

NATHAN A. MARA

Department of Chemical Engineering and Materials Science (CEMS)
 College of Science and Engineering
 University of Minnesota, Twin Cities Campus
 Minneapolis, MN 55455-0132
 Ph: (612) 625-7568
 Fax: (612) 626-7246 email: mara@umn.edu

Education

Degree	Institution	
B.S. Mechanical Engineering/Materials Science and Engineering	University of California, Davis	2000
Ph.D. Materials Science and Engineering (advisor: Professor Amiya Mukherjee)	University of California, Davis	2005

Positions/Employment

<i>University of Minnesota-Twin Cities</i> : Professor	2022-present
<i>University of Minnesota-Twin Cities</i> : CEMS Director of Undergraduate Studies	2022-present
<i>University of Minnesota-Twin Cities</i> : Associate Professor	2017-2022
<i>Center for Integrated Nanotechnologies (CINT), Los Alamos National Laboratory (LANL)</i> : Technical Staff Member	2010-2017
<i>Metallurgy Group MST-6, LANL</i> : Technical Staff Member	2008-2017
<i>CINT, LANL</i> : Acting Deputy Group Leader	11/16-3/17
<i>LANL Institute for Materials Science</i> : Deputy Director (founding)	2014-2017
<i>CINT, LANL</i> : Nanoscale Electronics and Mechanics Thrust Leader	3-11/2017
<i>CINT, LANL</i> : Nanoscale Electronics and Mechanics Thrust Co-Leader	2014-3/2017
<i>CINT, LANL</i> : Director's Postdoctoral Fellow	2005-2008
<i>Department of Chem. Eng. and Materials Science, UC Davis, CA</i> : Research Assistant	2000-2005
<i>Centaur Scientific LLC</i> : Owner and Lead Consultant	2018-present

Current Membership in Professional Organizations

The Minerals, Metals and Materials Society (TMS)	2006-present
Materials Research Society (MRS)	2006-present
American Society for Materials International (ASM International)	2023-present

HONORS AND AWARDS FOR RESEARCH/CREATIVE WORK, TEACHING, PUBLIC ENGAGEMENT, AND SERVICE

University of Minnesota

CEMS Shell Chair	2017-2021
CSE Tin Man award for "Outstanding Student Group Program/Event" for Material Advantage: UMN Bladesmithing Team	2019
UMN Joint Safety Team Safest Lab Award for Fall 2019	2019

External Sources

UMN Bladesmithing Team Advisor: Second Place Win at TMS 2024 Annual Meeting	2024
TMS Brimacombe Medal	2023
Journal of Materials Outstanding Paper Award	2018
International Journal of Plasticity Young Investigator Award	2017
National Institutes of Justice Body Armor Challenge Finalist	2013
TMS Young Leaders Professional Development Award	2012
LANL Achievement Award for Outstanding Accomplishment/Dedication	2011
LANL Distinguished Mentor Performance Award	2010
LANL Director's Postdoctoral Fellow	2005
ASM Golden Gate Chapter John Dorn Award for Outstanding PhD Research	2003
ASM Golden Gate Chapter Undergraduate Scholastic Achievement Award	2000
Engineer in Training: Passed EIT examination	1999
Tau Beta Pi	1999
Alumni Scholarship Recipient, UC Davis	1995
National Merit Scholarship Recipient	1995
Eagle Scout, Boy Scouts of America	1994

Visiting Professorships or Visiting Scholar Positions

Guest Scientist, CINT-LANL, nanomechanics and electron microscopy	2017-present
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Publications

Refereed Journal Articles

h-index 58, 5765 citations since 2019 according to Google Scholar

Publications with a * are students, postdocs, or early career staff mentored by N.A. Mara, last author correlates to project lead/PI.

- 169.) S. Majumder, C.C. Sun, N.A. Mara, “Crystal Structure-Mechanical Property Relationship in Succinic acid and L- alanine Probed by Nanoindentation”, manuscript in preparation (2024).
- 168.) J.K. Joy, A. Talapatra, Y. Yamamoto, M. Detroids, P. Jablonski, N.A. Mara, M.T. Hoang, L. Capolungo, “Prediction of Creep Rupture Time with a New Larson Miller Approach”, in review (2024).
- 167.) J.Y. Cheng*, Z. Li*, D.L. Poerschke, J.K. Baldwin, B.L. Bresnahan, N.A. Mara, “Thermal Stability of 3D Interface Cu/Nb Nanolaminates”, in review (2024).
- 166.) J.Y. Cheng*, J. Wang, Y. Chen, S. Xu, J.G. Barriocanal, J.K. Baldwin, I.J. Beyerlein, N.A. Mara, “3D interfaces enhance nanolaminate strength and deformability in multiple loading orientations”, *Acta Materialia*, Volume 267, 119697 (2024).
- 165.) J.Y. Cheng*, M. Rahakrishnan, C. Miller, R. Mier, S.C. Vogel, D.J. Savage*, J.S. Carpenter*, O. Anderoglu*, N.A. Mara, “The influence of thermomechanical treatment pathways on texture and mechanical properties in ARB Cu/Nb nanolaminates”, *Materials Science and Engineering: A*, Volume 886, 145610 (2023).
- 164.) E.D. Hintsala, B.R. Becker, B. Stadnick, U. Hangen, M. Sau*, N.A. Mara, “Mechanical Spectroscopy: Machine Learning and High Speed Nanoindentation for High Throughput Material Evaluation”, *Microscopy and Microanalysis*, Volume 29, 774-775 (2023).
- 163.) J.Y. Cheng*, Z. Li*, J.K. Baldwin, K. Hattar, N.A. Mara, “Thermal Stability of Nanolaminates Containing Thick 3D interfaces: An Ex-situ/In-situ Annealing Study”, *Microscopy and Microanalysis*, Volume 29, 1481-1482 (2023).
- 162.) Y.H. Lin, A. Bohn*, J.Y. Cheng*, A von der Handt, N.A. Mara, D.L. Poerschke, “Gas nitriding behavior of refractory metals and implications for multi-principal element alloy design”, *Journal of Alloys and Compounds*, Volume 947, 169568 (2023).
- 161.) Y. Chen*, D. Chen, J. Weaver*, J. Gigax, Y. Wang, N.A. Mara, S. Fensin, S.A. Maloy, A. Misra, N. Li, “Heavy ion irradiation effects on CrFeMnNi and AlCrFeMnNi high entropy alloys”, *Journal of Nuclear Materials*, Volume 574, 154163 (2023).
- 160.) Z.Li*, J.Y. Cheng*, J.D. Poplawsky, S. Xu, J.K. Baldwin, I.J. Beyerlein, N.A. Mara, “Critical length scales for chemical segregation at Cu/Nb 3-D interfaces by atom probe tomography”, *Scripta Materialia*, Volume 223, 115078 (2023).
- 159.) M. Jain, K. Yaddanapudi, A.T. Kidigannappa, J.K. Baldwin, M. Knezevic, N.A. Mara, I.J. Beyerlein, S. Pathak, “Simultaneous high strength and mechanical stability of bcc Nb/Mg nanolaminates”, *Acta Materialia*, Volume 242, 118487 (2023).
- 158.) S. Xu, J.Y. Cheng*, N.A. Mara, I.J. Beyerlein, “Thick interface size effect on dislocation transmission in nanolaminates”, *IOP Conf. Series: Materials Science and Engineering*, Volume 1249

012005 (2022).

157.) S. Xu, J.Y. Cheng*, N.A. Mara, I.J. Beyerlein, “Dislocation dynamics in heterogeneous nanostructured materials”, *Journal of the Mechanics and Physics of Solids*, Volume 168, 105031 (2022).

156.) **(invited)** I.J. Beyerlein, N.A. Mara, “Mechanical Properties of Metal Nanolaminates”, *Annual Review of Materials Research*, Volume 52, pp. 281-304 (2022).

155.) M. Sau*, E.D. Hintsala, Y. Chen*, D.D. Stauffer, S.A. Maloy, B.P. Eftink, T.J. Lienert, N.A. Mara, “High-Throughput Nanoindentation Mapping of Additively Manufactured T91 Steel”, *JOM*, (2022).
<https://doi.org/10.1007/s11837-022-05189-0>

154.) K.M. Schmalbach*, N.A. Mara, “Algorithms for Nanoindentation Strain Rate Jump Testing and Analysis”, *Experimental Mechanics*, (2022). <https://doi.org/10.1007/s11340-022-00833-x>

153.) S. Majumder, C. Sun, N.A. Mara, “Nanomechanical testing in drug delivery: Theory, applications, and emerging trends”, Volume 183, 114167, April 2022, <https://doi.org/10.1016/j.addr.2022.114167>

152.) S. Xu, J.Y. Cheng*, Z. Li*, N.A. Mara, I.J. Beyerlein, “Phase-field modeling of the interactions between an edge dislocation and an array of obstacles”, *Computer Methods in Applied Mechanics and Engineering*, Volume 389, 1 February 2022, 114426 (2022). <https://doi.org/10.1016/j.cma.2021.114426>

151.) J.Y. Cheng*, Z. Li*, S. Xu, I.J. Beyerlein, N.A. Mara, “Simultaneously Enhancing Strength and Plasticity Using 3D Interfaces: A Combined Experimental and Computational Approach”, *Nano Letters*, Volume 22, Issue 5, pp. 1897-1904 (2022). <https://doi.org/10.1021/acs.nanolett.1c04144>.

150.) M. Radhakrishnan, B. Kombaiah, M.N. Bachhav, T.J. Nizolek, Y.Q. Wang, M. Knezevic, N.A. Mara, O. Anderoglu, “Layer dissolution in accumulative roll bonded bulk Zr/Nb multilayers under heavy-ion irradiation”, *Journal of Nuclear Materials*, Volume 557, 153315, (2021).
<https://doi.org/10.1016/j.jnucmat.2021.153315>.

149.) A. Stein, N.A. Mara, “Nano goes the distance”, *Nature Materials*, Vol. 20, pp. 1456–1458 (2021).

148.) Z. Wang, K.M. Schmalbach*, R.L. Penn, D.L. Poerschke, A. Antoniou, N.A. Mara, A. Stein, “3D Periodic and Interpenetrating Tungsten–Silicon Oxycarbide Nanocomposites Designed for Mechanical Robustness”, *ACS applied materials & interfaces*, Vol. 13, 32126-32135 (2021).

147.) K. Schmalbach*, A. Lin*, D.C. Bufford, C. Wang, C.C. Sun, N.A. Mara, “Nanomechanical mapping and strain rate sensitivity of microcrystalline cellulose”, *Journal of Materials Research*, Vol. 36, pp. 2251-2265 (2021).

146.) A. Misra, M. Goken, N.A. Mara, I.J. Beyerlein, “Hierarchical and heterogeneous multiphase metallic nanomaterials and laminates”, *MRS Bulletin*, Vol. 46, pp. 236-243 (2021).

145.) C. Griesbach, S.J. Jeon, D.F. Rojas, M. Ponga, S. Yazdi, S. Pathak*, N.A. Mara, E.L. Thomas, R. Thevamaran, “Origins of size effects in initially dislocation-free single-crystal metallic micro-and nanocubes”, *Acta Materialia*, Vol. 214, 117020 (2021).

144.) W.W. Gerberich, K.M. Schmalbach*, Y. Chen*, E. Hintsala, N.A. Mara, “Quantifying Physical Parameters to Predict Brittle/Ductile Behavior”, *Materials Science and Engineering: A*, 140899 (2021).

- 143.) J.M. Wheeler, C. Harvey, N. Li*, A. Misra, N.A. Mara, X. Maeder, J. Michler, S. Pathak*, “High temperature nanoindentation of Cu–TiN nanolaminates”, *Materials Science and Engineering: A*, Vol. 804, pp. 140522 (2021).
- 142.) Z. Wang, K.M. Schmalbach*, R.L. Combs, Y. Chen*, R.L. Penn, N.A. Mara, “Effects of Phase Purity and Pore Reinforcement on Mechanical Behavior of NU-1000 and Silica-Infiltrated NU-1000 Metal–Organic Frameworks”, *ACS applied materials & interfaces*, 12 (44), 49971–49981 (2020).
- 141.) K.M. Schmalbach*, Z. Wang, R.L. Penn, D Poerschke, A. Antoniou, A. Stein, N.A. Mara, “Temperature-dependent mechanical behavior of three-dimensionally ordered macroporous tungsten”, *Journal of Materials Research*, Vol. 35, Iss. 19, pp. 2556–2566 (2020).
- 140.) Y. Chen*, N. Li*, R.G. Hoagland, X.-Y. Liu, J.K. Baldwin, I.J. Beyerlein, J.Y. Cheng*, N.A. Mara “Effects of three-dimensional Cu/Nb interfaces on strengthening and shear banding in nanoscale metallic multilayers”, *Acta Materialia*, Vol. 199, pp. 593–601 (2020).
- 139.) B.P. Eftink*, J.S. Weaver*, J.A. Valdez, V. Livescu, D. Chen, Y. Wang, C. Knapp, N.A. Mara, S.A. Maloy, G.T. Gray III, “Proton irradiation and characterization of additively manufactured 304L stainless steels”, *Journal of Nuclear Materials*, Vol. 531, pp. 152007 (2020).
- 138.) J.S. Weaver*, V. Livescu, N.A. Mara, “A comparison of adiabatic shear bands in wrought and additively manufactured 316L stainless steel using nanoindentation and electron backscatter diffraction”, *Journal of Materials Science*, Vol. 55, Iss. 4, pp. 1738–1752 (2020).
- 137.) D.J. Savage*, I.J. Beyerlein, N.A. Mara, S.C. Vogel, R.J. McCabe, M. Knezevic, “Microstructure and texture evolution in Mg/Nb layered materials made by accumulative roll bonding”, *International Journal of Plasticity*, Vol. 125, pp. 1–26 (2020).
- 136.) B. Leu*, D.J. Savage*, J. Wang, Md E. Alam, N.A. Mara, M.A. Kumar, J.S. Carpenter, S.C. Vogel, M. Knezevic, R. Decker, I.J. Beyerlein, “Processing of Dilute Mg-Zn-Mn-Ca Alloy/Nb Multilayers by Accumulative Roll Bonding”, *Advanced Engineering Materials*, Vol. 22, Iss. 1, pp. 1900673 (2020).
- 135.) M. Jain, N. Velisavljevic, J.K. Baldwin, M. Knezevic, N.A. Mara, I.J. Beyerlein, S. Pathak*, “Structure and properties of pseudomorphically transformed bcc Mg in Mg/Nb multilayered nanolaminates studied using synchrotron X-ray diffraction”, *Journal of Applied Physics*, Vol. 126, Iss. 2, pp. 025302 (2019).
- 134.) Y. Chen*, M.Y. Gong, S. Shao, N.A. Mara, J. Wang, “Interface Facilitated Reorientation of Mg Nanolayers in Mg-Nb Nanolaminates”, *JOM*, Vol. 71, pp. 1215–1220 (2019).
- 133.) K. Thomas*, G. Mohanty, J. Wehrs, A.A. Taylor, S. Pathak*, D. Casari, J. Schwiedrzik, N.A. Mara, R. Spolenak, J. Michler, “Elevated and cryogenic temperature micropillar compression of magnesium–niobium multilayer films. *Journal of Materials Science*, Vol. 54, pp. 10884–10901 (2019).
- 132.) Y. Chen*, E. Hintsala, N. Li*, B.R. Becker, J.Y. Cheng*, B. Nowakowski, J. Weaver*, D. Stauffer, N.A. Mara, “High-Throughput Nanomechanical Screening of Phase-Specific and Temperature-Dependent Hardness in Al_xFeCrNiMn High-Entropy Alloys”, *JOM*, Vol. 71, pp. 3368–3377 (2019).
- 131.) S. Singh, S. Chang, C.S. Kaira, J.K. Baldwin, N.A. Mara, N. Chawla, “Microstructure and mechanical properties of co-sputtered Al–SiC composites”, *Materials & Design*, 107670 (2019).

- 130.) E. Aydogan, J.S. Weaver*, U. Carvajal-Nunez*, M.M. Schneider, J.G. Gigax, D.L. Krumwiede, P. Hosemann, T.A. Saleh, N.A. Mara, D.T. Hoelzer, B. Hilton, S.A. Maloy, "Response of 14YWT alloys under neutron irradiation: A complementary study on microstructure and mechanical properties", *Acta Materialia* Vol. 167, pp.181-196 (2019).
- 129.) E. Aydogan, J.S. Weaver*, Y.Q. Wang, N.A. Mara, O. El-Atwani, S.A. Maloy, "Microstructure and Mechanical Properties of FeCrAl Alloys under Heavy Ion Irradiations", *Journal of Nuclear Materials*, Vol. 503, 250-262 (2018).
- 128.) R. Thevamaran, S. Pathak*, S. Yazdi, S.J. Jeon, O. Lawal, N.A. Mara, E.L. Thomas, "Size Effects in Single-Crystal Metallic Micro-and Nanocubes", *Micro and Nanomechanics*, Vol. 5, pp. 47-49 (2018).
- 127.) J. Schneider, J. Cobb, J.S. Carpenter*, N.A. Mara, "Maintaining nano-lamellar microstructure in friction stir welding (FSW) of accumulative roll bonded (ARB) Cu-Nb nano-lamellar composites (NLC)", *Journal of Materials Science & Technology*, Vol. 34 (1), pp. 92-101 (2018).
- 126.) B.P. Eftink*, N.A. Mara, O.T. Kingstedt, D. Safarik, S. Wang, J. Lambros, I.M. Robertson, "Deformation response of cube-on-cube and non-coherent twin interfaces in AgCu eutectic under dynamic plastic compression", *Materials Science and Engineering: A* Vol. 712, pp. 313-324 (2018).
- 125.) U. Carvajal-Nunez*, M.S. Elbakhshwan, N.A. Mara, J.T. White, A.T. Nelson, "Mechanical Properties of Uranium Silicides by Nanoindentation and Finite Elements Modeling", *JOM*, Vol. 70 (2), pp. 203-208 (2018).
- 124.) Y. Cui, B. Derby, N. Li*, N.A. Mara, A. Misra, "Suppression of shear banding in high-strength Cu/Mo nanocomposites with hierarchical bicontinuous intertwined structures", *Materials Research Letters*, Vol. 6 (3), pp. 184-190 (2018).
- 123.) M. Ardeljan, M. Knezevic, M. Jain, S. Pathak*, A. Kumar, N. Li*, N.A. Mara, J.K. Baldwin, I.J. Beyerlein, "Room temperature deformation mechanisms of Mg/Nb nanolayered composites", *Journal of Materials Research*, Vol. 33 (10), pp. 1311-1332 (2018).
- 122.) F. Liu, D.E. Hooks, N. Li*, N.A. Mara, J.A. Swift, "Mechanical Properties of Anhydrous and Hydrated Uric Acid Crystals", *Chemistry of Materials*, Vol. 30 (11), pp. 3798-3805 (2018).
- 121.) N.A. Mara, Y. Chen*, N. Li*, S. Yadav, J. Wang, X.Y. Liu, A. Misra, "In situ TEM Investigation of Mechanically Induced Phase Transformations in Nanoscale Composites", *Microscopy and Microanalysis*, Vol. 24 (S1), pp. 1828-1829 (2018).
- 120.) J.S. Weaver*, N. Li*, N.A. Mara, D.R. Jones, H. Cho, C.A. Bronkhorst, S.J. Fensin, G.T. Gray III, "Slip transmission of high angle grain boundaries in body-centered cubic metals: Micropillar compression of pure Ta single and bi-crystals", *Acta Materialia*, Vol. 156, pp. 356-368 (2018).
- 119.) O. El-Atwani, J.S. Weaver*, E. Esquivel, M. Efe, M.R. Chancey, Y.Q. Wang, S.A. Maloy, N.A. Mara, "Nanohardness measurements of heavy ion irradiated coarse-and nanocrystalline-grained tungsten at room and high temperature", *Journal of Nuclear Materials*, Vol. 509, pp. 276-284 (2018).
- 118.) J.S. Weaver*, D.R. Jones, N. Li*, N.A. Mara, S. Fensin, G.T. Gray III, "Quantifying heterogeneous deformation in grain boundary regions on shock loaded tantalum using spherical and sharp tip nanoindentation", *Materials Science and Engineering: A*, Vol. 737, pp. 373-382 (2018).

- 117.) L.W. Yang, C. Mayer, N. Li*, J.K. Baldwin, N.A. Mara, N. Chawla, J.M. Molina-Aldareguia, J. Llorca, “Mechanical properties of metal-ceramic nanolaminates: Effect of constraint and temperature” *Acta Materialia*, Vol.142, pp.37-48 (2018).
- 116.) B.M. Schultz, N. Li*, D.R. Economy, J.L. Sharp, N.A. Mara, M.S. Kennedy, “Tribological Performance of Monolithic Copper Thin Films During Nanowear”, *Wear*, Vol. 394, pp. 50-59 (2018).
- 115.) J.S. Weaver*, C. Sun*, Y.Q. Wang, S.R. Kalidindi, R.P. Doerner, N.A. Mara, S. Pathak*, “Quantifying the mechanical effects of He, W and He+W Ion-irradiation on tungsten with spherical nanoindentation”, *Journal of Materials Science*, Volume 53, Issue 7, pp 5296–5316 (2018).
- 114.) Y. Liu, N. Li*, A.M. Kumar, S. Pathak*, J. Wang, R.J. McCabe, N.A. Mara, C.N. Tomé, “Experimentally quantifying critical stresses associated with basal slip and twinning in magnesium using micropillars”, *Acta Materialia*, Vol. 135, pp.411-421 (2017).
- 113.) R. Liu, S. Pathak*, W.M. Mook*, J.K. Baldwin, N.A. Mara, A. Antoniou, “In situ frustum indentation of nanoporous copper thin films”, *International Journal of Plasticity*, Vol. 98, pp. 139-155 (2017).
- 112.) J.S. Weaver*, S. Pathak*, A. Reichardt, H.T. Vo, S.A. Maloy, P. Hosemann, N.A. Mara, “Spherical nanoindentation of proton irradiated 304 stainless steel: A comparison of small scale mechanical test techniques for measuring irradiation hardening”, *Journal of Nuclear Materials*, Vol.493, pp.368-379 (2017).
- 111.) J. Snel, M.A. Monclús, M. Castillo-Rodríguez, N. Mara, I.J. Beyerlein, J. Llorca, J.M. Molina-Aldareguia, “Deformation Mechanism Map of Cu/Nb Nanoscale Metallic Multilayers as a Function of Temperature and Layer Thickness”, *JOM*, 29, pp.1-13 (2017).
- 110.) N. Li*, M.J. Demkowicz, N.A. Mara, “Microstructure Evolution and Mechanical Response of Nanolaminate Composites Irradiated with Helium at Elevated Temperatures”, *JOM*, pp.1-8 (2017).
- 109.) G.R. Tynan, R.P. Doerner, J. Barton, R. Chen, S. Cui, M. Simmonds, Y. Wang, J.S. Weaver*, N.A. Mara, S. Pathak*, “Deuterium retention and thermal conductivity in ion-beam displacement-damaged tungsten”, *Nuclear Materials and Energy*, Vol. 12, pp. 164-168 (2017).
- 108.) “Strain fields induced by kink band propagation in Cu-Nb nanolaminate composites”, T.J. Nizolek*, M.R. Begley, R.J. McCabe, J.T. Avallone, N.A. Mara, I.J. Beyerlein, T.M. Pollock, *Acta Materialia*, Vol.133, pp.303-315, (2017).
- 107.) S. Pathak*, N. Velisavljevic, J.K. Baldwin, M. Jain*, S.J. Zheng*, N.A. Mara, I.J. Beyerlein, “Strong, Ductile, and Thermally Stable bcc-Mg Nanolaminates”, *Scientific Reports*, Vol.7(08) (2017).
- 106.) S. Pathak*, S.R. Kalidindi, J.S. Weaver*, Y.Q. Wang, R.P. Doerner, N.A. Mara, “Probing nanoscale damage gradients in ion-irradiated metals using spherical nanoindentation” *Scientific Reports*, 20 September 2017, Vol.7(1), pp.11918, (2017).
- 105.) Y. Chen*, S. Shao, X.Y. Liu, S.K. Yadav, N. Li*, N.A. Mara, J. Wang, “Misfit dislocation patterns of Mg-Nb interfaces”, *Acta Materialia*, Vol.126, pp.552-563 (2017)
- 104.) Z. Li, S.K. Yadav, Y. Chen*, N. Li*, X.Y. Liu, J. Wang, S. Zhang, J.K. Baldwin, A. Misra, N.A. Mara, “Mechanically controlling the reversible phase transformation from zinc blend to wurtzite in AlN”

Materials Research Letters, Vol.5(6), p.426-432, (2017).

103.) S.J. Vachhani*, N.A. Mara, V. Livescu, E. Cerreta, “Microstructure and local mechanical property evolution during high strain-rate deformation of tantalum”, *EPJ Web of Conferences*, Vol. 94, p. 02023 (2017).

102.) D. Economy, N.A. Mara, R. Schoepner, B. Schultz, R. Unocic, M. Kennedy, “Identifying deformation and strain hardening behaviors of nanoscale metallic multilayers through nano-wear testing”, *Metallurgical and Materials Transactions A*, Vol. 47, iss. 3, p. 1083-1095 (2016).

101.) N. Li*, M. Demkowicz, N.A. Mara, Y. Wang, A. Misra, “Hardening due to interfacial He bubbles in nanolayered composites”, *Materials Research Letters*, Vol. 4, iss. 2, p. 75-82 (2016).

100.) E.B. Watkins, J. Majewski, J.K. Baldwin, Y. Chen*, N. Li*, R.G. Hoagland, S.K. Yadav, X.Y. Liu, I.J. Beyerlein, N.A. Mara, “Neutron reflectometry investigations of interfacial structures of Ti/TiN layers deposited by magnetron sputtering”, *Thin Solid Films*, Vol. 616, p. 399-407 (2016).

99.) R.J. McCabe, J. Carpenter*, S. Vogel, N.A. Mara, I.J. Beyerlein, “Recrystallization and Grain Growth in Accumulative Roll-Bonded Metal Composites”, *JOM*, Vol. 67, iss. 12, p. 2810-2819 (2015).

98.) T.G. Lach, E.H. Ekiz, R.S. Averbach, N.A. Mara, P. Bellon, “Role of interfaces on the trapping of He in 2D and 3D Cu-Nb nanocomposites”, *Journal of Nuclear Materials*, Vol. 466, p. 36-42 (2015).

97.) M. Ardeljan, M. Knezevic, T. Nizolek*, I.J. Beyerlein, N.A. Mara, T.M. Pollock, “A study of microstructure-driven strain localizations in two-phase polycrystalline HCP/BCC composites using a multi-scale model”, *International Journal of Plasticity*, Vol. 74, p.35-57 (2015).

96.) J.S. Carpenter*, T.J. Nizolek*, R.J. McCabe, S.J. Zheng*, J.E. Scott, S.C. Vogel, N.A. Mara, T.M. Pollock, I.J. Beyerlein, “The Suppression of Instabilities via Biphasic Interfaces During Bulk Fabrication of Nanograined Zr” *Materials Research Letters*, Vol.3(1), p.50-57 (2015).

95.) N. Li*, S. Yadav, X-Y Liu, J. Wang, R. Hoagland, N.A. Mara, A. Misra, "Quantification of dislocation nucleation stress in TiN through high-resolution in situ indentation experiments and first principles calculations", *Scientific Reports*, Vol. 5, Article 15813, doi:10.1038/srep15813 (2015).

94.) C. Mayer, N. Li*, N.A. Mara, N. Chawla, “Micromechanical and in situ shear testing of Al–SiC nanolaminate composites in a transmission electron microscope (TEM)”, *Materials Science & Engineering A*, Vol.621, pp.229-235 (2015).

93.) P.E. Johnson, P. Muttli, D. Mackenzie, E.C. Carnes, J. Pelowitz, N.A. Mara, W.M. Mook*, S.D. Jett, D.R. Dunphy, G.S. Timmins, J.C. Brinker, “Spray-dried multiscale nano-biocomposites containing living cells”, *ACS nano*, 28 2015, Vol.9(7), pp.6961-77

92.) J.S. Carpenter*, R.J. McCabe, J.R. Mayeur, N.A. Mara, I.J. Beyerlein, “Interface-driven plasticity: The presence of an interface affected zone in metallic lamellar composites”, *Advanced Engineering Materials*, Vol.17(1), pp.109-114 (2015).

91.) S. Pathak*, S.R. Kalidindi, N.A. Mara, “Investigations of orientation and length scale effects on micromechanical responses in polycrystalline Zirconium using spherical nanoindentation”, *Scripta Materialia*, Vol. 113, pp. 241–245 (2016).

- 90.) **(invited)** N.A. Mara, N. Li*, A. Misra, J. Wang, “Interface-Driven Plasticity in Metal–Ceramic Nanolayered Composites: Direct Validation of Multiscale Deformation Modeling via In Situ Indentation in TEM”, *JOM*, Vol. 68, Issue 1, pp 143-150 (2016).
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- 3.) R.S. Mishra, S.R. Sharma, N.A. Mara, M.W. Mahoney, "Mechanical Properties of Friction Stir Welded Aluminum Alloys" ASM Proceedings: International Conference on Joining of Advanced and Specialty Materials III, proceedings from Materials Solutions '00 on Joining of Advanced and Specialty Materials, 9-11 October 2000, St. Louis, Missouri editors, Mrityunjay Singh et al.
- 2.) N.A. Mara, A.V. Sergueeva, A.K. Mukherjee, "Structure and high-temperature mechanical behavior relationship in nano-scaled multilayered materials" Creep Deformation: Fundamentals and Applications Proceedings of Symposium held during the 2002 TMS Annual Meeting. TMS 2002, pp.371-6.
- 1.) A. Sergueeva, N.A. Mara, A.K. Mukherjee, "Structure and mechanical behavior in nano-scaled multilayered materials" Dislocations and Deformation Mechanisms in Thin Films and Small Structures, Proceedings of Symposium held during the 2001 MRS Spring Meeting, MRS Proceedings Volume 673, p. 7.3.

Presentations***Invited Presentations at Professional Meetings, Conferences, Universities and Industries, etc.***

- 107.) N.A. Mara, J.Y. Cheng, Z. Li, M. De Leo, I.J. Beyerlein, S. Xu, N. Fuchs-Lynch, “Influence of thick 3-dimensional interfaces on metallic nanolayered composites”, 2024 TMS Annual Meeting, Orlando, FL, March 3-7.
- 106.) N.A. Mara, J.Y. Cheng, Z. Li, M. De Leo, I.J. Beyerlein, S. Xu, N. Fuchs-Lynch, “Thermomechanical stability of metallic composites and advanced reactor steels”, Keynote Lecture, Plasticity 2024, Panama City, Panama, January 5, 2024.
- 105.) N.A. Mara, C. Ho, M. De Leo, D. Poerschke, ““Tempera in questa aqua”: Experimenting with Impact of Medieval Quenching Recipes on Steel Hardness”, Invited lecture, Oakeshott Institute, October 24, 2023.
- 104.) N.A. Mara, J.Y. Cheng, Z. Li, M. De Leo, I.J. Beyerlein, S. Xu, N. Fuchs-Lynch, “Enhanced thermomechanical stability of nanolamellar composites containing thick 3D interfaces”, 2023 Society of Engineering Sciences Annual Meeting, Minneapolis, MN, October 11, 2023.
- 103.) N.A. Mara, J.Y. Cheng, Z. Li, M. De Leo, I.J. Beyerlein, S. Xu, N. Fuchs-Lynch, “Enhanced thermomechanical stability of nanolamellar composites containing thick 3D interfaces”, 2023 TMS Annual Meeting, San Diego, CA, March 19-23, 2023.
- 102.) N.A. Mara, J.Y. Cheng, S. Xu, Y. Chen, M. De Leo, J. Poplawsky, N. Li, J.K. Baldwin, I.J. Beyerlein, “Elevated temperature thermomechanical stability of metallic interfaces containing 3D character”, 2022 MRS Fall Meeting, Boston, MA, November 27-December 2, 2022.
- 101.) N.A. Mara, B. Eftink, I. Robertson, “Elucidating dislocation-interface interactions via in situ straining in the electron microscope”, 2022 TMS Annual Meeting, Anaheim, CA, February 27-March 3.
- 100.) N.A. Mara, “Understanding deformation at the nanoscale via *in situ* SEM mechanical testing”, 2022 TMS Annual Meeting, Anaheim, CA, February 27-March 3.
- 99.) N.A. Mara, “Breaking Bad: Understanding deformation and fracture at the nanoscale”, University of Minnesota, Chemical Engineering and Materials Science Department Seminar, September 23, 2021.
- 98.) N.A. Mara, J. Cheng, Z. Li, S. Xu, Y. Chen, J. Poplawsky, N. Li, J.K. Baldwin, I.J. Beyerlein, “Thermomechanical Stability of Metallic Interfaces Containing 3D Character”, International Conference on Mechanics of Composites and Thin Films, April 25-30, 2021.
- 97.) A. Misra, M. Goken, N.A. Mara, I.J. Beyerlein, “Hierarchical and heterogeneous multiphase nanomaterials and laminates”, MRS On Demand Webinar Series, March 24 2021.
- 96.) N.A. Mara, M. Sau, K. Schmalbach, L. Capolungo, E. Hintsala, D. Stauffer, D. Bufford, “Indentation Strain Rate Effects in Advanced Materials and Alloys”, Nanobruken International Nanomechanical Testing Conference, February 23-24, 2021.
- 95.) N.A. Mara, K.M. Schmalbach, A. Antoniou, “Mapping local strains during *in situ* SEM deformation of nanoporous materials” 2021 TMS Annual Meeting, virtual, March 15-18, 2021.

94.) N.A. Mara, M. Sau, K. Schmalbach, L. Capolungo, E. Hintsala, D. Stauffer, “Elevated Temperature Nanomechanical Behavior of Nuclear Reactor Steels”, ExtremeMAT Workshop, Los Alamos National Laboratory, February 10, 2021.

93.) N.A. Mara, “Breaking Bad: Deformation and fracture at the nanoscale”, University of Minnesota Department of Pharmaceutics Seminar, December 6, 2020.

92.) N.A. Mara, Y. Chen, J. Cheng, K. Schmalbach, W.W. Gerberich, “Breaking Bad: Interface driven deformation and fracture at the nanoscale”, Northern Arizona University Dept. of Applied Physics and Materials Science Seminar, October 8, 2020.

91.) N.A. Mara, J. Cheng, Z. Li, S. Xhu, Y. Chen, J. Poplawsky, N. Li, J.K. Baldwin, I.J. Beyerlein, “Thermomechanical Stability of Metallic Interfaces Containing 3D Character”, 2020 MRS Fall Meeting, Virtual Conference, November 30-December 4, 2020.

90.) N.A. Mara, Y. Chen, J. Cheng, K. Schmalbach, N. Li, J.K. Baldwin, I.J. Beyerlein, “*In situ* imaging of nanocomposite deformation: The influence of 3-D atomic-level interface structure and morphology on mechanical response”, 2020 TMS Annual Meeting, San Diego, CA, February 23-27, 2020.

89.) N.A. Mara, Y. Chen, E. Hintsala, D. Stauffer, B. Nowakowski, J. Gigax, N. Li, S. Maloy, J. Cheng, K. Schmalbach, “High-throughput Elevated Temperature Nanomechanical Mapping of Fe-based alloys”, 2020 TMS Annual Meeting, San Diego, CA, February 23-27, 2020.

88.) N.A. Mara, Y. Chen, J. Cheng, K. Schmalbach, W.W. Gerberich, “Heating and Beating at the nanoscale: The role of defects and interfaces on deformation and fracture”, University of Wisconsin Materials Department Seminar, November 7, 2019.

87.) N.A. Mara, Y. Chen, J. Cheng, W.W. Gerberich, “The influence of 3-D atomic-level interface structure on the mechanical behavior of nanocomposites”, University of Minnesota AEM Department Solid Mechanics Research Seminar, Minneapolis, MN, November 26, 2019.

86.) N.A. Mara, Y. Chen, J. Cheng, “The Influence of 3-D Interfacial Structure and Morphology on the Mechanical Behavior of Nanocomposites”, Nanomechanical Testing in Materials Research and Development VII, Malaga, Spain, September 29-October 4, 2019.

85.) N.A. Mara, R.L. Penn, D. Poerschke, A. Stein, Z. Wang, K. Schmalbach, “Metal-Ceramic Nanocomposites Designed for Thermomechanical Robustness”, University of Minnesota All-MRSEC meeting, Minneapolis, MN, January 31, 2019.

84.) N.A. Mara, Y. Chen, J. Cheng, N. Li, J.K. Baldwin, I.J. Beyerlein, “The influence of 3-D atomic-level interface structure on the mechanical behavior of nanocomposites”, 2019 MRS Fall Meeting, Boston, MA, December 1-5, 2019.

83.) N.A. Mara, Y. Chen, J. Cheng, K. Schmalbach, Z. Wang, W. Gerberich, L. Penn, D. Poerschke, A. Stein, “The Influence of 3-D Interfacial Structure on the Mechanical Behavior of Nanocomposites”, 2019 Spring MRS Meeting, Phoenix, AZ, April 21-25, 2019.

82.) N.A. Mara, “Elevated Temperature Nanomechanical Mapping and Approaches to High-Throughput Mechanical Testing of Fe-based Alloys”, TMS 2019 Annual Meeting, San Antonio, TX, March 2019.

81.) N.A. Mara, “Investigating Plasticity Effects on Fracture at the Microscale: The Ductile to Brittle Transition (DBT)”, TMS 2019 Annual Meeting, San Antonio, TX, March 2019.

80.) N.A. Mara, “Nanomechanical approaches to determining strength, ductility, and toughness for thin films, graded materials, and beyond...”, iPrime UMN Workshop, Minneapolis, Minnesota, January 16, 2019.

79.) N.A. Mara, “The role of 3-D interface structure in the deformation of nanocomposites”, Keynote Lecture, Plasticity 2019, Panama City, Panama, January 7, 2019.

78.) N.A. Mara, “Advancements in micro-scale test methodologies for determining the mechanical response of ion-irradiated materials”, LANL Institute of Materials Science Lecture, Los Alamos, New Mexico, September 26, 2018.

77.) N.A. Mara, “In-situ investigation of mechanically induced phase transformations in nanoscale composites”, CINT User Workshop Seminar, Santa Fe, New Mexico, September 24, 2018.

76.) N.A. Mara, “In-situ investigation of mechanically induced phase transformations in nanoscale composites”, M&M Annual Meeting, Baltimore, Maryland, August 8, 2018.

75.) N.A. Mara, “Composites Tailored for Service Under Extreme Conditions: Developing the Science Behind Damage-Tolerant Nanomaterials” ASM Twin Cities Chapter Meeting, Minneapolis, Minnesota, October 10, 2018.

74.) N.A. Mara, “Designing and characterizing materials for service under extreme conditions” UMN Material Advantage Chapter Seminar, Minneapolis, Minnesota, March 28, 2018.

73.) N.A. Mara, “Developing the science behind lightweight, damage-tolerant nanocomposites”, EMPA Mechanics of Materials and Nanostructures Department Seminar, Thun, Switzerland, July 5, 2018.

72.) N.A. Mara, “Stress-strain response of irradiated metallic materials via spherical nanoindentation”, Thermec 2018, Paris, France, July 10, 2018.

71.) N.A. Mara, “The influence of interfacial atomic structure and nanoscale damage gradients on multiscale mechanical behavior”, ETH Zurich Materials Department Seminar, Zurich, Switzerland, July 4, 2018.

70.) N.A. Mara, “High-throughput Nanomechanical Characterization of Fe-alloys for Service under Extreme Conditions”, TMS 2018 Annual Meeting, Phoenix, AZ, March 2018.

69.) N.A. Mara, “The Influence of 3-D Structure on the Mechanical Behavior of Layered Nanocomposites”, TMS 2018 Annual Meeting, Phoenix, AZ, March 2018.

68.) W. Gerberich, N.A. Mara, “Deep Brain Implant Sustainability”, Medtronic Seminar, Minneapolis, MN, July 2017.

67.) N.A. Mara, S. Pathak, M. Jain, Y. Chen, J. Weaver, W.M. Mook, J.K. Baldwin, N. Li, D. Bhattacharyya, J. Wang, A. Misra, I.J. Beyerlein, “Enhancing Ductility of Metal-Metal (HCP/BCC) and Metal-Ceramic Multilayered Composites”, TMS 2017 Annual Meeting, San Diego, CA, March 2017.

- 66.) N.A. Mara, D.J. Savage, M. Ardeljan, J.S. Carpenter, J.S. Weaver, R.J. McCabe, T. Nizolek, T. Pollock, N. Li, M. Knezevic, I.J. Beyerlein, “Microstructure and Mechanical Behavior of HCP/BCC Bulk Nanolaminate Composites Produced by Accumulative Roll Bonding”, TMS 2017 Annual Meeting, San Diego, CA, March 2017.
- 65.) N.A. Mara, “Developing the Science Behind Lightweight, Damage-Tolerant Nanomaterials: Controlling Interface-Driven Deformation Mechanisms”, Materials Science Departmental Seminar, Texas A&M University, April 6, 2017.
- 64.) N.A. Mara, “Developing the Science Behind Lightweight, Damage-Tolerant Nanomaterials: Controlling Interface-Driven Deformation Mechanisms”, Chemical Engineering and Materials Science Departmental Seminar, University of Minnesota, March 9, 2017.
- 63.) N.A. Mara, J.S. Weaver, S. Pathak, C. Sun, D. Patel, A.T. Nelson, A. Reichardt, P. Hosemann, S. Kalidindi, “High throughput mechanical characterization of ion irradiated materials using spherical indentation stress-strain measurements”, Keynote Lecture Plasticity 2017, Puerto Vallarta, Mexico, January 3, 2017.
- 62.) N.A. Mara, “The influence of interfacial atomic structure and nanoscale damage gradients on multiscale mechanical behavior”, Materials Science Department Seminar, Washington State University, December 5, 2016.
- 61.) N.A. Mara, D.J. Savage, J.S. Carpenter, S. Pathak, R.J. McCabe, T. Nizolek, N. Li, S. Vogel, M. Knezevic, I.J. Beyerlein, “Microstructure and Mechanical Behavior of HCP/BCC Nanolaminate Composites produced by Physical Vapor Deposition and Accumulative Roll Bonding”, MRS 2016 Fall Meeting, November 28, 2016.
- 60.) N.A. Mara, “The influence of interfacial atomic structure and nanoscale damage gradients on multiscale mechanical behavior”, Chemical Engineering and Materials Science Department Seminar, University of Minnesota, November 8, 2016.
- 59.) N.A. Mara, D.J. Savage, J.S. Carpenter, R.J. McCabe, T. Nizolek, N. Li, S. Vogel, M. Knezevic, I.J. Beyerlein, “Microstructure and Mechanical Behavior of HCP/BCC Bulk Nanolaminate Composites produced by Accumulative Roll Bonding”, MS&T 2016, Salt Lake City, UT, October 24, 2016.
- 58.) N.A. Mara, “The influence of interfacial atomic structure and nanoscale damage gradients on multiscale mechanical behavior”, Mechanical Engineering Department Seminar, Texas A&M University, April 12, 2016.
- 57.) N.A. Mara, “Damage Tolerant Bulk Nanocomposites”, US Special Operations Command briefing, Tampa, FL, March 9, 2016.
- 56.) N.A. Mara, “Interface Facilitated Deformation in Bimetallic Nanolayered Composites”, Keynote Lecture Plasticity 2016, Kona, Hawaii, January 6, 2016.
- 55.) N.A. Mara, “Interface Facilitated Deformation in Bimetallic Nanolayered Composites”, 2015 MRS Fall Meeting, Boston, MA, December 1, 2015.
- 54.) N.A. Mara, “Interfacial Structure Effects on the Mechanical Behavior of Layered Nanocomposites”, invited seminar at Drexel University, Philadelphia, PA, May 13, 2015.

- 53.) N.A. Mara, C.A. Bronkhorst, I.J. Beyerlein, “Damage Tolerant Bulk Nanocomposites”, LANL Global Security Program Briefing, LANL SCIF, February 23, 2015.
- 52.) N.A. Mara, C.A. Bronkhorst, I.J. Beyerlein, “Damage Tolerant Bulk Nanocomposites”, LANL Unmanned Aerial Systems (UAS) Workshop, February 4, 2015.
- 51.) N.A. Mara, “Multifunctional Materials at LANL”, Nano-Global Security Deep Dive, Los Alamos Research Park, November 13, 2014.
- 50.) N.A. Mara, S. Zheng, T. Nizolek, J. Carpenter, W.M. Mook, T. Pollock, J. Wang, I.J. Beyerlein “Effect of Interface Structure on the Mechanical Behavior of Nanolamellar Composites”, MS&T 2014, Pittsburgh, PA, October 12-16, 2014.
- 49.) N.A. Mara, S. Zheng, T. Nizolek, J. Carpenter, W.M. Mook, T. Pollock, J. Wang, I.J. Beyerlein, “Mechanical Behavior of Bulk Layered Nanocomposites Produced via Severe Plastic Deformation”, 2014 Pan American Materials Conference, Sao Paulo, Brazil, July 21-25, 2014.
- 48.) N.A. Mara, S. Zheng, T. Nizolek, J. Carpenter, W.M. Mook, T. Pollock, J. Wang, I.J. Beyerlein, “The Mechanical Behavior of Nanolaminate Materials”, Gordon Conference on Thin Films and Small Scale Mechanical Behavior, Bentley College, Waltham, MA, July 13-18, 2014.
- 47.) N.A. Mara, S. Zheng, T. Nizolek, J. Carpenter, W.M. Mook, T. Pollock, J. Wang, I.J. Beyerlein, “Mechanical Response of Bulk Nanocomposites Produced via Severe Plastic Deformation”, 17th U.S. National Congress on Theoretical and Applied Mechanics, Michigan State University, June 15-20, 2014.
- 46.) N.A. Mara, LANL briefings for Department of Energy, Nuclear Engineering, “Large scale production of Cu/Nb multilayers with Extreme Radiation Tolerance”, DOE Germantown April 22, 2014.
- 45.) N.A. Mara, “Building the Iron Man Suit: Developing the science behind lightweight, damage-tolerant nanocomposites”, Bradbury Science Museum Lecture, Los Alamos, New Mexico, April 9, 2014.
- 44.) C. Liu, N.A. Mara, M.L. Lovato, W.M. Mook, K.D. Clarke, D.J. Alexander, W.R. Blumenthal, and D.E. Dombrowski, “Measurement of Fracture Behavior in LEU Fuel Plates containing Al/Zr/U-10Mo Interfaces”, LANL Materials for the Future Capability Review, May 4-7, 2014.
- 43.) N.A. Mara, S. Zheng, T. Nizolek, J. Carpenter, W.M. Mook, T. Pollock, J. Wang, I.J. Beyerlein, “Influence of biphasic interfacial character on the mechanical response of nanolamellar composites” TMS 2014 Annual Meeting and Exhibition, San Diego, CA, Feb 2014.
- 42.) N.A. Mara, and I.J. Beyerlein, “Twinning from bimetal interfaces”, International workshop on twinning (international workshop via videoconference), hosted by Prof. L. S. Toth, University of Metz, France, November 13, 2013.
- 41.) N.A. Mara, “Severe Plastic Deformation of Bulk Nanocomposites: Stability of Microstructure and Interfaces at Extreme Strains and Temperatures”, Keynote Lecture Plasticity 2014, Freeport, Bahamas, January 2014.
- 40.) N.A. Mara, S. Zheng, J. Carpenter, T. Wynn, K. Kang, W.Z. Han, T. Nizolek, T. Pollock, J. Wang, I.J. Beyerlein, “Bi-phase Boundary Evolution in Bulk Laminar Nanocomposites Produced by Accumulative Roll Bonding”, MS&T 2013, Montreal, Canada, October 27-31, 2013.

- 39.) N.A. Mara, J. Carpenter, S. Zheng, W.Z. Han, T. Nizolek, J. Wang, I.J. Beyerlein, "Mechanical behavior of preferred interfaces in bulk multilayer nanocomposites produced via Accumulative Roll Bonding", Nanoscale Multilayers 2013, Madrid, Spain, October 1-4, 2013.
- 38.) N.A. Mara, S. Zheng, J. Carpenter, T. Nizolek, T. Pollock, J. Wang, K. Kang, W.Z. Han, I.J. Beyerlein, "High strength and thermally stable bulk nanolayered composites", Nanoscale Multilayers 2013, Madrid, Spain, October 1-4, 2013.
- 37.) N.A. Mara, S. Zheng, T. Nizolek, J. Carpenter, W.M. Mook, T. Pollock, J. Wang, I.J. Beyerlein, "High-strength and thermally stable bulk nanolayered composites", Pacific Rim International Conference on Advanced Materials and Processing, Waikoloa, HI, August 2013.
- 36.) N.A. Mara, N.Li, W.Z. Han, J. Carpenter, S. Zheng, T. Nizolek, B.P. Eftink, I.J. Beyerlein, J. Wang, K. Kang, A. Misra, "Large strain deformation of bulk laminar nanocomposites produced via Accumulative Roll Bonding", 4th International Workshop on Remote Electron Microscopy and In-Situ Studies, Lisbon, Portugal, May 22-24, 2013.
- 35.) N.A. Mara, J. Carpenter, W. Mook, W.Z. Han, S. Zheng, T. Nizolek, T.A. Wynn, J. Wang, I.J. Beyerlein, "Large strain deformation of bulk laminar nanocomposites produced via Accumulative Roll Bonding", MRS Spring Meeting, San Francisco, CA, April 1-4, 2013.
- 34.) N.A. Mara, W.Z. Han, J. Carpenter, S. Zheng, I.J. Beyerlein, J. Wang, K. Kang, A. Misra, "Bi-metal interface facilitated deformation twinning", Keynote Talk, Plasticity 2013, Nassau, Bahamas, January 3-9, 2013.
- 33.) N.A. Mara, J. Carpenter, S.J. Zheng, W.Z. Han, R. McCabe, R. Dickerson, P. Dickerson, K. Clarke, J. Scott, T. Wynn, W.M. Mook, T. Nizolek, B. Eftink, J. Ledonne, A.K. Mukherjee, A. Misra, I.J. Beyerlein, "Small-scale mechanical testing: Strength, ductility, and fracture at diminished length scales", MS&T 2012, Pittsburgh, PA, Oct. 7-11, 2012.
- 32.) N.A. Mara, J. Carpenter, S.J. Zheng, W.Z. Han, W.M. Mook, T. Nizolek, R.F. Zheng, J. Wang, I.J. Beyerlein, "Large strain deformation of Cu-Nb nanocomposites produced via Accumulative Roll Bonding", Society of Engineering Science, Atlanta GA, October 10-12, 2012.
- 31.) N.A. Mara, J. Carpenter, S.J. Zheng, W.Z. Han, R. McCabe, R. Dickerson, P. Dickerson, K. Clarke, W.M. Mook, T. Nizolek, B. Eftink, J. Ledonne, A. Misra, I.J. Beyerlein, "Bulk Nanolayered Composites: Interfacial influence on microstructural evolution at large plastic strains", Microscopy and Microanalysis, Phoenix AZ, July 29-August 2, 2012.
- 30.) N.A. Mara, J. Carpenter, S.J. Zheng, W.Z. Han, R. McCabe, R. Dickerson, P. Dickerson, K. Clarke, W.M. Mook, T. Nizolek, B. Eftink, J. Ledonne, A. Misra, I.J. Beyerlein, "Manufacturing Bulk Nanolamellar Composites: The influence of high interfacial density on Severe Plastic Deformation", Materials Design Institute invited seminar, LANL, July 25-26, 2012.
- 29.) N.A. Mara, "Bulk nanolamellar composites and their microstructural response to extreme plastic strains", Georgia Tech Materials Science Seminar, December 8, 2011.
- 28.) N.A. Mara, J. Carpenter, W. Han, J. LeDonne, J. Wang, I.J. Beyerlein, "Deformation mechanisms in Cu-Nb nanolamellar composites produced via Severe Plastic Deformation", TMS 2012 Annual Meeting, Orlando, Florida, March 11-15, 2012.

- 27.) N.A. Mara, J. Carpenter, J. Wang, J. LeDonne, I.J. Beyerlein, "Nanomechanical behavior of lamellar nanocomposites synthesized via Severe Plastic Deformation", Plasticity 2012, San Juan, Puerto Rico, January 3-8, 2012.
- 26.) N.A. Mara, W.Z. Han, K. Kang, J. Carpenter, J. Wang, I.J. Beyerlein, "Deformation twinning in nanolamellar Cu-Nb composites", Plasticity 2012, San Juan, Puerto Rico, January 3-8, 2012.
- 25.) N.A. Mara, J. Carpenter, J. LeDonne, J. Wang, I.J. Beyerlein, "Bulk Cu-Nb nanolamellar composites and their microstructural evolution under extreme strains", 2nd Annual U.S. DOE Nuclear Energy Programs Materials Science and Engineering Materials Cross-cut Workshop, UC Berkeley, June 22-24, 2011.
- 24.) N.A. Mara, T. Wynn, J. LeDonne, A. Rollett, I.J. Beyerlein, A. Misra, "The influence of bi-metal interfaces on rolling deformation in nanolaminar Cu/Nb composites", Plasticity 2011, Puerto Vallarta, Mexico, January 3-8, 2011.
- 23.) N.A. Mara, J. LeDonne, T. Wynn, J. Carpenter, J. Wang, R. Zhang, I.J. Beyerlein, "Response of bulk Cu-Nb nanolamellar composites to severe rolling strains", Keynote talk at the 3rd International Conference on Heterogeneous Materials Mechanics, Shanghai, China, May 22-26, 2011.
- 22.) N.A. Mara, I. Beyerlein, D. Bhattacharyya, D. Alexander, D. Hammon, C. Necker, "Effect of Interfaces on Microstructural Evolution and Deformation Behavior of Ultrafine Ag-Cu Laminar Nanocomposites" TMS 2010 Annual Meeting, Seattle, WA.
- 21.) N.A. Mara, "Ductility, Interfacial Shear, and Fracture of Cu/Nb Nanolayered Composites" TMS 2010 Annual Meeting, Seattle, WA.
- 20.) N.A. Mara, D. Bhattacharyya, P. Dickerson, R.G. Hoagland, A. Misra, "Ductility, Interfacial Shear, and Fracture of Cu/Nb Nanolayered Composites", Plasticity 2010, St. Kitts.
- 19.) N.A. Mara, I.J. Beyerlein, D. Bhattacharyya, J. Wang, D. Alexander, D. Hammon, "Effect of interfaces on microstructural evolution and deformation behavior of cast eutectic Ag-Cu nanocomposites, Plasticity 2010, St. Kitts.
- 18.) N.A. Mara, "Ductility and Strength at Diminshing Length Scales: Mechanical Response of Nanolayered Composites", Seminar at UC Riverside, November 12, 2009.
- 17.) N.A. Mara, "Mechanical Response of Multilayer Composites: Strength, Ductility and Fracture at the Nanoscale", MST unclassified seminar series, presented at LANL, July 27, 2009.
- 16.) N.A. Mara, "Mechanical Response of Multilayer Composites: Strength, Ductility and Fracture at the Nanoscale", seminar presented at Sandia National Laboratory, March 26, 2009.
- 15.) N.A. Mara, D. Bhattacharyya, P. Dickerson, R.G. Hoagland, A. Misra, "Deformation and Failure Mechanisms of Cu/Nb Nanoscale Composites: Microstructural Analysis at the Nanoscale", presented at the TMS 2009 Annual Meeting in San Francisco, CA.
- 14.) N.A. Mara, "Mechanical Response of Multilayer Composites: Ductility and Fracture at the Nanoscale", technical keynote talk presented at the Hysitron user community meeting, February 2009, San Francisco, CA.

- 13.) N.A. Mara, D. Bhattacharyya, P. Dickerson, R.G. Hoagland, A. Misra, “Mechanical Behavior/Microstructure Relationship in Cu/Nb Multilayers Tested via Micropillar Compression”, presented at the TMS 2008 Annual Meeting in New Orleans, LA.
- 12.) A. Misra, N.A. Mara, *et al.*, “Limits of Strength and Ductility in Nanolayered Metallic Composites”, presented at the MRS Spring Meeting, San Francisco, March 2008.
- 11.) N.A. Mara, “Ambient and Elevated Temperature Mechanical Behavior of Nanocrystalline Metals”, presented at the NanoSteel Corporation, Idaho Falls, ID, February 7, 2008.
- 10.) N.A. Mara, “Ambient and Elevated Temperature Mechanical Behavior of Nanolaminate Composites” presented at the Institute for Defense Analyses, Washington, D.C., November 8, 2007.
- 9.) M. Demkowicz, N.A. Mara, L. Dougherty, “Postdoctoral Research at LANL and the Los Alamos Postdoc Association”, presented as part of the MSCookies and Tea seminar series at LANL, August 14, 2007.
- 8.) N.A. Mara, D. Bhattacharyya, A. Misra, R.G. Hoagland, “Mechanical Response of Nanolayered Composites” presented at Los Alamos National Laboratory as part of a symposium on nanoscale metallic multilayers, July 8, 2007.
- 7.) N.A. Mara, “Elevated Temperature Tensile Behavior of Cu/Nb Nanoscale Multilayers”, presented as part of the MSCookies and Tea seminar series at LANL, January 31, 2007.
- 6.) N.A. Mara, “Mechanical Behavior of Nanocrystalline Materials: Temperature and Strain Rate Effects”, seminar at Washington State University, Pullman, WA, July 28, 2006.
- 5.) N.A. Mara, T. Tamayo, X. Zhang, A. Misra, A.K. Mukherjee, “Tensile Deformation of Cu/Nb Multilayers at Elevated Temperatures” presented at Los Alamos National Laboratory as part of a symposium on nanoscale metallic multilayers, March 20, 2006.
- 4.) N.A. Mara, “Effect of temperature and strain rate on mechanical properties of nanocrystalline materials” LANL, MST-STC Seminar, June 16, 2005.
- 3.) N.A. Mara, “Effect of temperature and strain rate on mechanical properties of nanocrystalline materials”, LLNL, Division of Chemistry and Materials Science Seminar, May 17, 2005.
- 2.) N.A. Mara, T. Tamayo, A.V. Sergueeva, X. Zhang, A. Misra, A.K. Mukherjee, “The effect of decreasing layer thickness on the high-temperature mechanical properties of Cu/Nb multilayers” presented at Los Alamos National Laboratory as part of a symposium on nanoscale metallic multilayers, March 21, 2005.
- 1.) N.A. Mara, A.V. Sergueeva, A.K. Mukherjee, “Structure and high-temperature mechanical behavior relationship in nano-scaled multilayered materials” presented at Los Alamos National Laboratory as part of a symposium on nanoscale metallic multilayers, September 4, 2003.

Contributed Papers Presented at Professional Meetings, Conferences, etc.

- 13.) N.A. Mara, “Exploring the Role of 3-Dimensional Interfaces in Nanocomposite Deformation”, MRS 2017 Fall Meeting, Boston, MA, November 28, 2017.

- 12.) S. Pathak, S.R. Kalidindi, R. Doerner, Y.Q. Wang, A.T. Nelson, N.A. Mara, “Probing Nanoscale Damage Gradients in Irradiated Materials with Spherical Nanoindentation”, TMS 2016 Annual Meeting, Nashville, TN, February 14-18, 2016.
- 11.) S. Pathak, S.R. Kalidindi, R. Doerner, Y.Q. Wang, A.T. Nelson, N.A. Mara, “Probing Nanoscale Damage Gradients in Irradiated Materials with Spherical Nanoindentation”, ECI conference: Nanomechanical Testing in Materials Research and Development V, Albufeira, Portugal, October 4-9, 2015.
- 10.) N.A. Mara, T. Wynn, J. LeDonne, J. Carpenter, W. Han, I.J. Beyerlein, R. McCabe, D. Hammon, A. Misra, “Fabrication and deformation of lamellar nanocomposites under severe rolling strains”, TMS 2011 Annual meeting, San Diego, CA.
- 9.) N.A. Mara, D. Bhattacharyya, P. Dickerson, R.G. Hoagland, A. Misra, “Mechanical Behavior of Nanoscale Multilayers: Nanoindentation, Micropillar Compression, and Tensile Testing”, presented at the 2008 MRS Fall Meeting in Boston, MA.
- 8.) N.A. Mara, P. Dickerson, J.G. Swadener, R.G. Hoagland, A. Misra, “Tensile and Fracture Behavior of Cu/Nb Nanoscale Multilayers” presented at the TMS 2007 Annual Meeting in Orlando, FL.
- 7.) N.A. Mara, A.V. Sergueeva, A. Misra, R.G. Hoagland, A.K. Mukherjee, “Tensile Behavior of Cu/Nb Nanoscale Multilayers”, presented at the MRS 2006 Fall Meeting in Boston, MA.
- 6.) N.A. Mara, T. Tamayo, A.V. Sergueeva, X. Zhang, A. Misra, A.K. Mukherjee, “Microstructure/High Temperature Mechanical Behavior Relationship in Cu/Nb Nanoscale Multilayers” presented at the MRS 2006 Spring Meeting in San Francisco, CA.
- 5.) N.A. Mara, A.V. Sergueeva, T.D. Mara, S.X. McFadden, “Superplasticity and Cooperative Grain Boundary Sliding in Nanocrystalline Ni₃Al”, presented at the 2006 TMS Annual Meeting in San Antonio, TX.
- 4.) N.A. Mara, A.V. Sergueeva, T. Tamayo, X. Zhang, A. Misra, A.K. Mukherjee, “High Temperature Mechanical Properties of Cu/Nb Nanoscale Multilayers at Diminishing Length Scales”, presented at the 2005 MRS Spring Meeting in San Francisco.
- 3.) N.A. Mara, A.V. Sergueeva, A.K. Mukherjee, “Mechanical properties/microstructure correlation in a devitrified Fe-based metallic glass” presented at the 2003 TMS Fall Meeting.
- 2.) N.A. Mara, A.V. Sergueeva, A.K. Mukherjee, “Nanocrystalline materials from devitrification of Fe-based metallic glasses” presented at the 2003 TMS Annual Meeting.
- 1.) N.A. Mara, A.V. Sergueeva, A.K. Mukherjee, “Structure and high-temperature mechanical behavior relationship in nano-scaled multilayered materials” Creep Deformation: Fundamentals and Applications Symposium held during the 2002 TMS Annual Meeting in Seattle, WA.

TEACHING AND CURRICULUM DEVELOPMENT

University of Minnesota

Laboratory Instructor, MatS 3851W Materials Properties Laboratory	Spring 2018
Lead Instructor and Lecturer, MatS 4221 Materials Performance	Fall 2018
Lead Instructor and Lecturer, MatS 8004 Mechanical Properties	Spring 2019
Lead Instructor and Lecturer, MatS 4221 Materials Performance	Fall 2019
Lead Instructor and Lecturer, MatS 8004 Mechanical Properties	Spring 2020
Lead Instructor and Lecturer, MatS 4221 Materials Performance	Fall 2020
Lead Instructor and Lecturer, MatS 8004 Mechanical Properties	Spring 2021
Lead Instructor and Lecturer, MatS 4221 Materials Performance	Fall 2021
Lead Instructor and Lecturer, MatS 8004 Mechanical Properties	Spring 2022
Lead Instructor and Lecturer, MatS 4221 Materials Performance	Fall 2022
Lead Instructor and Lecturer, MatS 8004 Mechanical Properties	Spring 2023
Lead Instructor and Lecturer, MatS 4221 Materials Performance	Fall 2023
Lead Instructor and Lecturer, MatS 8004 Mechanical Properties	Spring 2024
Lead Instructor and Lecturer, MatS 3012 Metals	Fall 2024
Guest Lecturer, Mechanical Behaviors of Materials (UC Davis Graduate Course)	2004
Reader for Mech. Behaviors of Materials Undergraduate Course, Dept. of Chemical Eng/Materials Sci., UC Davis, CA. Held office hours. Graded homework/exams	1999

Curriculum Development

Led the development of hybrid remote/in person MatS 4221: Materials Performance course for Fall 2020 semester.

ADVISING AND MENTORING**Undergraduate Students Mentored**

Ashlie Hamilton, University of Minnesota Materials Science and Engineering Undergrad	2021-present
Yazmin Cortes, University of Texas-Rio Grande Valley REU Student	Summer 2023
Bryce Everson, University of Minnesota Materials Science and Engineering Undergrad	2022-2023
Cuong Ho, University of Minnesota Materials Science and Engineering Undergrad	2022-present
Andre Bohn, University of Minnesota Materials Science and Engineering Undergrad	2020-2022
Lilly Schroer, Georgia Institute of Technology REU Student	Summer 2022
Albert Lin, University of Minnesota Materials Science and Engineering Undergrad	2019-2020
Kaci Gwilt, University of Minnesota Materials Science and Engineering Undergrad	2019-2020
Julia Hoffman, University of Minnesota Materials Science and Engineering Undergrad	2018-2019
Thomas Wynn, LANL Post Baccalaureate Student	2009-2010
Peter Marshall, LANL undergraduate summer student, Rensselaer Polytechnic Institute	2006-2009
Tammy Tamayo, undergraduate student, University of California, Davis	2004-2005

Graduate Student Activities*Master's Students Directed*

Kimberly Lopez-Zepeda, University of Minnesota, Mat. Sci. and Eng.	2021-2024
Moujhuri Sau, University of Minnesota, Chemical Engineering	2019-2023
Devin Williamson, University of Minnesota, Mat. Sci. and Eng.	2020-2021
Thesis: Measuring the Mechanical Properties of Individual Polymer Nanofibers	

Master's Student Advisees (Current)

Julia Hoffman, University of Minnesota, Mat. Sci. and Eng.	2020-present
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Doctoral Dissertations Directed

Justin Y. Cheng, UMN PhD student, now staff at Medtronic Dissertation: <i>The Influence of 3D Interfaces on Mechanical Behavior of Nanolaminated Bimetallic Composites</i>	2017-2024
Kevin Schmalbach, UMN PhD student, now staff at Bruker-Hysitron Dissertation: <i>Temperature and Rate Effects on the Mechanical Behavior of Tungsten and Its Nanocomposites</i>	2017-2022
Thomas Nizolek, PhD student, U. of California, Santa Barbara Dissertation: <i>Plastic Anisotropy and Kink Band Formation in Fine Grained Copper-Niobium Multilayers Produced by Accumulative Roll Bonding</i>	2016
Ben Eftink, PhD student, University of Illinois, Urbana-Champaign Dissertation: <i>Defect interactions with characteristic interfaces in Ag-Cu eutectic</i>	2016
Jon LeDonne, PhD student, Carnegie Mellon University	2012

Dissertation: *Characterization of Bulk Lamellar Accumulative Roll Bonded (ARB) Cu-Nb Composites across the Length Scale*

Doctoral Students Advised (Current)

Minh-Tam Hoang, University of Minnesota PhD student	2022-present
Mauricio De Leo, University of Minnesota PhD student	2021-present
Sushmita Majumder, University of Minnesota PhD student	2020-present
Soumyadeep Sen, University of Minnesota PhD student	2023-present

Post-doctoral fellows supervised

Ze Zhou Li, University of Minnesota postdoc, now Professor at Beijing Institute of Technology	2020-2021
Youxing Chen, LANL postdoc, University of Minnesota Research Associate, now Research Faculty, UNC-Charlotte	2016-2019
Ursula Carvajal-Nunez, LANL postdoc	2015-2017
Cheng Sun, LANL postdoc, now technical staff, Idaho National Lab	2015-2016
Jordan Weaver, LANL postdoc, now technical staff at NIST	2015-2017
Siddhartha Pathak, LANL Director's Postdoctoral Fellow, now Assistant Professor at Iowa State University	2012-2014
Shijian Zheng, Distinguished LANL postdoc, now Assistant Professor at Institute for Metal Research, Shenyang, China.	2011-2014
Bill Mook, LANL postdoc, now Sandia Albuquerque staff	2011-2014
John Carpenter, LANL postdoc, now LANL staff	2010-2017
Weizhong Han, LANL postdoc, now Assistant Professor, Xi'an Jiaotong University	2010-2014
Nan Li, LANL Distinguished Postdoc, now LANL staff	2009-2017
Osman Anderoglu, LANL postdoc, LANL staff, now Assistant Professor at University of New Mexico	2006-2010

SERVICE AND PUBLIC ENGAGEMENT**Service To The Discipline/Profession/Interdisciplinary Area(s)*****Editorships/Journal Reviewer Experience***

Journal of Materials Science, Springer-Nature Editor	2017-2020
Materials Research Letters Editorial Review Board	2018-present
Reviewer for peer-reviewed journals such as <i>Science</i> , <i>Nature Materials</i> , <i>Nature Communications</i> , <i>Nano Letters</i> , <i>Applied Physics Letters</i> , <i>Acta Materialia</i> , <i>Scripta Materialia</i> , <i>Materials Science and Engineering A</i> , <i>Metallurgical and Materials Transactions</i> , <i>Thin Solid Films</i> , <i>Journal of Materials Research</i> , <i>Journal of Alloys and Compounds</i> , <i>Materials Research Letters</i> , <i>International Journal of Plasticity</i> , <i>Journal of Materials and Design</i> , <i>Current Opinion in Solid State and Materials Science</i> , <i>Nanotechnology</i> , etc.	2005-present

Committee memberships

ASM International Minnesota State Chapter Executive Committee	2022-present
Vice Chair of ASMI Minnesota State Chapter (elected)	2023-2024
Chair of ASMI Minnesota State Chapter (elected)	2024-2025
TMS Nanomechanical Materials Behavior Committee (NMBC)	2008-present
Past Chair of TMS nanomechanical materials behavior committee	2015-2017
Chair of TMS nanomechanical materials behavior committee	2013-2015
Vice-Chair of TMS nanomechanical behavior committee	2011-2013
NMBC awards nomination subcommittee	2018-present
Member TMS Mechanical Behavior, Young Leaders Committees	2008-present
International Journal of Plasticity Young Researcher Award Committee Member	2018-present
Co-founder (of six founders total) of the Los Alamos Postdoc Association	2006
Chair, Staff Conversion Committee, Los Alamos Postdoc Association	2006-2008
UC Davis Student Representative, ASM Golden Gate Chapter	2001-2003

Review panels for external funding agencies, foundations, etc.

External Advisory Board Member, Center for Extreme Events in Structurally Evolving Materials (CEESEM), DoD funded, University of Wisconsin, Madison	2023-present
Reviewer, panel for Deutsche Forschungsgemeinschaft (German Research Foundation)	2021
Reviewer, DOE-BES Proposals, Mechanical Behavior and Radiation Effects Program, John Vetrano program manager	2021-present
Reviewer DOE-Nuclear Engineering University Programs	2019-present
Reviewer, LANL-Center for Integrated NanoTechnologies User Proposals	2017-present
Chair, NASA Translational Research Institute for Space Health (TRISH) Proposal Review Panel	2018
Reviewer, NSF Division of Civil, Mechanical and Manufacturing Innovation Review Panel chaired by Alexis Lewis, NSF program manager	2017

Invited LANL representative at the DOE-Nuclear Engineering Nuclear Innovations Workshop, Albuquerque, NM. 2015

Organization of conferences, workshops, panels, symposia

Co-organizer, 2025 TMS annual meeting symposium “*Structure-Property Relationships in Molecular Crystal Deformation*” 2025

Co-organizer, 2025 TMS annual meeting symposium “*Mechanical Behavior Related to Interface Physics V*” 2025

Organizer, “*ASMI Minnesota State Chapter Undergraduate Research Showcase*”, University of Minnesota, October 12, 2023, Minneapolis, MN. 2023, 2024

Co-Organizer, “Mechanical Behavior Of Nanocomposite, Nanoporous, And Nanostructured Materials” symposium at SES virtual conference, October 2020. 2020

Co-Organizer, “Nanocrystalline and Ultrafine-Grained Materials” symposium at PRICM-10, 10th Pacific Rim International Conference in X’ian, China, August 18-22, 2019. 2019

Co-organizer, “Experimental Mechanics at Multiple Length Scales” at 55th Annual Technical Meeting of the Society of Engineering Science (SES2018) Madrid, Spain 2018

Co-organizer, 2019 TMS annual meeting symposium “*Mechanical Behavior Related to Interface Physics III*” 2019

Co-organizer, 2014 TMS annual meeting symposium “*Mechanical Behavior Related to Interface Physics II*” 2014

Co-organizer, 2013 MS&T meeting symposium “*Multiscale Perspectives on Plasticity in BCC Metals*” 2013

Co-organizer, 2013 TMS annual meeting symposium “*Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale*” 2013

Co-organizer, 2012 TMS annual meeting symposium “*Mechanical Behavior Related to Interface Physics*” 2012

Co-organizer, 2010 MS&T meeting symposium “*Advanced Metallic Materials: Technological Exploitation of Mechanical Properties*” 2010

Organizer of Honorary Symposium at Plasticity 2014 for Professor Amiya Mukherjee 2014

Co-organizer, LANL Global Security-Nanomaterials Deep Dive 2014

Conference Co-organizer “*Advanced Qualification of Additive Manufacturing Materials*”, Santa Fe, NM 2015

Co-organizer, CINT user workshop symposium “*Real-time imaging of controlled nanoscale phenomena using S/TEM*” 2015

Organizer, CINT user workshop symposium “*Nanomechanical Response of Composite, Complex, and Thin Film Structures*” 2014

Co-organizer, CINT user workshop symposium “*NanoMechanics of Top Down and Bottom Up Nanostructures*” 2012

Service To The University/College/Department

University-wide service

Member, University Senate Campus Safety Committee 2021-2023

Faculty Advisor, UMN Bladesmithing Team 2018-present

Collegiate Service and Intercollegiate Service

Technical Contact and Coordinator for Nanomechanics, UMN CharFac	2017-present
UMN Science Court Jury Member	2019

Department/Unit Service

Director of Undergraduate Studies, CEMS	2022-present
Activity Lead, Girls Inc. Eureka! Outreach Program for Middle and HS Girls	2023-present
ASM Materials Camp Instructor	2024-present
Member, CEMS Graduate Admissions Committee	2017-2022
Department Delegate, University Materials Council Meeting, Phoenix, AZ	March 2018
UMN-CEMS Science Museum of Minnesota Outreach	December 2018

PhD Committee Service

Tianyi Xiang, Masters student, University of Minnesota (PI: Sun)
 Gerrit Vreeman, PhD student, University of Minnesota (PI: Sun)
 Vikram Joshi, PhD student University of Minnesota (PI: Sun)
 Yukai Shi, PhD Student, University of Minnesota (PI: Bates/Lodge)
 Justin Hopkins, PhD Student, University of Minnesota (PI: Dauenhauer)
 Deepti Kannan, PhD Student, University of Minnesota (PI: Calabrese/Francis/Ellison)
 Margaret House, PhD Student, University of Minnesota (PI: Dutcher)
 Yicong Chen, PhD Student, University of Minnesota (PI: Stadler)
 Annie Moorhead, PhD Student, University of Minnesota (PI: Francis)
 Brady Bresnahan, PhD Student, University of Minnesota (PI: Poerschke)
 Marisa Bazzi, PhD Student, University of Minnesota (PI: Tranquillo)
 Paul Blanchard, PhD Student, University of Minnesota (PI: Hackel)
 Yu-Hsuan Lin, PhD Student, University of Minnesota (PI: Poerschke)
 Chengjian Zhang, PhD Student, University of Minnesota (PI: Francis/Korshagen)
 Ziwei Wang, PhD Student, University of Minnesota (PI: M. Neurock)
 Eeshani Godbole, PhD Student, University of Minnesota (PI: D. Poerschke)
 Manish Jain, PhD Student, University of Nevada (PhD granted 2020 PI: S. Pathak)
 Zixue Ma, PhD Student, University of Minnesota (PI: K. Dorfman)

Los Alamos National Laboratory Institutional Service

Laboratory Directed R&D Defects and Interfaces Proposal Review Committee	2014-2017
Labwide Engineering Steering Committee MPA division representative	2013-2015
MST-6: Metallurgy Group Leader Search/Interview Committee	2013
Materials Science and Technology Division Laboratory Directed R&D red team review panel	2013
IAT isotope separation program review team (Paul Dunn, IAT Division Leader).	2012
Commendation from MST-Division (David Teter, Division Leader) for technical contribution to LANL 50-page MaRIE signature facility proposal	2012
CINT Colloquia Committee member	2012
As part of Co-Deputy Director responsibilities for LANL Institute for Materials Science:	2014-2017
One of three initial leaders (Director, two co-deputies) for institute startup	Est. March 2014
Served on hiring committee for center admin	2014
Co-organizer of the LANL Global Security-Nanomaterials Deep Dive	Nov. 2014
Lead organizer, Mat Sci/Data Technology Nexus Meeting, Santa Fe, NM	September 2016
Co-organizer, Quantum and Dirac Materials Workshop, Santa Fe, NM	March 2015
Co-organizer, LANL Additive Manufacturing Workshop, Santa Fe, NM	July 2015

Co-organized distinguished seminar series for high-profile external speakers. 2014-2017
PhD Committee Service
Somya Singh, PhD Candidate, Arizona State University (PI: N. Chawla)
Dr. Ben Eftink, University of Illinois (PhD granted 2016, PI: I. Robertson)
Dr. Josef Cobb, Mississippi State Univ. (PhD granted 2016, PI: J. Schneider)
Dr. Ran Liu, Georgia Tech (PhD granted 2015, PI: A. Antoniou)
Dr. Jon LeDonne, Carnegie Mellon University (PhD granted 2012, PI: A. Rollett)