Darren E. Mason
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Education

- August 1996 Ph.D. (Mechanics w/ Doctoral Mathematics Minor) - Department of Aerospace Engineering and Mechanics - University of Minnesota - Institute of Technology
- August 1991 B.S. (Mathematics *Cum Laude*) - University of Minnesota - Institute of Technology

Academic Awards & Recognition

- 2021 Albion College Teacher of the Year
- 2011 Albion College 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.
- 1992 University of Minnesota Graduate Fellowship.
- 1989-91 Ella Thorpe Mathematics Scholarship.
- 1986 University of Minnesota Freshman Scholarship.
- 1986 Honeywell Freshman Scholarship

Academic Appointments

- Sep 2012 – Present **Albion College - Professor**
  Department of Mathematics and Computer Science
- Aug 2023 – Present **Michigan State University - Visiting Professor**
  Department of Mathematics - Actuarial Science Program
- Aug 2016 – July 2019 **Michigan State University - Visiting Assistant Professor**
  Department of Mathematics - Actuarial Science Program in China
  Guangzhou Higher Education University, Guangzhou, PRC.
  Summers only, roughly between mid May through the first week in July.
- Aug 2016 – July 2017 **Michigan State University - Visiting Assistant Professor**
  Department of Mathematics - Actuarial Science Program
- Feb 2009 – July 2014 **Michigan State University - Adjunct Associate Professor**
  Department of Chemical Engineering and Materials Science

- June 2008 – July 2013 **Max Planck Institut für Eisenforschung - Visiting Scholar**
  Division of Microstructure Physics and Metal Forming
  Düsseldorf, Germany.
  Summers Only - 1 month/year.
- Sep 2007 – Aug 2012 **Albion College - Associate Professor**
  Department of Mathematics and Computer Science
- June 2007 – July 2009 **Michigan State University - Adjunct Associate Professor**
  Department of Statistics and Probability
- June 2006 – July 2008 **Michigan State University - Adjunct Associate Professor**
  Department of Civil & Environmental Engineering
- Aug 2007 – May 2008 **University of Minnesota - Visiting Assistant Professor**
  Department of Aerospace Engineering and Mechanics
  Sabbatical Leave from Albion College
- Aug 2001 – Aug 2007 **Albion College - Assistant Professor**
  Department of Mathematics and Computer Science
- Aug 2004 – June 2006 **Michigan State University - Adjunct Assistant Professor**
  Department of Civil & Environmental Engineering
- Aug 2002 – Aug 2004 **Michigan State University - Adjunct Assistant Professor**
  Department of Mechanical Engineering
- Sum 2002 - Sum 2007 **Volgograd State University for Civil and Architectural Engineering - Volgograd, Russia**
  Visiting Assistant / Associate Professor via MSU
- Sep 1998 – May 2002 **Michigan State University - Assistant Professor**
  Department of Materials Science and Mechanics
  Department of Mechanical Engineering; On leave during 2001-02.
- Aug 1996 – June 1998 **Carnegie Mellon University - Post Doctoral Research Associate**
  Carnegie Mellon University Department of Mathematical Sciences

Selected Professional Service

- Have reviewed 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
  - Session Chair for "Damage and Ductile Fracture", *17th International Symposium on Plasticity and its Applications*, Casa Magna Marriott Resort and Spa, Puerto Vallarta, MX, January 6, 2011.
- 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) - Currently on National Finance Committee
- SIAM (Society for Industrial and Applied Mathematics)

Selected Institutional Service

- *General Service*
  - Fall 2005 - Spring 2007 : Faculty Secretary
- *Committee Service*
  - Fall 2017 - Present; Member of BS&BC; Chair during Fall 2019 - Fall 2021.
  - Fall 2010 - Spring 2014 : Gerstacker Institute Internal Advisory Board
  - Fall 2009 - Spring 2012 : Hearing and Grievance Committee
  - Fall 2004 - Spring 2010 : Committee for Petitions and Academic Status

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.
  - *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).

Conference Papers and Professional Presentations Omitted