L. Catherine Brinson

ADDRESS: Mechanical Engineering & Materials Science
Duke University
144 Hudson Hall
Durham, NC 27708

phone: (919) 660-3933
home: (847) 869-5626

e-mail: cate.brinson@duke.edu
http://: http://mems.duke.edu/faculty/catherine-brinson

EDUCATION:

Ph.D., Applied Mechanics, June 1990
California Institute of Technology
Thesis Advisor: Professor Wolfgang G. Knauss
Thesis Title: "Time-Temperature Characterization of Solids Containing Multiple Viscoelastic Phases by Numerical Analysis"

MS., Applied Mechanics, June 1986
California Institute of Technology

BS., Engineering Science and Mechanics, June 1985
Summa Cum Laude Virginia Polytechnic Institute and State University

PROFESSIONAL EXPERIENCE:

Donald M Alstadt Department Chair, Mechanical Engr & Materials Science, *Duke University*, 2019 - present
Sharon C and Harold L Yoh III Professor of Engineering, *Duke University*, Sept 2018 – present
Professor of Mechanical Engineering and Materials Science, *Duke University*, Sept 2017 – present
Adjunct Professor, Mechanical Engineering Dept., *Northwestern University*, Sept 2017 – present
Associate Dean for Academic and Professional Initiatives, McCormick School of Engineering, *Northwestern University*, Sept 2015 – June 2017
Jerome B. Cohen Professor of Engineering, *Northwestern University*, Jan 2004 – Aug 2017
Full Professor, Mechanical Engineering Dept., *Northwestern University*, Sept. 2003 – Aug 2017
Secondary Appointment, Materials Science & Eng, *Northwestern University*, June 2003- Aug 2017
Visiting Professor, *NIST*, Sept 2014 - March 2015
Visiting Professor, *Universität des Saarlandes*, 2013-14
Department Chair, Mechanical Engineering, *Northwestern University*, 2007 - 2013
Visiting Professor, *Helmut Schmidt Universität* and *Technische Universität Hamburg-Harburg*, Hamburg, Germany, September 2006-Aug 2007
Associate Department Chair, Mechanical Engineering, *Northwestern University*, 2002 - 2006
Associate Professor, Mechanical Engineering Dept., *Northwestern University*, Sept 1998-Aug 2003
Visiting Professor, *Universität der Bundeswehr*, Hamburg, Germany, October 2000-Aug 2001
Assistant Professor, Mechanical Engineering Dept., *Northwestern University*, Oct. 1992 - 1998
Guest Scientist, *DLR-German Air & Space Agency*, Göttingen, Germany, April 1991 - Aug. 1992
Visiting Scientist, *Institut für Fertigungstechnik*, Erlangen, Germany, Aug. 1990 - Nov. 1990
Research Assistant, *California Institute of Technology*, Pasadena, CA, July 1986 - June 1990
Teaching Assistant, *California Institute of Technology*, Pasadena, CA, Sept. 1987-June 1988
Engineer, *Hercules Aerospace*, Salt Lake City, UT, Summer 1985
Research Assistant, Experimental Mechanics Laboratory, *Virginia Tech*, Blacksburg, VA, 1982-85
Engineering Technician, *Naval Research Laboratory*, Washington, D.C., Summers 1982, 1983

HONORS, AWARDS, EDITORSHIPS:

Eringen Medal, for "seminal contributions in modeling and characterization of polymer nanocomposites and shape memory alloys", *Society of Engineering Science*, 2022

Elected Fellow of the *American Academy of Arts and Sciences (AAAS)*, 2020
Elected to *International Union of Theoretical and Applied Mechanics (IUTAM) Congress Committee*, 202024
Nadai Medal, for "distinguished contributions to materials engineering", ASME, 2014
Fellow, *American Academy of Mechanics*, 2013
Humboldt Visiting Scholar Award, Humboldt Foundation, 2013
Academic Leadership Program Fellow, CIC, 2011-12
Chair of NRC Study Committee on Lightweight Materials, 2010-11
Fellow, *American Society for Mechanical Engineers*, 2009
Fellow*, Society for Engineering Science, 2007*
Friedrich Wilhelm Bessel Prize, Alexander von Humboldt Foundation, 2006-07
National Materials Advisory Board member, Jan. 2005 - Dec. 2010
Chair of NRC Study Committee on Durable Polymer Composites 2004-05
Editorial Board, *Advanced Engineering Materials*, 2004-2010
Editorial board, *Mechanics of Advanced Materials and Structures*, 2008 - 2013
ASME Thomas JR Hughes Young Investigator Award, 2003
Alexander von Humboldt Research Fellowship, 2000-2001
President of the *Society of Engineering Science*, 1999; Vice-President, 1998
DSSG - Defense Science Study Group, Institute for Defense Analysis, 1998-2000
Associate Editor, ASME *Journal of Engineering Materials & Technology*, 1997-2003
Board of Directors, *Institute for Mechanics and Materials Young Investigators*, 1997
Associate Editor, *Journal of Intelligent Material Systems and Structures*, 1996-2002
Honorable Mention, *McCormick Teacher of the Year Award*, Northwestern Univ. 1997
Board of Directors, *Society for Engineering Science*; 1996-00
Honored in *Celebration of Women Leaders at Virginia Tech*, March 1996
Northwestern Associated Student Government *Faculty Honor Roll* 1996
NSF CAREER Award, 1995-2000
ASEE New Mechanics Educator, 1995
ASEE Summer Faculty Fellowship, NASA-Langley, 1993
June and Donald Brewer Junior Professor, endowed chair, Northwestern University, 1992-94
AAUW (American Association of University Women Educational Foundation) Postdoctoral Fellowship, July 1991-July 1992
Special Language Scholarship for Ph.D.'s, *Deutscher Akademischer Austausch-Dienst*, Summer 1990
Caltech Special Institute Fellowship, 1985-86
ESM Departmental Scholarship, Virginia Tech, 1984-85
Finalist, *Woman of the Year Award*, Virginia Tech, 1984-85
T. Marshal Hahn Freshman Engineering Scholarship, Virginia Tech, 1981-82
Member of *Phi Kappa Phi* and *Tau Beta Pi* (National and Engineering Honor Societies)

PUBLICATIONS:

Books

Polymer Engineering Science and Viscoelasticity, 2nd Edition, H. F. Brinson and L. C. Brinson, Springer, (2014). **Over 75,000 chapter downloads from e-version since publication combined for 1st and 2nd edition.**
Polymer Engineering Science and Viscoelasticity, H. F. Brinson and L. C. Brinson, Springer, (2008).

Refereed Journal Articles

*over 180 refereed journal publications with over 27000 citations and an h-index of 72 in Google Scholar (*https://scholar.google.com/citations?user=vC99OmYAAAAJ&hl=en)

H Majithia, B Ma, RJ Sheridan, LC Brinson, *Closed Loop Prediction of PNC mechanical properties incorporating gradient interphase from direct AFM measurements*, manuscript in preparation, 2023.
J Peloquin, A Kirillova, C Rudin, LC Brinson, K Gall, *Prediction of 3D printed photopolymer lattice structure mechanical properties via machine learning*, submitted to Additive Manufacturing, 2023.

MV Bastawrous, Z Chen, A Ogren, C Daraio, C Rudin, LC Brinson, *Phononic materials with effectively scale-separated hierarchical features using interpretable machine learning*, Advanced Materials, submitted, 2023.

B Ma, N Finan, D Jany, ME Deagen, LS Schadler, LC Brinson, *Machine Learning-Assisted Understanding of Polymer Nanocomposites Composition–Property Relationship: A Case Study of NanoMine Database*, ACS Macromolecules, to appear 2023.

LC Brinson, LM Bartolo, B Blaiszik, D Elbert, I Foster, A Strachan, PW Voorhees, *Community Action on FAIR Data will Fuel a Revolution in Materials Research*, MRS Bulletin, to appear, 2023.

D Nepal, S Kang, KM Adstedt, K Kanhaiya, MR Bockstaller, LC Brinson, MJ Buehler, PV Coveney, K Dayal, JA El-Awady, LC Henderson, DL Kaplan, S Keten, NA Kotov, GC Schatz, S Vignolini, F Vollrath, Y Wang, BI Yakobson, VV Tsukruk, H Heinz, *Hierarchically structured bioinspired nanocomposites,* Nature Materials, doi.org/10.1038/s41563-022-01384-1, 22:18–35, 2022

ME Deagen, JP McCusker, T Fateye, S Stouffer, LC Brinson, DL McGuinness, LS Schadler, *FAIR and Interactive Data Graphics from a Scientific Knowledge Graph*. Sci Data 9, 239, https://doi.org/10.1038/s41597-022-01352-z, 2022.

LC Brinson, *Data-Driven Multiscale Science for Tread Compounding*, Tire Science and Technology, doi.org/10.2346/tire.22.21003, 2022

LS Schadler, WWei Chen, LC Brinson, R Sundararaman, P Prabhune, A Iyer, *Combining Machine Learning, DFT, EFM, and Modeling to Design Nanodielectric Behavior*, ECS Transactions, 108:51, DOI 10.1149/10802.0051ecst, 2022

DW Collinson, N von Windheim, K Gall, LC Brinson, *Direct evidence of interfacial crystallization preventing weld formation during fused filament fabrication of poly(ether ether ketone)*, Additive Manufacturing, doi.org/10.1016/j.addma.2022.102604, 2021.

ME Deagen, LC Brinson, RA Vaia, LS Schadler, *The Materials Tetrahedron Has a Digital Twin*, MRS Bulletin, doi.org/10.1557/s43577-021-00214-0, 2022.

Z Chen, A Ogren, Chiara Daraio, LC Brinson, C Rudin, *How to See Hidden Patterns in Metamaterials with Interpretable Machine Learning*, Extreme Mechanics Letters, doi.org/10.1016/j.eml.2022.101895, v 57 2022.

X Li, B Ma, J Dai, C Sui, D Pande, DR Smith, LC Brinson, PC Hsu, *Metalized polyamide heterostructure as a moisture-responsive actuator for multimodal adaptive personal heat management*, Science Advances, 7:51: eabj7906, DOI: 10.1126/sciadv.abj7906, 2021.

DW Collinson, RJ Sheridan, MJ Palmeri, LC Brinson, *Best practices and recommendations for accurate nanomechanical characterization of heterogeneous polymer systems with atomic force microscopy*., Progress in Polymer Science, doi.org/10.1016/j.progpolymsci.2021.101420, 2021.

N von Windheim, DW Collinson, T Lauc, LC Brinson, K Gall, *The influence of porosity, crystallinity, and interlayer adhesion on the tensile strength of 3D printed polylactic acid (PLA)*, Rapid Prototyping Journal, doi: 10.1108/rpj-08-2020-0205, 2021.

B Hu, A Lin, LC Brinson, ChemProps: *A RESTful API enabled database for composite polymer name standardization*, Journal of Cheminformatics 13 (1), 1-13, doi.org/10.1186/s13321-021-00502-6, 2021

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MD Eaton, LC Brinson, KR Shull, *Temperature Dependent Fracture Behavior in Model Epoxy Networks with Nanoscale Heterogeneity*, Polymer, doi.org/10.1016/j.polymer.2021.123560, 2021

AS Prasad, Y Wang, X Li, A Iyer, W Chen, LC Brinson, LS Schadler, *Investigating the effect of surface modification on the dispersion process of polymer nanocomposites*, Nanocomposites, 1-14, DOI: 10.1080/20550324.2020.1809250, 2020

LC Brinson, M Deagen, W Chen, J McCusker, DL McGuinness, LS Schadler, M Palmeri, U Ghumman, A Lin, B Hu, *Viewpoint: Polymer Nanocomposite Data: Curation, Frameworks, Access, and Potential for Discovery and Design*, ACS MacroLetters, 9:1086-1094, https://doi.org/10.1021/acsmacrolett.0c00264, 2020. **Cover article**.

RJ Sheridan, DW Collinson, LC Brinson, *Vanishing Cantilever Calibration Error with Magic Ratio Atomic Force Microscopy*, - Advanced Theory and Simulations, https://doi.org/10.1002/adts.202000090, 2020

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Y Wang, M Zhang, A Lin, A Iyer, AS Prasad, X Li, Y Zhang, L Schadler, W Chen, LC Brinson, *Mining structure-property relationships in polymer nanocomposites using data driven finite element analysis and multi-task convolutional neural network*, Molecular Systems Design & Engineering, DOI: 10.1039/D0ME00020E, 2020.

M Zhang, X Li, Y Wang, W Chen, LC Brinson, *Impact of Interfacial properties on the Viscoelastic Relaxation of Hard-Soft Block Copolymers using Finite Element Analysis*, Journal of Materials Research, 35:14, 1857-1873, DOI: 10.1557/jmr.2020.161, 2020.

DW Collinson, HM Emnett, JX Ning, MJZ Hartmann, LC Brinson, *Tapered polymer whiskers to enable threedimensional tactile feature extraction*, Soft Robotics, DOI: 10.1089/soro.2019.0055, 2020.

J Woodcock,* R Sheridan,* R Beams, S Stranick, WF Mitchell, LC Brinson, V Gudapathi, D Hartman, A Vaidya, JW Gilman, G Holmes, *Damage sensing using a mechanophore crosslinked epoxy resin in singlefiber composites*, Composites Science & Technology, doi.org/10.1016/j.compscitech.2020.108074, 2020 PP Paul, HM Paranjape, N Tamura, YI Chumlyakov, LC Brinson, *In-situ, microscale characterization of heterogeneous deformation around notch in martensitic Shape Memory Alloy*, Materials Science and Engineering: A, 771:13, doi.org/10.1016/j.msea.2019.138605, 2019

PP Paul, P Kabirifar, Q Sun, LC Brinson, *Structure-microstructure interactions in compression deformation of NiTi shape memory alloy micropillars*, Materials Letters 257, 126693, doi.org/10.1016/j.matlet.2019.126693, 2019

DW Collinson, MD Eaton, KR Shull, LC Brinson, *De-Convolution of Stress Interaction Effects from Atomic Force Spectroscopy Data across Polymer-Particle Interfaces*, Macromolecules, vol 52:22, 8940-8955, doi.org/10.1021/acs.macromol.9b01378, 2019.

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J Song, R Kahraman, DW Collinson, W Xia, LC Brinson, S Keten, *Temperature Effects on the Nanoindentation Characterization of Stiffness Gradients in Confined Polymers*, Soft Matter, 2019, 15 (3), 359-370, DOI 10.1039/C8SM01539B.

CR Fisher, HB Henderson, MS Kesler, P Zhu, GE Bean, MC Wright, JA Newman, LC Brinson, O Figueroa III, MV Manuel, *Repairing large cracks and reversing fatigue damage in structural metals*, Applied Materials Today, 13: 64-68, 2018, doi.org/10.1016/j.apmt.2018.07.003.

Z Yang, X Li, LC Brinson, AN Choudhary, W Chen and A Agrawal, *Microstructural Materials Design Via Deep Adversarial Learning Methodology*, J. Mech. Des 140(11), 111416 (Oct 01, 2018), doi: 10.1115/1.4041371 (**top cited paper in JMD 2020**)

X Li, Y Zhang, H Zhao, C Burkhart, LC Brinson, W Chen, *A transfer learning approach for microstructure reconstruction and structure-property predictions*, Nature: Scientific Reports, volume 8, Article number: 13461 (2018), 2018, doi: 10.1038/s41598-018-31571-7

M Zhang, Z Cui, LC Brinson, *Mechanical properties of hard–soft block copolymers calculated from coarsegrained molecular dynamics models*, Journal of Polymer Science Part B: Polymer Physics, 56, 1552– 1566, 2018, doi.org/10.1002/polb.24742.

H Zhao, Y Wang, A Lin, B Hu, R Yan, J McCusker, W Chen, DL McGuinness, LS Schadler, LC Brinson, *NanoMine Schema: A Data Representation for Polymer Nanocomposites*, APL Materials, 6(11), 111108, 2018, doi.org/10.1063/1.5046839.

M Zhang, Y Li, P Kolluru, LC Brinson, *Determination of Mechanical Properties of Polymer Interphase Using Combined Atomic Force Microscope (AFM) Experiments and Finite Element Simulations*, Macromolecules, 51(20), 8229-8240, doi.org/10.1021/acs.macromol.8b01427, 2018.

PV Kolluru, MD Eaton, DW Collinson, X Cheng, D Delgado, KR Shull, and LC Brinson, *An AFM-based Dynamic Scanning Indentation (DSI) Method for Fast, High Resolution Spatial Mapping of Local Viscoelastic Properties in Soft Materials*, Macromolecules, 51 (21), pp 8964–8978, DOI: 10.1021/acs.macromol.8b01426, 2018.

PP Paul, M Fortman, HM Paranjape, PM Anderson, AP Stebner, LC Brinson, *Influence of Structure and Microstructure on Deformation Localization and Crack Growth in NiTi Shape Memory Alloys*, Shape Memory and Superelasticity 4 (2), 285-293, 2018. **2018 ASM Editor's Choice article**

A Hu, X Li, A Ajdari, B Jiang, C Burkhart, W Chen, LC Brinson, *Computational analysis of particle reinforced viscoelastic polymer nanocomposites–statistical study of representative volume element*, J. of the Mechanics and Physics of Solids, https://doi.org/10.1016/j.jmps.2018.02.013, 114, 55-74, 2018.

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K Nandy, DW Collinson, CM Scheftic, LC Brinson, *Open-source micro-tensile testers via additive manufacturing for the mechanical characterization of thin films and papers*, PloS one 13:5, e0197999, 2018.

HM Paranjape, PP Paul, B Amin-Ahmadi, H Sharma, D Dale, JYP Ko, Y I Chumlyakov, LC Brinson, AP Stebner, *In situ, 3D characterization of the deformation mechanics of a superelastic NiTi shape memory alloy single crystal under multiscale constraint*, Acta Materialia, vol 144, pp. 748-757, https://doi.org/10.1016/j.actamat.2017.11.026, 2018.

R Bostanabad, Y Zhang, X Li, T Kearney, LC Brinson, DW Apley, WK Liu, W Chen, *Computational Microstructure Characterization and Reconstruction: Review of the State-of-the-art Techniques*, Progress in Materials Science, Vol 95, pp. 1-41, https://doi.org/10.1016/j.pmatsci.2018.01.005, 2018.

P Paul, H Paranjape, AP Stebner, DC Dunand DC, LC Brinson, *Effect of Machined Feature Size Relative to the Microstructural Size on the Superelastic Performance in Polycrystalline NiTi Shape Memory Alloys*, Mat Sci Eng A, DOI 10.1016/j.msea.2017.09.016 (2017)

AS Prasad, L Schadler, H Zhao, X Li, W Chen, LC Brinson, *Towards building a structure-properties prediction tool for nanodielectrics, Electrical Insulation and Dielectric Phenomenon* (CEIDP), IEEE 10.1109/CEIDP.2017.8257600 , 2017.

V Rawte, J McCusker, H Zhao, LC Brinson, W Chen, LS Schadler, DL McGuinness, *An Ontology for a Polymer Nanocomposite Community Data Resource*, Proceedings of the 2017 ACM on Web Science Conference, pp. 411-412, doi 10.1145/3091478.3098866, 2017.

M Zhang, S Aksar, JM Torkelson, LC Brinson, *Stiffness Gradients in Polymeric Model Nanocomposites Characterized via Atomic Force Microscopy and Fluorescence Spectroscopy*, Macromolecules, 50 (14), 5447-5458, DOI 10.1021/acs.macromol.7b00917, 2017.

H Zhao, Y Li, Y Huang, T Krentz, MH Bell, B Benicewicz, LC Schadler, LC Brinson, Dielectric Spectroscopy Analysis using Viscoelasticity-inspired Relaxation Theory with Finite Element Modeling, IEEE Transactions on Dielectrics and Electrical Insulation, Vol. 24, No. 6, pp. 3776-3785, Dec 2017.

MA Bessa, R Bostanabad, Z Liu, A Hu, D Apley, LC Brinson, W Chen, WK Liu, *A framework for data-driven analysis of materials under uncertainty: Countering the curse of dimensionality*, Comp Meth App Mech & Engr, 320:633-667, DOI 10.1016/j.cma.2017.03.037 2017.

HM Paranjape, PP Paul, H Sharma, P Kenesei, JS Park, TW Duerig, LC Brinson, AP Stebner, *Influences of granular constraints and surface effects on the heterogeneity of elastic, superelastic, and plastic responses of polycrystalline shape memory alloys*, J Mech Phys Solids, 102:46-66, 2017

P Zhu, Z Cui, MS Kesler, JA Newman, MV Manuel, MC Wright, LC Brinson, *Characterization and modeling of three-dimensional self-healing shape memory alloy-reinforced metal-matrix composites*, Mechanics of Materials 103, 1-10, DOI 10.1016/j.mechmat.2016.09.005 2016.

CD Wood, A Adjari, C Burkhardt, KW Putz, LC Brinson, *Understanding Competing Mechanisms for Glass Transition Changes in Filled Elastomers*, Composites Science and Technology, 127:88-94, doi.org/10.1016/j.compscitech.2016.02.027, 2016.

C Bewerse, LC Brinson, DC Dunand, *Porous shape-memory NiTi-Nb with microchannel arrays*, Acta Materialia 115:83-93, 2016.

H Zhao, X Li, Y Zhang, LS Schadler, W Chen, LC Brinson, *NanoMine: a material genome approach for polymer nanocomposites analysis and design*, APL-Materials, vol 4: 053204, 2016.

I Hassinger, X Li, H Zhao, H Xu, Y Li, T Krentz, Y Huang, LS Schadler, W Chen, LC Brinson, *Towards the Development of a Quantitative Tool for Predicting Dispersion of Nanocomposites Under Non-Equilibrium Processing Conditions*, Journal of Materials Science, 51(9):4238-4249, 2016.

Y Zhang, H Zhao, I Hassinger, LC Brinson, LS Schadler, W Chen, *Microstructure Reconstruction and Structural Equation Modeling for Computational Design of Nanodielectrics*. Integrating Materials and Manufacturing Innovation, 4(1):1-26, 2015.

K Nandy, MJ Palmeri, CM Burke, Z An, ST Nguyen, KW Putz, LC Brinson, *Stop Motion Animation Reveals Formation Mechanism of Hierarchical Structure in Graphene Oxide Papers*, Advanced Materials: Interfaces, DOI: 10.1002/admi.201500666, 3:6, 2016.

C Bewerse, AA Emery, LC Brinson, DC Dunand, *NiTi porous structure with 3D interconnected microchannels using steel wire spaceholders*, Mat Sci & Eng A 634: 153–160 2015.

Y Li, P Valavala, S Watcharotone, LC Brinson, *Models for nanoindentation of compliant films on stiff substrates*, J Mat Res, DOI 10.1557/jmr.2015.126, vol 30:11, pp 1747-1760, 2015.

Z Cui, S Yang, LC Brinson, *Fast evaluation of local elastic constants and its application to nanosized structures*, Phys Rev B, Vol: 91:18, Article Number: 184104, 2015.

C Bewerse, LC Brinson, DC Dunand, *Microstructure and mechanical properties of as-cast quasibinary NiTiNb eutectic alloy*, Mat Sci Eng A, Vol: 627 pp: 360-368, 2015.

CD Wood, M Vijayvergia, FH Miller, T Carroll, C Fasanati, LD Shea, LC Brinson, TK Woodruff, *Multimodal magnetic resonance elastography for noninvasive assessment of ovarian tissue rigidity in vivo*, Acta Biomat, Vol: 13, pp: 295-300, 2015.

CD Wood, L Chen, C Burkhart, KW Putz, JM Torkelson, LC Brinson, *Measuring Interphase Stiffening Effects in Styrene-based Polymeric Thin Films*, Polymer, DOI 10.1016/j.polymer.2015.08.033, 75:161-167, 2015.

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P Zhu, AP Stebner, LC Brinson, *Plastic and transformation interactions of pores in shape memory alloy plates*, Smart Materials and Structures, vol 23:10:104008, 2014.

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CM* Breneman, LC Brinson*, LS Schadler*, B Natarajan, M Krein, K Wu, L Morkowchuk, Y Li, H Deng, H Xu, *Stalking the Materials Genome: A Data-Driven Approach to the Virtual Design of Nanostructured Polymers*, Advanced Functional Materials, 2013, doi: 10.1002/adfm.201301744 *co-first authors.

AP Stebner, TA Sisneros, S Vogel, B Clausen, DW Brown, A Garg, RD Noebe, LC Brinson, *Micromechanical Elastic, Twinning, and Slip Strain Partitioning of Polycrystalline, Monoclinic Nickel-Titanium Large Uniaxial Deformations Measured via In Situ Neutron Diffraction,* Journal of the Mechanics and Physics of Solids, vol 61:11, pp 2302-2330, 2013.

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AC Deymier-Back, A Singhal, F Yuan, JD Almer, LC Brinson, DC Dunand, *Effect of high-energy X-ray irradiation on creep mechanisms in bone and dentin*, Journal of the Mechanical Behavior of Biomedical Materials, vol 21, pp 17-31, 2013.

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*Gates, T. S. and L. C. Brinson, *Acceleration of Aging in Graphite/Bismaleimide and Graphite/Thermoplastic Composites*, Proceedings of the AIAA 35th Structures, Structural Dynamics, and Materials Conference, Hilton Head, South Carolina, (1994).

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Brand, W., C. Boller, M. S. Huang and L. C. Brinson, *Introducing the Constitutive Behavior of Shape Memory Alloys into Adaptive Engineering Structures*, Symposium on the Mechanics of Phase Transformations and Shape Memory Alloys, ASME International Congress and Exposition, Chicago, ASME AMD-Vol. 189, C. Brinson, B. Moran, Eds., pp. 179-193, (1994).

Brinson, L. C. and T. S. Gates, *Effects of Physical Aging on Long-Term Creep Behavior of Polymers and Polymer Matrix Composites*, NASA Technical Memorandum 109081, (1994).

Boller, C., L. C. Brinson, W. Brand and M. S. Huang, *Some Basic Ideas on the Design of Adaptive Aircraft Structures using Shape Memory Alloys*, Proceedings, 4th International Conference on Adaptive Structures, Köln, Germany, November (1993).

*Brinson, L. C. and R. Lammering, *Development and Application of One-Dimensional Truss Finite Elements for Shape Memory Alloys*, Adaptive Structures and Material Systems, AD-Vol. 35, G. P. Carman and E. Garcia, Eds. ASME Winter Annual Meeting, New Orleans, November 28-December 3, pp. 1-10, (1993).

Brinson, L. C., *Constitutive Behavior of Shape Memory Alloys: one dimensional thermomechanical derivation with non-constant material functions and redefined martensite internal variable*, Conference on Recent Advances in Adaptive and Sensory Materials and their Applications, Virginia Tech, Blacksburg, VA, April 27 - 29, Technomic Publishing Co., C. A. Rogers and R. C. Rogers, Eds., pp. 729-742, (1992).

Knauss, W. G., G. U. Losi and L. C. Brinson, *Research Report on Fundamental Studies Related to Failure of Adhesively Bonded Structures*, California Institute of Technology, GALCIT SM Report 88-15, 75 pp., August (1988).

Brinson, L. C. and W. G. Knauss, *Finite Element Procedure for Determination of the Frequency Dependent Properties of Multi-Phase Viscoelastic Materials*, California Institute of Technology, GALCIT SM Report 90-7, 33 pp., May (1990).

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PATENTS

Po Chun Hsu, Boran Ma, Xiuqiang Li, LC Brinson, US Patent application 63/278,305, *Multimodal Metallization Systems for Thermoregulation and Methods Thereof*, Nov 11, 2021.

David W Collinson, Mitra J Hartmann, L Catherine Brinson, US Patent application 16102364, *Processing methods and apparatus to manufacture a functional, multi-scale, tapered fiber from polymer filament*, 2019.

Compton OC, Putz KW, Brinson LC, Nguyen ST, US Patent number 8,709,213, *Composite Graphene OxidePolymer Laminate and Method*, awarded April 2014.

SPONSORED RESEARCH

NSF Creating a Materials Research Coordination Network (MaRCN) in the Materials Research Data Alliance, 9/1/2022 – 8/31/2025

NSF, *Local Polymer Interfacial Mechanics: Effect of Topological and Chemical NanoPatterning*, PI, MoMS 2040670, 9/1/2021-8/31/2024

DOE FAIR, *FAIR Data and AI Framework for Architectured Metamaterials*, PI, DE-SC0021358, 9/23/2020 – 9/22/2023

NSF NRT, NRT-HDR: *Harnessing AI for Autonomous Material Design*, PI, DGE-2022040, 8/31/2020 – 8/30/2025

NSF Planning Grant, Planning Grant: *Engineering Research Center for Advanced Materials Manufacturing and Discover for Extreme Environments* (CAM2DE2), 9/1/2018-8/31/2019.

NSF CSSI, *Nanocomposites to Metamaterials: A Knowledge Graph Framework*, PI, CSSI-1835677, 11/1/2018-10/31/2023

AFOSR, *Stochastic Self-Consistent Clustering Theory for Composite Performance Prediction: from extreme value microstructure attributes to design of interphase for toughness*, PI, FA9550-18-1-0381, 11/1/2017 – 10/31/2023

NSF-DMREF, *A Data-Centric Approach for Accelerating the Design of Future Nanostructured Polymers and Composites Systems*, CMMI-1818574, PI, 9/1/2017 to 8/31/2022

NSF, *Understanding the neural basis for sensorimotor control loops using whisker-based robotic hardware platforms*, BCS-1734981, co-PI, 9/1/2017-8/31/2021

NSF-DIBBS, *Ontology-enabled Polymer Nanocomposite Open Community Data Resource*, co-PI, A12761//1640840, 9/1/2016 – 8/31/2019

DOE, *Microstructure Anisotropy Effects on Fracture and Fatigue Mechanisms in Shape Memory Alloy Martensites*, PI, DE-SC0010594 0003, 8/15/2016-8/14/2018.

Owens-Corning, *Structure Property Relationships for Glass Fiber Polymer Composites*, PI, 4509746934//Agmt 1/26/2016, 2/1/2016 – 1/31/2018

Goodyear, *Nanoscale Compound Science and Simulation*, PI, PO#4510883960 // Agreement 12, 6/1/2015 – 8/30/2018

NIST, *Center for Hierarchical Material Design*, co-I, 70NANB14H012 Amd 5, 1/1/2014-1/1/2019

AFOSR, *ABC Stochastic Multiresolution Theory for Microstructure Based Predictive Materials Science*, PI, FA9550-14-1-0032-P00003, 12/1/2013 – 11/30/2017

ONR, *Multiscale Modeling of Thermoplastic Elastomers for Enhanced Blast Properties through Microstructural Design*, PI, N00014-14-1-0434 P00002, 5/15/2014 – 5/14/2018

NSF, CDMR: *NanoMine: Data Driven Discovery for Nanocomposites*, PI, DMR-1310292, 9/1/2013 – 8/30/2017

NSF, DEMS: *Engineering Polymer Nanodielectric Systems using a Descriptor-based Design Methodology*, co-PI, CMMI-1334929, 9/1/2013-8/30/2017

DOE, *Granular Constraints and Size Effects in Polycrystalline Shape Memory Alloys*, PI, DE-SC0010594002, 8/15/2013-8/14/2016.

NASA, Self-Repairing Fatigue Damage in Metallic Structures for Aerospace Vehicles Using Liquid-Assisted Shape Memory Alloy Self-Healing (SMASH) Technology, co-PI, NNX13AR52A, 9/13/2013 – 6/12/2015.

Goodyear, *Non-Linear Viscoelastic Modeling of Rubber Compounds*, PI, 4507401163 / Amd 9, 9/1/2013 – 8/31/2014

ONR, *Materials Informatics Applied to Nanocomposites for Advanced Dielectric Technology*, co-PI, A12480// N000014-13-1-0173, 1/1/2013 – 12/31/2016

NSF, *Direct measurement of the role of confinement and chemistry on local physical and mechanical properties of polymers*, PI, CMMI-1235355/001, 9/1/2012- 8/31/2016

Goodyear, *Non-Linear Viscoelastic Finite Element Analysis of Rubber Compounds* and *Characterization and Modeling of Carbon Black Filled Rubbers*, 9/1/2012 – 8/31/2013

ARO, *Novel Processing for Creating 3d Architectured Porous Shape Memory Alloy – Polymer Composites*, W911NF-12-1-0013/ P00002, 11/1/2011 – 8/31/2012

NSEC – seed funding, *Injectable Protein Sponge*, 6/1/2010 - 9/30/2011

ONR, *Materials Informatics Applied to Nanocomposites for Advanced Technology*, 12/1/2009 – co-PI, N00014-10-1-0043/ P00007, 11/30/2013

ONR, *Enhancing the Penetration and Fragmentation Behavior of Metallic/Elastomer Composites,* co-PI, N00014-10-1-0043/ P00007, 12/1/2009 – 12/31/2013

NSF, *New Approach to Nanoindentation Experiments and Modeling: Toward Fundamental Understanding of Thin Polymer Films and Polymer Nanocomposites*, Principal Investigator, CMMI-0928050, 9/1/098/31/13

NSF, Stochastic *Multiscale Computational Design Methodology*, co-PI, CMMI-0928320, 9/1/2009 – 8/31/2013

Lockheed Martin, *Micro and Nano Scale Characterization of Hybrid Polymer Nanocomposites*, PI, 4/1/200910/31/2010

Goodyear Tire and Rubber Company, *Compound Multiscale Modeling for Predictive Tread Materials Design*, co-PI, 6/30-2009 – 12/30/2012

Argonne, *Synchrotron X-ray and Computational Studies of Strains in Animal Bones*, co-PI, 9/1/2007 – 8/31/2012

NIH, *Biomimetic Interfacial Control in Polymer Nanocomposites*, co-PI, 4/1/07-3/31/10

GM, *Smart Materials by Design*, co-PI, 6/1/08-5/31/11

Ford-Boeing, *Carbon Nano-reinforced Thermoset Polymers*, Principal Investigator, 6/1/2006 – 5/31/2008

ONR, *Enhancing the Penetration and Fragmentation Behavior of Metallic/Elastomer Composites*, co-PI, 1/4/06 – 9/30/09.

DOE, *Natural Fiber Nanocomposites*, co-PI, 10/1/2006 – 1/31/08

Goodrich BRITE award, *Processing, Modeling and Characterization of Nanoreinforced Polymer Composites*, co-PI, 1/1/2006 – 12/31/2007.

NSF Materials Science and Research Center Interdisciplinary Research Group, *Novel Processing Routes to Nanostructured Polymer Blends and Composites*, co-PI, 9/1/2005 – 8/31/2010

NSF, Mechanically- and Biologically-Active Nickel-Titanium Foam as Biomimetic Material for Skeletal Repair , co-PI, 6/1/2005 – 5/31/2009

NSF NIRT CMS-0404291: *Interphase Design for Extraordinary Nanocomposites*, Principal Investigator, 9/1/04-8/31/10

FAA, *Aging of Polymeric Insulation in Aircraft Wiring: Mechanical and Electrical Property Characterization and Correlation*, Principal Investigator, 9/1/03 – 8/31/06

NASA-Langley URETI, *Bioinspired Design and Processing of Multifunctional Nanocomposites*, Co-Principal Investigator, 7/1/02 – 6/30/07

NASA-Langley, *Micromechanics – Continuum – Numerical Modeling of Shape Memory Alloys*, Principal Investigator, 1/16/02 - 1/15/06

NSF Award DMR-0108342, *Organoapatite-Coated Titanium Foam: A Biohybrid for Skeletal Repair*, CoPrincipal Investigator, 8/1/01 – 4/30/05

NASA-Langley, *Nano-, Micro- and Macro-mechanics of Nanoreinforced Polymeric Materials*, Principal Investigator, 10/1/00 – 9/30/03.

NSF Award POWRE CMS-0074921, *Bone Cell Growth and Strength Characteristics of Microporous Titanium*, Principal Investigator, 9/1/00 – 8/31/01.

NSF Award CMS 0089977, *Self-Sensing Actuation and Control with SMAs*, 9/1/00 – 9/1/03.

Los Alamos National Lab, *Development of Physically Based Models for U-6Nb Alloys*, Principal Investigator, 6/1/00 – 6/1/03.

FAA, *Aging Characterization and Lifetime Assessment of Polymeric Insulation in Aircraft Wiring,* Principal Investigator, 6/1/00 – 7/31/03.

NSF-SGER Grant, CMS-9908368, *Micromechanical Testing and Multivariant Model Correlation for Shape Memory Alloys*, Principal Investigator, 6/1/99-6/1/00

NASA-Langley Research Grant, NCC1-271, *Synergistic Effects of Physical Aging and Damage on Long-term Behavior or Polymer Matrix Composites*, Principal Investigator, 11/1/97-11/1/99

3M Nontenured Faculty Grant, *Mechanics of Polymeric and Smart Materials*, Principal Investigator, 12/1/9612/1/98

NSF CAREER Award, CMS-9501792, *Characterization and Modeling of Multidimensional SMA Behavior and Coupled Effects of Temperature, Aging Time and Moisture in Polymer Composite Systems*, Principal Investigator, 9/1/95-3/15/00

NASA-Langley Research Grant, *Effects of Chemical and Physical Aging on Long-Term Behavior of Polymer Matrix Composites*, Principal Investigator, 1/1/95-1/1/98

NSF-Research Initiation Award, MSS-9308937, *Constitutive and Finite Element Modeling of Shape Memory Alloys*, Principal Investigator, 9/15/93-9/15/96

Northwestern University Research Grants Committee Award, *Characterization of Multi-Dimensional Shape Memory Alloy Behavior*, Principal Investigator, 6/1/93-6/1/94

INVITED SEMINARS:

ASTAR (Agency for Science Technology and Research), IHPC, Singapore, *Materials Data & Informatics: Curation, Frameworks, Access, and Potential for Discovery and Design*, 17 November 2022.

Materials Division Plenary Lecture, *Materials Data & Informatics: Curation, Frameworks, Access, and Potential for Discovery and Design*, ASME IMECE, Columbus OH, 30 Oct - 3 Nov, 2022.

Eringen Lecture, SES, *Nano and Polymers and Mechanics and Data*, College Station, TX, 16-19 Oct 2022.

ISPN 2022 – International Symposium on Polymer Nanocomposites: From Elaboration to Applications, **Keynote Talk**, *Polymer Nanocomposites: AFM, Interfaces and Data*, Lorient, France, 28-30 September, 2022.

Paris-Saclay University, *MaterialsMine: Leveraging Data Resources for Functional Polymers and Polymer Nanocomposite Research: Principles and Examples*, 27 September 2022.

AFOSR, Dayton OH, *Stochastic Self-Consistent Clustering Theory for Composite Performance Prediction: from extreme value microstructure attributes to design of interphase for toughness*, 3 Aug 2022

University of Washington, Seattle, WA, *AFM NanoMechanics of Polymer Interfaces*, 23 May 2022

Materials Research Society Meeting, Invited talk: *Using AI to Unlock Nature's Secrets to Design Mechanical Metamaterials*, Honolulu, HI, May 8-12, 2022.

Midwest Mechanics Lecture Series, *Nanomechanical AFM for structure, properties and data in multiphase polymers*, U Michigan, Michigan State, Notre Dame, U Wisconsin, 11-15 October 2021.

Duke Soft Matter Symposium, *Mechanical Metamaterials: Structure, Properties and Data*, keynote presentation, Durham NC, 4-5 October 2021

Bloch Symposium, University of Buffalo, *Creating an Organized, Searchable Data Repository on Next Generation Materials*, keynote presentation at hybrid event, 7-8 June 2021.

EMMC (European Materials Modeling Council), *Working toward Interoperability: Nanomine to Metamine and Ontologies*, live presentation in virtual event, 2-4 March 2021.

SES, *Progress in high resolution nanomechanical AFM for exploration of nanoscale structure and properties in soft materials*, live presentation in virtual event, 9/29/20-10/1/20.

APS, Pre-meeting Workshop on Machine Learning and Data for Polymer Physicists, *Capturing and using experimental data*, 2-5 March 2020, Denver CO. (presentation given remotely due to start of COVID pandemic).

APS, *De-Convolution of Stress Interaction Effects from Atomic Force Spectroscopy Data across PolymerParticle Interfaces,* 2-5 March 2020, Denver CO. (cancelled due to COVID)

NSF/NIST Summit on Big Data and Cyberinfrastructure for Materials Research, *NanoMine: A data resource for polymer nanocomposites*, 21-22 Nov 2019, Chicago IL.

NSF Workshop on "Applications of Machine Learning to Experimental Mechanics and Materials," NanoMine: *A data resource for polymer nanocomposites and the challenges for data science and design*, 6-7 Nov 2019, Arlington VA.

Research Data Alliance (RDA) Annual Conference, *NanoMine – The Start of a Materials Ontology*, Helsinki, Finland, 22-25 October 2019.

Polymer Processing Society, *Polymer NanoComposites, Interfaces and Data*, **Plenary Lecture**, 26-30 May 2019, Izmir Turkey.

American Chemical Society (ACS), *Nanoscale Characterization of Polymer Interfaces* and *A Data-driven approach for high performance polymer nanocomposite characterization and design using NanoMine*, 14 April 2019, Orlando FL.

NC State, *Polymer Interphase via AFM and Coupled Computational Analysis*, 8 Feb 2018.

Symposium on Contemporary Research in Mechanics of Materials and Structures, Caltech, Pasadena, CA, *The Nanocomposite Material Genome*, 21 Dec 2018.

A-Star, Singapore, 4 Dec, *Local Characterization of Polymers and NanoMine Data Resource*, 2018.

Boston University, 16 Nov, *Nanoscale Characterization of Polymer Interfaces*, 2018. SES,

Madrid, Spain, 10-12 Oct, *Mechanical Behavior of Polymeric Material Interfaces*, 2018

NIST MGI Workshop, July 30-31, *Polymer Nanocomposite Schema and Ontology*, 2018.

World Congress in Computational Mechanics, New York, NY, July 23-27, *Nanomine – Polymer Nanocomposite Data Resource to Design Next Generation Materials*, 2018

CHIMAD/NIST Data Summit, Rockville, MD, Sept 25-27, *Building a Polymer Data Schema*, 2017.

Keynote Talk, PPS Europe/Africa 2017, Polymer Processing Society, Dresden Germany, NanoMine: *Development of Material Data Resource and Analysis*, June 2017

Keynote Talk, Society of Polymer Science, Chiba, Japan, NanoMine: *Development of Material Data Resource and Analysis,* May 29 2017

NIMS, National Institute of Materials Science, Tsukuba, Japan, NanoMine: *Development of Material Data Resource and Analysis*, May 26, 2017

NIST, Functional Polymers Group, *Using AFM to measure local polymer properties near surfaces, Gaithersburg MD,* 14 Feb 2017.

ACS Polymer Composites Conference, *Stalking the Materials Genome: A Data Driven Approach to the Virtual Design of Nanostructured Polymers*, Sonoma CA, 25-28 July 2016.

Plenary Lecture, Mechanics of Time Dependent Materials Conference, *Local Polymer Properties at Interfaces*, Paris, France, 17-20 May 2016.

ICMEg (Integrated Computational Materials Engineering), *Development of Material Data Resource and Analysis for Polymer Nanocomposites*, Barcelona, Spain, April 2016.

SouthWest Mechanics Lecture Series, April 2016.

University of Michigan, *Local Polymer Response via AFM,* Ann Arbor, MI, 10 November 2015.

ESM Seminar, *Materials Genome Application to Polymer Nanocomposites*, 18 March 2015, Va Tech

US-Japan MGI Workshop, NIMS, June 23-24, 2015, *Nanomine: A materials data resource for polymer nanocomposites*.

Avant Symposium Keynote Lecture, 15-17 April 2015, *AFM to Characterize Local Polymer Properties,* Barcelona Spain.

NIST Seminar, *CHIMAD and Nanomine for Materials Genome*, 1 Dec 2014.

Nadai Lecture, *Local Polymer Behavior: Surfaces, Confinement, Composites,* as part of the Nadai Medal at the ASME IMECE, 17 November 2014, Montreal, Canada

Bell Lecture, *Polymers at Interfaces*, 23 October 2014, Johns Hopkins University.

IUTAM Symposium Connecting Multiscale Mechanics to Complex Materials Design, *Polymers at interfaces – properties at the nanoscale and their multiscale impact*, Evanston IL, 15 May 2014.

University of Dortmund, *Localized Polymer Response and a Materials Genome Approach for Nanocomposite Propery Prediction*, Dortmund, Germany, 30 January 2014.

University of Toronto, *Local Polymer Behavior: Surfaces, Confinement, Composites,* Toronto, Canada, 17 January 2014.

University of Saarbrücken, *SMA Modeling and Experiments: Reorientation and Novel Porous Microstructures*, Saarbrücken Germany, 22 October 2013.

Invited speaker for Prager Symposium in Society for Engineering Science, 49th Technical Meeting, Providence, RI, July, 28-31, 2013, *Nanomechanics of Nanocomposites*

Northwestern-Chongqing University, Workshop on Engineering Mechanics, June 25-30, 2013, *Local Polymer Behavior: Surfaces and Confinement*.

UNC Chemistry Department, *Polymer Mechanics Under Confinement*, Chapel Hill, NC, April 11, 2013. Big Data Domain Dinner, *Big Data in Materials Science*, Northwestern, March 18, 2013

NIMS-NU Workshop, *Computational Mechanics of Materials*, Tsukuba, Japan, Feb 25-Mar 1, 2013

Plenary Lecture, International Conference on Solid Mechanics and Applications, Bangalore, India, Aug 1924, 2012, *Local polymer behavior in nanocomposites: chemistry vs confinement*.

15th International Conference on Deformation, Yield and Fracture in Polymers, Kerkrade, Netherlands, April 1-6, 2012, *Interphases and Local Properties in Nanostructured Polymer Systems*.

Georgia Tech, Feb 23, 2012, *Interfaces and Interphases in Nanostructured Polymer Systems.*

Curie Lecture, University of Florida – Gainesville, Feb 7, 2012, *Interfaces and Interphases in Nanostructured Polymer Systems*.

Invited speaker, International Conference on Martensitic Transformations (ICOMAT), Osaka Japan, September 4-9, 2011, *Multiscale Modeling, Characterization and Design of Shape Memory Alloys and their Applications*.

Opening Plenary Speaker, International Conference on Mechanical Properties of Materials, Zhejiang University, Huangzhou, China, June 12-15, 2011, *Interfaces and Interphases in Nanostructured Polymer Systems*.

Invited speaker, MRS Boston Nov 29 – Dec 2, 2010, *Nanoscale Effects in Hierarchical Composite Systems*.

Distinguished Fowler Lecture, Texas A&M, Nov 10-11, 2010, *Confined Polymers: from Nanocomposites to Nanoindentation*.

Rensselear Polytechnic Institute, *Effects of Interface, Interphase and Substrate on Mechanical Properties of Polymers via Experiments and Simulations of Nanoindentation*, Oct 20, 2010

International Conference on Interfaces and Interphases in Multicomponent Materials, *Effects of Interface, Interphase and Substrate on Mechanical Properties of Polymers via Experiments and Simulations of Nanoindentation,* 1-3 Sept 2010, Sheffield, UK

Gordon Research Conference - Polymer Physics, *Exploring the Interphase Mechanical Properties in Thin Polymer Films and Nanocomposites: Coupled Experiments and Modeling of Nanoindentation*, June 27 – July 1, 2010, Mount Holyoke, MA.

ARO workshop on Intelligent and Active Protective Systems for Dynamic Load Mitigation, *SMA Modeling and Experiments: Reorientation and Novel Porous Microstructures*, Aberdeen, MD, May 27-28, 2010.

University of Minnesota, *Nanoindentation for Local Polymer Property Measurements – Implications for Nanocomposites*, April 22, 2010.

Keynote speaker at Composites at Lake Louise, Lake Louise, Canada, "*Model Nanocomposites for Local Interphase Property Determination – Novel Nanoindentation Experiments and Modeling*", Oct 25 – Oct 29, 2009.

University of Illinois Urbana Champaign, Materials Science Departmental Lecture, *Development of the Interphase in Polymer Nanocomposites: gradients, local properties and percolation*, 12 October 2009.

Carbon Nanotube Polymer Composites International Conference, Hamburg, Germany, September 20-23, 2009, *Development of the Interphase in Polymer Nanocomposites: gradients, local properties and percolation.*

Neutron School, Los Alamos National Lab, 6-12 July 2009, *Crystallography of Martensite*.

ExxonMobil, Clinton, NJ, *Inside Polymer Nanocomposites - interphases and percolation* June 2, 2009

University of Northern Texas, *Inside Polymer Nanocomposites - interphases and percolation*, September 17, 2008

Keynote Speaker, Smart Structure System Technologies Workshop, Prague, Czech Republic, *Porous Shape Memory Materials – Robust Modeling and Characterization*, May 4-7, 2008.

Southern California Mechanics Tour, Lectures at UCSD, UCLA, USC, Caltech, *Inside Polymer Nanocomposites - interphases and percolation*, March 3-7, 2008

Keynote speaker at Mechanics of Time Dependent Materials Conference, *Aging and Enthalpy Relaxation in Polymer Nanocomposites*, March 30- April 4, 2008

Gordon Conference, Ventura, CA. *Designer Polymer Nanocomposites*, January 13-18, 2008

Domain Dinner Speaker for Energy Efficient Transportation, Northwestern University, 3 December 2007

Keynote speaker at Composites at Lake Louise, Lake Louise, Canada, "*Polymer Nanocomposites - Controlling the Interphase and its Impact*", Oct 28 – Nov 2, 2007

US- China NSF Workshop and Summer Institute (UCWSI2007) on Bio- and Nano- Mechanics and Applications, *Polymer Nanocomposites: Mechanics, Modeling and Biomimetics* , August 31 - September 4, 2007, Beijing, China.

Helmut Schmidt University, Hamburg Germany, *Nanocomposites: Polymers Made Durable and the Vision for Materials Informatics*, 29 June 2007.

National Research Council, Integrated Computational Materials Engineering Workshop, *Materials Informatics: What, How and Why: Analogy to Bioinformatics*, Irvine NAS Beckman Center, 30 May 2007.

University of Hamburg, Applied Math Department, *Polymer Nanocomposites: Percolating Interphases*, 3 May 2007.

TMS Annual Meeting, *Micro to Macro Strain Mapping and Reorientation Based Modeling in Shape Memory Alloys*, San Antonio, TX, Feb 25-28, 2007.

DSRC Worshop on Reliable Polymers, *Time, Temperature and Aging in Polymers: the Nanocomposite Solution*, Chicago, 8 Feb. 2007

Technical Universität Hamburg-Harburg, 25 Jan 2007, *Percolated Interphases in Polymer Nanocomposites*.

Materials Science and Technology Conference (MS&T) 2006, *Materials Informatics*, 15-19 October 2006.

TMS Annual Meeting, *Interphase Design in Nanocomposites*, San Antonio, TX, March 12-16, 2006.

Materials Science Colloquium, Northwestern University, 7 Feb. 2006, *Polymer Nanocomposites and the Interphase*.

International Institute for Nanotechnology Kick-off Symposium, *Designing Polymer Nanocomposites*, Nov 5-6, 2005.

Keynote Panel at Materials Science and Technology Conference (MS&T), *Moving Materials Informatics Forward*, Pittsburgh, PA, Sept 25-28, 2005.

Carbon Nanotube Polymer Composites International Conference, Hamburg, Germany, September 5-7, 2005, *Controlling and Modeling the Interphase in Polymer Nanocomposites.*

Summer Institute for Nanomechanics, Nanoscale Mechanics, Bio-inspired Hierarchical Structures, and Potential Applications, *Bioinspired Polymer Nanocomposites* and *Engineered Self-healing Materials*, June 2005.

International Shape Memory and Damping Conference, Metz France, 10-11 May 2005, *SMA Constitutive Modeling: Applications to Adaptive Control, Self-Healing Composites and Foams*,

Princeton University, 15 April 2005, *Controlling and Modeling the Interphase in Polymer Nanocomposites*.

University of Southern California, 28 March 2005, *Controlling and Modeling the Interphase in Polymer Nanocomposites*.

Winter Neutron School, Los Alamos National Lab, 7-11 March 2005, *Crystallography of Martensite*.

Symposium for W. G. Knauss' 70th Birthday, Pasadena CA, Nov. 15-16, 2004, *Controlling and Modeling the Interphase in Polymer Nanocomposites*.

American Vacuum Society, AVS 51st International Symposium, Anaheim, CA, November 14 - 19, 2004, invited lecture for Nanotube Processing and Composite Materials symposium.

ICTAM – International Congress on Theoretical and Applied Mechanics, *SMA Hybrid Composites: Selfhealing, Self-stiffening and Shape Control Simulations*, Warsaw, Poland, 15-19 Aug 2004.

Summer Institute for Nanomechanics, Multiscale Modeling and Simulation of Nano Mechanics and Materials, *Polymer Nanocomposites: Challenges of Theory and Experiment*, June 2004

ASME Department Head Meeting, *Bioengineering and the Neural Engineering Initiative in Mechanical Engineering at Northwestern University*, Clearwater FL, 6-9 March 2004.

GALCIT 75th Anniversary Symposium, Caltech, 14 Nov 2003, *Scaling Issues in Polymer Nanocomposites*.

US-Swiss Nanoforum, Basel Switzerland, 13-14 Oct 2003, *Polymer Carbon Nanotube Composites*

Mechanics of Time-Dependent Materials Conference: Special Symposium honoring Max Williams, Lake Placid, NY, Oct 7-10, 2003, *Geometry and Interphase Effects in Nano-Reinforced Polymer Composites*.

Workshop on New Directions in Mechanics, DOE, *Nanomechanics to Design Materials of the Future*, Washington, DC, Sept. 2003.

Michigan Tech, 2 September 2003, "Why Nanocomposites?: Mechanics Issues"

Los Alamos National Laboratory, 24 July 2003, *Multiaxial SMA Modeling Considering Reorientation Effects*

TMS/ASM Spring Symposium: Frontiers in Materials Development: Computation, Nanomaterials, and Alternative Energy, Schenectady, NY, GE, May, 12 2003, *Geometry and Interphase Effects in Nanotube Reinforced Polymer Composites*.

Texas A&M University, 17 April 2003, "Why Nanocomposites?: Mechanics Issues"

Duke University, 6 March 2003, "Why Nanocomposites?: Mechanics Issues"

TMS Meeting, *Modeling and In Situ Observations of Stress Induced Transformation in Shape Memory Alloys*, Keynote speaker for "Martensitic Transformations in Low Symmetry Materials" Symposium. San Diego, CA, 3-6 March 2003.

Oregon State University, 14 May 2002, "Micromechanics Characterization of Shape Memory Alloys"

Los Alamos National Laboratory, 12 October 2001, "Micromechanical Modeling and Experiments for Shape Memory Alloys"

University of Michigan, Distinguished Lecture Series, 27 September 2001, "Micromechanical Modeling and Experiments for Shape Memory Alloys"

International Workshop Shape Memory Alloys – Experimental Verification and Numerical Modeling, Karlsruhe Germany, 9-11 July 2001, "Micromechanical Modeling and Experiments for Shape Memory Alloys"

University of Karlsruhe, 23 January 2001, "Micromechanical Modeling of Shape Memory Alloys"

NASA-Langley, 8-9 January 2001, "Effect of Nanotube Waviness on Nanoreinforced Polymers"

Universität der Bundeswehr, Hamburg Germany, 18 October 2000, "SMA Modeling: A Multivariant Approach and a Microplane Model"

Alexander von Humboldt Foundation, Introductory Meeting for 2000-01 Fellows/Awardees, Göttingen Germany, 8-11 October 2000, "Shape Memory Alloy Modeling and Experiments"

Conference Honoring Retirement of Prof. H. F. Brinson, Virginia Tech, 22-24 September 2000, "Micromechanical Issues in SMA Behavior and Modeling"

Los Alamos National Laboratory, 9-11 August 2000, Martensite Workshop, "SMA Modeling: A Multivariant Approach and a Microplane Model"

Hong Kong University of Science and Technology, 24 February 2000, "The Power of Materials and Mechanics - from smart materials to biomaterials"

Los Alamos National Laboratory, 27 September 1999, "Micromechanical Issues in SMA Behavior and Modeling"

Texas A&M University, 29 April 1999, "SMA Constitutive Modeling", and "Updating Undergraduate Engineering Curricula"

University of Massachusetts - Amherst, 25 February 1999, "Aging and Damage in Viscoelastic Composites"

The Boeing Company, High Speed Research Workshop, 15 September 1998, "Physical Aging and Damage in Polymer Composites"

Hong Kong University of Science and Technology, 25 March 1998, "Micromechanical Modeling of Shape Memory Alloys via the Multivariant Approach"

Gordon Conference, Santa Barbara, CA, 5-9 January 1998, "Aging in Polymeric Composites"

Northwestern University, 30 October 1997, Tenure Talk: "Mechanics of Shape Memory Alloys"

NASA-Langley, 11 September 1997, "Characterization and Modeling of Viscoelastic Composites with Nonisothermal Physical Aging"

Lawrence Livermore National Laboratory, CA, 5-6 December 1996, "Mechanics Modeling of Shape Memory Alloys"

3M - St Paul, MN, 4 November 1996, "Mechanics of Polymeric and Smart Materials"

NASA-Langley, 17 September 1996, "Aging, Time and Temperature"

University of Illinois - Urbana-Champaign, 7 December 1995, "Physical Aging in Polymers and Polymer Composites – aging in anisotropic materials under general variable thermomechanical loading"

NASA-Langley, 17 August 1995, "Physical Aging in Polymers and Polymer Composites – aging in anisotropic materials under general variable thermomechanical loading"

Michigan State University, 6 December 1994, "Finite Element and Micromechanics Models of Viscoelastic Composites"

1993 ASEE Summer Faculty Fellowship Program Final Presentations (selected from other summer fellows in division to present final presentation), Hampton VA, 11-12 August 1993, "Effects of Physical Aging on Long-Term Behavior of Composites"

NASA-Langley, Hampton, VA, 22 March 1993, "Thermorheologically Complex Behavior of Multiphase Viscoelastic Materials"

National Institute of Standards and Technology, Gaithersburg, MD, 19 March 1993, "Thermorheologically Complex Behavior of Multiphase Viscoelastic Materials"

Katholieke Universiteit Leuven, Belgium, 23 September 1992, "Constitutive and Finite Element Modeling of Shape Memory Alloys"

University of Poitiers, France, 18 September 1992, "Thermorheologically Complex Behavior of Multiphase Viscoelastic Materials" and "Constitutive and Finite Element Modeling of Shape Memory Alloys"

Free University of Brussels, Belgium, 22 May 1992, "One Dimensional Constitutive Behavior of Shape Memory Alloys"

Free University of Brussels, Belgium, 21 March 1991, "Finite Element Analysis of Multiphase Viscoelastic Solids"

CONFERENCE PRESENTATIONS:

SL McAlexander, LC Brinson, (October 19, 2022) "aiM NRT Program- AI for Understanding and Designing Materials" NSF-NRT Annual Meeting, Blacksburg, VA.

Boran Ma, David Jany, Nicholas Finan, Linda Schadler, L Cate Brinson, Understanding the effect of the interphase on polymer nanocomposite properties with MaterialsMine database, ACS Fall meeting, Chicago, IL, Aug 21-25, 2022

SL McAlexander, LC Brinson, (June 28, 2022) "aiM NRT Program- AI for Understanding and Designing Materials" Poster presented at MGI PI Meeting, College Park, Maryland.

Prajakta Prabune, LC Brinson, Design of Polymer Nanodielectrics, MRS Conference, Honolulu, HI, May 812, 2022

Boran Ma, LC Brinson, Understanding composition–property relationship of polymer nanocomposites - a case study of NanoMine database, MRS Conference, Honolulu, HI, May 8-12, 2022

Prajakta Prabhune, LC Brinson, *Design and analysis of polymer nanodielectrics using machine learning methods*, TrECS graduate students summer seminar series, UNC – Chapel Hill, 29 July, 2022

MRS 2021, *Developing a Framework for the Forward Prediction of the Mechanical Properties of Polymer Nanocomposites*, Heer Majitha, LC Brinson; *Scanning Probe Microscopy—Are There Even Best Practices?*, Richard Sheridan, LC Brinson; Dec 6-9, 2021.

Accurate nanomechanical characterization of polymer materials and composites, Richard Sheridan, LC Brinson, Asylum Research Webinar - Applications of Atomic Force Microscopy in Polymer Research, Oct 27, 2021

Duke Soft Matter Symposium, *ChemProps: A RESTful API enabled database for composite polymer name standardization*, Bingyin Hu and LC Brinson, Durham NC, 4-5 Oct 2021.

SES Virtual Conference Month October 2021, *Machine Learning-Assisted Polymer Nanocomposite Microstructure Design*, Boran Ma, L Cate Brinson, poster on Oct 19, 2021.

MRS 2020, *Multiscale Modeling of Polymer Nanocomposite Interphase*, Symposium: F.MT04, 29 Nov – 3 Dec 2020, Boston MA (virtual due to COVID).

MRS 2020, *Vanishing Calibration Error with Magic Ratio AFM—Improving the Accuracy of Modulus Measurement Through Error Propagation*, 29 Nov – 3 Dec 2020, Boston MA (virtual due to COVID).

International Semantic Web Conference, *NanoMine: A Knowledge Graph for Nanocomposite Materials Science*, virtual, 2 Nov 2020.

SES Annual Conference, *Deconvolution of Structural Effects in the Determination of Local Mechanical Properties from Atomic Force Microscopy* and *Production and characterization of biomimetic vibrissae for tactile sensory system*, 13-15 Oct 2019, St Louis MO.

ACS Polymer Composites Conference, *NanoScale Characterization of Polymer Interfaces*, Sonoma, CA, 2124 July 2019.

ASME IMECE, Nov 8-14, *AFM Analysis of Polybutadiene Distribution in the Weld Zones of FDM Printed ABS Dogbones*, 2018

SES, Madrid, Spain, 10-12 Oct, *A Data-driven approach for polymer nanocomposite behavior analysis using NanoMine*, 2018.

Society for Experimental Mechanics, Greenville SC, June 4-7, *Novel Experiments to Capture Local Viscoelastic Mechanical Property Distributions in Soft Heterogeneous Materials*, *Semi-quantitative Deconvolution of the Measured Interphase in Particle-matrix Polymer Nanocomposites*, and *A Dynamic Scanning Indentation Technique for Quantitative Viscoelastic Property Mapping*, 2018.

DYFP – Deformation, Yield and Fracture of Polymers, Kerkrade, Netherlands, March 25-29, *AFM nanomechanics for polymer physics*, 2018.

Gordon Conference on Multifunctional Materials and Structures, Ventura, CA, Jan 14-18, Poster: *NanoMine a materials genome platform for polymer nanocomposites*, 2018.

International Conference on Shape Memory and Superelastic Technologies, *Size effects in SMAs: Effect of texture in determining grain scale performance in SMAs*. San Diego, CA, May 2018.

TMS Annual Meeting and Exhibition, *Novel 3D Crystallite-scale Characterization of Deformation During Cyclic Loading of Low Crystal-symmetry Phases*. Phoenix, AZ, March 2018.

MRS 2017 Spring Meeting and Exhibit, Phoenix, AZ, *An adaptive design approach for exploring the interphase properties in polymer nanocomposites* and *A Computational Graph-based Approach for Stochastic Reconstruction of Microstructures Using a Deep Learning Framework*. Phoenix, AZ, April 20 2017

ASME International Mechanical Engineering Congress and Exposition, *Study of Martensite Deformation and Toughening Mechanisms at Notch Tip in NiTi based SMAs*. Tampa, FL, Nov 2017.

Polymer Processing Society, *Nanoprobe Investigations of Viscoelastic Behavior in Elastomeric Nanocomposites*, Dresden, Germany. June 29, 2017

Society for Engineering Science, 53rd Technical Meeting, College Park, MD, 5 talks on polymers, confinement, materials genome, October 2016.

Materials Research Society Fall Meeting & Exhibit, *The Role of Microstructural and Structural Constraints in Determining Local Superelastic Response in Planar SMA Specimens with Micro-holes*, Boston, MA, Nov 2016.

MRS Meeting, Mar 28 – Apr 1, 2016, Phoenix, AZ, *Application of NanoMine Data Resource to Analysis of Interphase Mechanism in Polymer Nanocomposites*

MRS Meeting, Nov 30-Dec 4, 2015, Boston MA. *An Integrated System for Material Informatics for Polymer Nanocomposites*.

ASME IMECE, Nov 13-19, 2015, Houston TX, Nanoscale Mechanical Properties of Polymer Interphase via AFM Indentation

International Indentation Workshop, UT Dallas, Nov 1-5, 2015, Measurement of local mechanical properties of ultra-soft hydrogels and biological tissues using nanoindentation.

MRS Meeting, Nov 30-Dec 5, 2014, Boston MA. Two talks on local polymer behavior and data mining strategies for polymer nanocomposite image processing.

Society for Engineering Science, 51st Technical Meeting, Purdue, IN, October 2014, 5 talks on polymers, confinement, materials genome and SMA digital property mapping.

Society for Engineering Science, 50th Technical Meeting, Providence, RI, July, 28-31, 2013, *Thermomechanical Properties and Deformation of Coarse-Grained Models of Hard/Soft Block Copolymers*

Society for Engineering Science, 49th Technical Meeting, Atlanta, GA, Oct, 10-12, 2012, *Hierarchical Design of Higher Filler Content Polymer Nanocomposites*

MRS Annual Meeting, Boston, MA, Nov 28 – Dec 2, 2012, *Nanoscale Effects in Hierarchical Composite Systems*.

Society for Engineering Science, 48th Technical Meeting, Evanston, IL, Oct, 12-15, 2011, *Viscoelastic Characterization of Soft Tissue Samples Via a Semi-empirical Nanoindentation Method (Wood, Brinson, Shea); Tuning The Hierarchical Structure In Graphene-oxide Papers (Palmeri, Putz, Brinson); Transformation Strain Anisotropy And Plasticity In A Robust 3d Shape Memory Alloy Constitutive Model (Stebner, Brinson); Local Phase Transformations In Porous NiTi Structures – Microscale Characterization And Modeling (Brinson, Tupper, Stebner); The Effect Of X-ray Irradiation On The Creep Behavior Of Bovine Cortical Bone (Black, Yuan, Singhal, Almer, Brinson, Dunand); Structuremechanical Properties Relationship Of Sea Urchin Spine – A Finite Element Study (Yuan, Stock, Brinson)* Society for Engineering Science, 47th Technical Meeting, Ames, IA, Oct 3-6, 2010, *Determination of Nanoscale Mehanical Properties near Hybrid Fiber Interfaces in Polymer Systems*

ASME Annual Meeting, Vancouver, Nov 14-18, 2010, *Effects of Interface, Interphase and Substrate on Local Mechanical Properties of Polymers via Experiments and Simulations of Nanoindentation*

Society for Engineering Science, 45th Technical Meeting, Iowa State, Oct, 4-6, 2010, *Determination of Nanoscale Mechanical Properties near Hybrid Fiber Interfaces in Polymer Systems, An SEM Image-Based Finite Element Approach on the Viscoelastic Behaviors of Rubber-Carbon Black Composites*

ASME Conference, Orlando FL, *Model Nanocomposites for Local Interphase Property Determination – Novel Nanoindentation Experiments and Modeling,* 15-19 Nov 2009

AIAA Conference, Palm Springs, May 4-7, 2009, *Suppression of Aging in Chemically Designed Polymer Nanocomposites*

ACS Annual Meeting, Salt Lake City, Mar 22-26, 2009 *Biofunctionalized and Graphene Based Polymer Nanocomposites – the Role of the Interphase*; and *Intelligent Design of Nanocomposites via Informatics*

TMS Annual Conference, San Francisco, Feb 15-20, 2009, *Percolation and Clustering Effects in Polymer Nanocomposites*

Society for Engineering Science, 43rd Technical Meeting, Urbana, IL, Oct, 12-15, 2008. *SMA Multiscale Characterization of Shape Memory Alloys Using Digital Image Correlation*, *Effects of a bio-inspired interfacial modification on the properties of polymer matrix nanocomposites*, and *Effect of particle clustering on the viscoelastic properties of polymer nanocomposites*

MS&T, Pittsburgh PA, October 5-8, 2008, *Impact of MWNT dispersion in polymer nanocomposite – A comparison of two different processing methods* and *Effects of a bio-inspired interfacial modification on the properties of polymer matrix nanocomposites*

Society for Engineering Science, 42nd Technical Meeting, College Station, TX, Oct, 21-25, 2007. *SMA Constitutive Modeling Incorporating Reorientation Effects and Application to Porous Materials*, and *A Numerical Study of Interphase Percolation Effects in the Polymeric Nanocomposites*

ECCOMAS Thematic Conference on Modeling of Heterogeneous Materials, Prague, Czech Republic, 25-27 June 2007, *The Influence of Nanotube Geometry on Polymer Composite Properties*.

US National Congress on Computational Mechanics (USNCCM 9), San Francisco, July 23-26, 2007, SMA *Constitutive Modeling Incorporating Reorientation Effects and Application to Porous Materials*.

American Chemical Society Meeting, Chicago, IL, 25-29 March 2007, *Improved Interfacial Adhesion Between NiTi and PMMA Utilizing a Biomimetic Initiator*.

ASME IMECE, Nov 2006, Chicago, IL, *Nanoparticle composites utilizing a biomimetic initiator for bone implants; A three dimensional phenomenological model for reorientation in shape memory alloys; Enthalpy relaxation in carbon nanotube polymer composites; Structure, Mechanical and Electrical Properties of model polymer gel nanotube composites; Implementation of shape memory alloy constitutive model in ABAQUS; Graphite nanocomposites: strategies to superior properties; Modeling the creep behavior of polymer nanocomposites; Curved fiber pullout model for nanocomposites; Effect of bone filling on response of porous Ti as potential new orthopedic implant material*.

Materials Science and Technology Conference (MS&T) 2006, *Interphases and Aging in Polymer Nanocomposites*, 15-19 October 2006.

Gordon Conference on Composites, 15-20 Jan 2006, Ventura, CA, Discussion Leader for *New Developments in Experimental Mechanics*, Poster on *Interphase Design in Nanocomposites*.

Society of Rheology, 77th Annual Meeting, 17-20 Oct 2005, Vancouver, British Columbia, Canada, *Graphene Nanocomposites*.

Society for Experimental Mechanics, Portland, OR, June 7-9, 2005, *Controlling and Modeling the Interphase in Polymer Nanocomposites.*

ASME IMECE, 15-19 November 2004, Anaheim, CA, *SMA Hybrid Composites: Self-healing, Self-stiffening and Shape Control Simulations* and *A Hybrid Numerical-Analytical Method for Modeling the Viscoelastic Properties of the Polymeric Nanocomposites*.

NASA BIMat Workshop, *Interphase effects of nanofillers in polymers*, May 25-26, 2006, Santa Barbara, CA.

NASA BIMat Workshop, *Polymer Nanocomposites: strength at the interphase*, Jan 31, 2006, Hampton, VA.

APS Meeting 2006, *Structure and Mechanical Properties of Model Nanotube Composites*.

NSF NIRT Review presentation, Dec 13, 2005.

NASA BIMat Workshop, *Polymer Nanocomposites: strength at the interphase*, Oct 7-8, 2004, Hampton, VA.

Society for Engineering Science 41st Technical Meeting, Lincoln, NE, 11-13 Oct 2004, *Electrical Resistance in SMAs and Controlling and Modeling the Interphase in Polymer Nanocomposites*.

ASME IMECE, 17-20 Nov 2003, *SMA Hybrid Composites: Self-healing, Self-stiffening and Shape Control Simulations* and *Reorientation in Shape Memory Alloys: Micromechanics and Continuum Modeling.*

Society for Engineering Science 40th Technical Meeting, *Representing SMA Multivariant Model Simulation Results Using Peak Intensity and Pole Figures* and *SMA Continuum Model with Martensite Reorientation Effects*, Ann Arbor, MI, 12-15 Oct 2003.

Frank Fisher, Ramanathan Thillaiyan, Lesley Meade, Benjamin Levy, Rod Ruoff, and L. Cate Brinson, *The impact of chemical functionalization on nanoparticle-reinforced polymers: Nanoscale characterization and effective mechanical properties*, American Society for Composites 18th Meeting, October 19-22, 2003.

44th AIAA/ASME/ASCE/AHS Structures, Structural Dynamics, and Materials Conference, 7-11 April 2003, Norfolk, VA, "Macroscale Experimental Evidence of a Reduced-Mobility Non-bulk Polymer Phase in Nanotube-reinforced Polymers"

39th Annual SES Conference, Penn State University, 13-16 October 2002, "SMA Kinetics Characterization: Micromechanics to Continuum"

Mini-Conference on Mechanics Innovations, 13-14 September 2002, San Antonio, TX, "Mechanics in Engineering First at Northwestern"

National Congress for Theoretical and Applied Mechanics, Va Tech, 23-28 June 2002, "Viscoelastic and Nano-geometry Effects in carbon nanotube-reinforced polymers", "A 3-D Two-tier Multivariant Model Based on Hierachical Structural Characteristic of SMA Martensites"

SEM Conference, Milwaukee, WI, 10 -12 June 2002, "Viscoelasticity and Physical Aging of Carbon Nanotube-Reinforced Polymers"

TMS Conference, Indianapolis, IN, 4-7 November 2001, "Effects of nanotube waviness on the properties of nano-reinforced polymers"

Sixth U.S. National Congress on Computational Mechanics, Dearborn, Michigan, 1-3 August 2001, "Mechanical response of carbon nanotube-reinforced polymers"

Joint ASME/ASCE/SES Summer Meeting, 27 June - 29 June 2001, San Diego CA, "Studies of SMA response to cyclic loading: strain rate and cycle dependence with microstructural observations" and "In situ SEM & EBSD Observation of Variant Formation, Detwinning and Reorientation in CuAlNi Single Crystals" and "Effects of curvature on the elastic modulus of carbon nanotube-reinforced polymers"

Society for Engineering Science 36th Technical Meeting, 21-25 October 2000, Columbia, SC, "Scaling Issues in SMA Modeling and Experiments"

International Congress for Theoretical and Applied Mechanics, 27 August - 2 September 2000, Chicago IL, "Simplified multivariant model and SEM/EBSD verification of variant formation and switching", "Titanium foam for use in bone implants: Microstructure effects on mechanical properties", and "Three dimensional constitutive model for shape memory alloys based on microplane model"

SPIE's 7th Annual International Symposium on Smart Structures and Materials, 5-9 March 2000, Newport Beach, CA, "SMA Single Crystal Experiments and Micromechanical Modeling for Complex Thermomechanical Loading"

Society for Engineering Science 35th Technical Meeting, 24-27 October 1999, Austin, TX, "Micromechanics Issues for SMA Constitutive Modeling"

ASME Summer Meeting, 26-30 June 1999, Va Tech, "Synergistic Effects of Aging and Damage in Viscoelastic Composites"

International Plasticity'99 Conference, 5-13 January 1999, Cancun Mexico, "Micromechanics Based Polycrystalline Model for SMAs"

Society for Engineering Science 34th Technical Meeting, 27-30 September 1998, Pullman, WA, "A Micromechanics Damage Model for Viscoelastic Composites"

Workshop on Reform of Undergraduate Mechanics Education, Penn State University, 16-18 August 1998, "The Engineering First Curriculum at Northwestern University"

ASTM Conference, Atlanta, 4 May 1998, "Aging During Elevated Temperature Stress Relaxation of IM7/K3B Composite"

Mechanics of Time Dependent Materials Conference, Pasadena CA, 3 March 1998, "Physical Aging in Polymers and Composites: A New Analysis Method for Isothermal and Nonisothermal Aging"

ASME IMECE'97, Dallas, TX, "Two-Phase Zone and Single Interface Solutions for SMAs" and "Combined Aging and Moisture Effects in Polymers and Polymer Matrix Composites"

Joint ASME/ASCE/SES Summer Meeting, McNU'97, 29 June - 2 July 1997, Evanston IL, "A Multivariant SMA Model" and "A Unified Theory for Macro-scale SMA Kinetic Laws and Phase Diagrams" and "Nonisothermal Physical Aging" and "Mechanics in the Engineering First Curriculum"

ASEE Annual Meeting, 15-18 June 1997, Milwaukee WI, "Mechanics in the Engineering First Curriculum"

Society for Engineering Science 33rd Technical Meeting, 20-23 Oct. 1996, Tempe, AZ, "Modeling and behavior of SMAs under multiaxial loading" and "Aging, Time and Temperature"

ASME Summer Meeting, 12-14 June 1996, Johns Hopkins, "Physical Aging in Polymers and Polymer Composites: Aging in Anisotropic Materials Under General Thermomechanical Loading" and "Toward the Integration of Mechanics, Mathematics and Computational Methods in an Undergraduate Engineering Curriculum"

Society for Engineering Science 32nd Technical Meeting, 28 Oct. - 1 Nov. 1995, New Orleans, "ThermoInduced Transformation in Prestressed 1-D SMA Body - Model and Numerical Simulation"

ASME Summer Meeting, 28-30 June 1995, Los Angeles, "A New Look at SMA Constitutive Models: Comparisons and Micromechanics"

ASEE Annual Meeting, 25-28 June 1995, Annaheim, "Introducing Basic Finite Elements into Sophomore Mechanics of Materials"

ASME International Congress and Exposition, 6-11 Nov. 1994, Chicago, "A Macromodel of Thermo-induced Martensite Transformation in a 1-D SMA Polycrystalline Body"

Society for Engineering Science 31st Technical Meeting, 10-12 Oct. 1994, College Station, TX, "Deformation Wave in 1-D SMA Rod Due to Martensitic Phase Transition Induced by Cooling of the Boundary"

International Conference on Composites Engineering, 28-31 Aug. 1994, New Orleans, LA, "Analysis of Variable Stress History on Polymeric Composite Materials with Physical Aging"

Symposium for the 60th Birthday of Wolfgang Knauss, 1-2 February 1994, Pasadena, CA, "Effects of Physical Aging on Long-Term Creep Behavior of Polymers and Polymer Matrix Composites"

ASME Winter Annual Meeting, 28 November - 3 December 1993, New Orleans, "Development and Application of One-Dimensional Truss Finite Elements for Shape Memory Alloys"

ASME Winter Annual Meeting, 8-13 November 1992, Anaheim, CA, "Finite Element Analysis of Multiphase Viscoelastic Solids"

Recent Advances in Adaptive and Sensory Materials and their Applications, 27-29 April 1992, Blacksburg, VA, "Constitutive Behavior of Shape Memory Alloys"

MEMBERSHIP IN TECHNICAL SOCIETIES:

MaRDA (Materials Research Data Alliance), Dec 2019 - present

RDA (Research Data Alliance), 2019- present

AAAS (American Academy for the Advancement of Science), 2016 - present

ACS (American Chemical Society), 2016 – present

MRS (Materials Research Society), 2003 – present

SES (Society for Engineering Science), 1994- present
Board of Directors, 1995-2000; Vice-President, 1998; President, 1999

TMS (The Minerals Metals and Materials Society), 2001-present

SEM (Society for Experimental Mechanics), 1986-present

ASME (American Society of Mechanical Engineers), 1986-present Computational Mechanics Committee, 1996-present

ASEE (American Society for Engineering Education), 1992-present Director at-large for *Women in Engineering Division*, 1996-98 American Academy of Mechanics, 1992-present

AAUW (American Association of University Women), 1994-present

DUKE ADMINISTRATIVE ACTIVITIES (2017 – PRESENT): VPR

Search Committee, Spring 2021

Department Chair of MEMS, June 2019 - present

Science and Technology Initiative Committee, Fall 2018 – Fall 2019

Faculty hiring committee for Matt Becker, Dec 2018 – Summer 2019

Diversity and Inclusion Committee, Pratt School of Engineering, Fall 2017 – Fall 2019

NU ADMINISTRATIVE ACTIVITIES (1992 – 2017):

Associate Dean for Academic and Professional Initiatives, 2015 – 2017.

Provost Search Committee, Fall 2016

Data Science Institute Committee, 2015 – 2017.

Office of Change Management, Governing Committee, 2015 – 2017.

CLAMMP Advisory Committee, 2014 – present.

Department Chair, Mechanical Engineering Department, 2007 - 2013

NUANCE Advisory Committee, 2012 - 2017

Conflict of Interest Committee, 2011-12

Strategic Planning Committee, Chair of Diversity and Inclusion Subcommittee, 2010

Presidential Search Committee, 2008-09

Northwestern Honorary Degree Committee, 2007 - 2010

Associate Department Chair, Mechanical Engineering Department, 2002 - 2006

Chair, Search Committee for joint ME-BME faculty line in nanobiomaterials/mechanics, 2005-06

Acting Department Chair, Mechanical Engineering Department, Jan-March 2004

McCormick Tenure and Promotion Committee, 2004-2006

Northwestern Program Review Committee for Athletics and Recreation, 2005
UFRPTPAD (University tenure/promotion appeal committee), 2003-04
Research Systems Planning Advisory Committee, 2003
Dean Search Committee, Engineering School, 2003
Internal Review Committee, Program Review for Chemistry Department, 2002
Graduate Student Admission Officer, ME Department, 1997 - 2000
Graduate Studies Committee for ME Dept., November 1993 - 2000
Chair of committee, September 1997 - 2000
Coordinator for Mechanics courses Teaching Assistants, 1995-97
Committee on ME Office Efficiency, December 1993 - June 1996
Organizer of Mechanics Colloquia Seminar Series, 1993-95
Committee on Excellence (October 1992-October 1994), including Subcommittees "Hiring, Tenure and Post-Tenure Decisions" and "Selection of Graduate Students"

NATIONAL COMMITTEE WORK

International Union of Theoretical and Applied Mechanics (IUTAM) Congress Committee, 2020-24
NRC Panel on Mechanical Science and Engineering at Army Research Laboratory, Member, March 2015 – April 2017
TMS Materials Data Infrastructure Working Group, March 2016-April 2017, report: *Building a Materials Data Infrastructure: Opening New Pathways to Discovery and Innovation in Science and Engineering* (Pittsburgh, PA: TMS, 2017). Electronic copies available at www.tms.org/mdistudy.
Committee member for *Fuel Economy of Light Duty Vehicles, Phase 2*, Board on Energy and Environmental Systems, NRC of the National Academies, 2012-14.
Co-Chair, Invited *DOD Workshop on Future Research Trends in Mechanical and Civil Engineering*, April 23-25, 2012, Report published Fall 2012.
Chair of Study Committee: *Application of Lightweighting Technology to Military Vehicles, Vessels and Aircraft*, National Materials Advisory Board and Division on Engineering and the Physical Sciences of the National Academy of Engineering, 2010-11.
Committee Member: *Benchmarking US Competitiveness in Mechanical Engineering*, National Research Council, 2006 (study publish date 2007)
Chair of Study Committee: *Going to Extremes: Meeting the Emerging Demand for Durable Polymer Matrix Composites*, National Materials Advisory Board of the National Academy of Engineering, 2004 (study publish date 2005).

REVIEWING:

Texts: Mechanics of Solids by Bickford; Mechanical Response of Polymers by Wineman and Rajagopal
Actively review papers for many Journals, including: *Acta Materialia, Advanced Materials, ASME Journal of Applied Mechanics, International Journal of Solids and Structures, Journal of the Mechanics and Physics of Solids, Journal of Intelligent Material Systems and Structures, Journal of Polymer Science, Composites Science and Technology, Mechanics of Composite Materials and Structures, Mechanics of Materials, Nature Materials, PNAS*
NSF Review Panel for Graduate Fellowships, February 15-18, 2004.
NSF Review Panels for Division of Civil and Mechanical Systems (previously Mechanical and Structural Systems), numerous from 1993 - present
Review proposals for AFOSR, ONR, NSF, DOE and other agencies on an ongoing basis.

CONFERENCE ORGANIZATION:

Co-Organizer of *Harnessing Data for Materials Symposium*, meeting of three national NRT programs for AI and Materials, Chicago, IL, 29-30 August 2022.
Co-Organizer of Symposium SF04 *Progress in Materials Genomics, Synthesis and Characterization of Functional Polymers and Polymer Nanocomposites* at MRS Annual Spring Meeting, Honolulu, HI, 8-12 May 2022.

Co-Organizer of Tutorial at MRS Annual Spring Meeting, Honolulu, HI, 8 May 2022, *Leveraging Data Resources for Functional Polymers and Polymer Nanocomposite Research: Principles and Examples*.

Co-Organizer of First Annual MaRDA Workshop, 23-25 Feb 2021, virtual

Lead Organizer of ASME International Mechanical Engineering Leadership Summit, March 14-16, 2013, San Diego, CA

Co-Organizer of Society of Engineering Science Annual Meeting, Chair of *Mechanics in Medicine Track*, Evanston IL, Oct 2011.

Co-Organizer of symposium on *Advanced Nanocomposite Systems*, ASME/ASCE/SES Summer Meeting, Baton Rouge, LA, June 1-3, 2005.

Co-Organizer of symposium on *Constitutive Relations of Advanced Materials*, ASME IMECE, Washington DC, Nov 15-21, 2003.

Co-Organizer of symposium on *Shape Memory Materials*, SES, Univ. Michigan, Oct. 12-15, 2003.

Co-Organizer of symposium on *Time Dependent Failure Phenomena*, The 14th U.S. Congress of Theoretical and Applied Mechanics, 23-28 June 2002, Blacksburg VA

Co-Organizer of symposium on *Physics, Mechanics and Modeling of Phase Transformations*, Joint ASME/ASCE/SES Summer Meeting, 27 June - 29 June 2001, San Diego CA

Co-Organizer of symposium on Active Materials, SPIE, 2000

Co-Organizer of symposium *Functionally Graded and Shape Memory Materials*, ASME IMECE, Dallas, TX, November 1997.

Co-Organizer of symposium on *Characterization and Modeling of Polymeric Material Systems*, Joint ASME/ASCE/SES Summer Meeting, Northwestern University, June 1997.

Program Co-Chair for McNU'97, Joint ASME/ASCE/SES Summer Meeting, Northwestern University, June 1997.

Co-Organizer for "Engineering Technology Forum", a short course for integrating design, multi-media and Working Model software into the basic mechanics curriculum, Northwestern University, 4 March 1995

Co-Organizer of *Symposium on Phase Transformations and Shape Memory Alloys*, ASME IMECE, Chicago, November 1994

Session Developer for Composite Durability; Chair of Session on "Aging, Creep and Durability of Composites I", International Conference on Composites Engineering, New Orleans, LA, August 28-31, 1994

OTHER PROFESSIONAL ACTIVITIES:

Co-Founder of new society, MaRDA: Materials Research Data Alliance, Dec 2019; on executive council for MaRDA Dec 2019 - present.

Active participation in University Materials Council (UMC), organization for department chairs of materials science, 2019 – present

Active participation in ASME Department Head Group, organization for department chairs of mechanical engineering, 2019 – present

NFDI (national research data infrastructures) review panel for DFG (German Science Foundation), Bonn, Germany, 11-12 Dec 2019.

iMAT reviewer, Ga Tech, Nov 2019

Active participant in UMC, University Materials Council, 2019 – present.

Active participant in ASME Dept Head Committee, 2019 – present.

Engineering Panel of Research Grants Council, University Grants Committee of Hong Kong 2019-2024

Caltech, Visiting Committee, School of Engineering, 19-21 March 2019.

Cornell University, Mechanical Engineering Program Review Committee, 27-29 Nov 2018.

Engineering and Applied Science Visiting Committee Member, Caltech, 2013 – present.

Mechanical Engineering Advisory Council, University of Delaware, 2013 – present.

Mechanical Engineering Visiting Committee member, Boston University, 2013 – present.

German Excellence Initiative Review Panel, June 2017

External Reviewer, City University Hong Kong, January 9-11, 2017.

Engineering Panel of Research Grants Council, University Grants Committee of Hong Kong 2015-2017.

Panelist NextProf Workshop for Future Women Faculty, Univ. Michigan, Sept 30 – Oct 1, 2015.

Senior Mentor, BigTen Women's Workshop, April 3-5, 2013, Milwaukee, WI.

External Reviewer, Notre Dame University, March 3-5, 2013.

Established joint educational exchange program between Northwestern University and Shanghai Jiao Tong University, 2011- 2016.

Invited review panelist for Deutsche Forschungsgemeinschaft (DFG) in materials science and engineering for "German Excellence Initiative", 14-16 Jan 2012.

ASME Department Head Executive Board, 2011-13

External Reviewer, University of Florida Gainesville, Aerospace and Mechanical Engineering Department, Dec 4-6, 2011.

External Reviewer, Penn State Mechanical Engineering Department, Nov 1-2, 2010.

Invited review panelist for Deutsche Forschungsgemeinschaft (DFG) in materials science and engineering for new "German Excellence Initiative", November 2010.

Panelist for *Motherhood and Success in Science & Engineering* Panel Discussions, Northwestern University and University of Chicago, 18 May 2009.

Executive Education Course, Business for Scientists and Engineers, Kellogg Business School, 2008.

Northwestern Representative at Annual Coalition for National Science Funding, Poster title: *Bionic Bones*, June 25, 2008, Rayburn House Office Building, Washington DC.

Invited review panelist for Deutsche Forschungsgemeinschaft (DFG) in materials science and engineering for new "German Excellence Initiative", 21-22 June 2007 and 28-30 June 2006.

Invited review panelist for Methusalem Project, Leuven Belgium, 17-19 May 2007.

Thesis committee member, Andrey Vishnevsky, Helmut Schmidt University, Hamburg Germany, May 11, 2007.

Invited Committee Member, New Directions in Mechanics Workshop, DOE, Washington DC, September 2003.

Co-author of web-based text for freshman course Dynamics of Systems 1998-02; coordination of asynchronous learning tools for course 2001-02 (http://othello.mech.nwu.edu/ea3/).

Structural and Multifunctional Materials Panel for National Materials Advisory Board of the *National Academy of Sciences*, Materials Research for the Defense After Next, Jan. 2001 – Jan 2002.

Advisor and Founder of *Preparing Future Engineering Faculty*, professional development group for Northwestern engineering graduate students, 1999-present

Co-developer of new core undergraduate "Engineering First Curriculum" at Northwestern, 1996-02

Faculty Associate for the Women's Residential College at NU, 1999-2000

Moderator for the Mechanics Curriculum sessions at the Workshop on Reform of Undergraduate Mechanics Education, Penn State University, 16-18 August 1998

Organized SWE students at NU as coaches for Science Olympiad teams from a local middle school, 1998.

Attended IMM Workshops for Young Investigators (Seattle, October 1996; Albany, August 1997).

MEAS Speaker for NU Admissions Office Forum, 1 June 1997

Resident Associate, Ayers CCI Dormitory on Northwestern Campus, 1995 -1996.

Keynote speaker for "Women in Engineering – the Challenge of the 21st Century" a career workshop for women students and their parents at Northwestern University, 14 May 1994

Speaker at Northwestern SWE student chapter meetings

Panelist for "Women in Science" session of the 1994 *Women in Leadership* conference at Northwestern University

MEAS Academic Panelist for NU Admissions Office Open House, 29 August 1993

GRADUATE STUDENTS AND POSTDOCS

Ph.D. Students (41):

Han Zhang, Mechanical Engineering and Materials Science, *Experiments and Machine Learning for Structural Metamaterials*, PhD expected 2027

Defne Çirci, Mechanical Engineering and Materials Science, *Natural Language Processing as Pathway to Polymer Research*, PhD expected 2027

Nicholas Finan, Mechanical Engineering and Materials Science, *AI, NanoComposites and MetaMaterials*, PhD expected 2025.

Prajakta Prabhune, Mechanical Engineering and Materials Science, *Computational Mechanics and Machine Learning for Polymer Nanocomposites*, PhD expected 2023.

Heer Majithia, Mechanical Engineering and Materials Science, *Local Polymer Properties with Novel NanoPatterning*, PhD expected 2023.

Anqi (Claire) Lin, Mechanical Engineering and Materials Science, *Demonstration of Data Mining in Polymer Nanocomposites*, PhD expected 2023.

Bingyin Hu, Mechanical Engineering and Materials Science, *Data Curation of a Findable, Accessible, Interoperable, Reusable Polymer Nanocomposites Data Resource - MaterialsMine*, PhD 2022.

David Collinson, Mechanical Engineering, *Deconvolution of Nanomechanical Atomic Force Microscopy across Interfaces in Polymer Systems in Experiment and Simulation*, PhD 2020.

Matt Eaton, Materials Science and Engineering, *Design Driven Multi-scale Mechanical Property Characterization of Polymer Composites*, PhD 2020.

Yixing Wang, Mechanical Engineering, *Combining Finite Element with Data Analytical Approaches for Structure-Property Modeling in Polymer Nanocomposites*, PhD 2019

Min Zhang, Theoretical and Applied Mechanics, *Multiscale Modeling of Thermoplastic Elastomers for Enhanced Mechanical Properties*, PhD 2018.

Xiaolin Li, Theoretical and Applied Mechanics, *Interphase Modeling and Data Analytical Approaches for Polymer Nanocomposites Design,* PhD 2018.

Min Zhang, Materials Science and Engineering, *Local Mechanical Properties Characterization of Soft Polymeric Material via Atomic Force Microscopy Nanoindentation and Finite Element Simulations*, PhD 2018.

Partha Paul, Mechanical Engineering, *Influence of Multiscale Constraint on Inelastic Deformation Behavior of Austenite and Martensite Phases in Shape Memory Alloys*, PhD 2018.

Angie Hu, Mechanical Engineering, *Multiscale Nonlinear Viscoelastic Modeling of Filled Elastomers*, PhD expected 2018.

Richard Zhao, Mechanical Engineering, *Multiscale Modeling and Data Mining for Polymer Nanocomposites*, PhD 2017.

Krishanu Nandy, Mechanical Engineering, *Graphene Oxide Papers and Composites*, PhD 2016.

PingPing Zhu, Mechanical Engineering, *Shape Memory Alloy Modeling and Applications to Porous and Composite Structures*, PhD 2015. First position: Chrysler.

Xu Cheng, Mechanical Engineering, *Characterization of Local Mechanical Properties of Polymer Thin Films and Polymer Nanocomposites via AFM indentations*, PhD 2014. First position: Nike.

Yang Li, Materials Science and Engineering, *Exploring the Role of Interphase in Mechanical, Viscoelastic and Dielectric Response of Polymer and Polymer Nanocomposites using Modeling Method*, PhD 2014. First position: Dow Chemical.

Catherine Bewerse, Materials Science and Engineering, *Micromechanical Testing and in situ Characterization of SMA phase transformation*, PhD June 2014. First position: Boston Consulting.

Charlie Wood, Mechanical Engineering, *Developing Nanoindentation Techniques for Characterizing Local Mechanical Properties of Soft Matter*, PhD Dec 2013, Currently at Motorola.

Aaron Stebner, Mechanical Engineering, Partitioning of Elastic, *Transformation, and Plastic Strains of ShapeMemory NiTi through Modeling and Neutron Diffraction*, PhD 2012. Currently Assistant Professor at CO School of Mines.

Fang Yuan, Materials Science and Engineering, *Bone Mechanics Modeling*, PhD 2012. Currently Senior Design Engineer at Apple.

Marc Palmeri, Materials Science and Engineering, *Toughening Mechanisms in Nanocomposites*, PhD 2011.

Supinda Watcharotone, Mechanical Engineering, *Interfaces and Dispersion of nanoparticles in Polymer Nanocomposites*, PhD 2011, currently at R&D Engineer, Sunstar Americas.

Keith Gall, Mechanical Engineering, *Microstructural Measurements of Phase Transformation and Relation to Macroscopic Properties for Shape Memory Alloys*, PhD 2010.

Lesley Meade Hamming, Materials Science and Engineering, *Self-healing polymer nanocomposites utilizing a biomimetic initiator*, PhD 2010. Currently Associate at Winston and Strawn.

Andy Schoch, Materials Science and Engineering, *Structural Development and Mechanical Response of Thermoreversible Triblock Copolymer Gels and Gel/Nanotube Composites*, PhD 2009. Currently Research Associate at Saint-Gobain Abrasives.

Ray Qiao, Mechanical Engineering, *Interphase Percolation Effects in Polymer Nanocomposites*, PhD June 2009. Currently research scientist at Apple Computer.

Grace Chen, Mechanical Engineering, *Fracture Mechanics for Nanoreinforced Polymers*, PhD 2009, currently at CFD Research Corp.

Michele Panico, Mechanical Engineering, *Multiscale modeling of shape memory alloys,* PhD June 2008. Currently research scientist at Exxonmobil.

Hua Liu, Mechanical Engineering, *Characterization and Modeling of Viscoelastic Behavior of Carbon Nanotube Reinforced Polymers: The Influence of Interphase and Nanotube Morphology*, PhD September 2007. Currently research scientist at Pactiv.

Huanlong Li, Mechanical Engineering, *Modeling and Simulation of Microporous Titanium: Effects of Morphology with Application to Orthopaedic Implants*, PhD June 2006.

Debbie Burton, Theoretical and Applied Mechanics, *Continuum Models for Shape Memory Alloys for Simulations*, PhD June 2005.

Tao Bai, Mechanical Engineering, *Impedance Spectroscopy and Mechanical Response effects of Physical and Chemical Aging of Polymers*, 2003-2006, no degree.

Frank Fisher, Mechanical Engineering, MS Thesis: *Combined Aging and Moisture Effects in Polymers and Polymer Matrix Composites;* PhD Thesis: *Nanomechanics and the viscoelastic behavior of carbon nanotube-reinforced polymers*, Ph.D. June 2002, currently Professor at Stevens Institute of Technology, NSF CAREER Award 2009.

Xiujie Gao, Mechanical Engineering, *Multivariant Modeling and Characterization of SMAs Based on Hierarchical Characteristics of Martensite Crystallography*, Ph.D. March 2002, currently at GM.

Alex Bekker, Applied Math, *Mathematical Modeling of One-Dimensional Shape Memory Alloy Behavior: Phase Diagram Kinetics and Temperature Induced Transformation*, Ph.D. Fall 1997, currently in computer industry in Silicon Valley (exact whereabouts unknown)

MiinShiou Huang, Mechanical Engineering, *A Multivariant Shape Memory Alloy Model*, Ph.D. Fall 1997, Research Associate, Univ. Tenn. 1998, currently at Ford Company.

Roger Bradshaw, Mechanical Engineering, *Nonisothermal Physical Aging in Polymer Composite Materials*, Ph.D. Summer 1997, currently Professor at University of Lousiville.

M. S. Students (21):

Anlan Chen, MatSci, *ML assisted library infrastructure for polymer nanocomposite microstructures built by Molecular Dynamics simulations*, MS 2023

Connor Turley, MEMS, *Structure-Processing Relationships of Tapered Polymeric Fibers,* MS 2020.

Zhao Chen, Computer Science, *Data Sifting Models for Nanocomposite Data*, MS 2019.

Ridvan Kahraman, Materials Science and Engineering, *Molecular Modeling and Experiments on PolymerNanocellulose Interfaces*, MS 2018

Jinqiang Ning, Mechanical Engineering, *The Fabrication and Structure-Processing Relationships of Biomimetic Artificial Rat Whisker*, MS June 2017.

Anqi (Claire) Lin, Materials Science and Engineering, *Data Driven Heuristic Model for Polymer Nanocomposite Interphase*, MS expected June 2017.

Xiaojing (Michelle) Yuan, Data Extractor for Online Curation of Polymer Nanocomposite Data, MS expected 2018 (joint with SJTU).

Zijiang Yang, Mechanical Engineering, *Data Structures and Models for Microstructure-Property Relations*, MS June 2016.

Angie Hu, Mechanical Engineering, *Modeling of Nanocomposite properties using statistical approaches*, MS December 2013.

Donghai Guo, Mechanical Engineering, *Nanocomposites and Materials Informatics*, MS June 2011.

Sankar Narayanan, Mechanical Engineering, *Molecular Dynamics and Multiscale Modeling of Polymer Nanocomposites*, MS Aug 2009.

Robert Friedrich, Diplomarbeit, Helmut Schmidt Universität, Hamburg Germany, *Modeling of nanoindentation experiments of thin, polymeric Films*, performed research work on site at NU campus for one year 2008-09.

Keith Gall, *Digital Image Correlation Analysis of Shape Memory Alloys*

Ray Qiao, *Numerical Modeling of Shape Memory Alloys and Interfacial Effects in Self-Healing Composites*, MS Feb 2006.

James Washington, Mechanical Engineering, *Multi-scale Measurements of Viscoelastic Properties of Polymeric Materials by Tensile and Indentation Deformations*, MS Feb 2006.

Zhu He, Mechanical Engineering, *Use of Electrical Resistance Testing to Redefine the Transformation Kinetics and Phase Diagram for SMAs*, MS Dec 2004.

Sarah Thelen, Mechanical Engineering, *Mechanics of Ti- Foam Implant Materials*, MS June 2000.

Frank Fisher, Mechanical Engineering, *Viscoelastic Behavior of Polymer Matrix Composites with Interphase Effects: Theoretical Models and Finite Element Analysis*, M.S., Fall 1998.

Richard Hansen, Mechanical Engineering, *Multiviscoelastic Materials in a Single Constrained Layer*, M.S. Spring 1997.

WenSheng Lin, Mechanical Engineering, *Micromechanics Studies of Multiphase Viscoelastic Composites*, M.S. Winter 1996.

Shiyi Hwang, Mechanical Engineering, *Behavior of One-Dimensional Shape Memory Alloy Wires with Heat Transfer Effects*, M.S. Winter 1994.

Postdoctoral Fellows (22):

Rayehe Karimi Mahabadi, *AI and Computation for Structural Metamaterials*, 2023 – present

Mary Bastawrous, *Machine Learning for Discovery of Hierarchical Structural Metamaterials*, 2021 – 2022

Boran Ma, *Atomistic to continuum to data methods applied to confined polymers and their interphases*, 2020 – present.

Richard Sheridan, *AFM Characterization of Designed Polymer and Composite Interfaces*, 2019 – present.

Pavan Kolluru, *Nanoscale Testing of Polymer Interphases and Interfaces*, 2015 – 2019, currently at Texas A&M University.

Harshad Paranjape, *Micromechanics Modeling of Effects of Grain Size and Defects on Shape Memory Alloys*, jointly appointed with CO School of Mines, 2016-2018.

Zhiwei Cui, *Molecular Simulations of Nanostructured Polymers*, 2012-2015, currently at GM

Amin Ajdari, Modeling of Nonlinear Response of High Loading Nanofilled Elastomers, 2012 – 2014, currently at Current.

Marc Palmeri, *Synthesis and Characterization of Polymer Nanocomposites*, 2011 – 2015

Pavan Valavala, *Molecular Dynamics and Modeling of Thermoplastic Elastomers and Nanocomposites*, August 2010 – Dec 2011, currently at Dow Chemical.

Hua Deng, *Modeling of Elastomer Nanocomposites*, 2009- 2012, currently at Western Digital.

Michele Panico, Mechanical Engineering, *Multiscale modeling of shape memory alloys and Molecular Modeling of Polymers*, 2008- 2009, currenty at Exxonmobil.

Karl Putz, *Thermosetting Nanocomposite Systems and Effects of Nanoparticle Geometry on Interphase and Mobility*, 2006 – 2013.

Anny Flory, *Aging and Structural Relaxation in Nanocomposites*, 2005-07, now research scientist at Dow Corning.

Hui Zhang, *Indentation Mechanics for Polymer Coatings*, 2004-2005

Hui Shen, *Numerical Micromechanics for Porous Metallic Materials*, 2004 – 2006, currently professor at Ohio Northern University

Frank Fisher, *Viscoelastic Effects in Nanoreinforced Polymers*, 2002 – 2004, currently professor at Stevens Institute of Technology

Xiujie Gao, *Micromechanical Shape Memory Behavior – Modeling and Experiments*, 2002-2005, currently at GM

T. Ramanathan, *Aging Characterization of Polymeric Wiring Insulation Materials and Design and Characterization of Polymer Nanocomposites*, 2001-2008

Xiangyang Zhang, *SEM Identification of SMA Variants During Loading*, 1999

Nagendra Akshantala, *Physical Aging and Damage Mechanics in Composites*, 1997-99, currently at Goodyear Co.

Martin Monahan, *Physical Aging in Composites – Use of Reduced Time in Viscoelastic Constitutive Equations for Long Term Response*, 1993-94, currently at Baxter Corporation.

Undergraduate Students working on research (59):

Io Saito, Summer 2022 – present, Physical and Chemical Patterning for Polymer Interphase Exploration

Joshua Facello, Summer 2021, Development of Spectral Data Parser for NanoMine

Ben Genender, Summer 2021, Investigating the Effects of Silica Nanoparticles on the Glass Transition Temperature of Polystyrene

Mathias Heider, Summer 2021, NanoMine Data Curation via Jupyter Notebook Workflow

Ryan Ryerson, Summer 2021, Machine-Learning Assisted Investigation of the Interphase in Polymer Nanocomposites via Molecular Dynamics

David Jany, Summer 2020, Machine Learning to Relate Descriptors and Tg in NanoMine

Joseph Kirchhoff, Summer 2019, Structural Metamaterials, Simulation, Fabrication and Characterization

Darius Coleman, Summer 2019, Macro and Micro Characterization and Processing of Tapered Polymer Fibers

Nandita Subbiah, Summer 2019, Pratt Grand Challenges REU, Data-driven Polymer Nanocomposite Design via the Materials Genome Initiative

Nicholas Finan, Summer 2019, Pratt Grand Challenges REU, Nanoscale Characterization of Interfaces in Additively Manufactured Components

M'Kayla Rogers, Summer 2018, Data Curation and Analysis for the Nanomine Data Resource

Kwame Simmons, Summer 2018, Nanoscale Characterization of Interfaces in Additively Manufactured Components

Junhua Tan, Summer 2018, Data Curation and Analysis for the Nanomine Data Resource

Laura Perez, Summer 2018, Patterning Polymers via Laser Interference Lithography

Xin Shen, Fall 2018, visiting researcher from TU Aachen, Local Properties of 3D Printed Constructs.

Valentina Guarino, MRSEC Summer 2016, Nanomine Data Curation

Kelly Ruffenach, MRSEC Summer 2016, interfaces in 3d printed polymers

Anetta Siemianowicz, Summer 2016, Data Curation for NanoMine

Karen Qu, Summer 2015, Data Curation and Database Expansion for the Nanomine Data Resource

Max Brinson, Summer 2015, Web Application and Interface Design for Nanomine Website

Mathias Schmutz, Summer 2015, Data Curation and Database Expansion for the Nanomine Data Resource.

Charlie Scheftic, IIN REU Summer 2015, Towards Rapid Prototyped Lab Instruments: Inexpensive, OpenSource, In-Situ Tensile Tester for Use in Scanning Electron Microscopy.

Marven Laborde, REU Summer 2015, Characterizing the influence of substrate stiffness on model polymer nanocomposites

Alan Grossman, REU, Summer 2014, Characterization of Nano-Scale Local Mechanical Properties on the Surfaces of Polymer Thin Films

Konner Scott, Summer 2014, Microstructural Characterization and Microscopic Image Process

Ty Higashi, REU, Summer 2014, Investigation of the evaporative formation mechanism of graphene oxide papers

Marai Hayes, REU, Summer 2014, Characterization of Polymer Nano-confinement Effects in Thin Films on Functionalized Substrates

Paul Perkovich, Summer 2014, Spin Coating as a Method of Depositing CNF/PDMS Electrodes on EAP Substrate

Brett Glassner, Summer 2014, Origins of Oscillations in Mechanical Testing of Graphene Oxide Papers

Kevin Zhu, IIN REU, Summer 2013, Local Mechanical Properties of Polymers in Nanocomposites

Alyssa Leright, MRSEC REU, Summer 2013, Extraction of Polymer from Graphene Oxide Composites

Kareem Youssef, nuVIBE, Summer 2013, Interfacial Mechanics of Fused Graphene Oxide Papers

Brett Glassner, Volunteer, Summer 2013, Fatigue Testing of Graphene Oxide Papers

Alejandro Jimenez, MRSEC REU 2012, Sandwich Graphene Oxide Composites and Detailed Mechanics of Graphene Oxide Papers

Veronica Perez, MRSEC REU, Fabrication of h-BN papers

Christopher Eley, IIN REU, Summer 2012, Local Mechanical Properties of Polymers Near Interfaces

Peter Kaminski, Diplomarbeit completed at NU, 2012, Local Mechanical and Electrical properties of Graphene Filled Polymers.

Colin Burke, MRSEC REU Summer 2011, h-BN Exfoliation for Nanocomposite Research; returned Summer 2012 Stop Motion Self-Assembly of Graphene Oxide Papers

Fatma Diouf, NSEC REU Summer 2011, Investigation of Hairpin to Duplex Transition for Polyacrylamide Hydrogel Crosslinking

Tracy Galla, NSEC RET Summer 2011, The Mechanical Properties Of Graphene Oxide As Influenced By Thickness & The Carbon-Oxygen Ratio

Melissa Stangl, MRSEC REU Summer 2011, Mechanisms Governing Infiltration and Fusion of Graphene Oxide Paper with Polymers to Yield Hierarchically-Structured Nanocomposites

Helena Varela, visiting researcher, University of Alicante, Spain, *Effect of nanoparticle geometry on interphase creation*, 2010.

Claire Segar, Washington University, *Formation of Graphene Oxide Paper*, summer 2010.

Sule Alabi, UIC, *Injectable Protein Sponge*, summer 2010.

Robert Friedrich, visiting researcher, *Modeling of Nanoindentation for Local Polymer Properties*, Diplomarbeit completed at NU, 2008-09.

Thomas Yu, *Characterization of nanofiller dispersion stability in solution*, 2009.

Zhefei Li, *Synthesis and characterization of carbon nanofiber hybrid composites*, 2009.

Katja Leckband, part of Diplomarbeit completed at NU, *Evaluation of the Influence of Cnt - Functionalization on the Nano-Scale Mechanical and Thermo-Mechanical Properties of Epoxy Nanocomposites*, Fall 2008.

Wang Pai, *Synthesis and Characterization of conducting nanocomposites using graphitic nanofillers*, summer 2008.

Rachel Cohn, *Effect of Crosslink Density on Interphase Creation in Polymer Nanocomposites*, summer 2007.

Angela Alexander, *Polymer Nanocomposites: Carbon Nanotubes and Beyond*, summer 2007.

Laura Jamison, *Buckyballs in Nanocomposites*, summer 2006

Jeff Schumacher, *Polymer Nanocomposites*, 2004 - 2005

Ben Levy, *Imaging and analysis of nanoinclusions in polymers*, 2003 - 2004

Lesley Meade, *Influence of nanoparticles on polymer mechanical response*, 2002-2005

Ben Mangrich, *Thermomechanical Testing of SMA wires*, 2003- 2004

Peter Golovin, *Micromechanical modeling programming*, 2002 - 2003

Werner Brand, *SMA wire characterization and beam control modeling*, 1994

Craig Balanos, *Chemical Aging of Polymer Films and Impedance Spectroscopy Testing*, high school teacher summer intern, 2000.

Scientific and Technical Staff:

Tolu Fateye, Software Developer, lead architect for front and back end of NanoMine and MetaMine, 2020-present

Anya Wallace, Software Developer, lead developer for user interface on MetaMine, 2020 – present

Shana McAlexander, Research Scientist and Associate Director of AI for Understanding and Designing Mateirals (aiM) NRT Graduate Training Program, 2021 – present

Erik Daughtrey, Software Developer, first professional developer dedicated to NanoMine platform, 2018 – 2020.

Marc Palmeri, research scientist, lab group coordinator/ project manager, 2015 – present

COURSES TAUGHT

Applications of AI in Materials, Spring 2021, Spring 2022, Spring 2023

2 week Module in *Synthesis and Processing of Materials* on "Data and AI in Materials", Fall 2022, Fall 2023.

Elasticity and Viscoelasticity, Fall 2018

Engineering Analysis III: Dynamics of Systems, ENG-205, spring 97-98, spring 98-99, spring 99-00, spring 01-02, spring 02-03, spring 03-04, Spring 2014-15

Mechanics of Materials, CE-216, winter 92-93, spring 92-93, spring 93-94, winter 96-97

Computer Enhanced Mechanics of Materials, CE-216, pilot section, winter 94-95, winter 95-96

Mechanics, CE 212, fall 93-94, fall 94-95

Theory of Elasticity, CE-415, winter 93-94, winter 94-95, fall 95-96, fall 96-97, fall 97-98, fall 2005-06, winter 2010-11.

Mechanics of Advanced Materials, ME-495 (now ME 456), new graduate course, spring 96-97, spring 98-99, fall 01-02, fall 03-04, winter 04-05, winter 07-08, winter 09-10, winter 15-16.

SMA Crystallography and Mechanics, ME-495, graduate course, winter 2011-12, spring 2011-12.