Darren E. Mason
Professor
Department of Mathematics and Computer Science
Albion College
611 East Porter Street
Albion, MI 49224-5013
(517)-629-0826 (voice) (517)-629-0264 (fax) (517)-614-7737 (mobile)
dmason@albion.edu

Essential Experience and Strengths

- Extensive post-secondary teaching experience at both major R1 universities and a small liberal arts college where promotion to full professor was earned.
- Strong history of incorporating computational software such as *Mathematica*, *Excel*, *R*, and *MPL* into classes, as well as the use of many online education systems.
- Routinely uses project-based learning in appropriate classes to help reinforce mathematical concepts.
- First generation college student from a lower middle-class family with the ability to make connections with diverse student populations.
- Background as a military veteran who worked 40+ hours a week in college furthers my understanding of stressors that students experience outside the classroom.
- Extensive background advising undergraduates in class/career planning, research/theses, as well as writing letters of recommendation for successful post-graduate study and careers.
- Administrative experience as department chair and developer of academic programs/curricula (actuarial science, engineering, and other courses in applied mathematics).
- Co-author of 36 peer-reviewed journal articles and conference papers and over 51 professional presentations.

Education

- August 1996 Ph.D. (Mechanics w/ Doctoral Mathematics Minor) - Department of Aerospace Engineering and Mechanics - University of Minnesota - Institute of Technology
  - Thesis Title: *On Nonlocal Continuum Mechanics*
  - Thesis Advisor: Professor Roger L. Fosdick
  - Committee Members: Avner Friedman, Perry Leo, Vladimir Sverak, and Lev Truskinovsky.
- August 1991 B.S. (Mathematics *Cum Laude*) - University of Minnesota - Institute of Technology

Academic Awards & Recognition

- 2011 Phi Beta Kappa Scholar of the Year
- 2004 Elected to Selection Committee of The Society for Natural Philosophy
- 1995 Minnesota Space Grant Consortium Fellowship.
- 1993-95 National Science Foundation Graduate Research Fellowship.
- 1993-95 Dept. Of Defense Graduate Research Fellowship (declined due to NSF offer).
- 1992 University of Minnesota Graduate Fellowship.
- 1989-91 Ella Thorpe Mathematics Scholarship.
- 1986 University of Minnesota Freshman Scholarship.
- 1986 Honeywell Freshman Scholarship

Academic Appointments

I. **Albion College**

- Sep 2012 – Present **Albion College - Professor**
  Department of Mathematics and Computer Science
  Department Head for 2017 - 2018
- Sep 2007 – Aug 2012 **Albion College - Associate Professor**
  Department of Mathematics and Computer Science
- Sep 2002 – Aug 2007 **Albion College - Assistant Professor**
  Department of Mathematics and Computer Science
- Sep 2001 – Aug 2002 **Albion College - Visiting Assistant Professor**
  Department of Mathematics and Computer Science

II. **Non-Albion Domestic**

- 01/01/14 – 08/31/19 **Michigan State University - Visiting Professor**
  Department of Mathematics
  - Appointments vary between full time and adjunct throughout the year during the academic year and/or summer session(s).
- 07/01/12 – 09/01/13 **Michigan State University - Adjunct Associate Professor**
  Department of Chemical Engineering and Materials Science
  - Appointment varied between adjunct and visiting status depending on salary arrangements associated with international research appointments.
- 02/01/09 – 08/15/10 **Michigan State University - Adjunct Associate Professor**
  Department of Chemical Engineering and Materials Science
  - Appointment varied between adjunct and visiting status depending on salary arrangements associated with international research appointments.
- Sep 2007 - May 2008 **University of Minnesota - Visiting Associate Professor**
  Department of Aerospace Engineering & Mechanics
  - Sabbatical visit to teach and conduct research with Roger L. Fosdick.
- 08/16/07 – 01/31/09 **Michigan State University - Adjunct Associate Professor**
  Department of Statistics and Probability

  - Appointment varied between adjunct and visiting status depending on salary arrangements associated with study-abroad appointments.
- 06/01/06 – 04/30/07 **Michigan State University - Adjunct Associate Professor**
  Department of Civil and Environmental Engineering
  - Appointment varied between adjunct and visiting status depending on salary arrangements associated with study-abroad appointments.
- 05/16/04 – 04/30/06 **Michigan State University - Adjunct Assistant Professor**
  Department of Civil and Environmental Engineering
  - Appointment varied between adjunct and visiting status depending on salary arrangements associated with study-abroad appointments.
- 06/16/03 – 12/31/03 **Michigan State University - Adjunct Assistant Professor**
  Department of Chemical Engineering & Materials Science
  - Appointment varied between adjunct and visiting status depending on salary arrangements associated with study-abroad appointments.
- 01/01/03 – 06/15/03 **Michigan State University - Adjunct Assistant Professor**
  Department of Mechanical Engineering
  - Appointment varied between adjunct and visiting status depending on salary arrangements associated with study-abroad appointments.
- 07/01/01 – 08/15/02 **Michigan State University - Assistant Professor - On Leave**
  Department of Mechanical Engineering
- 08/16/98 – 06/30/01 **Michigan State University - Assistant Professor**
  Department of Materials Science and Mechanics
  Department of Mechanical Engineering
- Aug 1996 – June 1998 **Carnegie Mellon University (CMU) - Post Doctoral Research Associate** Carnegie Mellon University
  Department of Mathematical Sciences
- June 1997 – July 1997 **Carnegie Mellon University - Research Project Director**
  Carnegie Mellon University Summer Institute in Undergraduate Applied Mathematics
- Aug 1994 – Aug 1996 **University of Minnesota - Graduate Teaching Assistant**
  University of Minnesota Department of Aerospace Engineering and Mechanics

III. **Non-Albion International**

- Summer 2016 - 2019 **Guangzhou Higher Education University**
  Visiting Professor of Actuarial Science
  Department of Mathematics and Information Sciences
  Guangzhou, China

- Summer 2008 - 2013 **Max Planck Institut für Eisenforschung - Visiting Scholar**
  Division of Microstructure Physics and Metal Forming
  Düsseldorf, Germany.
  Summers Only - 1 month/year.

- Summer 2002 - 2007 **Volgograd State University for Civil and Architectural Engineering - Volgograd, Russia**
  Visiting Assistant / Associate Professor

  – Active faculty participant in the Michigan State University Study - Abroad Program *A Multidisciplinary Study Program in Russia : Engineering, Education and Russian Language.* During this period my MSU appointment was typically converted from an adjunct appointment to a visiting appointment to reflect a change in salary status.

Teaching Experience

- **Actuarial Science** (2014 - Present)

  Since 2014, I have taught a variety of actuarial science classes at Albion College, Guangzhou Higher Education University (GZHU), and Michigan State University (MSU).

  – Albion College: Albion began offering actuarial science classes for the first time in Fall 2017. This was done in conjunction with my work to develop a dual-degree program in actuarial science, created at Albion with MSU as a potential transfer school in mind.

    * *Math 388 - Risk Management with R.* Developed in Fall 2020, this class is a project-based class that pairs students into teams to solve practical problems using either Excel or R. Included is a capstone project where students select and analyze a problem, culminating in a final presentation, paper, and associated code/algorithms. Required projects include bond & loan amortization tables, annuity valuation, simulation of European option prices, Monte-Carlo simulation of stock markets, and computation of the efficient frontier for team-selected stock trios.
    * *Math 313 - Financial Mathematics for Actuaries.* Developed in Fall 2017, this class covered rational pricing of risky securities (options, forwards, swaps, etc.) in discrete time using the binomial and multinomial asset pricing models. Included modeling of both vanilla and exotic (Asian, lookback, binary, barrier, etc.) options of European and American type, as well as an introduction to discrete stochastic processes.
      · This class has evolved to be a blend both discrete and continuous time derivative pricing with the addition of Black-Scholes-Merton theory and pricing formulae, use of Greek measures and their utility within hedging methodologies, implied and historical volatility estimation, lognormal pricing models, and an introduction to random walks & stochastic Itô calculus.
    * *Math 388 - Theory of Mathematical Interest.* The content covers basic interest concepts, annuities, loans/mortgages, bonds, investment valuation methods, the term structure of interest rates, and duration/convexity measures.

- Guangzhou Higher Education University: As part of the 2+2 actuarial science program between MSU & GZHU, I have traveled to Guangzhou, China and taught the below actuarial science courses during the summers of 2016 - 2019.

    * Classes Taught: Theory of Mathematical Interest (see Math 388 above), Financial Mathematics for Actuaries (see original description of Math 313 above), and Financial Engineering (see evolved description of Math 313 above).

- Michigan State University: As a visiting faculty member I have taught a variety of actuarial science courses at MSU.

    * Classes Taught:
        · *Math 361 - Financial Mathematics for Actuaries I* (see Math 313 - early above).
        · *Math 458 - Financial Mathematics for Actuaries II* (see Math 313 - evolved above).
        · *Math 490 - Introduction to Financial Derivatives* This 1 or 2 credit course is designed to prepare actuarial science students to take and pass the derivatives portion of the FM (Financial Mathematics) examination administered by the Society of Actuaries.

- **Engineering** (1996 - Present)

  Due to my training in engineering mechanics as an undergraduate and graduate student at the University of Minnesota, I have taught engineering classes at Albion College, Carnegie Mellon University, Michigan State University, and the University of Minnesota. *Course numbers are available upon request.*

  - Albion College: Introduction to Continuum Mechanics, Dynamics, Strength of Materials, and Fluid Mechanics.
  - Carnegie Mellon University: Continuum Mechanics.
  - Michigan State University: Statics, Strength of Materials, Introduction to Dynamics, Intermediate Dynamics, Intermediate Elasticity, Linear Elasticity, Continuum Mechanics, Energy Methods in Mechanics.
  - University of Minnesota: Statics, Dynamics, Deformable Body Mechanics.

- **Mathematics** (1996 - 1998; 2001 - Present)

  Due to my training in mathematics as an undergraduate and graduate student at the University of Minnesota, as well as subsequent research at CMU, MSU, and Albion, I have taught mathematics & statistics classes at Albion College, Carnegie Mellon University, and Michigan State University. *Course numbers are available upon request.*

  - Albion College: Introductory Statistics, Precalculus, Calculus I, Calculus II,

Multivariate Calculus, Ordinary Differential Equations I & II, Linear Algebra, Discrete Structures (Methods of Proof), Mathematical Statistics, Numerical Analysis, Operations Research, Real Analysis, Complex Analysis, Abstract Algebra, Mathematical Modeling, Point Set Topology, Partial Differential Equations I & II, Variational Calculus.

- Carnegie Mellon University: Calculus for the Humanities, Multivariate Analysis.
- Michigan State University: Probability and Statistics for Engineers.

Teaching Development

- Spring 2010 - *Albion College Micro-teaching Workshop Facilitator*, January, 2010
- Spring 2006 - *Albion College Micro-teaching Workshop Co-Organizer*, January, 2006
- Spring 2005 - *Albion College Micro-teaching Workshop*, January, 2005
- Spring 2002 - *Albion College Micro-teaching Workshop*, January, 2002
- Fall 1999 & Spring 2000 - Lilly Teaching Seminar series.
- 2000 - Finalist - Michigan State University Teaching Fellows Competition.
- 1999 - Participant - Michigan State University Teaching Fellows Competition.

Undergraduate Thesis Advising

- Paxton Mueller Albion College Senior - College Honors Thesis
  The Mathematics of Sofya Kovalevskaya
  Fall 2014 - Spring 2015.
  Thesis Advisor.
  Work presented at 2015 Elkin-Isaac Student Research Symposium.
- Sophia Potoczak Albion College Senior - College Departmental Thesis
  A Probabilistic Model of Large Woody Debris Movement and Distribution in Small Mountain Streams
  Fall 2011 - Spring 2012.
  Thesis Advisor.
  Work presented at 2012 Elkin-Isaac Student Research Symposium.
- Aaron Croad Albion College Senior - Inter-Departmental Thesis
  Optimal Repayment of Student Loans
  Spring 2012.
  Thesis Advisor.
  Work presented at 2012 Elkin-Isaac Student Research Symposium.
- Christopher Creighton Albion College Senior - College Departmental Thesis
  Comparison of Quantization Results from Two-Dimensional Cosmologies Quantized with Different Factor Orderings
  Fall 2010 - Spring 2011.
  Thesis Advisor.
  Work presented at 2011 Elkin-Isaac Student Research Symposium.
- Christine Riker Albion College Junior - College Honors Thesis
  Determination of Critical Strain Energy Release Rate for Mode II Fracture in FRP-Wood Bonds

Fall 2003 - Spring 2004.
Co-Primary Advisor with Eric Landis of Univ. of Maine.
Winner of Albion College *Jenkins Award* for best thesis.
Work presented at 2004 Elkin-Isaac Student Research Symposium.

Non-Thesis Undergraduate Research Advising

- Brian Dick Albion College Senior - FURSCA 2006 Project
  Development of Crystallographic Analysis Algorithms Software
  Summer 2006.
  Research Co-Advisor with David Reimann.
- James Hice Albion College Senior - FURSCA 2005 Project
  Development of Crystallographic Analysis Algorithms Software
  Summer 2005.
  Research Co-Advisor with David Reimann.
- Jeff Jia Albion College Senior - FURSCA 2005 Project
  Development of Crystallographic Analysis Algorithms Software
  Summer 2005.
  Research Co-Advisor with David Reimann.

Note: FURSCA stands for Foundation for Undergraduate Scholarship and Creative Activities.

Albion College Directed Studies

Jodie Bosheers, Alyssa Brooks, Claire Ostrowski & Josh Pemberton	- *Mathematical Theory of Interest* - Fall 2017.
Shuqi Zhou	- *Partial Differential Equations II* - Spring 2015.
Shuqi Zhou	- *Intermediate Dynamical Systems* - Fall 2014.
Mitchell Borchers, Lauren Kettle, Mitchell Pender, Carl Pressprich & Patrick Wagner	- *Statics and Strength of Materials* - Spring 2013.
Tianyang Cai	- *Statics and Dynamics of Materials* - Spring 2012.
Sophia Potoczak	- *Introduction to Continuum Mechanics* - Fall 2011 - Spring 2012.
Khristian Wright	- *Introduction to Fluid Mechancis* - Spring 2011.
Dugan Karnazes & Khris Wright	- *Statics and Strength of Materials* - Spring 2011.
Chris Creighton	- *Point Set Topology* - Spring 2010.
Adam Hashimoto	- *Statics and Strength of Materials* - Spring 2007.
Brian Dick	- *Statics and Dynamics of Materials* - Spring 2006.
Nicholas Moroz	- *Statics and Strength of Materials* - Spring 2006.

Giovanni DiMatteo	- *Differential Geometry* - Fall 2005.
Dustin Turner	- *Differential Equations and Dynamical Systems* - Fall 2005.
James Hice	- *Development of Crystallographic Analysis Software* - Fall 2005.
Erin Knight	- *Fluid Mechanics for Chemical Engineers* - Spring 2005.
Giovanni DiMatteo	- *Real Analysis II* - Fall 2004.
William Green	- *Continuum Mechanics and Tensor Analysis* - Fall 2003 - Fall 2004.
Stephanie Rigot	- *Engineering Statics* - Fall 2002.

Albion College Tutorials

Murun Jargal	-	*Math 370 - Introduction to Partial Differential Equations* - Fall 2018.
Anthony Nowicki	-	*Math 331 - Real Analysis* - Fall 2004.
Anthony Nowicki	-	*Math 245 - Multivariable Calculus* - Fall 2004.
Daniel Coupland	-	*Math 245 - Multivariable Calculus* - Fall 2003.
Stephanie Taylor	-	*CS 151 - Survey of Computer Science* - Spring 2003.

Undergraduate Mathematics Advising

- 2005 - Present : *COMAP Mathematical Contest in Modeling*
  - Advised anywhere from one to five teams of 2-3 students who compete in a 96 hour competition dedicated to solving one of two open-ended applied mathematics problems.
  - Success over the years has ranged from a lowest showing of *Successful Participant* to a top showing of *Meritorious Achievement.*
- November 2019 : *Simon Conference for Young Researchers in Risk Management and Insurance* - Michigan State University- East Lansing, MI; November 22 - 23, 2019.
- October 2004 : *SIAM Symposium on Complexity and Analytics* - University of Michigan - Dearborn, MI; October 23, 2004.
- October 2004 : *Pi Mu Epsilon Mathematics Conference* - Miami University - Oxford, OH; October 1, 2004.

Graduate Thesis Committee Service

- Lidya Novozhilova Michigan State University Ph.D. Thesis
  Axisymmetric Problems in Nonlinear Elasticity : Existence and Global Injectivity of Energy Minimizers and New Classes of Exact Three Dimensional Motions,
  successfully defended on November 18, 2003.
- Jintae Kim Michigan State University Ph.D. Thesis
  Infinitely Many Periodic Solutions of Nonlinear Wave Equations on S^n,
  successfully defended in 2001.

Professional Service

- Reviewer for articles across multiple professional journals including
  - SIAM Journal of Mathematical Analysis.
  - Journal of Elasticity
  - Journal of Differential Equations and Nonlinear Mechanics
  - Materials Science and Engineering, Series A.
- Service at Scientific Meetings
  - 2004 - Judge for the *25^{th} Annual Sigma Xi Student Research Symposium* at the University of Toledo (April 24, 2004).
  - Session Chair for "Damage and Ductile Fracture", *17^{th} International Symposium on Plasticity and its Applications*, Casa Magna Marriott Resort and Spa, Puerto Vallarta, MX, January 6, 2011.
  - 2016 - Judge for the *Sigma Xi Annual Meeting* at the Hyatt Regency, Atlanta, GA (November 11-13, 2016).
  - 2018 - Judge for the *Sigma Xi Annual Meeting* at the Hyatt Regency - San Francisco Airport, Burlingame, CA (October 25 - 28, 2018).
- Past & Present Professional Society Memberships
  - AMS (American Mathematical Society)
  - KME (Kappa Mu Epsilon National Mathematics Honor Society)
  - MAA (Mathematical Association of America)
  - SNP (The Society for Natural Philosophy)
  - Sigma Xi (Scientific Research Society)
  - SIAM (Society for Industrial and Applied Mathematics)
- Other service to the scientific community:
  - Elected to *Selection Committee* of the Society for Natural Philosophy (2005).
  - Judge for the *Third Annual Michigan State University Student Mathematics Conference* held in East Lansing, MI (March 19, 2005).
  - 2002-2007 - Grader for the *Michigan Mathematics Prize Competition.*

Institutional Service

- Albion College
  - *General Service*
    - Fall 2018 - Present : Director and Founder of the Albion College Dual Degree Program in Actuarial Science.
    - Fall 2009 - Spring 2016 : Co-Director of the Albion College Dual Degree Program in Engineering
    - Fall 2008 - Spring 2009 : Director of Foundation for Undergraduate Research, Scholarship, and Creative Activity
    - Fall 2005 - Spring 2007 : Faculty Secretary

- *Committee Service*
  - Fall 2019 - Present : Gerstacker Institute Internal Advisory Board
  - Fall 2019 - Present : Compensation Task Force
  - Fall 2019 - Present : 403B Finance Committee
  - Fall 2019 - Present : Budgets, Salaries, and Benefits Committee (Chair in 2020-21).
  - Fall 2010 - Spring 2014 : Gerstacker Institute Internal Advisory Board
  - Fall 2009 - Spring 2012 : Hearing and Grievance Committee
  - Fall 2008 - Spring 2010 : Committee for Petitions and Academic Status
  - Fall 2004 - Spring 2007 : Committee for Petitions and Academic Status
  - Fall 2004 - Spring 2007 : Committee for Gender and Ethnic Studies
  - Spring 2005 : Museum and Atrium Committee for new science complex
  - Various years : Judge and Selection Committee Member - DASP - Distinguished Albion Scholars Program.
- *Departmental Service*
  - Ongoing : Departmental Representative - Albion College Visitation Days
  - Fall 2017 - Spring 2018 : Chair, Department of Mathematics & Computer Science
  - Fall 2003 - Spring 2007 : Director - Department of Mathematics and Computer Science Colloquium
  - Various years (including 2014, 2015) : Participant - SOAR
  - Fall 2004 : Primary Author - Software Funding White Paper for Math, Computer Science, and Physics
  - Fall 2003 : Collaborator - Mathematics and Computer Science Degree Program Restructuring
  - Spring 2003 - Fall 2003 : Designer - Curriculum Innovation in Math 219/Math 247

- Michigan State University
  - Oct 2000 - May 2001 : Mathematics - Engineering Liaison Committee
  - Aug 1998 - May 2001 : Institute For Global Engineering Education Committee
  - Jan 2000 - May 2000 : Computing Services Advisory Committee
  - Aug 1999 - May 2000 : Materials Science And Mechanics Advisory Committee
  - Nov 1999 - May 2000 : Materials Science And Mechanics Faculty Search Committee
  - Aug 1999 - Aug 2001 : University Hearing Board

Funding History

- Funded Grants:
  - *National Science Foundation*, "World Material Network: Investigation of Damage Nucleation Mechanisms in Polycrystals", $480,000, 06/01/10 - 06/30/12, Consultant for Co-PIs T.R. Bieler and M.A. Crimp of Michigan State University and P. Eisenlohr and C. Zambaldi of the Max Planck Institut für Eisenforschung.

- *National Science Foundation*, "World Material Network: Investigation of Damage Nucleation Mechanisms in Polycrystals", $419,000, 07/01/07 - 06/30/10, Consultant for Co-PIs T.R. Bieler and M.A. Crimp of Michigan State University.
- *Interdisciplinary Fund for Faculty Development - Albion College*, "Enhancing the Interdisciplinary Connections between Mathematics, Computer Science, and Art at Albion College", $15,000.00, Fall 2006, co-PIs D. Reimann and G.B. Wahl.
- *Beckman Coulter Genomics Educational Grant Program*, "Enhancement in Teaching Molecular Biology Using the Beckman Coulter CEQ 8000", $49,450.00 (matching funds), Spring 2005, co-PIs S. Lyons-Sobaski, K. Saville, D. Skean, and M. Duman-Scheel.
- *Albion College Faculty Development Program*, "Development of Crystallographic Analysis Algorithms and Software", $3560.00 −− Spring 2005.
- *Air Force Office of Scientific Research*, "Mesoscopic measurement and modeling of slip transfer across boundaries in anisotropic metallic systems.", $375,000.00, 12/00 −− 08/04, co-PIs with T.R. Bieler and M.A. Crimp.
- *Albion College Faculty Development Program*, "Microstructural Sensitive Design of Diamond Windows", $1135.23 −− Spring 2002.
- *Composite Materials Science Center*, "Multiscale energy methods for composite interfaces - an anelastic approach", $ 15,600, 08/00 −− 12/00.
- *Composite Materials Science Center*, "Mechanical properties and *in vitro* biocompatibility of porous hydroxyapatite whisker-reinforced hydroxyapatite ceramic bone substitutes", $ 22,600, 08/00 −− 12/00, co-PIs M.J. Crimp and L. McCabe.
- *Composite Materials Science Center*, "Multiscale energy methods for composite interfaces", $ 17,500, 05/99 - 08/00.

- Selected Unfunded Grant Proposals :
  - *Howard Hughes Medical Institute*, "The Albion College Molecular Life Sciences Program", $1,598,950, 08/08 - 08/12, co-authors A. Beilstein (Chemistry), C. Harris (Chemistry), L. Lewis (Chemistry), M. Mercer-TaChick (Education), A. Miller (Physics), C. Rohlman (Biochemistry), K. Saville (Biology), R. Scmitter (Biology) and C. Van de Ven (Geology).
  - *National Science Foundation*, "The Effects of Microstructure and Crystallographic Texture on Creep and Damage Nucleation Mechanisms in Tin and Lead-Free Solder", $ 576,082, 09/04 - 09/07, co-authors T.R. Bieler and M.A. Crimp.
  - *Howard Hughes Medical Institute*, "The Albion College Molecular Life Sciences Program", $1,426,400, 08/04 - 08/08, co-authors Dr. C. Rohlman and M. Scheel.
  - *National Science Foundation Grant Opportunities for Academic Liaison with Industry (GOALI)*, "Characterization and Modeling of Micromechanisms of Damage Nucleation and Propagation in Aluminum Alloys", $1,174,564, 08/04 - 08/07, co-authored with T.R. Bieler, M.A. Crimp, and F. Pourboghrat of MSU and F. Barlat and H. Weiland of the ALCOA Technical Center.

Peer-Reviewed Journal Publications

1. Li, H., D.E. Mason, T.R. Bieler, C.J. Boehlert, and M.A. Crimp, "Methodology for estimating the critical resolved shear stress ratios in α-phase Ti using EBSD based trace analysis", *Acta Materialia*, **61**, p. 7555-7567 (2013).
2. Li, H., D.E. Mason, Y. Yang, T.R. Bieler, M.A. Crimp, and C. J. Boehlert, "Comparison of the deformation behavior of commercially pure titanium and Ti-5Al-2.5Sn(wt.%) at 296 and 728K", *Philosophical Magazine*, **93**(21), p. 2875-2895 (2013).
3. Wang, L., Y. Yang, P. Eisenlohr, T.R. Bieler, M.A. Crimp, and D.E. Mason, "Twin Nucleation by Slip Transfer across Grain Boundaries in CP Titanium", *Metallurgical and Materials Transactions A*, **41**(2), p. 421-430 (2010).
4. Bieler, T.R., M.A. Crimp, Y. Yang, L. Wang, P. Eisenlohr, D.E. Mason, W. Liu, G.E. Ice, "Strain heterogeneity and damage nucleation at grain boundaries during monotonic deformation in commercial purity titanium", *Journal of Metals*, **61**(12), p. 45-52 (2009).
5. Bieler, T.R., P. Eisenlohr, F. Roters, D. Kumar, D.E. Mason, M.A. Crimp, and D. Raabe, "The Role of Heterogeneous Deformation on Damage Nucleation at Grain Boundaries in Single Phase Materials", *International Journal of Plasticity*, **25**(9), p. 1655-1683 (2009).
6. Kumar, D., T.R. Bieler, P. Eisenlohr, D.E. Mason, M.A. Crimp, F. Roters, and D. Raabe, "On Predicting Nucleation of Microcracks Due to Slip-Twin Interactions at Grain Boundaries in Duplex γ-TiAl", *ASME J. Eng. Maters. Technol.*, **130**(2), (2008).
7. Fallahi, A., D.E. Mason, D. Kumar, T.R. Bieler, and M.A. Crimp, "The Effect of Grain Boundary Normal on Predicting Microcrack Nucleation using Fracture Initiation Parameters in Duplex TiAl", *Materials Science and Engineering - Series A*, **432** (1-2), p. 281-291 (2006).
8. Bieler, T.R., A. Fallahi, B.C. Ng, D. Kumar, M.A. Crimp, B.A. Simkin, A. Zamiri, F. Pourboghrat, and D.E. Mason, "Fracture Initiation/Propagation Parameters for Duplex TiAl Grain Boundaries based on Twinning, Slip, Crystal Orientation, and Boundary Misorientation", *Intermetallics*, **13** (9), p. 979 (2005).
9. Fallahi, A., D. Kumar, A. Zamiri, T.R. Bieler, M.A. Crimp, F. Pourboghrat, and D.E. Mason, "The Effect of Grain Boundary Misorientation, Inclination, Crystal Orientation, and Stress State on Microcrack Initiation in Duplex TiAl Grain Boundaries", *TMS Letters*, **1** (5), p. 101 (2004).
10. Telang, A.U., T.R. Bieler, D.E. Mason, & K.N. Subramanian, "Comparisons of Experimental and Computed Crystal Rotations due to Slip in Crept and Thermomechanically Fatigued Dual Shear Eutectic Sn-Ag Solder Joints", *J. Electronic Materials*, **32** (11), p. 1445 (2003).
11. Simkin, B.A., B.C. Ng, T.R. Bieler, M.A. Crimp, & D.E. Mason, "Orientation Determination and Defect Analysis in Near-Cubic Intermetallic-TiAl using SACP", *Intermetallics*, **11** (3), p. 215 (2003).
12. Kinderlehrer, D., I. Livshits, D.E. Mason, & S. Ta'asan, "The Surface Energy of MgO: Multiscale Reconstruction from Thermal Groove Geometry," *Interface Science*, **10** (2), p. 223 (2002).

13. Bieler, T.R., M.A. Crimp, D.E. Mason, S.L. Semiatin, B.A. Simkin, & B.C. Ng, ' 'Use of Crystallography and Electron Microscopy Techniques to Quantify Heterogenous Strain and Damage Nucleation Phenomena", *Advanced Measurement Methods* (Air Force Office of Scientific Research Web Journal), **1**, p. 1 (2002).
14. Saylor, D.M., D.E. Mason, & G.S. Rohrer, "Experimental Method for Determining Surface Energy Anisotropy and its Application to Magnesia", *J. Amer. Cer. Soc.*, **83**, p. 1226 (2000).
15. Adams, B.L., D. Kinderlehrer, I. Livshits, D.E. Mason, W.W. Mullins, G.S. Rohrer, A.D. Rollett, D. Saylor, S. Ta'asan, & C.-T. Wu, "Extracting Grain Boundary Energy And Surface Energy From Measurement Of Triple Junction Geometry", *Interface Science*, **7**, p. 321 (1999).
16. Kinderlehrer, D. & D.E. Mason, "Incoherence at Heterogeneous Interfaces," *J. Mech. Phys. Solids*, **47**, p. 1609 (1999).
17. Fosdick, R.L. and D.E. Mason, "Nonlocal Continuum Mechanics, Part I: Existence and Regularity, " *SIAM J. Appl. Math.*, **58** (4), p. 1278 (1998).
18. Fosdick, R.L. and D.E. Mason, "Nonlocal Continuum Mechanics, Part II: Structure, Asymptotics, and Computations, " *J. Elasticity*, **48**, p. 51 (1997).
19. Fosdick, R.L. and D.E. Mason, "Single Phase Energy Minimizers For Materials With Nonlocal Spatial Dependence," *Quart. Appl. Math*, **54**, p. 161 (1996).

Peer-Reviewed Conference Papers

1. Ng, B.C., T.R. Bieler, M.A. Crimp, and D.E. Mason, "Prediction of crack paths based upon detailed microstructure characterization in near γ - TiAl alloy", in *TMS MS&T 2004 Symposium on Materials Damage Prognosis*, ed. J.M Larsen, J.R. Calcaterra, L. Christodoulou, M.L. Dent, W.J. Hardman, J.W. Jones, S.M. Russ, *TMS (The Minerals, Metals, & Materials Society)*, 2005, pp. 307-314.
2. Ng, B.C., M.A. Crimp, T.R. Bieler, and D.E. Mason, "Studies of twin activity at crack tips in near-gamma TiAl using electron channeling contrast imaging", in *Gamma Titanium Aluminides - 2003*, ed. Y.W. Kim, H. Clemens, and A.H. Rosenberger, TMS, Warrendale, PA, p. 503 (2004). Selected Paper.
3. Maleck, T., D. Prestel, V. Galishnikova, R. Harichandran, D.E. Mason, and J. Merrill, "U.S.-Russian collaboration to enhance engineering education, research, and development of internationally recognized programs in Russia", in *Proceedings of the 3rd International Colloquium on Engineering Education* , Tsinghua University, Beijing, China, September 7-10 (2004). Invited Paper.
    - Appears in *Innovations 2005 - World Innovations in Engineering Education and Research*, Chapter 36, p. 443, www.ineer.org.
4. Mason, D.E., R. Harichandran, T. Maleck, V. Galishnikova, J. Merrill, D. Prestel, and P. Streng, "Engineering educational and research between a U.S. and a Russian university: A sustainable model for international programs", *Proc. 2004 International Conference on Engineering Education and Research - Progress Through Partnership*, Bouzov Castle; Czech Republic, June 27-30, Ostrava, Slovakia (2004).

5. Mason, D.E., J. Merrill, R. Harichandran, V. Galishnikova, T. Maleck, D. Prestel, and P. Streng, "Innovation in a large-scale study-abroad program in engineering", *Proc. 2004 ASEE Conference and Exposition*, Salt Lake City, UT (2004). *Nominated as best paper in its section.*
6. Bieler, T.R., M.A. Crimp, and D.E. Mason, "Mesoscopic measurement and modeling of slip transfer across boundaries in anisotropic metallic systems", *Proc. Air Force Office of Scientific Research Joint Contractor's Meeting*, Boulder, CO (2003).
7. Crimp, M.A, B.A. Simkin, B.C. Ng, D.E. Mason, and T.R. Bieler, "Microscale characterization of deformation defects in bulk intermetallics alloys using electron channeling contrast imaging", *International Conference on Processing and Manufacturing of Advanced Materials - Processing, Fabrication, Properties, & Applications*, Legannes, Madrid, Spain, July 07-11, Eds. T. Chandra, J.M Torralba, and T. Sakai, TransTech Publishers, Zurich, p. 1885 (2003).
8. T.R. Bieler, M.A. Crimp, and D.E. Mason, "Mesoscopic Measurement and Modeling of Slip Transfer Across Boundaries in Anisotropic Metallic Systems", *Proc. Air Force Office of Scientific Research Joint Contractor's Meeting*, Bar Harbor, ME (2002).
9. Simkin, B.A., M.A. Crimp, T.R. Bieler, and D.E. Mason, "The Effect of Crystal Orientation on Deformation Transfer at γ-γ Boundaries in a Near-γ TiAl Based Alloy", in *3rd Int. Symp. On Structural Intermetallics*, TMS Publishing, Warrendale, PA, p. 391 (2001).
10. Mason, D.E., B.A. Simkin, M.A. Crimp, and T.R. Bieler, "Measurements and Modeling of Deformation Transfer at γ-γ Grain Boundaries in TiAl", in *2nd Int. Symposium On Modeling the Performance of Engineering Structural Materials*, D.R. Lesuer and T.S. Srivatsan, eds., TMS Proceedings, Warrendale PA, p. 149 (2001).
11. Bieler, T.R., M.A. Crimp, and D.E. Mason, "Mesoscopic Measurement and Modeling of Slip Transfer Across Boundaries in Anisotropic Metallic Systems", *Proc. Air Force Office of Scientific Research Joint Contractor's Meeting*, Snowbird, UT (2001).
12. Adams, B.L., D. Casasent, B. El-Dasher, M. Demirel, D. Kinderlehrer, C. Liu, I. Livshits, F. Manolache, D. E. Mason, A. Morawiec, W.W. Mullins, S. Ozdemir, H. Rogan, G.S. Rohrer, A.D. Rollett, D. Saylor, S. Ta'asan, C. Talukder, C.-T. Wu, C.-C. Yang, & W. Yang., "Grain Boundary Property Determination through Measurement of Triple Junction Geometry and Crystallography", *Proc.* 1^{st} *Joint International Conference on Grain Growth*, ed. G. Gottstein and D.A. Molodov, Springer-Verlag, Aachen, GERMANY, p. 165 (2001).
13. Saylor, D.M., D.E. Mason, & G.S. Rohrer, "Determining Surface Energy Anisotropy from Measurements of Thermal Groove Geometry", *Proc.* 12^{th} *International Conference on Textures of Materials*, ed. J.A. Szpunar, Montreal, CANADA, p. 1637 (1999).
14. Adams, B.L., C. Bauer, D. Casasent, B. El-Dasher, D. Kinderlehrer, I. Livshits, F. Manolache, D. E. Mason, A. Morawiec, W.W. Mullins, S. Ozdemir, H. Rogan, G.S. Rohrer, A.D. Rollett, D. Saylor, S. Ta'asan, C. Talukder, C.-T. Wu, C.-C. Yang, & W. Yang., "Extraction of grain boundary energies from triple junction geometry", Plenary Presentation, *Proc.* 12^{th} *International Conference on Textures of Materials*, ed. J.A. Szpunar, Montreal, CANADA, pp. 9 (1999).

15. Kinderlehrer, D., I. Livshits, D.E. Mason, & S. Ta'asan, "Multiscale Reconstruction of Grain Boundary Energy from Microstructure.", *Proc.* 12^{th} *International Conference on Textures of Materials*, ed. J.A. Szpunar, Montreal, CANADA, p. 1643 (1999).
16. Saylor, D., D.E. Mason, & G.S. Rohrer, "The Influence of Surface and Grain Boundary Tangent Plane Anisotropy on Thermal Groove Geometry in Magnesia," *Proceedings of the* 3^{rd} *International Conference on Grain Growth*, Carnegie Mellon University, Pittsburgh, PA, p. 359 (1998).
17. Kinderlehrer, D. & D.E. Mason, "Remarks about Incoherence at Interfaces," *Proceedings of the* 3^{rd} *International Conference on Grain Growth*, Carnegie Mellon University, Pittsburgh, PA, p. 51 (1997).

Other Publications

1. Bieler, T.R., M.A. Crimp, P. Eisenlohr, Y. Yang, L. Wang, A. Alankar, D.E. Mason, W. Liu, R. Barabash, and G.E. Ice, "Damage Nucleation and Heterogeneous Deformation at Grain Boundaries in Commercial Purity Ti", *National Science Foundation Final Report* for NSF-DFG Materials World Network grant DMR-0710570, June 2011.
2. Bieler, T.R., M.A. Crimp, P. Eisenlohr, Y. Yang, L. Wang, A. Alankar, D.E. Mason, W. Liu, R. Barabash, and G.E. Ice, "Damage Nucleation and Heterogeneous Deformation at Grain Boundaries in Commercial Purity Ti", *National Science Foundation Progress Report* for NSF-DFG Materials World Network grant DMR-0710570, June 2010.
3. Bieler, T.R., M.A. Crimp, Y. Yang, L. Wang, P. Eisenlohr, Y.J. Ro, D.E. Mason, W. Liu, and G.E. Ice, "Damage Nucleation at Grain Boundaries in Commercial Purity Ti", *National Science Foundation Progress Report* for NSF-DFG Materials World Network grant DMR-0710570, June 2009.
4. Mason, D.E., N. Ignatova, T. Maleck, and D. Prestel, "Postcards from Russia: Engineering Students Study Abroad in Volgograd", *Currents* (MSU College of Engineering Alumni Magazine), **3** (1), July 2003.

Invited Professional Presentations

1. D.E. Mason and R.L. Fosdick, "A nonlocal model in one-dimensional mechanics", *International Workshop on Material Modeling*, Departamento de Engenharia de Estruturas, Escola De Engenharia De São Carlos, Universidade de São Paulo, São Carlos, Brazil. April 1, 2014. Principal speaker.
2. Bieler, T.R., S.C. Sutton, D.E. Mason, and M.A. Crimp, "Analysis and Simulation of Heterogeneous Deformation and Slip System Activation Along Grain Boundaries in Pure Tantalum and Niobium", *19*th *International Symposium on Plasticity and Its Current Applications*, Sheraton Nassau Beach Resort, Nassau, Bahamas, January 4, 2013. *Keynote Address.*
3. Mason, D.E., P. Eisenlohr, T.R. Bieler, and M. A. Crimp, "Evolving Mesoscale Damage Metrics in Titanium", 3^{rd} *International Symposium on Computational Mechanics of Polycrystals*, Avendi Hotel, Bad Honnef, Germany, June 28, 2012. Principal speaker.

4. Bieler, T.R., D.E. Mason, C. Zambaldi, P. Eisenlohr, C. Zhang, H. Li, L. Wang, Y. Yang, C. Boehlert, M. A. Crimp, R. Barabash, W. Liu, "Characterization and modeling of deformation near grain boundaries in Titanium and Ti-5Al-2.5Sn", *141st Meeting and Exhibition of The Minerals, Metals, and Materials Society*, Walt Disney World Swan & Dolphin Resort, Orlando, FL, March 12, 2012. *Keynote Address.*

5. Mason, D.E., T.R. Bieler, P. Eisenlohr, and M.A. Crimp, "Evolving Mesoscale Damage Metrics in Commercially Pure Titanium", *18th International Symposium on Plasticity and its Applications*; Rio Mar Beach Resort & Spa, Puerto Rico Resort and Spa, Puerto Rico, USA, January 04, 2012. Principal speaker.

6. Bieler, L. Wang, Y. Yang, H. Li, C.J. Boehlert, M.A. Crimp, D.E. Mason, P. Eisenlohr, R. Barabash, and W. Liu, "Characterization and modeling of heterogenous deformation near grain boundaries in titanium and Ti-5Al-2.5Sn", *Complex Dynamics of Dislocations, Defects, and Interfaces*; Workshop in Los Alamos National Laboratory, New Mexico, November 14-16, 2011.

7. Mason, D.E., T.R. Bieler, P. Eisenlohr, and M.A. Crimp, "Predicting Fracture Nucleation at Grain Boundaries in TiAl using Evolving Mesoscale Metrics", *17th International Symposium on Plasticity and its Applications*; Casa Magna Marriott Puerto Vallarta Resort and Spa, Mexico, January 06, 2011. Principal speaker.

8. Bieler, L. Wang, Y. Yang, P. Eisenlohr, M.A. Crimp, D.E. Mason, W. Liu, R. Barabash, and G.E. Ice, "Characterization and modeling of slip and mechanical twin interactions at grain boundaries in commercially pure Ti", *17th International Symposium on Plasticity and its Applications*; Casa Magna Marriott Puerto Vallarta Resort and Spa, Mexico, January 03, 2011.

9. Bieler, L. Wang, Y. Yang, M.A. Crimp, P. Eisenlohr, D.E. Mason, G.E. Ice, and W. Liu, D.E. Mason, "Damage nucleation at grain boundaries in commercial purity Ti", *2010 ASM Meeting - Atlanta Section*; January 19, 2010.

10. Bieler, T.R., M.A. Crimp, P. Eisenlohr, G.E. Ice, W. Liu, D.E. Mason, Y. Ro, L. Wang, and Y. Yang, "The interrelationship between dislocation slip and deformation twinning in CP Ti", *2010 International Symposium on Plasticity and its Applications*, St. Kitts Marriot Resort & The Royal Beach Casino, St. Kitts, St. Kitts and Nevis; January 04, 2010.

11. Bieler, T.R., M.A. Crimp, P. Eisenlohr, G.E. Ice, W. Liu, D.E. Mason, Y. Ro, L. Wang, and Y. Yang, "Comparison of slip, slip transfer, and damage nucleation in experimental observations and crystal plasticity finite element simulations of CP Ti", *Fall Meeting of the Materials Research Society*, John B. Hynes Convention Center, Boston, MA; December 01, 2009.

12. Bieler, T.R., M.A. Crimp, P. Eisenlohr, G.E. Ice, D.E. Mason, D. Raabe, F. Roters, L. Wang, and Y. Yang, "Interactions between slip-systems, grain boundaries, heterogeneous deformation, and microcracking in commercially pure Ti", *2009 International Symposium on Plasticity and its Applications*, Frenchman's Reef and Morning Star Marriot Beach Resort, St. Thomas, U.S. Virgin Islands; January 05, 2009.

13. Mason, D.E., D. Kumar, T.R. Bieler, P. Eisenlohr, M.A. Crimp, F. Roters, and D. Raabe, "Predicating nucleation of microcracks due to slip-twin interactions at grain boundaries in duplex γ-TiAl", *Erich-Schmid Kolloquium 2008*, Department

of Materialphysik, University of Leoben, Austrian Academy of Sciences; August 6, 2008. Principal speaker.

14. Bieler, T.R., M.A. Crimp, F. Pourboghrat, A. Fallahi, B.A. Simkin, B.C. Ng, D. Kumar, A. Zamiri, and D.E. Mason, "Microscale characterization in the SEM: Electron channeling and diffraction for orientation analysis and defect imaging", *Invited Colloquium*, Max Planck Institut für Eisenforschung, Düsseldorf, Germany, July 18, 2008.
15. Mason, D.E., "Unusual Behavior in Rubber Cubes", $E = MC^2$ *Colloquium Series*, Kalamazoo College, Kalamazoo, MI, November 15, 2006. Principal speaker.
16. Bieler, T.R., M.A. Crimp, F. Pourboghrat, A. Fallahi, B.A. Simkin, B.C. Ng, D. Kumar, A. Zamiri, and D.E. Mason, "The effect of twinning and crystal orientation on microcrack initiation in duplex TiAl grain boundaries", *Interdisciplinary Research Center Materials Workshop*, University of Birmingham, UK, July 5-7, 2004.
17. Bieler, T.R., M.A. Crimp, & D.E. Mason, "Study of the micromechanisms of plasticity and fracture in bulk metallic samples using electron channeling contrast imaging", *Office of Naval Research "Naval Steels" Workshop*, St. Michaels, MD, April 9-11, 2003.
18. Telang, A.U., T.R. Bieler, D.E. Mason, & K.N. Subramanian, "Microstructure evolution of crept, aged, and thermomechanically fatigued single shear lap Sn-Ag solder joints using orientation imaging microscopy", *Naval Postgraduate School*, Monterrey, CA, March 7, 2003.
19. Bieler, T.R., M.A. Crimp, D.E. Mason & B.C. Ng, "Deformation transfer at γ-γ boundaries in TiAl: experimental characterization and modeling", *Air Force Office of Scientific Research U.S.- Korea Workshop: Advances in Metallic Structures*, Kihei, Maui, HI, January 21-23, 2003.
20. Bieler, T.R., M.A. Crimp, D.E. Mason, S.L. Semiatin, K.N. Subramanian, & J.P. Lucas, "Identification and quantification of heterogeneous deformation in TiAl, Ti-6Al - 4V, and lead free solder joints", *A Workshop on Displacive Measurements Techniques*, Wright Patterson Air Force Base, Dayton, OH, January 24, 2001.
21. Mason, D.E. "A new mathematical model of deformation transfer in polycrystals", *General Motors Research & Development Center*, Warren, MI; Oct. 19, 2000. Principal speaker.
22. Kinderlehrer, D., I. Livshits, D.E. Mason, & S. Ta'asan, "Multiscale reconstruction of grain boundary energies and mobilities in polycrystals" *Gordon Research Conference on Solid State Studies in Ceramics*, Kimball Union Academy, Meriden, NH; August 2000. Principal speaker.
23. Kinderlehrer, D., I. Livshits, D.E. Mason, & S. Ta'asan, "Multiscale reconstruction of surface energy in MgO", *ASME Summer Meeting Symposium to Honor the 60th Birthday of Roger L. Fosdick*, Virginia Polytechnic University, Blacksburg, VA; June 1999. Principal speaker.
24. Fosdick, R.L., & D.E. Mason, "Some results in nonlocal continuum mechanics", *Michigan State University Department of Materials Science & Mechanics*, East Lansing, MI, Summer 1997. Principal speaker.
25. Fosdick, R.L., & D.E. Mason, "Existence and regularity in nonlocal continuum mechanics", *Carnegie Mellon University Department of Mathematics - Center for Nonlinear Analysis*, Pittsburgh, PA, Spring 1997. Principal speaker.

Contributed Professional Presentations

1. Mason, D.E., A. Cohen, & E.A. Valdez, "Albion College & Michigan State University: Development of a Dual Degree Program in Actuarial Science", *International Congress of Mathematicians*, COEX, Seoul, KOREA. August 13 - 21, 2014.
2. Li, H., D.E. Mason, T.R. Bieler, M.A. Crimp, and C.J. Boehlert, "Estimating the critically resolved shear stress ratios of the deformation systems in α-phase titanium", *Materials Science & Technology 2013*, Palais des Congrès, Montréal, Quebec, CANADA. October 29, 2013.
3. Li, H., D.E. Mason, T.R. Bieler, M.A. Crimp, and C.J. Boehlert, "Analysis of Heterogeneous Deformation along Grain Boundaries in Tensile Tests of Pure Titanium", *141st Meeting and Exhibition of The Minerals, Metals, and Materials Society*, Walt Disney World Swan & Dolphin Resort, Orlando, FL, March 13, 2012.
4. Jarvis, I., T.R. Bieler, M.A. Crimp, D.E. Mason, B. Boyce, "Analysis of Heterogeneous Deformation along Grain Boundaries in Tensile Tests of Pure Titanium", *141st Meeting and Exhibition of The Minerals, Metals, and Materials Society*, Walt Disney World Swan & Dolphin Resort, Orlando, FL, March 13, 2012.
5. Mason, D.E., T.R. Bieler, P. Eisenlohr, M.A. Crimp, "Predicting Fracture Nucleation at Grain Boundaries in TiAl using Evolving Mesoscale Metrics", *4th International Conference on Advanced Computational Engineering and Experimenting*, Palais De Congress, Paris, France, July 8, 2010. Principal speaker.
6. Wang, L, Y. Yang, M.A. Crimp, P. Eisenlohr, D.E. Mason, T.R. Bieler, "Nucleation of Extension Deformation Twins in α - Ti", *139th Meeting and Exhibition of The Minerals, Metals, and Materials Society*, Washington State Convention and Trade Center, Seattle, WA, February 17, 2010.
7. Wang, L, Y. Yang, M.A. Crimp, P. Eisenlohr, D.E. Mason, T.R. Bieler, "Deformation mode characterization and FEM simulation of α - Titanium deformed in bending", *138th Meeting and Exhibition of The Minerals, Metals, and Materials Society*, Moscone West Convention Center, San Francisco, CA, February 15, 2009.
8. Bieler, T.R., C. Boehlert, M.A. Crimp, P. Eisenlohr, G.E. Ice, W. Liu, D.E. Mason, D. Raabe, F. Roters, L. Wang, and Y. Yang, "Computational modeling of interactions between slip-systems and grain boundaries that lead to fracture initiation", *4th International Conference on Multiscale Materials Modeling*, Tallahassee-Leon County Civic Center, Tallahassee, FL, October 27 - 31, 2008. Principal speaker.
9. Bieler, T.R., M.A. Crimp, L. Wang, Y. Wang, P. Eisenlohr, F. Roters, D. Raabe, D.E. Mason and G.E. Ice, "Characterization of interactions between slip-systems and grain boundaries that lead to heterogeneous deformation in commercially pure Ti", *2008 Materials Science and Technology Conference and Exhibition*, David L. Lawrence Convention Center, Pittsburgh, PA, October 5 - 9, 2008.
10. Mason, D.E. and D. Reimann, "Developing a successful undergraduate colloquium course," *90th Meeting of the Mathematical Association of America*, New Orleans, LA, January 05 - 08, 2007. Principal speaker.
11. Ng, B.C., T.R. Bieler, M.A. Crimp, and D.E. Mason, "Prediction of crack path based on grain boundary misorientation and stress in a near-γ TiAl Alloy", *TMS Annual Meeting*, San Francisco, CA, February 13-17, 2005.

12. Mason, D.E., J. Merrill, R. Harichandran, T. Maleck, D. Prestel, V. Galishnikova, and P. Streng, "Innovation in a large-scale study-abroad program in engineering", *ASEE 2004 North Central Section Spring Conference*, Western Michigan University, Kalamazoo, MI, April 13-14, 2004. Co-Principal speaker.
13. Fallahi, A., D. Kumar, T.R. Bieler, M.A. Crimp, A. Zamiri, F. Pourboghrat, and D.E. Mason, "The effect of grain boundary misorientation, inclination, crystal orientation, and stress state on microcrack initiation in duplex TiAl grain boundaries", *TMS Annual Meeting*, Charlotte, NC, March 15-18, 2004.
14. Telang, A.U., T.R. Bieler, D.E. Mason, & K.N. Subramanian, "Plasticity modeling of lead-free solder joints in creep based upon orientation imaging microscopy", *TMS Fall Meeting*, Chicago, IL Nov. 11, 2003.
15. Telang, A.U., T.R. Bieler, D.E. Mason, K.N. Subramanian, A. Zamiri, & F. Pourboghrat, Microstructural evolution of TMF'ed solder joints using Orientation Imaging Microscopy", *TMS Fall Meeting*, Chicago, IL Nov. 11, 2003.
16. Mason, D.E., T.R. Bieler, B.L. Adams, & V. Ayres, "Application of microstructural design strategies to define optimal polycrystalline diamond deposition textures", *10^{th} International Conference on Plasticity*, Quebec City, QB, July 7-11, 2003. Principal speaker.
17. Bieler, T.R., M.A. Crimp, & D.E. Mason, "Deformation and crack initiation in TiAl", *10^{th} International Conference on Plasticity*, Quebec City, QB, July 7-11, 2003.
18. Bieler, T.R., M.A. Crimp, D.E. Mason, B.C. Ng, & B.A. Simkin, "Mesoscopic measurement of slip transfer and microcracking across boundaries in TiAl and Aluminum alloy systems", *ALCOA Technical Center*, Pittsburgh, PA, June 1, 2003.
19. Novozhilova, L. & D.E. Mason, "Existence and injectivity of minimizers for axisymmetric problems in nonlinear elasticity", *Workshop on Quasiconvexity and its Applications, Princeton University Program in Applied and Computational Mathematics*, Princeton NJ, November 2002. *Poster presentation.*
20. Novozhilova, L. & D.E. Mason, "Existence of minimizers for axisymmetric problems in nonlinear elasticity", *Michigan State University Seminar on Partial Differential Equations*, Michigan State University Department of Mathematics, East Lansing, MI; October 2002.
21. Ng, B.C., T.R. Bieler, M.A. Crimp & D.E. Mason, "The effects of crystal orientation and misorientation on crack propagation and arrest in a near-γ TiAl alloy", *TMS Fall Meeting*, Columbus, OH; October 6 - 10, 2002.
22. Bieler, T.R., M.A. Crimp & D.E. Mason, "Mesoscopic Measurement and Modeling of Slip Transfer Across Boundaries in Anisotropic Metallic Systems", *The Joint Annual Review of Metallic and Ceramic Materials Programs (The Air Force Office of Scientific Research)*, Bar Harbor, ME, 12-14 Aug. 2002. Co-Principal speaker.
23. Mason, D.E., B.A. Simkin, T.R. Bieler, & M.A. Crimp, "Dislocation and Twinning Strain Transfer at Grain Boundaries in Equiaxed TiAl Alloys", *TMS Annual Meeting Symposium on Fundamentals of Structural Intermetallics: Deformation Behavior of Intermetallics*, Seattle, WA, Feb. 19, 2002.
24. Mason, D.E., B.A. Simkin, M.A. Crimp & T.R. Bieler, "Measurements and Modeling of Deformation Transfer at γ-γ Grain Boundaries in TiAl", *TMS Fall Meeting*, Indianapolis, IN, Nov 7, 2001.

25. Bieler, T.R., M.A. Crimp, & D.E. Mason, "Mesoscopic Measurement and Modeling of Slip Transfer Across Boundaries in Anisotropic Metallic Systems", *The Joint Annual Review of Metallic and Ceramic Materials Programs (The Air Force Office of Scientific Research)*, The Cliff Lodge, Snowbird, Utah, Aug. 19-21, 2001.
26. Kinderlehrer, D., I. Livshits, D.E. Mason, & S. Ta'asan, "Multiscale reconstruction of grain boundary energy from microstructure", *Third SIAM Conference on Mathematical Aspects of Materials Science*, Crowne Plaza Hotel, Philadelphia, PA; May 22-24, 2000.

Other Scholarly Presentations

1. D.E. Mason, "Damage in Titanium and Titanium Aluminum", *Albion College Faculty Lecture Series*, Albion College, Albion, MI. March, 2012. Principal speaker.
2. D.E. Mason, "What is entropy and why is it always increasing? Remarks about the second law of thermodynamics in continuum physics", *Albion College Faculty Lecture Series*, Albion College, Albion, MI. October, 2009. Principal speaker.
3. D.E. Mason, "Mathematical Foundations of the Second Law of Thermodynamics", *Physics Seminar*, Department of Mathematics and Computer Science, Albion College, Albion, MI, December 05, 2008. Principal speaker.
4. Mason, D.E., "Mathematical modeling of shape memory alloys", *Mathematics and Statistics Colloquium Series*, Calvin College, Grand Rapids, MI, November 2004. *Invited*. Principal speaker.
5. Mason, D.E., I. Livshits, D. Kinderlehrer, and S. Ta'asan, "Material surface energy and the Kaczmarz algorithm", *MCS Colloquium*, Department of Mathematics and Computer Science, Albion College, Albion, MI, September, 2004. Principal speaker.
6. Mason, D.E., J. Merrill, R. Harichandran, V. Galishnikova, T. Maleck, and D. Prestel, "Educational and research collaboration between multiple U.S. and Russian academic institutions: A sustainable model for international programs", *MCS Colloquium*, Department of Mathematics and Computer Science, Albion College, Albion, MI, September, 2004. Principal speaker.
7. Mason, D.E., J. Merrill, R. Harichandran, V. Galishnikova, T. Maleck, and D. Prestel, "Educational and research collaboration between multiple U.S. and Russian academic institutions: A sustainable model for international programs", *Albion College Faculty Lecture Series*, Albion College, Albion, November, 2004. Principal speaker.
8. D.E. Mason, "Mathematical modeling of shape memory alloys", *MCS Colloquium*, Department of Mathematics and Computer Science, Albion College, Albion, MI, November, 2003. Principal speaker.
9. Mason, D.E., T.R. Bieler, B.L. Adams, & V. Ayres, "What in the world is a *diamond window* and how do I make the *best* one?", *Albion College Faculty Lecture Series*, Albion College, Albion, October, 2003. Principal speaker.
10. Mason, D.E., "A primer in variational calculus", presented at multiple locations. Principal speaker.
    (a) *MCS Colloquium*, Department of Mathematics and Computer Science, Albion College; Albion, MI, Spring 2003.

(b) *Invited Colloquium*, University of Alaska - South East; Juneau, Juneau, AK, February 2003.

(c) *Invited Colloquium*, Central College; Pella, IA, January 2003.

(d) *Invited Colloquium*, Central Washington University; Ellensburg, WA, January 2003.

(e) *Invited Colloquium*, Franklin College; Franklin, IN, December 2002.

(f) *Invited Colloquium*, Albion College; Albion, MI, Summer 2001.

11. Mason, D.E., "Unexpected Behavior in Rubber Cubes (and other oddities in mechanics)", *MCS Colloquium*, Department of Mathematics and Computer Science, Albion College; Albion, MI, January 2003. Principal speaker.