

## VITA

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Research Associate Professor  
Department of Mechanical Engineering  
University of Utah  
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### Education:

Ph.D. Mechanical Engineering, University of Utah, Salt Lake City, Utah, March 1997.

B.A. Physics and Mathematics, Hastings College, Hastings, Nebraska, May 1991.

### Professional Experience:

2016-Present: Owner, Laird Avenue Consulting, LLC, Salt Lake City, Utah.

2008-Present: Research Associate Professor, University of Utah, Salt Lake City, Utah.

2008-2014: Senior Research Scientist, Perforating Research, Schlumberger

1997-2008: Research Assistant Professor, University of Utah, Salt Lake City, Utah.

1993-1997: Graduate Research Assistant, Physical Fluid Dynamics Laboratory, Department of Mechanical Engineering, University of Utah, Salt Lake City, Utah.

1993: Summer Internship, Amoco, Ahead of the bit overpressure detection, Houston, TX.

### Research Interests:

Computational Continuum Mechanics, Fluid Structure Interaction, Particle Methods, Parallel Computational Mechanics, Biomechanics, Mixing Processes in Turbulent Flows,

### Patents:

Shaped Charge Liner, U.S. Patent No. 8,985,024, March 24, 2015, with Wenbo Yang.

Detonator Structure and System, U.S. Patent No. 10,190,398, January 29, 2019, with Kenneth Goodman.

Shaped charge system having multi-composition liner, U.S. Patent No. 10,830,023, November 10, 2020, with Lawrence A. Behrmann and Wenbo Yang.

## Peer Reviewed Journal Publications and Book Chapters:

Lander, R.H., Cook, J.E., Guilkey, J.E., Kerimov, A., Bonnell, L.M., and Goodwin, L.B., “Digital Rock Advances from a Material Point Method Approach for Simulation of Frame Moduli and a Sedimentary Petrology Inspired Method for Creation of Synthetic Samples Through Simulation of Deposition and Diagenesis”, DOI: 10.1190.geo2023-0244.1, *Geophysics*, 2023.

Guilkey, J.E., Alsolaiman, O., Lander, R., Bonnell, L., “Cohesive Zones to Model Bonding in Granular Material with the Material Point Method”, *Computer Methods in Applied Mechanics and Engineering*, DOI: 10.1016/j.cma.2023.116260, **415**, 2023.

Guilkey, J.E., Lander, R., Bonnell, L., “A Hybrid Penalty and Grid Based Contact Method for the Material Point Method”, *Computer Methods in Applied Mechanics and Engineering*, **379**, DOI: 10.1016/j.cma.2021.113739, 2021.

Solowski, W., Berzins, M., Coombs, W., Guilkey, J., Moller, M., Adibaskoro, T., Seyedan, S., Tran, Q.A., Tielen, R., Soga, K., “Material Point Method, Overview and Challenges Ahead”, (pp. 113-204). Vol. 54, *Advances in Applied Mechanics*. Book Chapter, Published, 01/01/2021.

Tran, Q.A., Solowski, W., Berzins, M., Guilkey, J., “A Convected Particle Least Square Interpolation Material Point Method”, *Int. J. Numerical Methods in Engineering*, DOI: 10.1002/nme.6257, 2019.

Leavy, R.B., Guilkey, J.E., Phung, B.R., Spear, A.D., Brannon, R.M., “A Convected-Particle Tetrahedron Interpolation Technique in the Material-Point Method for the Mesoscale Modeling of Ceramics”, *Computational Mechanics*, **1**, 1-21, 2019.

Homel, M.A., Guilkey, J., Brannon, R.M., “Mesoscale Validation of the Effective Stress Approach for Modeling the Plastic Deformation of Fluid-Saturated Porous Material”, *J. Dynamic Behavior of Materials*, **1**, 23-44, 2017.

Gritton, G., Guilkey, J., Hooper, J., Bedrov, D., Kirby, R.M., and Berzins, M., “Using the material point method to model chemical/mechanical coupling in the deformation of a silicon anode”, *Modelling and Simulation in Materials Science and Engineering*, **25**, 2017.

Homel, M.A., Guilkey, J., Brannon, R.M., “Numerical Solution for Plasticity Models using Consistency Bisection and a Transformed-Space Closest-Point Return”, *Computational Mechanics*, **56**, 565-584, 2015.

Homel, M.A., Brannon, R.M., Guilkey, J., “Controlled Numerical Fracture in the Material Point Method (MPM) with Convective Particle Domain Interpolation (CPDI) Domain Scaling”, *Int. J. Numerical Methods in Engineering*, DOI: 10.1002/nme.5151, 2015.

Homel, M.A., Guilkey, J., Brannon, R.M., “Continuum Effective-Stress Approach for High-Rate Plastic Deformation of Fluid-Saturated Geomaterials with Application to Shaped-Charge Jet Penetration”, *Acta Mechanica*, **227**, 279-310, 2015.

Nairn, J.A., Guilkey, J.E., "Axisymmetric Form of the Generalized Interpolation Material Point Method", *Computer Methods in Applied Mechanics and Engineering*, **101**, 127-147, 2015.

Edgar LT, Maas SA, Guilkey JE, Weiss JA, "A coupled model of neovessel growth and matrix mechanics describes and predicts angiogenesis in vitro", *Biomech Model Mechanobiol* 2014 Nov 28.

Edgar, L.T., Underwood, C.J., Guilkey, J.E., Weiss, J.A., "Extracellular matrix density regulates the rate of neovessel growth and branching in sprouting angiogenesis", *PLOS One* 9 (1), 2014.

Kamojjala, K.C., Brannon, R.M., Sadeghirad, A., Guilkey, J.E., "Verification tests in solid mechanics", *Engineering with Computers*, DOI: 10.1007/s00366-013-0342-x, 2013.

Sadeghirad, A., Brannon, R.M., Guilkey, J.E., "A second-order convected particle domain interpolation (CPDI2) with enrichment for weak discontinuities at material interfaces", *Int. J. Numerical Methods in Engineering*, **95**, 928-952, 2013.

Burghardt, J, Brannon, R., Guilkey, J., "A nonlocal plasticity formulation for the material point method", *Comp. Methods in Applied Mechanics and Engineering*, Vol. 225-228, pp 55-64, 2012.

Edgar, L.T., Sibole, S.C., Underwood, C.J., Guilkey, J.E., Weiss, J.A., "A computational model of in vitro angiogenesis based on extracellular matrix fiber orientation", *Comp. Methods in Biomechanics and Biomedical Engineering*, DOI:10.1080/10255842.2012.662678, 2012.

Imroz Choudhury, A.N.M., Steffen, M.D., Guilkey, J.E., Parker, S.G., "Enhanced Understanding of Particle Simulations Through Deformation-Based Visualization", *Computer Modeling in Engineering and Sciences*, **63**, 2010.

H. Yuan, Lee, J.H., Guilkey, J.E., "Stochastic reconstruction of the microstructure of equilibrium form snow and computation of effective elastic properties", *Journal of Glaciology*, **56**, 2010.

Thomas, S., Ameel, T., Guilkey, J., "Mixing Kinematics of Moderate Reynolds Number Flows in a T-Channel", *Physics of Fluids*, **22**, 1, 2010.

Wallstedt, P.C., Guilkey, J.E., "A weighted least squares particle-in-cell method for solid mechanics", *Int. J. Num. Meth. Eng.*, doi: 10.1002/nme.3041, 2010.

Luitjens, J., Guilkey, J., Harman, T., Worthen, Parker, S., "Adaptive Computations in the Uintah Framework", *Advanced Computational Infrastructures for Parallel/Distributed Adaptive Applications*, (eds M. Parashar and X. Li), John Wiley & Sons, Inc., Hoboken, NJ, USA. doi: 10.1002/9780470558027.ch10, 2009.

Wallstedt, P.C., Guilkey, J.E., "An evaluation of explicit time integration schemes for use with the generalized interpolation material point method", *J. Comp. Phys.*, **227**, 9628-9642, 2008.

M. Steffen, P.C. Wallstedt, J.E. Guilkey, R.M. Kirby, and M. Berzins, "Examination and Analysis of Implementation Choices within the Material Point Method (MPM)", *Computer Modeling in Engineering and Sciences*, **31**, 107-127, 2008.

- Wallstedt, P.C., Guilkey, J.E., "Improved Velocity Projection for the Material Point Method", *Computer Modeling in Engineering and Sciences*, **19**, 223-232, 2007.
- Guilkey, J.E., Harman, T.B., Banerjee, B., "An Eulerian-Lagrangian Approach for Simulating Explosions of Energetic Devices", *Computers and Structures*, **85**, 660-674, 2007.
- Bigler, J., Guilkey, J., Gribble, G., Hansen, C., Parker, S., "A Case Study: Visualizing Material Point Method Data", Proceedings of Eurographics/IEEE-VGTC Symposium on Visualization, 209-376, 377 May 2006.
- Ionescu, I., Guilkey, J.E., Berzins, M., Kirby, R.M., Weiss, J. A., "Simulation of Soft Tissue Failure using the Material Point Method", *Journal of Biomechanical Engineering*, **128**, 917-924, 2006.
- Parker, S.G., Guilkey, J., Harman, T., "A component-based parallel infrastructure for the simulation of fluid-structure interaction", *Engineering with Computers*, **22**, 277-292, 2006.
- Guilkey, J.E., Hoying, J.A., Weiss, J.A., "Computational Modeling of Multicellular Constructs with the Material Point Method", *Journal of Biomechanics*, **39**, 2074-2086, 2006.
- Bardenhagen, S.G., Brydon, A.D., Guilkey, J.E., "Insight into the Physics of Foam Densification via Numerical Solution", *Journal of the Mechanics and Physics of Solids*, **53**, 597-617, 2005.
- Campbell, J.E., Coppom, R.W., Guilkey, J.E., Klewicki, J.C., McMurtry, P.A., "Time Resolved Concentration Measurements in an Axial Flow Mixer", *Journal of Fluids Engineering*, **126**, 981-989, 2005.
- Guilkey, J.E., and Weiss, J.A., "Implicit time integration for the Material Point Method: Quantitative and algorithmic comparisons with the Finite Element Method", *International Journal for Numerical Methods in Engineering*, **57**, 1323-1338, 2003.
- Bardenhagen, S.G., Guilkey, J.E., Roessig, K.M., Brackbill, J.U., Witzel, W.M., Foster, J.C., "An Improved Contact Algorithm for the Material Point Method and Application to Stress Propagation in Granular Material", *Computer Modeling in Engineering and Sciences*, **2**, 509-522, 2001.
- Hansen, L., Guilkey, J.E., McMurtry, P. A., Klewicki, J. C. "The use of photoactivatable fluorophores in the study of turbulent pipe mixing: effects of inlet geometry", *Meas. Sci. Technol.*, **11**, 1235-1250, 2000.
- Guilkey, J. E., Kerstein, A. R., McMurtry, P. A., Klewicki, J. C. "Mixing Mechanisms in Turbulent Pipe Flow", *Physics of Fluids*, **9**, 717-723, 1997.
- Guilkey, J. E., Kerstein, A. R., McMurtry, P. A., Klewicki, J. C. "Long-Tailed Probability Distributions in Turbulent-Pipe-Flow Mixing", *Physical Review E*, **56**, 1753-1758, 1997.
- Guilkey, J. E., Gee, K. R., McMurtry, P. A., Klewicki, J. C. "Use of caged fluorescent dyes for the study of turbulent passive scalar mixing", *Experiments in Fluids*, **21**, 237-242, 1996.

Guilkey, J. E., McMurtry, P. A., Klewicki, J. C. "Effect of Initial Conditions on Scalar Statistics in Turbulent Pipe Flow", *AICHE Journal*, **43**, 1947-1962, 1997.

### **Conference Papers, Proceedings and Abstracts:**

Guilkey, J. Lander, R, Bonnell, L., Alsolaiman, O., MPM for Modeling Diagenetic Processes, Presentation at the 13<sup>th</sup> MPM Workshop, University of Texas, Austin, September, 2022.

Lander, R, Bonnell, L., Guilkey, J., 3D Digital Sedimentary Petrology Models, Keynote Address, GeoKarlsruhe 2021, Karlsruhe, Germany, September 19-24, 2021.

Guilkey, J. Lander, R, Bonnell, L., , An Alternative Contact Method for Small Deformation MPM Simulations, Presentation at the 12<sup>th</sup> MPM Workshop, Virginia Tech, September, 2019.

Guilkey, J., Cyberstone: A Material Point Method Based Approach to Diagenesis, Presentation at the 11<sup>th</sup> MPM Workshop, Oak Ridge, Tennessee, September, 2018.

Guilkey, J., On Particle Splitting, Presentation at the 9<sup>th</sup> MPM Workshop, Portland, Oregon, September 8<sup>th</sup>, 2016

Guilkey, J., Kamojjala, K., A Study in Beauty vs. Accuracy, Presentation at the 8th MPM Workshop, Corvallis, Oregon, September, 2014.

Guilkey, J., Simulations of Perforation-Induced Shock Loading Experienced by Instrumentation Embedded in Cement , Schlumberger Eureka Modeling and Simulation SIG Workshop, September 3rd, 2014.

Guilkey, J., Goodman, K., Use of numerical simulation to optimize designs for ballistics transfer, Schlumberger Eureka Modeling and Simulation SIG Workshop, September 18, 2013. *Best Presentation Award.*

Burghardt, J, Leavy, B., Guilkey, J., Xue, Z., Brannon, R., Application of Uintah-MPM to shaped charge jet penetration of aluminum. Proceedings of the 9th World Congress on Computational Mechanics, Sydney, Australia, 2010.

Burghardt, J., Guilkey, J., Brannon, R., Use of MPM for simulating penetration of geologic materials with particulated metal jets. Presentation at the 5th MPM Workshop, Corvallis, Oregon, April 2009.

Guilkey, J., An Overview of the Generalized Interpolate Material Point Method with an Emphasis on Unresolved Issues, Presentation at the 5th MPM Workshop, Corvallis, Oregon, April 2009.

Edgar, LT., Guilkey, J., Underwood, C., Bagget, B., Utzinger, U., and J. Weiss. 2010. Three-dimensional simulation of in vitro angiogenesis: Effects of extracellular matrix structure and density. *ASME SBC 2010.*

Edgar, LT., Sibole, S., Underwood, C., Guilkey, J., and J. Weiss. 2010. Simulating the influence of the extracellular matrix on 3D in vitro angiogenesis. *Proc CMBBE 2010. 1<sup>st</sup> Place for Best Student Presentation.*

Sibole, S., Underwood, C., Guilkey, J., and J. Weiss. 2009. A continuous-discrete mathematical model simulates in vitro angiogenesis. *Proc ASME SBC*, 2009.

Burghardt, J., Guilkey, J., Brannon, R., Use of MPM for simulating penetration of geologic materials with particulated metal jets, 5th MPM Workshop, Corvallis, Oregon, April 2009.

Sibole, S., Underwood, C., Guilkey, J., and J. Weiss. 2008. A discrete computational model to predict in vitro angiogenesis. *Proc ASME SBC*, 2008.

Duncan, C., Harman, T., Guilkey, J., “Aerodynamics of Vocal Fold Measurement: A Novel Fluid Structure Interaction Model”, *Bull. Amer. Physical Society*, **52**, November, 2007.

Dwyer, T., Guilkey, J., Oldroyd, H., Barber, T., Pardyjak, E., “Reynolds Number Effects on Near-Source Turbulent Mixing in Pipe Flow”, *Bull. Amer. Physical Society*, **52**, November, 2007.

Guilkey, J.E., Harman, T.B., Banerjee, B., “An Eulerian-Lagrangian Approach for Simulating Explosions of Energetic Devices”, Fourth MIT Conference on Computational Mechanics, Cambridge, MA, June, 2007.

Gribble, C., Stephens, A., Guilkey, J., and Parker, S. "Visualizing Particle-Based Simulation Datasets on the Desktop." In British HCI 2006 Workshop on Combining Visualization and Interaction to Facilitate Scientific Exploration and Discovery, September 2006, pp. 1-8

Ionescu, I, Guilkey JE, Berzins M, Kirby RM, Weiss JA: “A Failure Model for Soft Tissues using Material Point Method”, Proceeding of the 7th International Conference on Computer Methods in Biomechanics and Biomedical Engineering, March 2006.

Ionescu, I, Weiss JA, Guilkey J, Cole M, Kirby RM, Berzins M: Ballistic injury simulation using the material point method. Proceedings, Medicine Meets Virtual Reality, eds. James D Westwood et al., IOS Press, (published in Stud Health Technol Inform. 2005;119:228-33.

Guilkey, J., Hoying, J., Weiss, J.A., “Large-Scale Modeling of the Mechanical Behavior of Multicellular Constructs”, 2005 Summer Bioengineering Conference, June 22-26, Vail Cascade Resort, Vail, Colorado.

Ionescu, I., Guilkey, J., Berzins, M., Kirby R.M., Weiss, J.A., “Simulation of soft tissue failure with the Material Point Method”, 2005 Summer Bioengineering Conference, June 22-26, Vail Cascade Resort, Vail, Colorado.

Banerjee B., Guilkey, J.E., Harman, T.B., Schmidt, J.A., McMurtry, P.A., “Simulation of Impact and Fragmentation With the Material Point Method”, *11<sup>th</sup> International Conference on Fracture*, Turin, Italy, March 20-25, 2005.

Ionescu, I., Guilkey, J., Berzins, M., Kirby R.M., Weiss, J.A., “Computational Simulation of Penetrating Trauma in Biological Soft Tissues using the Material Point Method”, Proceedings, Medicine Meets Virtual Reality, Stud. Health Technol. Inform., 2005;111:213-218.

Guilkey, J.E., Zhang, Y., Hoying, J.B., Weiss, J.A., “Mechanical simulation of multicellular structures with the material point method”, *6th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering*, Madrid, Spain, February 25-28, 2004.

Guilkey, J.E., Harman, T., Xia, A., Kashiwa, B., McMurtry, P., “An Eulerian-Lagrangian Approach for Large Deformation Fluid Structure Interaction Problems, Part 1: Algorithm Development”, *Proceedings of the Second International Conference on Fluid Structure Interaction*, Cadiz, Spain, June 2003.

Harman, T., Guilkey, J.E., Schmidt, J., Kashiwa, B., McMurtry, P., “An Eulerian-Lagrangian Approach for Large Deformation Fluid Structure Interaction Problems, Part 2: Multi-Physics Simulations within a Modern Computational Framework”, *Proceedings of the Second International Conference on Fluid Structure Interaction*, Cadiz, Spain, June 2003.

Bardenhagen, S.G., Roessig, K.M., Byutner, O., Guilkey, J.E., Bedrov, D., Smith, G.D., “Direct numerical simulation of weak shocks in granular material”, *12<sup>th</sup> International Detonation Symposium*, San Diego, California, August 11-16, 2002.

Parker, S.G., Guilkey, J.E., Harman, T.B., “An Infrastructure for Parallel Multi-Physics Mechanics Simulations”, *7<sup>th</sup> U.S. National Congress on Computational Mechanics*, Albuquerque, New Mexico, July 2003.

Guilkey, J.E., Weiss J. A. “An implicit time integration strategy for use with the material point method”, *Proceedings of the First M.I.T. Conference on Computational Fluid and Solid Mechanics*, June, 2001.

McMurtry, P.A., Guilkey, J.E., Harman, T.B. “Modeling Fluid-Structure Interactions in Fires and Explosions”, *Proceedings of the 30<sup>th</sup> AIAA Fluid Dynamics Conference*, June, 1999.

Guilkey, J., Gee, K., Klewicki, J.C., and McMurtry, P. “Caged Fluorescent Dye Based Studies of Turbulent Scalar Mixing,” *International Symposium on Optics, Imaging, and Instrumentation*, The International Society for Optical Engineering, San Diego, CA, July 1995.

Guilkey, J., McMurtry, P., Kerstein, A., and Klewicki, J.C. “Low Wavenumber Statistics in Turbulent Pipe Flow,” *Bull. Amer. Physical Society*, **41** (9), pg. 1690, November, 1996.

Guilkey, J., Gee, K., McMurtry, P., and Klewicki, J.C. “A New Initialization Technique for Studies of Turbulent Scalar Mixing,” *Bull. Amer. Physical Society*, **40** (12), pg. 1966, November, 1995.

McMurtry, P., Guilkey, J., Klewicki, J.C., and Kerstein, A.R. “Scalar Variance Decay in Turbulent Pipe Flow: Theory, Model and Experimental Results,” *Bull. Amer. Physical Society*, **40** (12), pg. 2043, November, 1995.

### **Schlumberger Internal Reports:**

2010, PR-10-04, Investigating the Efficacy of Seismic Air-Guns for Coalbed Fracturing

2010, PR-10-08, Exploration via Numerical Simulation of the Importance of Material Heterogeneity in the Mechanical Response of Geomaterials

2010, PR-10-09, Investigation of methods to achieve mesh-independence in simulations involving material heterogeneity

2011, PR-11-04, The Kayenta Geomaterial Model for use in Numerical Simulations of Shaped Charge Jet Penetrations - Preliminary Report

2011, PR-11-05, An Investigation on the Effect of Different Materials in Shaped Charge Liners

2011, PR-11-07, On Quantifying the Effects of Strength and Geometry in Penetration

2011, PR-11-08, Uintah for resolved, multi-dimensional simulations of near-gun wellbore dynamics

2012, PR-12-01, Reverse Ballistics Tests: Experimental Results and Model Comparisons

2012, PR-12-04, Use of numerical simulation to evaluate design options for the SecureExposed detonator

2012, PR-12-05, Use of numerical simulation to evaluate design options for improving ballistics transfers to boosters

2012, PR-12-06, Time of Arrival Tests for PJO and PJN 2906 into Two Aluminum Alloys

2012, PR-12-07, Proposal for Measuring the Minimum Penetration Velocity of Stressed Rock

2013, PR-13-01, Status Report on Arenisca, the University of Utah Geomechanics Model

2013, PR-13-02, A numerical investigation into the effect of air gaps between ballistics transfer components

2013, PR-13-17, Consideration of the feasibility of propellant driven water jets

2014, PR-14-03, Numerical Simulations of Loading Experienced by Instrumentation Embedded in Cement Due to Perforating

2014, PR-14-04, Optimization of the Pellet Geometry for the Secure Detonator: Comparison of Experimental and Numerical Approaches

2014, PR-14-05, A Stand-Alone Implementation of the Arenisca Geo-Material Model

**Awards:**



Schlumberger Eureka Modeling and Simulation Workshop Best Presentation, 2013.

“Fastest Male Faculty or Staff”, University of Utah Alumni Association 5K, 2008

Citizen Service Award, Salt Lake County Sheriff’s Department, 2006.

Coauthor - Taylor and Francis prize for the “Outstanding Innovation in Computer Methods in Biomechanics and Biomedical Engineering”, 800 Euro cash award, February 28, 2004, Madrid, Spain.

ACERC Graduate Fellowship, 1993.

University of Utah Graduate Fellowship, 1996.

**Professional Activities:**

Host and Lead Organizer of the First Annual Material Point Method Workshop, 2005.

Host and Lead Organizer of the Fourth Annual Material Point Method Workshop, 2008.

Member, Organizing Committee, 2007 American Physical Division of Fluid Dynamics Annual Meeting

**Reviewer for:** American Institute of Chemical Engineers Journal, Europhysics Letters, Composites: Part A, Applied Science and Manufacturing, Computer Methods in Biomechanics and Bioengineering, Computers and Fluids, Propellants, Explosives, Pyrotechnics, Engineering with Computers, Computers and Structures, International Journal of Solids and Structures, Applied Numerical Mathematics, Mechanics of Advanced Materials and Structures, Journal of Computational Physics, Computer Methods in Applied Mechanics and Engineering, Journal of Fluids Engineering

**Teaching Interests and Experience:**

Teaching interests include: Dynamics, Numerical Methods, Fluid Mechanics, and Heat Transfer  
Taught Vibrations, University of Utah, Dept of Mechanical Engineering, 2015, 2019.

Taught Numerical Analysis Univ. of Utah, Dept. of Mechanical Engineering, 2005, 2007, 2008

Taught Dynamics University of Utah, Dept. of Mechanical Engineering, Summer 1995,

Graduated 1 Ph. D. student (2009) and 2 Masters students.

Committee member for several students in Mech. Eng., Bioengineering and Computer Science

## **Invited Lectures:**

Invited Lecture, The Material Point Method for Modelling Diagenesis, University of Eswatini, Manzini, Eswatini, October 2022.

Invited Keynote Address, 3<sup>rd</sup> International Conference on the Material Point Method for Modelling Soil-Water-Structure Interaction (MPM2021), Hamburg, Germany.

“Uintah-MPM Training”, Virginia Tech University, September 11, 2019.

“Uintah-MPM, Features and Capabilities”, Army Research Laboratory, May 14, 2019.

“Cyberstone: A Material Point Method Based Approach to Diagenesis”, Johns Hopkins University, March 1, 2019.

“An Eulerian-Lagrangian Approach for Simulating Explosions of Energetic Devices”, Schlumberger Reservoir Completions, Rosharon, TX, July 16, 2008

“The Material Point Method and its Uses in SCI Institute Related Research Projects”, SCI Institute Seminar, March 24, 2006.

“Modeling Explosions and Detonations at the Utah ASC-ASAP Center”, Lawrence Livermore National Laboratory, High Energy Applications Facility, June 9, 2004.

“Fluid Structure Interaction Simulation in the Center for the Simulation of Accidental Fires and Explosions”, University of Utah, Department of Mechanical Engineering, October 17, 2003.

“Fluid Structure Interaction Simulation in the Center for the Simulation of Accidental Fires and Explosions”, Utah State University, Department of Mechanical and Aerospace Engineering, November 3, 2003.

“An Introduction to the Material Point Method”, Sandia National Laboratories, April 21, 1999.