Alloy, American Foundry Society Conference, Atlanta, Ga, March 1999.

Void Nucleation, Growth, and Coalescence Modeling, International Conference in Plasticity, Cancun, Mexico, Jan 1999.

Finite Deformation Atomistic Modeling, International Conference in Plasticity, Cancun, Mexico, Jan 1999.

Microstructure Evaluation of various cast aluminum alloys, USCAR/USAMP Quarterly Review Meeting, Detroit, MI, Dec 1998.

Notch test analysis: simulation and experiments, TMS, Chicago, IL, Oct 1998.

Simple Shear simulations using atomistic methods, Summer ASME Meeting, Gainesville, FL, June, 1998.

Incubation modeling of fatigue, USCAR/USAMP Quarterly Review Meeting, Detroit, MI, June 1998.

Internal State Variable Modeling of a Cast A356 Aluminum Alloy, American Foundry Society Conference, Atlanta, Ga, May 1998.

Computational Modeling and Simulation at Sandia National Laboratories, Ford Motor Company, Dearborn, MI, April 1998,

Computational Modeling and Simulation at Sandia National Laboratories, Chrysler Corporation, Auburn Hills, MI, April 1998,

Computational Modeling at Different Size Scales, Cal Tech, Pasadena, Ca, Feb 1998.

Void Stress Parametric Study, Stanford Univ, Stanford, Ca, March 1997.

Plasticity in Process and In-Service Modeling of Metal Parts, Naval Surface Warfare Center, Dahlgreen, MD, 1996.

Plasticity and Damage in HY100 Steel, Naval Research Laboratory, MD, 1996.

Various Navy Hull Simulations Using an Internal State Variable Model, Dunfermline, Scotland, 1996.

Finite Element Simulations of Fracture of the B83 Weapons Carrier, ISATA Conference, Florence, Italy, 1996.

Parametric Studies of Electromigration and Void Stress Analysis, Stanford University, 1996.

Stress History Dependent Localization and Failure Using Continuum Damage Mechanics Concepts, ASTM Conference, Orlando, FL, 1996.

Conferences/Seminars/Workshops Organized (15 total)

Multiscale Models for Manufacturing and Properties, TMS, Phoenix, AZ 2018

Manufacturing Summit, Manufacturing and Materials Innovation, TMS, Pittsburgh, Pa 2015.

International Conference on Creationism, Pittsburgh, Pa Aug 4-9, 2013

3rd Bi-ennial MSU Workshop on Predictive Science and Engineering, Starkville, MS June 26-28, 2012

2nd Bi-ennial MSU Workshop on Predictive Science and Engineering, Starkville, MS June 22-25, 2010

Workshop of "Waste Repositories of Nuclear Materials: The Usage of Salt", CAVS Ext., Jackson, MS May 2010

Symposium on "Multiscale Fatigue," ASME Winter meeting, Orlando, FL November 2009

Symposium on "Plasticity, Damage, and Fracture," in honor of Dr. David McDowell, Int. J. Plasticity Conf., St. Thomas, VI Jan 3-8, 2009.

MSU Workshop on Materials and Mechanics, Starkville, MS June 23-25, 2008

American Academy of Mechanics Symposium on "Multiscale Modeling for Plasticity and Damage," New Orleans, LA June 17, 2008

CAVS/CMD Industry Day, Starkville, MS April 2007

K-6 Regional Crash Test Competition, CAVS, MS Nov 2006

Mentoring the Next-Generation Faculty, Starkville, MS July 2006

Computational Multiscale Modeling, 10th US National Congress on Computational Mechanics, Anaheim, CA July 2006

American Society of Metals, Symposium on Engineering and Design of Alloys, Cincinnati, OH
June 2006

Materials Research Society, AA-Micro and Nanomechanics of Structural Materials, Boston, MA
Nov 2005

Computational Micro and Nanotechnology, 9th US National Congress on Computational
Mechanics, Austin, Texas July 2005

Multiscale Modeling and Experiments, Plasticity Conference, Hawaii Jan 2005

ASME Winter Meeting Materials Symposia Chair, Anaheim, CA Nov 2004

Computational Micro and Nanotechnology, 8th US National Congress on Computational
Mechanics, Beijing, China Sept 2004

Predictive Material Modeling and Computational Strategy for Creep and Fatigue Damage, Winter
ASME meeting, Nov 2003

Computational Micro and Nanotechnology, 7th US National Congress on Computational
Mechanics, Albuquerque, NM July 2003

Rapid Solidification Symposium, Society of Engineering Sciences Conference, Penn State
University, Oct 2002.

MesoScale Conference, Denmark, 2002

Engineering Application of Complex Constitutive Models, Plasticity Conference, Aruba, Jan 2002

Computational Micro and Nanotechnology, 6th US National Congress on Computational
Mechanics, Detroit, MI, Aug 2001

Nonlocal Plasticity Workshop, July 2001, Sandia National Laboratories, Livermore, Ca.

Nonlocal Plasticity Workshop, Aug 2000, Sandia National Laboratories, Livermore, Ca.

Sandia Engineering Sciences Summer Institute, Summer 2000, Sandia National Laboratories,
Livermore, Ca.

Nonlocal Plasticity Workshop, Aug 1999, Sandia National Laboratories, Livermore, Ca.

Sandia Engineering Sciences Summer Institute, Summer 1999, Sandia National Laboratories,
Livermore, Ca.

Nonlocal Plasticity Workshop, Aug 1998, Sandia National Laboratories, Livermore, Ca.

Sandia Engineering Sciences Summer Institute, Summer 1998, Sandia National Laboratories,
Livermore, Ca.

Multiscale Plasticity and Damage Analysis, McNu, ASME Summer Meeting, July 1997, Chicago,
IL.

Sandia Academic Related Activities

2002 DOE program, *Advanced Computing Research Institute*: graduate students from 5
universities.
Recruitment for Sandia new hires

2001 DOE program, *Engineering Sciences Summer Institute*: graduate students from 20
universities.
DOE program, *Advanced Computing Research Institute*: graduate students from 4
universities.
Recruitment for Sandia new hires

2000 DOE program, *Engineering Sciences Summer Institute*: graduate students from 10
universities
Recruitment for Sandia new hires

1999 DOE program, *Engineering Sciences Summer Institute*: graduate students from 6
universities
Recruitment for Sandia new hires

1998 Developed DOE program, *Engineering Sciences Summer Institute*: graduate students
from 4 universities
Recruitment for Sandia new hires

Publications by Mark F. Horstemeyer (505 total documents, citation h-factor=66)

Ordered By dates

Books/Encyclopedias (11 total)

11. Horstemeyer, M.F., *Integrated Computational Materials Engineering (ICME) for Metals: Concepts and Case Studies*, Wiley Press, 2018.
10. Carino, R.L. and Horstemeyer, M.F., "Case Studies using MATLAB to Build Model Calibration Tools for Multiscale Modeling," INTECH, OpenScience/OpenMinds, Chapter 6, pp. 139-157; <http://dx.doi.org/10.5772/62348>; <http://www.intechopen.com/articles/show/title/case-studies-in-using-matlab-to-build-model-calibration-tools-for-multiscale-modeling>, 2016.
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