Mark A Tschopp, PhD

Contact Information

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Distinguished R&D Scientist, ARL Fellow
Citations: >9000 (Google Scholar)
h-index: 51 (Google Scholar, ResearchGate)
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Bio

Experienced senior S&T leader with technical expertise in artificial intelligence, machine learning, materials science and solid mechanics with a proven track record of advancing organizational impact through AI/ML, data science, and business intelligence—grounded in scientific expertise and strategic leadership. I serve as a Senior S&T Leader, Research Scientist, and Fellow at the Army Research Laboratory, where I drive foundational research and strategic initiatives to shape the future Army. With over two decades of experience across government, academia, and industry, I bring a record of scientific excellence, cross-sector collaboration, and organizational leadership. As a senior leader, I founded ARL Central, expanding ARL's national footprint by growing the researcher base from zero to 30+, launching new partnerships and centers, and expanding $40M+/yr in research programs. I now lead the Army AI Innovation Institute, defining its technical direction and long-term strategy to advance future AI at scale for Army priorities. On the scientific front, I have authored 100+ peer-reviewed publications with 9,000+ citations and have delivered 200+ talks, including 120+ invited seminars. My honors include the ASM International Silver Medal, Fellow of ASME and ASM International, and ARL Fellow, as well as multiple awards for leadership, mentoring, communication, and scientific impact.

Education

Georgia Institute of Technology, Atlanta, Georgia USA

Ph.D., Materials Science and Engineering, Summer 2007, GPA 3.9/4.0

- *Dissertation:* "Atomistic simulations of dislocation nucleation in single crystals and grain boundaries," pp. 1-375 (2007), 2008 Sigma Xi Best PhD Thesis Award.
- *Advisor:* Prof. David L. McDowell, Regents' Professor and Carter N. Paden, Jr. Distinguished Chair in Metals Processing for MSE/ME (Emeritus)

University of Missouri-Rolla, Rolla, Missouri USA
(now) Missouri University of Science & Technology

M.S., Metallurgical Engineering, December 1999, GPA 4.0/4.0

- *Thesis:* "Mechanisms of the formation of pyrolysis defects in aluminum lost foam castings," pp. 1-255 (1999).
- *Advisor:* Prof. Donald Askeland, Distinguished Professor for Metallurgical Engineering

B.S., Metallurgical Engineering, May 1998, GPA 3.9/4.0

Professional Training & Leadership Development

To complement my scientific and strategic leadership roles, I pursued structured professional development in leadership, management, and machine learning/artificial intelligence. This includes formal Army senior leader programs, business and ML certificate courses, and other technical training—primarily completed through online platforms such as Coursera and Blackboard.

Army Management Staff College *2021–2022*
Continuing Education for Senior Leaders (CESL)

CESL Future Warfare
CESL Business Transformation
CESL Management Development Course
CESL SECARMY Leadership Development Seminar

Business and Leadership Development *2021–2023*

University of South Florida, Muma College of Business
Ethical and Inclusive Leadership Certificate

Northwestern University, Kellogg School of Management
Organizational Leadership Specialization (4 courses)

- Leadership through Marketing
- High Performance Collaboration: Leadership, Teamwork, and Negotiation
- Leadership Communication for Maximum Impact
- Leadership Through Social Influence

University of Pennsylvania, Wharton Business School
AI for Business Specialization (4 courses)

- AI Fundamentals for Non-Data Scientists
- AI Applications in People Management
- AI Applications in Marketing and Finance
- AI Strategy and Governance

Technical Training in AI/ML and Data Science *2020–2023*

DeepLearning.AI (Andrew Ng, Stanford University)

Machine Learning Engineering for Production (2 courses)

- Introduction to ML in Production
- Machine Learning Data Lifecycle in Production

Deep Learning Specialization (5 courses)

- Neural Networks and Deep Learning
- Hyperparameter Tuning, Regularization, and Optimization
- Structuring ML Projects
- Convolutional Neural Networks
- Sequence Models (RNN, LSTM, GRU)

Other Technical Courses

- How to Win a Data Science Competition, HSE University
- Introduction to Deep Learning, HSE University
- Mathematics for Machine Learning: Linear Algebra, Imperial College London
- Machine Learning, Stanford University (Andrew Ng)

Employment

DEVCOM Army Research Laboratory
Aberdeen Proving Ground, MD (2014–2018) | ARL Central, Chicago, IL (2018–)

Associate for Strategic Partnerships, DB-04 (GS-15) **06/24–Present**

→ Lead the Army AI Innovation Institute (A2I2) Collaborative Research Alliance, shaping technical vision and strategy to advance future AI at scale for Army priorities.

→ Develop strategic partnerships for the Military Information Science division—within ARL, with other Army organizations (e.g., AI2C), and with external organizations in academia and industry.

→ Developed and led the HQDA Strategic Broadening Seminar course "AI for Soldiers," coordinating 100+ personnel and delivering in-residence programs for 50+ Soldiers worldwide in both 1-week & 2-week formats; lauded by HQDA with future requests to scale.

Senior Research Data Scientist, DB-04 (GS-15) **01/24–06/24**

→ Developed and delivered the Army-wide "Machine Learning for Everyone" (ML101) course, reaching 300+ Army professionals and engaging 3,000 participants worldwide over the last 5 years; praised at the highest levels of the Army.

→ Designed and maintained the ARL Partnership Agreement Dashboard, tracking $1B+ in external agreements to enhance strategic insight and decision-making; adopted throughout ARL enterprise (ARO–extermural, ARD–intramural).
→ Applied data science and mining techniques to internal metrics and open-source publication data (via external APIs), building on sabbatical research to support ARL programs, planning, and strategy.

Senior Research Scientist (Paid Sabbatical), DB-04 (GS-15) **01/23–01/24**

→ Completed a one-year sabbatical at Northwestern University and University of Chicago focused on scientific leadership, AI/ML research, and strategic partnerships, with emphasis on publication analytics, collaboration networks, and the Science of Science.
→ Conducted multiple major research studies to strengthen ARL scientific outcomes and expand my AI/ML and data science expertise; delivered invited seminars and authored a 200+ page technical report (three comprehensive studies).
→ Taught in-residence AI/ML 101 courses at Rock Island Arsenal and launched a book project on machine learning for broader audiences.
→ Deepened expertise in AI/ML, NLP, and organizational leadership through applied research and reading 50+ books across AI, leadership, behavioral economics, and strategy.

Regional Director, DB-05 (SSTM, ARL Senior Leader) **12/17–12/22**

→ Founded ARL Central, ARL's regional hub in the Midwest, growing the team from 0 to 30+ scientists; set the technical vision, launched new partnerships and research centers, and expanded ARL resources by $40M/year.
→ Led the development of a hub-and-spoke research model that expanded ARL's presence and visibility across the Midwest, enabling sustained engagement with senior leaders across the Army, academia, civic institutions, and industry; received recognition from the Under Secretary of the Army, including a challenge coin inscribed with "Outstanding Service to the Nation."
→ Navigated significant disruptions during COVID by rethinking and adapting ARL Central's operating model—establishing new virtual collaboration norms, preserving external engagement, and maintaining strategic momentum as a remote regional site.
→ Completed senior leader development, including the SecArmy Leadership Program, Business Transformation, and Management Development courses; earned certificates in AI for Business and Organizational Leadership (8-course total); read 50+ books on leadership, strategy, and innovation.

Regional Director (A), DB-04 (GS-15) **06/17–12/17**
Team Leader, DB-04 (GS-15), Alloy Design & Development Team **02/16–09/17**
Branch Chief (A), DB-04 (GS-15) **08/15–02/16**
Senior Research Scientist, DB-04 (GS-15) **05/14–12/17**

DEVCOM Army Research Laboratory, Aberdeen Proving Ground, MD
Contractor with **ORISE** (2012–2013), **DRC** (2013–2014), and **Engility** (2014)

Senior Research Scientist / Subject Matter Expert / Senior Fellow **08/12-05/14**

Mississippi State University, Center for Advanced Vehicular Systems, Starkville, MS

Assistant Research Professor **08/09–05/14**
Adjunct Professor, Mechanical Engineering **08/09–05/14**
Adjunct Professor, Computational Science & Engineering **08/09–05/14**

Air Force Research Laboratory, Wright-Patterson Air Force Base, OH
Contractor with **Universal Technology Corporation**

Visiting Research Scientist **08/07–08/09**

Graduate Research Experience

Graduate Research Assistant, **Georgia Institute of Technology** **08/03–08/07**
Graduate Research Assistant, **University of Missouri-Rolla** **08/98–12/99**

GM Powertrain, Saginaw, MI | Defiance, OH
Advanced Materials Development Center (2000–2001)
Casting Development and Validation Center (2001–2003)

Process/Manufacturing Engineer **01/00–08/03**

Internship Experience

Manufacturing Engineer, **GM Powertrain–Massena**, Massena, NY **05/98–08/98**
Automotive Test Engineer, **GM Powertrain–CTC**, Saginaw, MI **05/97–08/97**
Metallurgical Engineer, **Stahl Specialty Company**, Kingsville, MO **05/96–08/96**

Honors and Awards

- Department of Army Special Act Award, 2023 (transition of ARL Central)
- ARL Honorary Award - Leadership, 2023 (inaugural chair of ARL Employee Advisory Council committee on Workforce Enrichment, Recruitment, and Retention)
- ARL Honorary Award Award - Impactful Communication, 2022 (Machine Learning for Everyone)
- ARL Mentoring Award, 2022 (ARL formal mentoring program)
- ARL Fellow, 2021 (only 1.5% of ARL scientists)
- ASM International Fellow, 2018
- Outstanding Service to the Nation (coin), UnderSecArmy Ryan McCarthy, 2018 (ARL Central)
- ASME Fellow, 2017
- Best Paper Award, 2017 (IISE Transactions)
- Department of Army Special Act Award, 2017 (professional society service)
- ASM International Silver Medal Award, 2016 (top mid-career award)
- Department of Army Special Act Award, 2015 (branch chief supervisory excellence)
- Three Covers for Refereed Journals (MSMSE 2013, Advanced Engineering Materials 2014, Advanced Engineering Materials 2018)
- Metallurgical and Materials Transactions A: Excellent Reviewer Award (2015, 2012)
- Faculty Excellence Award, 2011 (Mississippi State University)
- Best PhD Thesis Award, 2008 (Georgia Institute of Technology, 1 of 5 campus-wide)
- Engineering Mechanics Award, 2007 (Georgia Institute of Technology, only 1 per year)
- Impact Award, 2005 (Georgia Institute of Technology, top campus-wide award for research)
- NSF Graduate Research Fellowship, 2004–2007 (1 of 26 for MSE in nation)
- Georgia Institute of Technology Presidential Fellowship, 2003–2007
- Best Paper Award, 2001 (AFS Transactions)

ARL Organizational Impact

Dr. Tschopp has significantly influenced the Army Research Laboratory through leadership at both the branch and regional levels. His efforts have shaped strategy, structure, and external engagement across ARL.

As **branch chief** for the Metals Branch within the Materials & Manufacturing Science Division, Dr. Tschopp led a strategic restructuring effort to better align the branch's research activities with Army priorities and customer needs. He established two complementary teams: one focused on long-term, fundamental research and another dedicated to near-term, applied research with clear relevance to Army engineering centers. This restructuring broadened the branch's material focus beyond traditional basic research topics, such as nanocrystalline materials, to include critical structural materials—specifically steels and aluminum alloys—directly tied to Army Modernization Priorities. This shift not only positioned the branch to engage more effectively with Army customers but

also enabled a major collaborative initiative with external partners to develop advanced steels for combat vehicle and automotive applications. In this leadership role, Dr. Tschopp was responsible for financial oversight, annual planning, end-of-year performance ratings, and the supervision of more than two dozen employees. His exceptional performance as branch chief was recognized with a laboratory-level award.

As ARL Central's inaugural **Regional Lead**, Dr. Tschopp defined and operationalized the Army Research Laboratory's presence in the Midwest, transforming a nascent concept into a thriving regional engine for innovation, partnerships, and research impact. He led ARL's strategic adaptation during the COVID-19 pandemic—transitioning its hub from the University of Chicago to downtown Chicago's Discovery Partners Institute—to better align with emerging DoD priorities and help launch the Midwest Defense Innovation Hub. Under his leadership, ARL Central expanded to include researchers and major initiatives in propulsion and power, advanced materials and manufacturing, energetic materials and impact physics, the Internet of Battlefield Things (IoBT), cyber-enabled electromagnetic spectrum, and artificial intelligence/machine learning. Dr. Tschopp built coalitions with DIU, NSIN, the 75th Innovation Command, and a broad network of academic and industry collaborators across the Midwest. Over five years, he developed and executed ARL Central's strategic vision, guided organizational change, mentored junior scientists, launched pilot programs, and drove culture change as the inaugural Chair of ARL's 30-member Workforce Enrichment, Recruitment, and Retention Council. He also continued to lead technically as an ARL Fellow and nationally recognized scientist, strengthening internal and external partnerships to accelerate ARL's mission. The results are measurable: up to $40M/year in new research investments, expanded congressional engagement, the formal establishment of the ARL Center for UAS Propulsion, the first collaborative research alliance led from the Midwest, and a growing professional network supported by high-visibility ARL events and outreach.

Top 10 Articles Demonstrating Scientific Impact

Dr. Tschopp's accomplishments span research excellence, professional service, and mentorship. This section highlights research contributions that exemplify his scientific impact. His work focuses on the relationships between chemistry, processing, microstructure, and mechanics in materials—enabling innovations in how materials are manufactured, designed, and engineered for specific applications.

1. **Tschopp, MA, Ramsay, CW, Askeland, DR**, ***Mechanisms of Formation of Pyrolysis Defects in Aluminum Lost Foam Castings***, Trans. AFS, 108 (2000) 609-614.
   - Award-winning work that identified key mechanisms behind defect formation in aluminum lost foam castings. Funded by DOE, this research was presented to 100+ industry partners and earned a Best Paper Award at the 2001 AFS Convention. At GM Powertrain, Dr. Tschopp applied these findings to develop casting and validation processes that were adopted at manufacturing plants in Saginaw, MI and Defiance, OH. These changes led to multi-million-dollar annual savings across a new family of inline engine blocks and heads.

2. **Tschopp, MA, Spearot, DE, McDowell, DL**, ***Atomistic simulations of homogeneous dislocation nucleation in single crystal copper***, Modelling and Simulation in Materials Science and Engineering, 15 (2007) 693-709.
   - Pioneering study that challenged conventional theory by demonstrating that stress normal to the slip plane plays a major role in dislocation nucleation—orthogonal to Schmid stress-based models for dislocation motion. This marked the beginning of a broader body of work on dislocation nucleation mechanisms using atomistic simulations.

3. **Tschopp, MA, McDowell, DL**, ***Structures and energies of $\Sigma 3$ asymmetric tilt grain boundaries in Cu and Al***, Philosophical Magazine, 87 (2007) 3147-3173.
   - This highly cited paper launched a series of studies on symmetric and asymmetric grain boundaries in FCC metals. It provided a comprehensive analysis of how local atomic structure correlates with grain boundary character and grain boundary energy, often reproducing experimental HRTEM structures. At the time of publication, this was one of the most detailed investigations on the influence of grain boundary character and plane, influencing

models of mechanical behavior in polycrystalline materials.

4. **Tschopp, MA, McDowell, DL**, ***Dislocation nucleation in $\Sigma 3$ asymmetric tilt grain boundaries***, International Journal of Plasticity, 24 (2008) 191-217.
   - This foundational paper provided atomistic insights into how grain boundary structure, local stress state, and atomic-level mechanisms control dislocation nucleation in nanocrystalline FCC metals. This work helped establish a mechanistic basis for understanding deformation in ultrafine-grained and nanocrystalline materials.

5. **Tschopp, MA, Spearot, DE, McDowell, DL**, ***Influence of Grain Boundary Structure on Dislocation Nucleation in FCC Metals***, Dislocations in Solids: A Tribute to FRN Nabarro, vol. 14, pp. 43-139 (2008), ed. JP Hirth.
   - This invited 97-page book chapter synthesized results from NSF-funded graduate work and presented a unified view of dislocation nucleation mechanisms in single crystals and grain boundaries. I delivered a keynote talk on this at the International Conference on Fatigue and this work formed the foundation of a dissertation that received the Sigma Xi Best PhD Thesis award.

6. **Tschopp, MA, Bartha, BB, Porter, WJ, Murray, T, Fairchild, S**, ***Microstructure - dependent local strain behavior in polycrystals through in situ scanning electron microscope tensile experiments***, Metallurgical Transactions A, 40 (2009) 2363-2368.
   - This experimental study introduced a methodology for coupling crystallographic orientation with local strain fields using nano-patterned speckles and digital image correlation in an SEM environment. It demonstrated how grain boundaries influence heterogeneous deformation, contributing widely cited tools and insights to the field of microscale experimental mechanics.

7. **Tschopp, MA, Wilks, GB, Spowart, JE**, ***Multi-Scale Characterization of Orthotropic Microstructures***, Modelling and Simulation in Materials Science and Engineering, 16 (2008) 065009.
   - Selected as the journal's Editor's Choice, this paper introduced novel synthetic microstructure generation techniques and multiscale statistical characterizations of composite microstructures. It influenced further work on image-based quantification and materials informatics methods, particularly in the context of Integrated Computational Materials Engineering (ICME).

8. **Hossain, D, Tschopp, MA*, Ward, DK, Bouvard, JL, Wang, P, Horstemeyer, MF**, ***Molecular dynamics simulations of deformation mechanisms of amorphous polyethylene***, Polymer, 51 (2010) 6071-6083 (*Corresponding Author).
   - This DOD-funded study employed atomistic simulations to investigate the molecular mechanisms underlying tension and compression in amorphous polyethylene. As corresponding author, Dr. Tschopp conceptualized and led the research, overseeing simulation development, designing post-processing algorithms, and guiding the project's scientific direction. He supervised and collaborated with a postdoctoral researcher (first author) and completed major portions of the work following the researcher's departure. This highly-cited publication has become a widely referenced study in polymer mechanics at the atomic scale.

9. **Tschopp, MA, Solanki, KN, Gao, F, Sun, X, Khaleel, M, Horstemeyer, MF**, ***Probing grain boundary sink strength at the nanoscale: Energetics and length scales of vacancy and interstitial absorption by grain boundaries in α-Fe***, Physical Review B, 85 (2012) 064108.
   - Published in a leading physics journal, this study leveraged high-throughput atomistic simulations to quantify point defect absorption energies across $\approx$200 grain boundaries in α-Fe. It revealed the preferential binding of interstitials over vacancies at grain boundaries and complemented contemporaneous findings published in Science around the same time, contributing to defect transport models in radiation environments.

10. **Tschopp, MA, Murdoch, HA, Kecskes, LJ, Darling, KA**, ***Bulk Nanocrystalline Metals: Review of the Current State of the Art and Future Opportunities for Copper and Copper Alloys***, JOM, 66 (2014) 1000-1019.
    - This collaborative review examined the potential of nanocrystalline copper alloys for bulk applications, highlighting strategies for stabilizing ultrafine grain structures through chemistry and processing. The review synthesized emerging trends and key breakthroughs at ARL, laying groundwork for materials-by-design approaches targeting grain boundary engineering.

Peer-Reviewed Journal Publications

Asterick by my name denote that I am the corresponding author (leading research) when not in first author position.

1. Messina, J., Luo, R., Xu, K., Lu, G., Deng, H., **Tschopp, M.A.**, Gao, F., "Machine learning to predict aluminum segregation to magnesium grain boundaries," Scripta Materialia, 204 (2021) 114150.
2. Paudel, Y., Giri, D., Priddy, M.W., Barrett, C.D., Inal, K., **Tschopp, M.A.**, Rhee, H., El Kadiri, H., "A Review on Capturing Twin Nucleation in Crystal Plasticity for Hexagonal Metals," Metals, 11(9) (2021) 1373:1-53.
3. Dyar, C., Brauer, S., Williams, W., Doude, H., Whittington, W., Oppedal, A., El Kadiri, H., **Tschopp, M.A.**, Rhee, H., "Enhancing Mechanical Properties of Hot Wrought Steel by Microalloying and Optimizing Heat Treatments," Journal of Materials Engineering and Performance, 29(8) (2020) 5374–5387.
4. Chavoshi, S.Z., **Tschopp, M.A.**, Branicio, P.S., "Transition of deformation mechanisms in nanotwinned single crystalline SiC," Philosophical Magazine 99(21) (2019) 2636–2660.
5. Khanzadeh, M., Chowdhury, S., **Tschopp, M.A.**, Doude, H., Marufuzzaman, M., Bian, L., "In-situ monitoring of melt pool images for porosity prediction in directed energy deposition processes," Institute of Industrial and Systems Engineers (IISE) Transactions, 51(5) (2019) 437–455.
    - ⋆ "Enabling 'lab-to-fab' transition of metal-based additive manufacturing" was highlighted by IISE Transactions
6. Aboutaleb, A.M., Mahtabi, M.J., **Tschopp, M.A.**, Bian, L., "Multi-objective accelerated process optimization of mechanical properties in laser-based additive manufacturing: Case study on Selective Laser Melting (SLM) Ti-6Al-4V," Journal of Manufacturing Processes, 38 (2019) 432–444.
7. Seifi, S.H., Tian, W., Doude, H., **Tschopp, M.A.**, Bian, L., "Layer-wise modeling and anomaly detection for laser-based additive manufacturing," Journal of Manufacturing Science and Engineering, 141(8) (2019) 081013:1–12.
8. Jordan, L.A., **Tschopp, M.A.**, Mlsna, T.E., Wipf, D., Horstemeyer, M.F., "Modeling and experimental calibration of the corrosion of RHA steel in immersion and salt-fog environments," Corrosion Engineering, Science and Technology, 54(2) (2019) 114–121.
9. Hernández-Rivera, E., Chowdhury, S., Coleman, S.P., Ghassemi, P., **Tschopp, M.A.***, "Integrating Exploratory Data Analytics into ReaxFF Parameterization," MRS Communications, 8(3) (2018) 1300–1310.
10. Goins, P.E., Murdoch, H.A., Hernández-Rivera, E., **Tschopp, M.A.**, "Effect of magnetic fields on microstructure evolution," Computational Materials Science, 150 (2018) 464–474.
11. Khanzadeh, M., Chowdhury, S., Marufuzzaman, M., **Tschopp, M.A.**, Bian, L.,"Porosity Prediction: Supervised-learning of Thermal History for Direct Laser Deposition," Journal of Manufacturing Systems, 47 (2018) 69–82.
12. Chen, J., **Tschopp, M.A.**, Dongare, A.M., "Shock Wave Propagation and Spall failure of Nanocrystalline Cu/Ta Alloys: Effect of Ta in Solid-Solution," Journal of Applied Physics, 122(22) (2017) 225901.
13. Khanzadeh, M., Chowdhury, S., **Tschopp, M.A.**, Bian, L.,"Quantifying Geometric Accuracy with Unsupervised Machine Learning: Using Self-Organizing Maps on Fused Filament Fabrication Additive Manufacturing Parts," (ASME) Journal of Manufacturing Science and

Engineering, 140 (2018) 031011.

14. Chen, J., **Tschopp, M.A.**, Dongare, A.M., "Role of Nanoscale Cu/Ta Interfaces on the Shock Compression and Spall Failure of Nanocrystalline Cu/Ta Systems at the Atomic Scale," Journal of Materials Science, 53 (2018) 5745–5765.
15. Imandoust, A., Barrett, C.D., Al-Samman, T., **Tschopp, M.A.**, Essadiqi, E., El Kadiri, H., Hort, N., "Unraveling recrystallization mechanisms governing texture development from rare earth element additions to magnesium," Metallurgical Transactions A, 49(5) (2018) 1809–1829.
16. Atwater, M.A., Guevara, L.N., Darling, K.A., **Tschopp, M.A.**, "Solid State Porous Metal Production: A Review of the Capabilities, Characteristics and Challenges," Advanced Engineering Materials, 20(7) (2018) 1700766:1–33.
    - ⋆ Cover Image
    - ⋆ Best of Advanced Engineering Materials 2018 contains articles selected by the editors to represent the most outstanding articles published throughout the past year.
17. Foley, D., Tucker, G.J., **Tschopp, M.A.**, Coleman, S.P., "Correlating deformation mechanisms with X-ray diffraction phenomena in nanocrystalline metals using atomistic simulations," Computational Materials Science, 154 (2018) 178–186.
18. Turnage, S., Darling, K.A., Rajagopalan, M., Whittington, W., **Tschopp, M.A.**, Peralta, P., Solanki, K.N., "Influence of variable processing conditions on the quasi-static and dynamic behaviors of resistance spot welded aluminum 6061-T6 sheets," Material Science and Engineering A, 724 (2018) 509–517.
19. Khanzadeh, M., Tian, W., Yadollahi, A., Doude, H.R., **Tschopp, M.A.**, Bian, L., "Dual Process Monitoring of Metal-Based Additive Manufacturing Using Tensor Decomposition of Thermal Image Streams," Additive Manufacturing, 23 (2018) 443–456.
20. Banadaki, A., **Tschopp, M.A.**, Patala, S., "An Efficient Monte-Carlo Algorithm for Determining the Minimum Energy Structures of Metallic Grain Boundaries," Computational Materials Science, 155 (2018) 466–475.
21. **Tschopp, M.A.**, Gao, F., Solanki, K., "He–V cluster nucleation and growth in α-Fe Grain Boundaries," Acta Materialia, 124 (2017) 544–555.
22. **Tschopp, M.A.**, Hernandez, E., Darling, K.A., Atwater, M.A., Solanki, K.N., "A Thermodynamic and Kinetic-Based Grain Growth Model for Nanocrystalline Materials: Parameter Sensitivity Analysis and Model Extension," Computational Materials Science, 131 (2017) 250–265.
23. **Tschopp, M.A.**, Nouranian, S., Rinderspacher, C., Gwaltney, S.R., Baskes, M.I., Horstemeyer, M.F., "Quantifying Parameter Sensitivity and Uncertainty of a Reactive Interatomic Potential for Saturated Hydrocarbons," ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, 4(1) (2018) 011004:1–17.
    - ⋆ Invited article by Sandia National Laboratory colleague in Uncertainty Quantification (DAKOTA developer)
24. Hernandez, E., Coleman, S.P., **Tschopp, M.A.**, "Using Similarity Metrics to Quantify Differences in High-Throughput Datasets: Application to X-Ray Diffraction Patterns," ACS Combinatorial Science, 19 (2017) 25–36.
    - ⋆ Published an ARL-TN on applying similarity/distance metrics in MATLAB and Python
25. Hornbuckle, B.C., Murdoch, H.A., Roberts, A.J., Kecskes, L.J., **Tschopp, M.A.**, Doherty, K.J., Yu, J.H., "Property Mapping of Friction Stir Welded Al-2139 T8 Plate using Site Specific Shear Punch Testing," MSE A, 682 (2017) 192–201.
26. Barrett, C.D., Imandoust, A., Oppedal, A.L., Inal, K., **Tschopp, M.A.**, El Kadiri, H., "Effect of Grain Boundaries on Texture Formation during Dynamic Recrystallization of Magnesium Alloys," Acta Materialia, 128 (2017) 270–283.
27. Paudel, Y., Barrett, C.D., **Tschopp, M.A.**, Inal, K., El Kadiri, H., "Beyond initial twin nucleation in hcp metals: Micromechanical formulation for determining twin spacing during deformation," Acta Materialia, 133 (2017) 134–146.
28. Rajagopalan, M., Adlakha, I., **Tschopp, M.A.**, Solanki, K.N., "Energetics of hydrogen segregation to Fe grain boundaries for modeling stress corrosion cracking," JOM (Journal of Materials), 69 (2017) 1398–1403.

29. Aboutaleb, A.M., **Tschopp, M.A.**, Rao, P.K., Bian, L., "Multi-Objective Accelerated Process Optimization of Part Geometric Accuracy in Additive Manufacturing," ASME Journal of Manufacturing Science and Engineering, Special Issue on Data Science-Enhanced Manufacturing, 139(10) (2017) 101001–1.
30. **Tschopp, M.A.**, Coleman, S.P., McDowell, D.L., "Symmetric and Asymmetric Grain Boundary Structure and Energy in Copper and Aluminum (and transferability to other FCC metals)," Integrating Materials and Manufacturing Innovation, 4(1) (2015) 176–189.
    - ⋆ First Data Descriptor article in IMMI
    - ⋆ Co-published with largest public grain boundary dataset for FCC metals (available on NIST data repository)
    - ⋆ Highlighted by Journal Editor C.H. Ward in article "Introducing the Data descriptor article," IMMI 4 (2015) 190–191 as "an excellent example of a rich and high-quality dataset that many others in the field will find useful in the conduct of their own research."
    - ⋆ Incorporated into new NIST Materials Data Curation System as the example for grain boundaries
31. Darling, K.A., Kapoor, M., Kotan, H., Thompson, G.B., **Tschopp, M.A.**, Kecskes, L.J., "Mechanical Properties of Oxide-Dispersion-Strengthened (ODS) Ferritic Alloys Based on Zirconium Oxides," Journal of Nuclear Materials, 467 (2015) 205–213.
32. Coleman, S.P., Hernandez-Rivera, E., Behler, K.D., Synowczynski-Dunn, J., **Tschopp, M.A.***, "Challenges of Engineering Grain Boundaries in Boron-Based Armor Ceramics," JOM (Journal of Materials), 68 (2016) 1605–1615.
    - ⋆ Invited article for issue on grain boundaries and interfaces
33. Atwater, M.A., Darling, K.A., **Tschopp, M.A.***, "Synthesis, characterization and quantitative analysis of porous metal microstructures: Application to microporous copper produced by solid state foaming," AIMS Materials Science, 3(2) (2016) 573-590.
    - ⋆ Invited article for special issue on advanced mirostructural characterization of materials
34. Bhatia, M.A., Rajagopalan, M., Darling, K.A., Tschopp, M.A., Solanki, K.N., "The role of Ta on twinnability in nanocrystalline Cu-Ta alloys," Materials Research Letters, 5 (2017) 48–54.
35. Nouranian, S., Gwaltney, S.R., Baskes, M.I., **Tschopp, M.A.**, Horstemeyer, M.F., "Nanomechanical Simulations of Tensile Bond Rupture in Single Alkane Molecules with Generalization to a Single Polyethylene Chain Using the Modified Embedded-Atom Method," Chemical Physics Letters, 635 (2015) 278–284.
36. Rojhirunsakoola, T., Darling, K.A., **Tschopp, M.A.**, Pun, G.P.P., Mishin, Y., Banerjee, R., Kecskes, L.J., "Structure and Thermal Decomposition of a Nanocrystalline Mechanically Alloyed Supersaturated Cu-Ta Solid Solution," MRS Communications, 5 (2015) 333–339.
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37. **Tschopp, M.A.**, McDowell, D.L., "Microrotation-Augmented Energy Minimization for Generating Nanocrystalline Materials," Proceedings of the 16^{th} European Conference of Fracture, Emmanuel Gdoutos (Editor), (2006).
38. **Tschopp, M.A.**, Tucker, G.J., McDowell, D.L., "Atomistic Modeling of Grain Boundary Structure and Dislocation Emission," Progress and Challenges in Understanding Materials Interfaces, Lawrence Cook, Wayne Kaplan (Editors), Materials Science and Technology Conference and Exhibition 2006.

Technical Reports

39. **Tschopp, M.A.**, Cassenti, D.N., "The Army Artificial Intelligence Innovation Institute (Summary Technical Report, 2018–2025)," ARL-TR-10274 (JAN 2026), 1-120.
40. **Tschopp, M.A.**, Hobbs, R., Work, M., "Artificial Intelligence for Soldiers 2025: Enhancing AI Readiness for the Army," ARL-SR-0506 (JUN 2025), 1–79.
41. **Tschopp, M.A.**, "Global Collaboration Dynamics in Scientific Research: Why Does It Occur? Examining the Citation Economy," ARL-TR-10058 (FEB 2025), 1–56.
42. **Tschopp, M.A.**, "Global Collaboration Dynamics in Scientific Research: How Often Does It Occur," ARL-TR-10057 (FEB 2025), 1–72.
43. **Tschopp, M.A.**, Hobbs, R., "Artificial Intelligence for Soldiers 2024: Experiences and Lessons Learned from the Inaugural Course," ARL-SR-0497 (JUL 2024), 1–112.
44. **Tschopp, M.A.**, "From Scientific Institutions to Research Concepts to Global Collaboration and Beyond: Uncovering Patterns in Scientific Networks," ARL-SR-0493 (FEB 2024), 1–213.
45. Hoppel, C., Stepp, D., Becker, R., Bakas, M., Vargas–Gonzalez, L., Tonge, A., **Tschopp, M.A.**, "Controlling the Load Distribution in High-Strength Materials Army Science Planning and Strategy Meeting (ASPSM)," ARL-SR-0438 (Feb 2021), 1–44.
46. **Tschopp, M.A.**, Joshi, K., Chowdhury, S., "Coupling Molecular Dynamics and Machine Learning for Predicting Aluminum Segregation to Magnesium Grain Boundaries," ARL-TR-8490 (Sep 2018), 1–40.
47. Guziewski, M., Coleman, S.P., **Tschopp, M.A.**, "Expansion and Automation of the Energy Conserving Orientational Force for Calculation of Grain Boundary Mobility," ARL-TR-8302 (Feb 2018), 1–42.
48. Khanzadeh, M., Chowdhury, S., Marufuzzaman, M., **Tschopp, M.A.**, Bian, L., "Using Self Organizing Maps for In-situ Monitoring of Melt Pool Thermal Profiles for Porosity Prediction in Laser-based Additive Manufacturing Processes," ARL-TN-0888 (June 2018), 1–31.
49. **Tschopp, M.A.**, Hernandez, E., "Quantifying Similarity and Distance Measures for Vector-based Datasets: Histograms, Signals, and Probability Distribution Functions," ARL-TN-0810, 1–40.
50. **Tschopp, M.A.**, Nouranian, S., Baskes, M.I., Gwaltney, S.R., Horstemeyer, M.F., "Influence of Parameters of a Reactive Interatomic Potential on the Properties of Saturated Hydrocarbons," ARL-TR-7850, 1–62.
51. Foley, D., Coleman, S.P., Tucker, G.J., **Tschopp, M.A.**, "Voronoi-based Nanocrystalline Generation Algorithm for Atomistic Simulations," ARL-TN-0806, 1–44.
52. **Tschopp, M.A.**, "3-D Synthetic Microstructure Generation with Ellipsoid Particles," ARL-TN-0789, 1–32.
53. Foley, D., **Tschopp, M.A.**, Coleman, S.P., "Nanocrystal Generation through Geometric Packing Algorithms," HIP-15-20 final report.
54. **Tschopp, M.A.**, Maupin, H.E., "ARL Lightweight and Specialty Metals Branch Research and Development (FY14)," ARL-SR-0319, 1–64.
55. **Tschopp, M.A.**, Darling, K.A., Atwater, M.A., Kecskes, L.J., "Low-Cost Structural Ther-

moelectric Materials: Processing and Consolidation," ARL-TR-7167, 1–28.

56. **Tschopp, M.A.**, Darling, K.A., Atwater, M.A., "Surpassing the Theoretical Limit of Porosity in Conventional Solid-State Foaming: Microstructure Characterization of Length Scales in a Copper Metal Foam," ARL-TR-7139, 1–60.
57. **Tschopp, M.A.**, Darling, K.A., Atwater, M.A., Solanki, K.N., "Predicting Grain Growth in Nanocrystalline Materials: A Thermodynamic and Kinetic-Based Model Informed by High Temperature X-ray Diffraction Experiments," ARL-TR-7107, 1–79.
58. **Tschopp, M.A.**, "Atomistic Modeling Development for Nanocrystalline Metal Alloys," PETTT Final Technical Report, High Performance Computing Modernization Program, 2014.
59. **Tschopp, M.A.**, Darling, K.A., Atwater, M.A., VanLeeuwen, B.K., Liu, Z.K., "Enhancing the High Temperature Capability of Nanocrystalline Alloys: Utilizing Thermodynamic Stability Maps to Mitigate Grain Growth Through Solute Selection," ARL-TR-6743, 1–53.
60. **Tschopp, M.A.**, Darling, K.A., "Towards Predictive Models of Nanocrystalline Binary Metal Alloys: Role of Solutes and Interfaces on Segregation and Mechanics in Al-Based Nanocrystalline Systems (ISN Year 1 Report)," ARL-SR-291.
61. **Tschopp, M.A.**, F. Gao, X. Sun,"Modeling of defect sinks at grain boundaries in Fe-Cr and Fe-He systems," U.S. Department of Energy, Nuclear Energy Advanced Modeling and Simulation, Fundamental Methods and Models Program, 2012 Quarterly Report.
62. **Tschopp, M.A.**, F. Gao, X. Sun,"The Effects of the Uncertainty of Thermodynamic and Kinetic Properties on Nucleation and Evolution Kinetics of Cr-Rich Phase in Fe-Cr Alloys," U.S. Department of Energy, Nuclear Energy Advanced Modeling and Simulation Program, M3MS-12PN0606018, ARL-CR-0705, 1–52.
63. **Tschopp, M.A.**, "Damage Mechanics Model Development for Monocrystalline Superalloys," Defense Technical Information Center, ADA523928.
64. Fairchild, S., **Tschopp, M.A.**, Bartha, B.B., Murray, P.T., Porter, W.J., "Digital Image Correlation of Ni-base Superalloy René 88DT Using *In Situ* SEM Tension Experiments," Preprint, Defense Technical Information Center, ADA502792.
65. **Tschopp, M.A.**, Tiley, J.S., Viswanathan, G.B., "Automated Identification and Characterization of Secondary & Tertiary gamma' Precipitates in Nickel-Based Superalloys," Preprint, Defense Technical Information Center, ADA522026.
66. **Tschopp, M.A.**, Groeber, M.A., Simmons, J.P.,Rosenberger, A.H., Woodward, C., "Technique for Automated Extraction of Symmetric Microstructural Features: Application to Dendritic Cores in Single Crystal Ni-Based Superalloys," Preprint, Defense Technical Information Center, ADA546146.
67. Spowart, J.E., Wilks, G.B., **Tschopp, M.A.**, "Multi-Scale Characterization of Inhomogeneous Morphologically Textured Microstructures," Preprint, Defense Technical Information Center, ADA501812.
68. **Tschopp, M.A.**, Wilks, G.B., Spowart, J.E., "Multi-Scale Characterization of Orthotropic Microstructures," Preprint, Defense Technical Information Center, ADA489997.
69. **Tschopp, M.A.**, Wilks, G.B., Spowart, J.E., "Multiscale Characterization Technique for Chemically Reactive Multiphase Composite Microstructure," Preprint, Defense Technical Information Center, ADA523465.
70. Groeber, M.A., Simmons, J., Rosenberger, A.H., Woodward, C., **Tschopp, M.A.**, Fahringer, R., "Symmetry-Based Automated Extraction of Microstructural Features: Application to Dendritic Cores in Single-Crystal Ni-Based Superalloys," Preprint, Defense Technical Information Center, ADA520551.
71. Bartha, B.B., John, R., Caton, M., Jha, S., Porter, W.J., Fairchild, S., Murray, T., **Tschopp, M.A.**, Li, K., Larsen, J.M., Szczepanski, C.J., Glavicic, M.G., Martin, P., "Modeling Complex Structural Geometry and Process Interaction," Defense Technical Information Center, ADA522042.
72. Tiley, J.S., Viswanathan, G.B., Shiveley, A., **Tschopp, M.A.**, Srinivasan, R., Fraser, H.L., Banerjee, R., "Measurement of gamma prime Precipitates in a Nickel-Based Superalloy using Energy-Filtered Transmission Electron Microscopy Coupled With Automated Segmenting Techniques," Preprint, Defense Technical Information Center, ADA519441.

Select Trade Journals & Popular Press

Name listed for authored articles in trade journals, press. All other articles include quotes from me in an official capacity or highlights from regional engagement in ARL Central.

73. "Army scientists train Soldiers on how to leverage AI technologies," ARL Public Affairs, 19 MAY 2025.
    - ⋆ "AI holds the extraordinary potential to swiftly analyze the deluge of data present within the future battlefield and to deliver actionable insight to Soldiers at the speed of relevance," Tschopp said. "We want this course to equip Soldiers with the knowledge and decision-making capabilities to harness AI as a tool to gain a competitive edge over our adversaries."
74. "Operationalizing Science at JMC with Artificial Intelligence and Machine Learning," Joint Munitions Command Public Affairs (OCT 2024).
    - ⋆ "AI and ML are not just buzzwords; they are powerful tools that are revolutionizing how we approach complex problems," said Tschopp. "It's essential that our Soldiers and Civilians understand not just the 'what,' but also the 'how' and 'why' behind these algorithms. By demystifying these technologies, we are empowering our Soldiers and Civilians to leverage data-driven insights and make more informed decisions; ultimately, enhancing our operational capabilities."
75. "Army hosts global AI, machine learning event," ARL Press Release (MAY 2021).
    - ⋆ "A great demonstration of Army leadership in the field of machine learning, and an incredible job by Mark," said Gen. John M. Murray, [4-star] Commanding General (R) of the Army Futures Command. "What started as a good idea, some initiative, and a desire to spread knowledge, was met with incredibly positive feedback. His short course showcased not only the challenges associated with building neural networks, but the Army's efforts to harness these capabilities."
76. **Tschopp, M.A.**, "Welcome to ARL Central," National Defense Innovation Assocation and Indiana Innovation Institute (MAR 2021).
    - ⋆ Authored an invited blog for NDIA–IN3 chapter of 600 members
77. "Army, Argonne scientists explore nanoparticles for future weapon systems," ARL Press Release (FEB 2021).
78. "University of Missouri works with Army to enhance warfighter technology," ARL Press Release (NOV 2020).
79. "Army adds Northwestern engineers to team finding material solutions," ARL Press Release (OCT 2020).
80. "Army readies charging port for autonomous drone swarms," ARL Press Release (OCT 2020).
81. "Army unmanned vehicles to get hybrid electric power," ARL Press Release (SEP 2020).
82. "Army-funded research may enable drones to run on any type of fuel," ARL Press Release (SEP 2020).
83. "Purdue, U.S. Army to collaborate on next-generation energetic materials," Purdue Press Release (AUG 2020).
84. "Case Western Reserve and Polymer Plus partner with Army research lab to develop manufacturing approaches for cost-effective production of lightweight, high-performance polymeric materials," CWRU Press Release (AUG 2020).
85. "Army's Corporate Research Laboratory (ARL) Central: Video," Youtube (DEC 2019).
86. "UChicago Workshop Highlights Internet of Things Potential for Cities, Army Installations," U Chicago Press Release (JUL 2019).
87. "Army focuses on power, propulsion for future unmanned aircraft systems," ARL Press Release (JUN 2019).
88. "Army researchers conduct first-ever combustion experiment with X-rays," ARL Press Release (DEC 2018).
89. "Army lab recognizes scientific contributions of postdocs at symposium," ARL Press Release (OCT 2018).
90. "Welcoming Army Research Lab to town," Invent2026, Medium.com (OCT 2018).
91. "U.S. Army Research Laboratory taps engineering student for fellowship," UIC Press Release (OCT 2018).
92. "Army Research Lab selects lead for new regional partnership," ARL Press Release (JAN

2018).

93. "ARL, UChicago forge new partnerships in the Greater Chicago Area," ARL Press Release (NOV 2017).
94. "U.S. Army Research Laboratory announces new partnership," ARL Press Release (OCT 2017).
95. "Army Researcher Makes Science Real for Elementary Students," Armed with Science (DoD) Press Release (MAY 2017), Army Press Release (APR 2017), RDECOM press release (APR 2017), ARL Press Release, APG News (APR 2017), British News Agency (MAY 2017).
96. "Engineering society elects Army researcher as fellow," RDECOM Press Release, Army Press Release, ARL Press Release (JUN 2017).
97. "Scientific society honors Army materials researcher," ARL Press Release (JUL 2016).
98. "Army Research Laboratory wins DOD grants for summer interns," ARL Press Release (MAR 2016).
99. "Wearing body armor strengthens civilian experience," ARL Press Release (JUL 2015).
100. "CAVS Studies High Temperature Aerospace Materials in Modern Turbine Engines," MSU CAVS press release (DEC 2013).
101. **Tschopp, M.A.**, "Career Opportunities and Experiences in Materials Science and Engineering," ASM International Advanced Materials & Processes (AUG 2013).
102. **Tschopp, M.A.**, "MS&T 2012 Symposium for Emerging Professionals: Early Strategies for Career Development," ASM International Advanced Materials & Processes (AUG 2012).
103. **Tschopp, M.A.**, "Integrated Computational Materials Engineering (ICME): A paradigm shift from materials selection to materials design," ASM International Advanced Materials & Processes (MAR 2012).
104. "CAVS studies radiation effects on nuclear reactor materials," MSU University Relations press release, Maroon Research magazine, 2012 Research Windows (MAR 2012).
105. "Learning About Material Integrity from Statistical Data: Imaging, statistics, and computational analysis shed new light on defects," Pacific Northwest National Laboratory highlighted research (FEB 2012).

Invited Seminars

Presenting Author in **Boldface** type

106. **Tschopp, M.A.**, "Reflection of a Career: Careers in National Laboratories!," Case Western Reserve University, 17 SEP 2024.
107. **Tschopp, M.A.**, "Data is the New Bacon: Why Data is Sizzlin' Right Now," Army Management Staff College, Kickoff Invited Lecture for Data Foundations course, 14 JUN 2024.
108. **Tschopp, M.A.**, Oie, K., "Power Up Your Career: Come Learn about Sabbaticals," ARL Cafe Seminar, MAR 2024.
109. **Tschopp, M.A.**, "The Science of Science: How to Stand on the Shoulders of Giants (Without Falling Off)," ARL Colloquium seminar, 14 FEB 2024 (120-minute seminar).
110. **Tschopp, M.A.**, "Star Wars + Machine Learning = Wait, what?! Exploring top mis-ML Concepts-ions," University of North Texas, 12 JAN 2024.
111. **Tschopp, M.A.**, "An Arsenal of Experiences: Maneuvering the Frontlines of a Modern PhD Career... to ARL," University of Chicago, 16 NOV 2023.
112. **Tschopp, M.A.**, "Star Wars and Machine Learning: Lessons Learned from the 'somewhat familiar with ML' crowd," Carnegie Mellon University, 3 NOV 2023.
113. **Tschopp, M.A.**, "From Hallowed Halls to Army Strong: Navigating the World of Army-Academia Collaboration," Carnegie Mellon University, 3 NOV 2023.
114. **Tschopp, M.A.**, "How to do business with ARL," 2023 National Cybersecurity Education Colloquium (NCEC), Chicago, IL, 18–22 SEP 2023.
    - ⋆ Invited panelist for "Federal funding opportunities" workshop, 22 SEP 2023, and
    - ⋆ Invited member of invitation-only committee on "Generative AI Tools and Cybersecurity", 21 SEP 2023
115. **Tschopp, M.A.**, "Adventures in Career-Shifting: Navigating the Unpredictable Roads of a Modern PhD Career... and... National Laboratories!," Case Western Reserve University, 19

SEP 2023.

116. **Tschopp, M.A.**, "Science of Science: Future Challenges and Opportunities," Columbia University, ARO Workshop on Decentralized Science, 17 AUG 2023.
117. **Tschopp, M.A.**, "Adventures in Career Shifting: Navigating the Unpredictable Roads of a Modern PhD Career," Northwestern University, 17 MAY 2023.
118. **Tschopp, M.A.**, "From Padawan to Jedi Master: Machine Learning with a Star Wars Twist," Northwestern University, Northwestern Institute on Complex Systems (NICO) Seminar Series, 10 MAY 2023.
119. **Tschopp, M.A.**, "The Sociology of Science: How to Stand on the Shoulders of Giants (Without Falling Off)," Georgia Institute of Technology, "Advances in Multiscale Mechanics and Materials Design" symposium in honor of David McDowell's retirement, 14 APR 2023.
120. **Tschopp, M.A.**, "The Science of Science: How to Stand on the Shoulders of Giants (Without Falling Off)," University of North Carolina–Chapel Hill, 4 APR 2023.
121. **Tschopp, M.A.**, "From Hallowed Halls to Army Strong: Navigating the World of Army-Academia Collaboration," University of North Carolina–Chapel Hill, 4 APR 2023.
122. **Tschopp, M.A.**, "Data is the New Bacon: Why Data is Sizzlin' Right Now," Army Management Staff College, Kickoff Invited Lecture for Data Foundations course.
    - ⋆ 24 FEB 2023
    - ⋆ 31 MAR 2023
    - ⋆ 28 APR 2023
    - ⋆ 23 JUN 2023
123. **Tschopp, M.A.**, "An ARL Perspective: Doing Business with the Army (Research Laboratory)," Northwestern University, 9 NOV 2022.
124. **Tschopp, M.A.**, "Army Research Laboratory in Chicago? Tailored Ecosystem Engagement Model," SEN Baldwin National Security Advisor and Staff, 15 AUG 2022.
125. **Tschopp, M.A.**, "AI/ML in the DoD," 3rd Annual NDSEG Fellowship Conference, invited panel member, JUL 2022.
126. **Tschopp, M.A.**, "AI/ML in the Army and Air Force," Air Force MADLAB (Machines, Algorithms, Data Lab) Center of Excellence Workshop, invited panel member, JUN 2022.
127. **Tschopp, M.A.**, "The National Laboratory Career Path," (virtual) Georgia Tech Teaching Practicum, 28 SEP 2021.
128. **Tschopp, M.A.**, "AI/ML for Materials Design: Steels," (virtual) DoD Steels Conference, invited panel member, OCT 2021.
129. **Tschopp, M.A.**, "Tri-Service Panel on Careers in the DoD," 2nd Annual NDSEG Fellowship Conference, invited panel member, 19–21 JUL 2021.
130. **Tschopp, M.A.**, "Army Research Laboratory: big Army to AFC to ARL," (virtual) ARL–Georgia Tech Workshop on Materials + Manufacturing Science and Engineering, plenary talk, 26 MAY 2021.
131. **Tschopp, M.A.**, "Army Research Laboratory: A Short Introduction to the Corporate R&D Laboratory for the Army," (virtual) ARL–Georgia Tech Workshop on Materials + Manufacturing Science and Engineering, plenary talk, 25 MAY 2021.
132. **Tschopp, M.A.**, "Army Research Laboratory Network? The Army's Open Campus Business Model and ARL Central–Disrupting Defense S&T for Future Capabilities," (virtual) University of Chicago Center for Decision Research, APR 2021.
133. **Tschopp, M.A.**, "Army Research Laboratory Network? The Army's Open Campus Business Model and ARL Central–Disrupting Defense S&T for Future Capabilities," Washington University at St Louis, 11 JAN 2021.
134. **Tschopp, M.A.**, "Army Research Laboratory—Computational & Information Science Research," University of Illinois–Chicago, Computer Science seminar, 23 OCT 2020.
    - ⋆ Split seminar with 2 ARL scientists: Dr. Celso de Melo, Dr. Mark Dennison
135. **Tschopp, M.A.**, "Army Research Laboratory Network: Mission, People, Open Campus," Midwest Defense Innovation Summit, invited panel member, 21 OCT 2020.
    - ⋆ "On behalf of the organizing committee of the Midwest Defense Innovation Summit, we would like to extend a sincere thank you for your participation in this inaugural event. We

have been overwhelmed by positive feedback from attendees and we have you to thank for that," Midwest Defense Innovation Summit Organizing Committee.
   - ⋆ Other panel members: AFRL Director, ONR Global Director

136. **Tschopp, M.A.**, "Army Research Laboratory – Advanced Electronics and Electronic Warfare," University of Illinois–Chicago, Electrical and Computer Engineering department seminar, 16 OCT 2020.
   - ⋆ Split seminar with 2 ARL scientists: Dr. Romeo del Rosario, Dr. Neil Vallestero
   - ⋆ "Thank you for all your efforts in organizing a great set of talks for us today. I think all of you generated a great deal of excitement and there will be many emails to you about possible collaborations. As you could tell there were a few faculty who were there who were just interested in finding out about funding but many of the others were interested in engaging and collaborating and students who were present particularly those in ECE stayed on for a while and Neil and Romeo were very kind to answer their questions." Mitra Dutta, former VCR, UIC.

137. **Tschopp, M.A.**, "Army Research Laboratory – BioEngineering Research in ARL?," University of Illinois–Chicago, Bioengineering department seminar, 16 OCT 2020.
   - ⋆ Split seminar with 2 ARL scientists: Ms. Ashley Eidsmore, Dr. Carolyn Hampton

138. **Tschopp, M.A.**, "Army Research Laboratory Network? The Army's Open Campus Business Model and ARL Central – Disrupting Defense S&T for Future Capabilities," University of Colorado–Boulder, 14 OCT 2020.
   - ⋆ "From our perspective, it was excellent. Overall, excellent event thought from my end... thanks to you, Bill and Catie for putting together." Massimo Ruzzene, Associate Dean for Research
   - ⋆ Organized faculty research webinar with CU-Boulder Office of Research
   - ⋆ 15 ARL Scientists in 5 follow-on Technical Breakout Sessions

139. **Tschopp, M.A.**, "ARL Central, Polycrystalline Materials by Design, and other Short Stories," University of Illinois–Chicago, Civil and Materials Engineering department seminar, 9 OCT 2020.
140. **Tschopp, M.A.**, "Early Career Panel Discussion – Career Development," TechEvent – 2020 Postdoc and Early Career Symposium, invited panel member, 16 SEP 2020.
141. **Tschopp, M.A.**, "AAMP-UP! Career Path, Career Development, Army Research Laboratory and Army Science & Technology," Purdue University AAMP-UP career seminar, JUN 2020.
142. **Tschopp, M.A.**, "Army Research Laboratory Network? The Army's Open Campus Business Model and ARL Central–Disrupting Defense S&T for Future Capabilities," Ohio State University, DEC 2019.
143. **Tschopp, M.A.**, "Army Research Laboratory Network? The Army's Open Campus Business Model and ARL Central–Disrupting Defense S&T for Future Capabilities," Iowa State University, NOV 2019.
144. **Tschopp, M.A.**, "Army Research Laboratory Network? The Army's Open Campus Business Model and ARL Central–Disrupting Defense S&T for Future Capabilities," Colorado University–Boulder, NOV 2019.
145. **Tschopp, M.A.**, "Wait... What? The Army has a Corporate Research Laboratory?!?!" Colorado State University, NOV 2019.
146. **Tschopp, M.A.**, "ARL Central, Polycrystalline Materials by Design, and other Short Stories," Colorado School of Mines, NOV 2019.
147. **Tschopp, M.A.**, "Army Research Laboratory Network? The Army's Open Campus Business Model and ARL Central–Disrupting Defense S&T for Future Capabilities," Colorado School of Mines, NOV 2019.
148. **Tschopp, M.A.**, "Army Research Laboratory in Midwest? The Army's Open Campus Business Model and ARL Central–Disrupting Defense S&T for Future Capabilities," Argonne National Laboratory, OCT 2019.
149. **Tschopp, M.A.**, "ARL Central, Polycrystalline Materials by Design, and other Short Stories," University of Wisconsin–Madison, Lindbergh Lecture Seminar Series, 19 SEP 2019 (60-minute seminar).

150. **Tschopp, M.A.**, "Army Research Laboratory in Wisconsin? The Army's Open Campus Business Model and ARL Central–Disrupting Defense S&T for Future Capabilities," University of Wisconsin–Madison, Faculty Lunchtime Lecture, 19 SEP 2019 (60-minute seminar).
151. **Tschopp, M.A.**, "Research and Technology for Operating Environments of the Future, i.e., 'Cool Stuff that We are Working On'," 425 9^{th}–12^{th} grade students, Peoria Public School District, 6 SEP 2019 (educating students about STEM, STEM careers in the Army, and the Army Research Laboratory).
152. **Tschopp, M.A.**, "ARL-Central: JeopARLdy & the informal (Pizza) Lunch 'N Learn," Northwestern University, 16 AUG 2019 (75 minute seminar/discussion/Jeopardy Quiz Show).
153. **Tschopp, M.A.**, "Army Research Laboratory in Indiana? The Army's Open Campus Business Model and ARL Central–Disrupting Defense S&T for Future Capabilities," Indiana University–Bloomington, JUL 2019 (60-minute seminar).
154. **Tschopp, M.A.**, "Army Research Laboratory in Chicago? The Army's Open Campus Business Model and ARL Central–Disrupting Defense S&T for Future Capabilities," Illinois Institute of Technology, 29 MAY 2019 (60-minute seminar).
155. **Tschopp, M.A.**, "Army Research Laboratory at U Minnesota? The Army's Open Campus Business Model and ARL Central–Disrupting Defense S&T for Future Capabilities," University of Minnesota, 13 MAY 2019 (60-minute seminar).
156. **Tschopp, M.A.**, "KEYNOTE: Army Research Laboratory and the Army's Open Campus Initiative: Disrupting Defense S&T for Future Capabilities," Chicago State Center for Intelligence and Security Research (CINSER), 18 APR 2019.
157. **Tschopp, M.A.**, "The Army Research Laboratory, The Army Research Laboratory Central, and NSWC–Crane I," NSWC–Crane Leadership, Merrillville, IN, 17 APR 2019 (120-minute seminar/questions).
158. **Tschopp, M.A.**, "The Army Futures Command, The Army Research Laboratory, The Army Research Office, The Army Research Laboratory Central, Notre Dame, and You (A^4ND You)," Notre Dame University, 6 MAR 2019 (30-minute seminar).
159. **Tschopp, M.A.**, "ARL-Central: An 'Open' Extended Model for Defense S&T," Notre Dame, 27 FEB 2019 (60-minute seminar).
160. **Tschopp, M.A.**, "ARL Central Roadshow: Past, Present, and Future," Army Research Laboratory 12 DEC 2018, 13 DEC 2018, 9 JAN 2019, 13 FEB 2019 (60-minute seminar).
161. **Tschopp, M.A.**, "Application of Machine Learning in Materials Science," University of Illinois–Chicago, 31 OCT 2018 (60-minute seminar/discussion).
162. **Tschopp, M.A.**, "ARL Central, Polycrystalline Materials by Design, and other Short Stories," Purdue University, MSE Seminar Series, 26 OCT 2018 (60-minute seminar).
163. **Tschopp, M.A.**, "ARL-Central: An 'Open' Extended Model for Defense S&T," University of Illinois–Urbana-Champaign, 25 OCT 2018 (30-minute seminar).
164. **Tschopp, M.A.**, "ARL-Central: An 'Open' Extended Model for Defense S&T," University of Wisconsin–Madison, 24 OCT 2018 (30-minute seminar).
165. **Tschopp, M.A.**, "ARL-Central: An 'Open' Extended Model for Defense S&T," (made to representatives from all Milwaukee universities), University of Wisconsin–Milwaukee, 10 SEP 2018 (invited 60-minute seminar–90 minutes with questions).
166. **Tschopp, M.A.**, Tracy V. Shephard (WMRD-LD DC), "ARL at U Chicago? An 'Open' Extended Model for Defense S&T – ARL Central," University of Chicago Chemistry Department, 7 SEP 2018 (invited 60-minute seminar).
167. **Tschopp, M.A.**, "ARL-Central: An 'Open' Extended Model for Defense S&T," Northern Illinois University, 9 AUG 2018 (invited 60-minute seminar).
168. **Tschopp, M.A.**, "ARL in Chicago? Nucleation and Growth of an 'Open' Extended Model for Defense S&T – ARL Central," ASM Materials Professional Society, Chicago, IL, 20 MAR 2018 (invited 60-minute keynote).
169. **Tschopp, M.A.**, "ARL in the Midwest? An 'Open' Extended Model for Defense S&T – ARL Central," Marquette University, 8 MAR 2018 (invited 60-minute seminar).
170. **Tschopp, M.A.**, "Polycrystalline Materials by Design at Army Research Laboratory," Center for Hierarchical Materials Design (ChiMaD), Northwestern University, 6 DEC 2017 (invited

60-minute seminar).

171. **Tschopp, M.A.**, "Materials by Design of Polycrystalline Materials at the US Army Research Laboratory," University of Connecticut, 8 SEP 2017 (60-minute seminar).
172. **Tschopp, M.A.**, "Materials Engineering," 4^{th} grade class, Homestead Wakefield Elementary School, 2 JUN 2017 (2 60-minute talks).
173. **Tschopp, M.A.**, "Materials by Design of Polycrystalline Materials," Mississippi State University, 2017 (60-minute seminar).
174. **Tschopp, M.A.**, "Materials by Design of Polycrystalline Materials," Georgia Tech, 2017 (60-minute seminar).
175. **Tschopp, M.A.**, "Materials Engineering," 4^{th} grade class, Homestead Wakefield Elementary School, 7 APR 2017 (75-minute talk).
176. **Tschopp, M.A.**, "Integrated Computational Materials Engineering: Accelerating Materials Discovery, Development, and Design by Merging Mechanical Engineering, Materials Science, and Computational Science," ARL Colloquia and Science Café, 22 FEB 2017 (60-minute seminar).
177. **Tschopp, M.A.**, "Polycrystalline Materials by Design," UT-Arlington, 3 FEB 2017 (60-minute seminar).
178. **Tschopp, M.A.**, "Polycrystalline Materials by Design," Texas A&M, 1 FEB 2017 (60-minute seminar).
179. **Tschopp, M.A.**, "Understanding Structure-Property Relationships of Grain Boundaries and Interfaces for Materials Design," Johns Hopkins University, 16 SEP 2016, Baltimore, MD.
    - ⋆ HEMI invited seminar, associated with MEDE CRA
180. **Tschopp, M.A.**, **Hernandez, E.**, "Army Research Laboratory Organization, Mission, and Research: Combining Design with Materials Science for Next Generation Material Development," University of Buffalo, 11 AUG 2016, Buffalo, NY.
181. **Tschopp, M.A.**, **Coleman, S.P.**, "Materials by Design at Army Research Laboratory," NASA-Langley, 1 AUG 2016, Hampton, VA.
182. **Tschopp, M.A.**, **Holmes, L.J.**, "ARL and Additive Manufacturing Overview", U.S. National Committee on Theoretical and Applied Mechanics, 22 APR 2016, The National Academies Building, Washington, DC.
    - ⋆ Highlighted on ARL Public Affairs, "Researchers invited to speak about ARL and Additive Manufacturing at U.S. National Committee on Theoretical and Applied Mechanics"
    - ⋆ 1 of 8 invited speakers for this panel of experts in Theoretical and Applied Mechanics, which included the NAE president (National Academy of Engineering) Dr. Dan Mote, the Director of ERDC Dr. Jeffery Holland, the Chief Scientist of DHS Dr. Kevin Brown, et al.
    - ⋆ Kudos email, Wing Kam Liu, PhD, PE, President of the International Association for Computational Mechanics, Chair of the US National Committee on Theoretical and Applied Mechanics, "On behalf of the US National Committee on Theoretical and Applied Mechanics, we thank you very much for taking your valuable time to come visit and talk to us. Our Members and other researchers, including those watching/listening via WebEx, appreciated very much your presence and the enlightening lectures."
183. **Tschopp, M.A.**, "Understanding and Exploiting Structure-Property Relationships of Interfaces for Materials Design," University of Cincinnati, 4 MAR 2016, Cincinnati, OH.
184. **Tschopp, M.A.**, "U.S. Army Research Laboratory: An Intro to our Organization and Materials Research," Mississippi State University, 6 JAN 2016, Starkville, MS.
185. **Tschopp, M.A.**, "ARL Grain Boundary Science and Engineering," Carnegie Mellon University, 20 OCT 2015, Pittsburgh, PA.
    - ⋆ Led visit with 9 ARL S&Es, mostly early career to spark ideas and collaboration
    - ⋆ Led to recruitment of PhD student Dr. Philip Goins, now ARL Staff Scientist
186. **Tschopp, M.A.**, "Engineering Nanoscale Interfaces for Metals Design," National Institute for Standards and Technology (NIST), 26 AUG 2015, Gaithersburg, MD.
187. **Tschopp, M.A.**, "Armed with Science: Career Experiences and Opportunities within Government Defense Laboratories," University of Michigan, College of Engineering Postdoctoral Association, 13 JUL 2015, Ann Arbor, MI.

- ⋆ Kudos letter from Elizabeth Wagner, College of Engineering, Office of the Dean of Research, University of Michigan, "On behalf of the College of Engineering Postdoc Advisory Group, I would like to express our deep appreciation for your recent outreach to the College of Engineering student and postdoctoral research fellow communities. You were the first speaker for our new postdoc programming, and it was terrific launch. Your July 13th seminar, Armed with Science: Career Experiences and Opportunities within Government Defense Laboratories, provided a well-rounded overview of the career options available for doctoral students and postdocs, and highlighted the pros and cons of working in a government defense lab. Since your talk, several postdocs have let me know that your talk introduced them to the array of available research opportunities and created an interest in exploring career opportunities in a national laboratory."
- ⋆ Led to recruitment of PhD student Dr. Efrain Hernandez, now ARL Staff Scientist

188. **Tschopp, M.A.**, "Understanding and Exploiting Structure-Property Relationships of Interfaces for Metallurgical Design," Northeastern University, 1 MAY 2015, Boston, MA.
189. **Tschopp, M.A.**, "A fresh take on... Engineering Interfaces at the Nanoscale for Metallurgical Design," Stony Brook University, 1 APR 2015, Stony Brook, NY.
190. **Tschopp, M.A.**, "In the Army Now: Career Experiences and Opportunities in Government Defense Laboratories," Missouri University of Science and Technology, 13 FEB 2015, Rolla, MO.
191. **Coleman, S.P.**, **Tschopp, M.A.**, "Virtual Diffraction: Linking Simulation and Experiment," Missouri University of Science and Technology, FEB 13, 2015, Rolla, MO.
192. **Tschopp, M.A.**, "The ABCs of ICME and other cool stuff," Missouri University of Science and Technology, 12 FEB 2015, Rolla, MO.
    - ⋆ Kudos letter from Dr. Wayne Huebner, department chair, Missouri University of S&T: "Your visit and presentation on February 12th could be used as a poster child of what an alum can do to inspire students. Great job! Your presentation was the perfect blend of science, engineering & humor. Your ability to take a deep subject matter and make it understandable to everyone in the audience was remarkable. I know that the students walked away thinking about how ICME will be used as a tool to shape the future."
193. **Tschopp, M.A.**, "Overview of Recent Materials Research in WMRD/LSMB and Opportunities/Interest for Expanding Materials-by-Design Capability," ARL-CISD Seminar, 14 JAN 2015.
194. **Coleman, S.P.**, **Tschopp, M.A.**, "Virtual Diffraction in Atomistic Simulations," ARL-CISD Seminar, JAN 14, 2015.
195. **Tschopp, M.A.**, Darling, K.A., Kecskes, L., Murdoch, H.A., "The "Nanocrystalline Metals" Renaissance of the 21st Century: Tailoring "Bulk" Nanocrystalline Metals for Enhanced Thermal Stability and Mechanical Properties," Arizona State University, 12 SEP 2014.
196. **Tschopp, M.A.**, Darling, K.A., Kecskes, L., Murdoch, H.A., "The "Nanocrystalline Metals" Renaissance of the 21st Century: Tailoring "Bulk" Nanocrystalline Metals for Enhanced Thermal Stability and Mechanical Properties," Los Alamos National Laboratory, 8 SEP 2014.
197. **Tschopp, M.A.**, Darling, K.A., Kecskes, L., Murdoch, H.A., "A New Beginning for "Bulk" Nanocrystalline Metals: Tailoring the Composition, Processing, and Structure for Enhanced Thermal Stability and Mechanical Properties of Nanocrystalline Metals," Mississippi State University, 19 MAY 2014.
198. **Tschopp, M.A.**, "Twinning in HCP metals: Everyday I'm Shuffling," California Institute of Technology, 15 NOV 2013, Solid Mechanics Seminar, Pasadena, CA.
199. **Tschopp, M.A.**, "Bridging the Gap between Solid Mechanics and Materials Science: Integrating Critical Experiments and Simulations for Computational Multiscale Modeling," University of Alabama, 15 APR 2013, Tuscaloosa, AL.
    - ⋆ Faculty position interview, Materials Science and Engineering department
200. **Tschopp, M.A.**, "Bridging the Gap between Solid Mechanics and Materials Science: Integrating Critical Experiments and Simulations for Computational Multiscale Modeling," Florida International University, 7 MAR 2013, Miami, FL.
    - ⋆ Faculty position interview, Mechanical and Materials Engineering department

201. **Tschopp, M.A.**, "Bridging the Gap between Solid Mechanics and Materials Science: Integrating Critical Experiments and Simulations for Computational Multiscale Modeling," Johns Hopkins University, 7 DEC 2012, Baltimore, MD.
202. **Tschopp, M.A.**, "Bridging the Gap between Solid Mechanics and Materials Science: Integrating Critical Experiments and Simulations for Computational Multiscale Modeling," Army Research Laboratory, WMRD, Ceramics and Transparent Armor Branch, 28 SEP 2012, Aberdeen, MD.
203. **Tschopp, M.A.**, "Bridging the Gap between Solid Mechanics and Materials Science: Integrating Critical Experiments and Simulations for Computational Multiscale Modeling of Metals," Army Research Laboratory, 12 JUL 2012, Aberdeen, MD.
204. **Tschopp, M.A.**, "Exploring the nanoscale mechanisms of dislocation and twin nucleation in fcc and hcp polycrystalline materials," Seminar, University of North Texas, 4 APR 2012, Denton, TX.
    ⋆ Faculty position interview, Mechanical Engineering department
205. **Tschopp, M.A.**, "Exploring the nanoscale mechanisms of dislocation and twin nucleation in fcc and hcp polycrystalline materials," Seminar, Brown University, 8 MAR 2012, Providence, RI.
    ⋆ Faculty position interview, Mechanical Engineering department
206. **Tschopp, M.A.**, "Transforming the Paradigm for Future Materials Design: Materials Innovation and Infrastructure Development for ICME and the Materials Genome Initiative," Seminar, University of Florida, 13 FEB 2012, Gainesville, FL.
    ⋆ Faculty position interview, Materials Science and Engineering department
207. **Tschopp, M.A.**, "Material Innovation and Infrastructure Development for Material Applications in Wind Energy," Seminar, University of Iowa, 6 FEB 2012, Iowa City, IA.
    ⋆ Faculty position interview, Mechanical Engineering department (Wind Energy thrust)
208. **Tschopp, M.A.**, "Quantifying Material Structure-Property Relationships and Uncertainties at the Nanoscale for Computational Design of Material Systems," Seminar, Lawrence Livermore National Laboratory, 2 FEB 2012, Livermore, CA.
209. **Tschopp, M.A.**, "Quantifying Material Structure-Property Relationships and Uncertainties at the Nanoscale for Computational Design of Material Systems," Seminar, Sandia National Laboratory, 1 FEB 2012, Livermore, CA.
210. **Tschopp, M.A.**, "Quantifying Material Structure-Property Relationships and Uncertainties at the Nanoscale for Computational Design of Material Systems," Seminar, Pacific Northwest National Laboratory, 31 JAN 2012, Richland, WA.
211. **Tschopp, M.A.**, "Quantifying Structure-Property Relationships for Computational Materials Design: Applicability to Aerospace Engineering," Seminar, Mississippi State University, 16 NOV 2011, Starkville, MS.
    ⋆ Faculty position interview, Aerospace Engineering department
212. **Tschopp, M.A.**, "Quantifying Structure-Property Relationships for Computational Materials Design: Applicability to Automotive Engineering," Seminar, Clemson University (ICAR), 27 JUL 2011, Greenville, SC.
    ⋆ Faculty position interview, Automotive Engineering department
213. **Tschopp, M.A.** "Towards Developing Automated Digital Image Processing Techniques: Application to Microstructure Characterization and Feature Extraction," Seminar, Mississippi State University (CAVS), MAY 2011, Starkville, MS.
214. **Tschopp, M.A.**, "MEAM Interatomic Potential Generation: Coupling MATLAB with Atomistic Codes," 3rd Annual NIST Workshop on Atomistic Simulations for Industrial Needs, 27–28 JUL 2010, Gaithersburg, MD.
215. **Tschopp, M.A.**, "Structure-property relationships at the atomistic scale," Seminar, University of Michigan, JUL 2010, Ann Arbor, MI.
216. **Tschopp, M.A.**, "Structure-property relationships at the atomistic scale: Applications to metals and polymers," Seminar, Pacific Northwest National Laboratory, 26 APR 2010, Richland, WA.
217. **Tschopp, M.A.**, "Structure-property relationships at the atomistic scale: Applications to

metals and polymers," Seminar, Washington State University, 28 APR 2010, Pullman, WA.

218. **Tschopp, M.A.**, "Integrated Computational Materials Engineering Research: Atomistic Structure-Property Relationships & Microstructure Sensitive Design," Seminar, Texas A&M, 13 MAY 2009, College Station, TX.
    ⋆ Faculty position interview, Mechanical Engineering department
219. **Tschopp, M.A.**, "Integrated Computational Materials Engineering Research: Atomistic Structure-Property Relationships & Microstructure Sensitive Design," Seminar, Drexel University, 20 APR 2009, Philadelphia, PA.
    ⋆ Faculty position interview, Mechanical Engineering department
220. **Tschopp, M.A.**, "Integrated Computational Materials Engineering Research: Atomistic Structure-Property Relationships & Microstructure Sensitive Design," Seminar, Mississippi State University, 1 APR 2009, Starkville, MS.
    ⋆ Faculty position interview, Center for Advanced Vehicular Systems
221. **Tschopp, M.A.**, McDowell, D.L., "Dislocation nucleation in $\Sigma 3$ asymmetric tilt grain boundaries," Seminar, Georgia Tech, 15 FEB 2007, Atlanta, GA.
222. **Tschopp, M.A.**, McDowell, D.L., "Atomistic Modeling of Grain Boundary Structure and Dislocation Nucleation," Seminar, Air Force Research Lab (AFRL) Materials Directorate, 23 OCT 2006, WPAFB, OH.
223. **Tschopp, M.A.**, McDowell, D.L., "Microrotation-Augmented Energy-Minimization for Generating Nanocrystalline Cu Structures," Seminar, Georgia Institute of Technology, 28 OCT 2005, Atlanta, GA.
224. **Tschopp, M.A.**, Spearot, D.E., McDowell, D.L., "Dislocation or Disclination? Comparison of Theory and Observations," Seminar, Georgia Institute of Technology, 25 FEB 2005, Atlanta, GA.

Invited Conference Presentations

225. **Tschopp, M.A.**, "Science of Science. Standing on the Shoulders of Giants (Without Falling Off): Navigating the World of Scientific Knowledge," NDSEG 2023 Conference, 30 JULY 2023 (invited 60-minute talk).
226. **Shawn Coleman**, Daniel Foley, Garritt Tucker, Tschopp, M.A., "Nanocrystalline Cu Deformation Characterization Simulations," TMS 2018, MAR 14, 2018 (invited 30-minute talk).
227. **Tschopp, M.A.**, "Using data science and data analytics to understand and quantify structure-property relationships in materials," International Conference on Plasticity, Damage, and Fracture, 7 JAN 2018 (invited 30-minute talk).
228. **Tschopp, M.A.**, "SAUQIPAM: Sensitivity Analysis and Uncertainty Quantification of Interatomic Potentials for Atomistic Modeling," MRS 2017 Conference, 28 NOV 2017 (invited 30-minute talk).
229. **Tschopp, M.A.**, "'Would you say I have a Plethora of Grain Boundaries?' An Interfacial Property Data Repository for Generating, Storing, Curating, and Using Grain Boundaries," Society of Engineering Science, 27 JUL 2017 (invited 40-minute talk).
230. **Tschopp, M.A.**, "Quantifying Uncertainty from (Pseudo)potentials for First Principles and Classical Atomistic Potentials," TMS 2017, 27 FEB 2017 (30-minute invited talk).
231. **Tschopp, M.A.**, "Quantifying Structure-Property Relationships of Grain Boundaries and Interfaces at the Atomic Scale for Design of Polycrystalline Materials," TMS 2017, 27 FEB 2017 (20-minute invited talk).
232. Shawn Coleman, **Efraín Hernández–Rivera**, DeCarlos Taylor, Jenn Synowczynski-Dunn, Mark A. Tschopp, "Validation and optimization of boron carbide interatomic potentials using XRD," International Conference & Exposition on Advanced Ceramics & Composites, JAN 2017, Daytona Beach, FL (30-minute invited talk).
233. **Tschopp, M.A.**, "Influence of Grain Boundary Structure on Segregation of Point Defects, Helium, and Hydrogen," ASME IMECE 2016, 16 NOV 2016 (40-minute invited talk).
234. **Tschopp, M.A.**, "Multiscale Approach to Engineering Microstructure in Boron-Based Armor Ceramics," ASME IMECE 2016, 14 NOV 2016 (40-minute invited talk).
235. **Tschopp, M.A.**, Hernandez, E., Coleman, S, Chowdhury, S., "A Metamodeling Approach for

Parameter Sensitivity Analysis and Uncertainty Quantification in a Boron-Carbide Interatomic Potential," MS&T 2016, 26 OCT 2016 (40-minute invited talk).

236. Daniel Foley, Shawn Coleman, **Garritt Tucker**, Mark Tschopp, "Linking Nanoscale Deformation Mechanisms and Interfaces with Diffraction Profiles in Nanocrystalline Materials," MS&T 2016, OCT 24, 2016 (40-minute invited talk).
237. **Tschopp, M.A.**, "Microstructure as Data: Microstructure Quantification and Analysis for Materials Design," MS&T 2016, 24 OCT 2016 (40-minute keynote).
238. **Tschopp, M.A.**, "Understanding and Exploiting Structure-Property Relationships of Grain Boundaries and Interfaces for Materials Design," Society of Engineering Science, 2 OCT 2016 (invited talk).
239. **Tschopp, M.A.**, "Integrated Computational Materials Engineering: Accelerating Materials Discovery, Development, and Design by Merging Mechanical Engineering, Materials Science, and Computational Science," all-invited talk 'Short Course on ICME' symposium, 2015 ASME IMECE Annual Conference, Houston, TX.
240. **Tschopp, M.A.**, Waas, T., Spadaccini, C., Madison, J., Arnold, S., "Integrated Computational Materials Engineering," 'Short Course on ICME' panel, 2015 ASME IMECE Annual Conference, Houston, TX (invited panel speaker).
241. **Tschopp, M.A.**, "I got my degree. What now?," MS&T 2015, 7 OCT 2015, Columbus, OH (invited panel speaker).
242. **Tschopp, M.A.**, Coleman, S.P., Synowczynski-Dunn, J., "Engineering Interfaces at the Nanoscale for Polycrystalline Design," MS&T 2015, 7 OCT 2015, Columbus, OH.
243. **Darling, K.A.**, Roberts, A.J., **Tschopp, M.A.**, Hornbuckle, B.C., Kecskes, L.J., "Developing Stable Bulk Nanocrystalline Cu Alloys from Powder Precursors," International Workshop on Interfaces at Bear Creek, SEP 30, 2015, Bear Creek, PA.
244. **Tschopp, M.A.**, "Microstructure Quantification and Analysis for ICME of High Temperature Alloys," TMS 2015, High-Performance Aerospace Alloys Design Using ICME Approach symposium, 17 MAR 2015, Lake Buena Vista, FL.
245. **Darling, K.A.**, **Tschopp, M.A.**, Kecskes, L.J., "Effect of Processing Parameters on the Microstructure of Mechanically Alloyed Nanostructured Al–Mn Alloys," TMS 2015, Advanced Composites for Aerospace, Marine, and Land Applications II symposium, MAR 16, 2015, Lake Buena Vista, FL.
246. **Tschopp, M.A.**, "Armed with Science: Career Experiences and Opportunities in Government Defense Laboratories," MS&T 2014, Perspectives for Emerging Materials Professionals – Career Perspectives for Emerging Materials Professionals symposium, 14 OCT 2014, Pittsburgh, PA.
247. **Gao, F.**, Yang, L, Gao, N., Tschopp, M.A., Kurtz, R.J., "Evolution of Nano Gas bubbles: Atomistic Simulations at Experimental Time Scales," CAARI 2014, International Conference on the Application of Accelerators in Research and Industry, MAY 25–30, 2014, San Antonio, TX.
248. **Tschopp, M.A.**, El Kadiri, H., Barrett, C.D., "Towards understanding shear and shuffles during compound twinning in hexagonal close-packed structures (Everyday I'm Shuffling!)," TMS 2014, 16–20 FEB 2014, San Diego, CA.
249. **Tschopp, M.A.**, Solanki, K.N., Nouranian, S., "Understanding and Automating the Design Aspects of Interatomic Potential Design (Being Mike Baskes: Cloning Mike's Brain for the Future of Interatomic Potential Design)," TMS 2014, 16–20 FEB 2014, San Diego, CA.
250. **Tschopp, M.A.**, Atwater, M.A., Darling, K.A., "*Expanding* solid-state foaming: Intraparticle expansion as a means to enhance porosity in metals," TMS 2014, 16–20 FEB 2014, San Diego, CA.
251. **Tschopp, M.A.**, Darling, K.A., Kecskes, L., Roberts, A.J., Kapoor, D., Mathaudhu, S., Zahrah, T., "Bulk Consolidation of Nanostructured Cu-Ta Alloys," TMS 2014, 16–20 FEB 2014, San Diego, CA.
252. **Nouranian, S.**, Tschopp, M.A., Gwaltney, S.R., Baskes, M.I., Horstemeyer, M.F., "A Parameterized Interatomic Potential for Saturated Hydrocarbons Using the Modified Embedded-Atom Method," TMS 2014, FEB 16–20, 2014, San Diego, CA.

253. **Tschopp, M.A.**, Kecskes, L., Darling, K.A., "High Strain Rate Properties of Nanostructured Cu-Ta Alloys," TMS 2014, 16–20 FEB 2014, San Diego, CA.
254. **Bhattia, M.A.**, Adlakha, I., Solanki, K.N., Tschopp, M.A., "Energetically-driven approach for evaluating hydrogen enhanced localized plasticity versus hydrogen enhanced decohesion mechanisms in iron," TMS 2014, FEB 16–20, 2014, San Diego, CA.
255. **Gao, F.**, Yang, L., Heinisch, H., Jiang, W., Kurtz, R.J., Terentyev, D., He, X.F., Tschopp, M.A., "Modeling He Effects on Microstructure Evolution in α-Fe," 16th International Conference on Fusion Reactor Materials, Beijing, China, OCT 20–26, 2013.
256. **Tschopp, M.A.**, "Characterizing Primary Dendritic Microstructures to Quantify the Processing-Structure-Property Relationship In Single Crystal Nickel-Based Superalloys," ASME 2013 IMECE, 19 NOV 2013, San Diego, CA.
257. **Tschopp, M.A.**, Darling, K.A., Kecskes, L., Murdoch, H.A., "Grain Boundaries Galore: Tailoring the Composition, Processing, and Structure for Enhanced Thermal Stability and Mechanical Properties of Nanocrystalline Metals," MS&T 2013, 27–31 OCT 2013, Montreal, Canada.
258. **Tschopp, M.A.**, Gao, F., Solanki, K.N., Sun, X., "Energetics and length scales of point defect and element segregation to grain boundaries in Fe," TMS 2013, Modeling and Experimental Validation of Multiscale Mechanical Behavior from Atomic Scale to Macro Scale symposium, 7 MAR 2013, San Antonio, TX.
259. **Tschopp, M.A.**, Atwater, M.A., Hammond, V.H., Roberts, A.J., Maupin, H.E., Darling, K.A., Kecskes, L.J., "Influence of Processing Parameters on the Microstructure and Mechanical Properties of Lightweight High Entropy Alloys," TMS 2013, Symposium on High Entropy Alloys, 7 MAR 2013, San Antonio, TX.
260. **Gao, F.**, Tschopp, M.A., Yang, L., Hu, S., Heinisch, H., Kurtz, R., "Multiscale Modeling of He Effects on Microstructure Evolution in Alpha-Fe," TMS 2013, Mesoscale Computational Materials Science of Energy Materials: Irradiation and Defects symposium, MAR 5th, 2013, San Antonio, TX.
261. **Gao, F.**, Yang, L., Li, Y., Hu, S., Sun, X., Tschopp, M.A., "Evolution of Defects and He within Grain Boundaries in Fe," MS&T 2012, Microstructure-Based Property Prediction and Small Scale Experimental Validation: Microstructure Effects, OCT 9th, 2012, Pittsburgh, PA.
262. **Tschopp, M.A.**, "Career Mobility: Personal experience and lessons learned from industry, government laboratories, and academia," MS&T 2012, Perspectives for Emerging Materials Professionals, 9 OCT 2012, Pittsburgh, PA.
263. **Barrett, C.D.**, Tschopp, M.A., El Kadiri, H., "Influence of Crystallographic Orientation on Twin Nucleation in Single Crystal Magnesium," International Conference on Plasticity 2012.
264. **Solanki, K.N.**, Tschopp, M.A., Rhodes, N.R., "Atomic scale study of grain boundary segregation in Fe due to grain boundary morphology and point defects," Environmental Damage in Structural Materials Under Static/Cyclic Loads at Ambient Temperatures, Engineering Conferences International.
265. **Tucker, G.J.**, Tschopp, M.A., McDowell, D.L., "Structure and Dislocation Nucleation in FCC GB Interfaces," Symposium on Structural Transitions and Local Deformation Processes At and Near Grain Boundaries, MS&T 2009, Pittsburgh, PA.
266. **Tschopp, M.A.**, McDowell, D.L., "KEYNOTE: Atomistic simulations of dislocation nucleation in FCC metals," Keynote lecture at 12th International Conference on Fracture 2009, 'Atomistic Fracture and Deformation' symposium, 12–17 JUL 2009, Ottawa, Ontario, Canada.
267. **Groeber, M.A.**, Fahringer, R., Tschopp, M.A., Woodward, C., Dimiduk, D.M., Uchic, M., Rosenberger, A.H., "Integration of 3D Structure Information for a Single X-tal Ni-Base Superalloy into Computational Models for Behavior Prediction," TMS 2009, San Francisco, CA.
268. **Tschopp, M.A.**, McDowell, D.L., "Tension-compression asymmetry in homogeneous dislocation nucleation in single crystal copper," 14^{th} International Symposium on Plasticity 2009, 'Atomistic and Multiscale Modeling of Dislocations and Defects in Solids' symposium, 3–8 JAN 2009, St. Thomas, US Virgin Islands.
269. **Spowart, J.E.**, Wilks, G.B., Tschopp, M.A., "Multi-Scalar Analysis of Area Fractions: Applications for Characterizing Multi-Component Discontinuously-Reinforced Composite Mi-

crostructures," 2008 MS&T, OCT 5th-9th, 2008, Pittsburgh, PA.

270. **Woodward, C.**, Groeber, M.A., Tschopp, M.A., Uchic, M., Dimiduk, D.M., Russ, S., "The Virtual Turbine Blade: Multi-Length Scale Characterization of a Single-Crystal Turbine Blade," MMM 2008, OCT 27th-31th, 2008, Tallahassee FL.
271. Tschopp, M.A., Tucker, G.J., Mayeur, J., **McDowell, D.L.**, "Grain Boundary Structure, Properties and Implications for Dislocation/Disclination Mechanics in FCC Metals," IUTAM symposium, 5–9 NOV 2007, Eindhoven, Germany.
272. **Tschopp, M.A.**, McDowell, D.L., "Dislocation Nucleation in Asymmetric Tilt Grain Boundaries," 13th International Symposium on Plasticity, JUN 2007, Alaska.
273. **McDowell, D.L.**, **Tschopp, M.A.**, Tucker, G.J., "Atomistic Modeling of Grain Boundary Structure and Dislocation Nucleation," Plenary lecture, MS&T 2006, OCT 16th, 2006, Cincinnati, OH (invited plenary).
274. **McDowell, D.L.**, Spearot, D.E., **Tschopp, M.A.**, "Grain Boundary Structure and Dislocation / Disclination Mechanics in Plasticity of FCC Metals," 2006 12^{th} International Symposium on Plasticity, JUL 18th, 2006, Halifax, Nova Scotia.
275. **McDowell, D.L.**, Spearot, D.E., Jacob, K.I., **Tschopp, M.A.**, "Atomistic simulations of disclination structures and evolution in fcc metals," 2006 Mathematisches Forschungsinstitut Oberwolfach 'Mechanics of Materials', JAN 22nd–28th, 2006, Oberwolfach, Germany.

Contributed Conference Presentations (Presenter, Lead Author)

276. **Tschopp, M.A.**, "ICME Challenges: New Approaches for Bridging Atomistic Length Scales through Interatomic Potential Evaluation and Design," ASME IMECE 2016, IMECE2016-68262, NOV 17, 2016.
277. **Tschopp, M.A.**, Shawn Coleman, Srikanth Patala, Arash Banadaki, Zachary Trautt, "Materials Databases: Grain Boundary Datasets for Quantifying Structure-Property Relationships," MS&T 2016, OCT 24, 2016.
278. **Tschopp, M.A.**, "Influence of Grain Boundary Structure on Segregation of Point Defects, Helium, and Hydrogen," ASME IMECE 2016, IMECE2016-68261.
279. **Tschopp, M.A.**, "ICME Challenges: New Approaches for Bridging Atomistic Length Scales through Interatomic Potential Evaluation and Design," ASME IMECE 2016, IMECE2016-68262.
280. **Tschopp, M.A.**, Efrain Hernandez, Shawn Coleman, Souma Chowdhury, "A Metamodeling Approach for Parameter Sensitivity Analysis and Uncertainty Quantification in a Boron-Carbide Interatomic Potential," MS&T 2016.
281. **Tschopp, M.A.**, Shawn Coleman, Srikanth Patala, Arash Banadaki, Zachary Trautt, "Materials Databases: Grain Boundary Datasets for Quantifying Structure-Property Relationships," MS&T 2016.
282. **Tschopp, M.A.**, Coleman, S.P., Synowczynski-Dunn, J., Solanki, K.N., McDowell, D.L., "Atomistic Modeling of Structure-Property Relationships in Grain Boundaries," TMS 2016, FEB 14–18, 2016, Nashville, TN.
283. **Tschopp, M.A.**, Coleman, S.P., "Towards a Data Repository for Atomistic Modeling and Simulation of Grain Boundaries," NIST Workshop, 23 NOV 2015.
284. **Tschopp, M.A.**, Solanki, K.N., Gao, F., Coleman, S., Dunn, J., "Atomistic Modeling for Grain Boundary (Segregation) Engineering: Exploiting Micro- and Macro-Scale Interfacial Structure-Property Relationships," TMS 2015, Polycrystalline Materials: Bringing Together Experiments, Simulations, and Analytic Theories symposium, MAR 17, 2015, Lake Buena Vista, FL.
285. **Tschopp, M.A.**, Oppedal, A., Solanki, K.N., "Local/Global Measurement of Primary Dendrite Arm Spacing in Single Crystal Nickel-Based Superalloys," TMS 2015, Multiscale Microstructure, Mechanics, and Prognosis of High Temperature Alloys symposium, MAR 16, 2015, Lake Buena Vista, FL.
286. **Tschopp, M.A.**, Solanki, K.N., Gao, F., "Energetics and length scales of point defect and element segregation to grain boundaries," MS&T 2014, Interfaces, Grain Boundaries, and Surfaces from Atomistic and Macroscopic Approaches symposium, OCT 14, 2014, Pittsburgh,

PA.

287. **Tschopp, M.A.**, Kecskes, L., Atwater, M.A., Hammond, V., Darling, K.A., "Equal Channel Angular Extrusion Consolidation of Lightweight High Entropy Alloys," TMS 2014, FEB 16–20, 2014, San Diego, CA.
288. **Tschopp, M.A.**, Yin, W., Darling, K.A., Kecskes, L., Wei, Q., "Quasi-static and Dynamic Mechanical Properties of Nanostructured Copper Doped with Tantalum," TMS 2014, FEB 16–20, 2014, San Diego, CA.
289. **Tschopp, M.A.**, Oppedal, A., Miller, J.D., Carino, R., Groeber, M.A., Rosenberger, A.H., Solanki, K.N., "Characterizing Primary Dendritic Microstructures to Quantify the Processing-Structure-Property Relationship in Single Crystal Nickel-Based Superalloys," TMS 2013, Characterization of Minerals, Metals and Materials 2013, MAR 6th, 2013, San Antonio, TX.
290. **Tschopp, M.A.**, Gao, F., Solanki, K.N., Sun, X., "Influence of Grain Boundary Structure on Segregation of Cr/He atoms in Fe," TMS 2013, Integrated Computational Modeling of Materials for Nuclear Energy symposium, MAR 5th, 2013, San Antonio, TX.
291. **Tschopp, M.A.**, Solanki, K.N., Rhodes, N.R., "Energetics of point defect and impurity segregation to grain boundaries in α-Fe," TMS 2012 Annual Meeting & Exhibition, MAR 11th–15th, 2012, Orlando, FL.
292. **Tschopp, M.A.**, Solanki, K.N., Horstemeyer, M.F., Baskes, M.I., Gao, F., Sun, X., Khaleel, M., "Effect of grain boundary character on the segregation of impurities and point defects to grain boundaries in Fe," Deformation and Transitions at Grain Boundaries, MS&T 2011, OCT 16th–20th, 2011, Columbus, OH.
293. **Tschopp, M.A.**, Solanki, K.N., Horstemeyer, M.F., "A generalized framework for quantifying grain boundary structure-property relationships at the nanoscale," Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches – Fundamental and Engineering Issues, MS&T 2011, OCT 16th–20th, 2011, Columbus, OH.
294. **Tschopp, M.A.** "Image Analysis of Microstructure Features," Severstal Visit, MAY 2011, Starkville, MS.
295. **Tschopp, M.A.**, Solanki, K.N., Horstemeyer, M.F., Baskes, M.I., Gao, F., Sun, X., Khaleel, M., "Towards a unified framework for interatomic potential development: Application to the Fe-He system," TMS 2011, Microstructural Processes in Irradiated Materials symposium, FEB 27th–MAR 3rd, 2011, San Diego, CA.
296. **Tschopp, M.A.**, Ward, D.K., Bouvard, J.L., Horstemeyer, M.F., "Atomic Scale Deformation Mechanisms of Amorphous Polyethylene under Tensile Loading," TMS 2011, Massively Parallel Simulations of Materials Response symposium, FEB 27th–MAR 3rd, 2011, San Diego, CA.
297. **Tschopp, M.A.**, Horstemeyer, M.F., Gao, F., Sun, X., Khaleel, M., "Influence of Grain Boundary Character on Point Defect Formation Energies in BCC Fe," MS&T 2010, Phase Stability, Diffusion, Kinetics and Their Applications (PSDK-V) Symposium, OCT 21st, 2010, Houston, TX.
298. **Tschopp, M.A.**, Groeber, M., Simmons, J.P., Rosenberger, A.H., Woodward, C., "Development of Imaging Techniques for Automated Extraction of Microstructural Features from Serial Images," MS&T 2010, Tools, Models, Databases and Simulation Tools Developed and Needed to Realize the Vision of Integrated Computational Materials Engineering Symposium, OCT 20th, 2010, Houston, TX.
299. **Tschopp, M.A.**, Horstemeyer, M.F., "Computational framework for grain boundary structure-property relationships at the nanoscale," MS&T 2010, Tools, Models, Databases and Simulation Tools Developed and Needed to Realize the Vision of Integrated Computational Materials Engineering Symposium, OCT 19th, 2010, Houston, TX.
300. **Tschopp, M.A.**, Groeber, M., Simmons, J.P., Rosenberger, A.H., Woodward, C., "Automated Dendrite Core Detection in Single Crystal Ni-Based Superalloys from Optical Images," MS&T 2009, Microstructure Characterization, Analyses, and Design Symposium, OCT 25th–29th, 2009, Pittsburgh, PA.
301. **Tschopp, M.A.**, Wilks, G.B., Spowart, J.E., "Multi-Scale Analysis of Area Fractions Characterization of Two-Phase Composite Microstructures," ASME IMECE 2009, Novel Approaches in Heterogeneous Materials Analysis and Characterization Symposium, NOV 13th–19th, 2009,

Lake Buena Vista, FL.

302. **Tschopp, M.A.**, Spearot, D.E., McDowell, D.L., "Molecular Dynamics Simulation of Homogeneous Nucleation of Dislocations in Single Crystals," ASME IMECE 2009, Symposium on Modeling at Atomic / Molecular Scale, NOV 13th–19th, 2009, Lake Buena Vista, FL.
303. **Tschopp, M.A.**, McDowell, D.L., "Asymmetric tilt grain boundary structure in copper and aluminum," 2008 MS&T, OCT 5th–9th, 2008, Pittsburgh, PA.
304. **Tschopp, M.A.**, Wilks, G., Spowart, J.E., "Multi-Scale Characterization of Orthotropic Microstructures," 2008 MS&T, OCT 5th–9th, 2008, Pittsburgh, PA.
305. **Tschopp, M.A.**, McDowell, D.L., "Atomistic Simulations of Grain Boundary Dislocation Nucleation," 2008 TMS Annual Meeting & Exhibition, MAR 9th–13th, 2008, New Orleans, LA.
306. **Tschopp, M.A.**, Tiwari, S., Ghosh, S., McDowell, D.L., "Influence of Grain Boundary Character on Nanocrystalline Plasticity," 2008 TMS Annual Meeting & Exhibition, MAR 9th–13th, 2008, New Orleans, LA.
307. **Tschopp, M.A.**, Medlin, D.E., McDowell, D.L., "Dislocation Nucleation at the Vicinal Coherent Twin in FCC Cu and Al," 2008 TMS Annual Meeting & Exhibition, MAR 9th–13th, 2008, New Orleans, LA.
308. **Tschopp, M.A.**, McDowell, D.L., "Structures, Energies, and Dislocation Nucleation of $\Sigma 3$ Asymmetric Tilt Grain Boundaries," TMS Conference 2007, FEB 26th, 2007, Orlando, FL.
309. **Tschopp, M.A.**, McDowell, D.L., "Microrotation-Augmented Energy-Minimization for Generating 3D Nanocrystalline Cu Structures" and "Structures and Energies of $\Sigma 3$ Asymmetric Tilt Grain Boundaries," 16th European Conference of Fracture, JUL 4th, 2006, Alexandroupolis, Greece.
310. **Tschopp, M.A.**, McDowell, D.L., "Microrotation-Augmented Energy-Minimization for Generating Nanocrystalline Cu Structures," 2005 ASME IMECE, NOV 8th, 2005, Orlando, FL.
311. **Tschopp, M.A.**, Wang, Q.G., DeWyse, M.J., "Mechanisms of Misrun Formation in Aluminum Lost Foam Castings," AFS 106th Casting Congress - Lost Foam Casting Division 11, MAY 2002, Minneapolis, MN.
312. **Tschopp, M.A.**, "Fluidity of Aluminum A356 in the Lost Foam Casting Process," AFS 106th Casting Congress - Lost Foam Casting Division 11, MAY 2002, Minneapolis, MN.
313. **Tschopp, M.A.**, "Water Jacket Leakers - Intake Spring Deck Fold and Intake Port #12 Fold Defects," GM Lost Foam Technology Exchange, OCT 2001, Saginaw, MI.
314. **Tschopp, M.A.**, Ramsay, C.W., Askeland, D.R., "Mechanisms of Formation of Pyrolysis Defects in Aluminum Lost Foam Castings" AFS 104th Casting Congress - Lost Foam Casting Division 11, APR 2000, Pittsburgh, PA.
315. **Tschopp, M.A.**, Ramsay, C.W., Askeland, D.R., "Processing Variable Significance on Metal Flow and Defect Formation in Thick Section LFCs - Full Factorial Experiment," AFS 104th Casting Congress - Lost Foam Casting Division 11, APR 2000, Pittsburgh, PA.
316. **Tschopp, M.A.**, Askeland, D.R., "Mechanisms of Formation of Pyrolysis Defects in Aluminum Lost Foam Castings," DOE Lost Foam Consortium & Division 11 AFS Meeting, OCT 1999, Des Plaines, IL.

Conference Presentations (Co-Author)

317. **Patala, S.**, Tschopp, M.A., "An efficient Monte-Carlo algorithm for determining the minimum energy structures of metallic grain boundaries," TMS 2018, MAR 12, 2018.
318. **Paul, J.**, Limmer, K., Tschopp, M.A., Chaudhuri, S., "Searching for Corrosion Resistant Mg Alloys Using Genetic Algorithms," TMS 2018, MAR 12, 2018.
319. **Dickel, D.**, Tschopp, M.A., Horstemeyer, M.F., "Calibration of a Titanium Modified Embedded Atom Method Potential to High Temperature Behavior," TMS 2018, MAR 13, 2018.
320. **Paudel, Y.R.**, Barrett, C.D., Tschopp, M.A., Inal, K., El Kadiri, H., "A Micromechanical Study for Twin Nucleation in hcp Metals: Development of Analytical Solution to Study Twin Bands Formation," TMS 2018, MAR 15, 2018.
321. **Patala, S.**, Tschopp, M.A., "An efficient Monte-Carlo algorithm for determining the minimum energy structures of interfaces," MRS 2017 Fall Conference, 11/27/17.

322. **Paudel, Y.R.**, Tschopp, M.A., El Kadiri, H., et al., "An Analytical Micromechanical Model Solution for Twin Nucleation in Hexagonal Close-packed Metals," MS&T 2017, 10/11/2017.
323. **Hornbuckle, B.C.**, Tschopp, M.A., Roberts, A.J., Darling, K.A., et al., "Utilizing Site Specific Shear Punch Testing to Evaluate Friction Stir Welded Al-2139 T8 Plate," MS&T 2017, 10/12/2017.
324. **Limmer, K.**, Tschopp, M.A., McWilliams, B., et al. "Design of Experiments Approach for DMLS," MS&T 2017, 10/9/2017.
325. **Goins, P.**, Tschopp, M.A., "Magnetic Fields and Thermal Gradients: Simulated Engineering of Three-Dimensional Microstructure through Thermomagnetic Manipulation," MS&T 2017, 10/12/2017.
326. **Hernández–Rivera, E.**, Tschopp, M.A., "Modeling Viscoplastic Deformation of Synthetic Welded Microstructures," MS&T 2017, 10/12/2017.
327. **Khanzadeh, M.**, Tschopp, M.A., Bian, L., "Classification based porosity prediction technique using melt pool signal," 2017 Annual International Solid Freeform Fabrication Symposium (SFF Symp 2017), 08/09/2017.
328. **Hernández–Rivera, E.**, Chowdhury, S., Tschopp, M.A., Coleman, S., "Design of Experiments Approach to Optimizing Complex Bond Order and Reactive Potentials," TMS 2017, FEB 27, 2017.
329. **Aboutaleb, A.**, Bian, L., Rao, P.K., Tschopp, M.A., "Accelerated Geometry Accuracy Optimization of Additive Manufacturing Parts," ASME Manufacturing Science and Engineering Conference (MSEC2017), JUN 2017.
330. **M. Khanzadehdaghalian**, Chowdhury, S., Tschopp, M.A., Bian, L.,"Anomaly Detection of Additively Manufactured Thin-Wall Using 3-D Modeling of Melt Pool Temperature Distribution," ASME Manufacturing Science and Engineering Conference (MSEC2017), JUN 2017.
331. **Hernández–Rivera, E.**, Tschopp, M.A., Coleman, S., Taylor, D., Subhash, G., Parsard, G., "Similarity Metrics Analysis of B_4C Polymorphic Structural Differences As Measured From Virtual XRD," MACH Conference 2017.
332. **Hernández–Rivera, E.**, Tschopp, M.A., Baskes, M.I., "MEAM Parameter Space Optimization for Elemental Boron," International Conference & Exposition on Advanced Ceramics & Composites, JAN 2017, Daytona Beach, FL.
333. **Hernández–Rivera, E.**, Coleman, S., Tschopp, M.A., "Quantifying Similarities Between Gaussian–based Spectral Responses and its Application to Virtual Materials Characterization," International Conference & Exposition on Advanced Ceramics & Composites, JAN 2017, Daytona Beach, FL.
334. **Dongare, A.M.**, Chen, J., Tschopp, M.A., "Spall Failure Response of Nanocrystalline Cu-Ta Systems at the Atomic Scales," ASME IMECE 2016, NOV 14, 2016.
335. **Banadaki, A.**, Tschopp, M.A., Patala, S., "An Efficient Algorithm for Determining the Minimum Energy Structures of Grain Boundaries," MS&T 2016, OCT 24, 2016.
336. **Chen, J.**, Tschopp, M.A., Dongare, A.M., "Effect of Solute on the Shock and Spall Failure Response of Nanocrystalline Cu-Ta Systems at the Atomic Scales," ASME IMECE 2016.
337. **Foley, D.**, Coleman, S., Tschopp, M.A., Tucker, G.J., "Linking Nanoscale Deformation Mechanisms and Interfaces with Diffraction Profiles in Nanocrystalline Materials," MS&T 2016.
338. **Hernández–Rivera, E.**, Tschopp, M.A., Allen, J.B., "Implementation of a coupled Read–Shockley Q–state Monte Carlo into the SPPARKS framework to Simulate Magnetic Field Influence on Textures," MS&T 2016.
339. **Hernández–Rivera, E.**, Coleman, S.P., Tschopp, M.A., "Sensitivity Analysis of the ReaxFF Parameter Space,' ' SIAM Conference on Mathematical Aspects of Materials Science (MS16), MAY 8–12, 2016, Philadelphia, PA.
340. **Rajagopalan, M.**, Turnage, S., Darling, K., Tschopp, M.A., Solanki, K.N., "Microstructural Evolution of Nanocrystalline Copper-tantalum Alloy," TMS 2016, FEB 14–18, 2016, Nashville, TN.
341. **Turnage, S.**, Darling, K., Rajagopalan, M., Tschopp, M.A., Solanki, K.N., "Dynamic Behavior of a Nanocrystalline Cu-Ta Alloy," TMS 2016, FEB 14–18, 2016, Nashville, TN.
342. **Coleman, S.P.**, Tschopp, M.A., Synowczynski-Dunn, J., "Building, Optimizing and Charac-

terizing Grain Boundaries in Atomistic Simulations," TMS 2016, FEB 14–18, 2016, Nashville, TN.

343. **Bhatia, M.**, Solanki, K.N., Tschopp, M.A., "MEAM potential for Boron Suboxide (B_6O)," TMS 2016, FEB 14–18, 2016, Nashville, TN.
344. **Turnage, S.**, Rajagopalan, M., Darling, K., Solanki, K., Tschopp, M.A., "Dynamic Behavior and Microstructural Evolution of Nanocrystalline and Ultrafine Grained Cu-Ta Alloys," TMS 2016, FEB 14–18, 2016, Nashville, TN.
345. **Synowczynski-Dunn, J.**, Tschopp, M.A., Coleman, S.P., "First Principles Study of Defect Formation in Bulk Boron Suboxide," International Conference & Exposition on Advanced Ceramics & Composites, JAN 26, 2016, Daytona Beach, FL (poster presentation).
346. **Foley, D.**, Coleman, S.P., Tschopp, M.A., "Study of Nanocrystalline Deformation Using Virtual Diffraction Characterization," 23rd ARL/USMA Technical Symposium, OCT 14, 2015 (poster presentation).
347. **Hernández–Rivera, E.**, Coleman, S.P., Tschopp, M.A., "Hybrid Deterministic-Statistical Models for Mesoscale Microstructural Evolution," 23rd ARL/USMA Technical Symposium, OCT 14, 2015 (poster presentation).
348. **Coleman, S.P.**, Synowczynski-Dunn, J., Hernandez, E., Tschopp, M.A., "Modeling Boron Ceramics: Defects and Interfaces," MEDE Fall Meeting, OCT 15, 2015, White Marsh, MD (poster presentation).
349. **Hernández–Rivera, E.**, Coleman, S.P., Tschopp, M.A., "Hybrid Deterministic-Statistical Models for Mesoscale Microstructural Evolution," MEDE Fall Meeting, OCT 15, 2015, White Marsh, MD (poster presentation).
350. **Shi, J.Y.**, Gao, F., Peng, L., Ye, M.Y., Tschopp, M.A., "Computational Study of Grain Boundary Interactions with Helium Under Tensile Stress in Alpha-Iron," ICFRM17, OCT 12–16, 2015, Aachen, Germany.
351. **Coleman, S.P.**, Synowczynski-Dunn, J., Tschopp, M.A., "Grain Boundary Builder for Atomistic Simulations," MS&T 2015, OCT 8, 2015, Columbus, OH.
352. **Synowczynski-Dunn, J.**, Tschopp, M.A., Coleman, S.P., "Density Functional Theory Study of Vacancy Formation in B_6O," MS&T 2015, OCT 6, 2015, Columbus, OH (poster presentation).
353. **Coleman, S.P.**, Tucker, G.J., Tschopp, M.A., "Decomposing Nanocrystalline Deformation Using Virtual Diffraction," MS&T 2015, OCT 7, 2015, Columbus, OH.
354. **Coleman, S.**, Tschopp, M.A., "Virtual Diffraction: A Technique for Coupling Atomistic Simulations and Experiments," MACH Conference 2015, In-situ, Time-resolved Measurements and Computational Modeling symposium, APR 8th, 2015, Annapolis, MD.
355. **Rajagopalan, M.**, Adlakha, I., Muthegowda, N., Solanki, K.N., Tschopp, M.A., "Energetics Associated with the Interaction between Embrittlement Species and Grain Boundaries in Alpha-Iron," TMS 2015, Materials and Fuels for the Current and Advanced Nuclear Reactors IV symposium, MAR 19, 2015, Lake Buena Vista, FL.
356. **Solanki, K.N.**, Bhatia, M., Zhang, X., Azarnoush, M., Lu, G., Tschopp, M.A., "Role of Oxygen on Mechanical Properties of High Temperature Materials: A QM/MM Study," TMS 2015, Multiscale Microstructure, Mechanics, and Prognosis of High Temperature Alloys symposium, MAR 18, 2015, Lake Buena Vista, FL.
357. **Turnage, S.**, Darling, K.A., Rajagopalan, M., Tschopp, M.A., Solanki, K.N., "Dynamic Behavior of a Nanocrystalline Cu–Ta Alloy," TMS 2015, Polycrystalline Materials: Bringing Together Experiments, Simulations, and Analytic Theories symposium, MAR 16, 2015, Lake Buena Vista, FL.
358. **Hornbuckle, C.**, Kecskes, L.J., Darling, K.A., Tschopp, M.A., Tanaporn, R., Banerjee, R., Pun, G.P., Mishin, Y., "Microstructure and Mechanical Properties of Bulk Nanostructured Cu–Ta Alloys Consolidated by Equal Channel Angular Extrusion," TMS 2015, Novel Synthesis and Consolidation of Powder Materials symposium, MAR 16, 2015, Lake Buena Vista, FL.
359. **Nouranian, S.**, Gwaltney, S.R., Baskes, M.I., Tschopp, M.A., Horstemeyer, M.F., "Computational Nanomechanics of Single-Chain Molecular Bond Rupture in Hydrocarbon-Based Polymers Using Modified Embedded Atom Method Potential," TMS 2015, Computational

Modeling and Stochastic Methods in Materials Discovery and Properties symposium, MAR 16, 2015, Lake Buena Vista, FL.

360. **Nouranian, S.**, Baskes, M.I., Gwaltney, S.R., Tschopp, M.A., Horstemeyer, M.F., "An Interatomic Potential for the Interfacial Characterization of Titanium and Polyethylene Based on the Modified Embedded-Atom Method," 14th AIChE Annual Meeting 2014, NOV 17, 2014, Atlanta, GA.
361. **Turnage, S.**, Solanki, K.N., Whittington, W., Florea, R., Tschopp, M.A., Darling, K.A., "Structure-property relationships of 6061-T6 aluminum alloy thermo-mechanically bonded with varying temperatures," ASME 2014, Montreal, Quebec, Canada.
362. **Atwater, M.A.**, Darling, K.A., Tschopp, M.A., "Solid-state Foaming with Additive Expansion: A Simple Method for Teaching Old Dogs New Tricks," MS&T 2014, Advanced Manufacturing Technologies – Advanced Manufacturing III symposium, OCT 15, 2014, Pittsburgh, PA.
363. **Atwater, M.A.**, Darling, K.A., Tschopp, M.A., Murdoch, H.A., Kecskes, L.J., "Stabilization and Mechanical Properties of Nanocrystalline Copper by Alloying with Tantalum," MS&T 2014, Sintering and Related Powder Processing Science and Technologies symposium, OCT 15, 2014, Pittsburgh, PA.
364. **Rajagopolan, M.**, Bhatia, M.A., Solanki, K.N., Tschopp, M.A., "Investigation of Atomic-Scale Energetics on Liquid Metal Embrittlement of Aluminum due to Gallium," TMS 2014, FEB 16–20, 2014, San Diego, CA.
365. **Murdoch, H.A.**, Darling, K.A., Tschopp, M.A., Roberts, A.J., Cook, T., "Grain refinement and growth in copper using surface mechanical attrition treatment at cryogenic temperatures," TMS 2014, FEB 16–20, 2014, San Diego, CA.
366. **Turnage, S.**, Solanki, K.N., Whittington, W., Florea, R., Tschopp, M.A., Darling, K.A., "Structure-property relationship investigation of a thermo-mechanical-electrical processed spot weld," TMS 2014, FEB 16–20, 2014, San Diego, CA.
367. **Asadi, E.**, Zaeem, M.A., Moitra, A., Tschopp, M.A., "Effects of vacancies on the generalized stacking fault energy of metals," TMS 2014, FEB 16–20, 2014, San Diego, CA.
368. **Adlakha, I.**, Solanki, K.N., Tschopp, M.A., "Atomic scale investigation of grain boundary structure role on deformation and crack growth dynamics in aluminum," TMS 2014, FEB 16–20, 2014, San Diego, CA.
369. **Nouranian, S.**, Tschopp, M.A., Gwaltney, S.R., Baskes, M.I., Horstemeyer, M.F., "Simulations of bond rupture in normal alkanes under tensile molecular deformation using reactive potentials," AIChE 2013, NOV 3–8, 2013, San Francisco, CA.
370. **Nouranian, S.**, Tschopp, M.A., Gwaltney, S.R., Baskes, M.I., Horstemeyer, M.F., "A Reactive Interatomic Potential for the Molecular Dynamics Simulations of Saturated Hydrocarbons Using the Modified Embedded-Atom Method," AIChE 2013, NOV 3–8, 2013, San Francisco, CA.
371. Bhattia, M., Adlakha, I., **Solanki, K.N.**, Tschopp, M.A., "Influence of Hydrogen and Point Defects in BCC Iron: A nanoscale investigation," TMS 2013, Microstructural Processes in Irradiated Materials symposium, MAR 4th, 2013, San Antonio, TX.
372. **Spear, P.**, Akasheh, F., Tschopp, M.A., Li, B., "Atomistic Generalized Stacking Fault Energy Curve for Metallic Elements at the Interface," Regional Undergraduate Research Symposium at Albany State University, OCT 24th-25th, 2012, Albany, GA.
373. **Wright, T.**, Akasheh, F., Tschopp, M.A., Li, B., "Identification of the Dislocation structure in Nanoscale Metallic Interfaces," Regional Undergraduate Research Symposium at Albany State University, OCT 24th-25th, 2012, Albany, GA.
374. **Zhang, X.E.**, Tschopp, M.A., Shi, S., Cao, J., "The Strain-stress Behavior of Amorphous Cellulose from Molecular Dynamics Simulation," 2012 International Conference on Green Power, Materials and Manufacturing Technology and Applications (GPMMTA 2012), JUL 17th-19th, 2012, Kunming, Yunnan, China.
375. **Solanki, K.N.**, Tschopp, M.A., Rhodes, N.R., "Nanoscale investigation of segregation and embrittlement in α-Fe due to hydrogen and grain boundary character," TMS 2012 Annual Meeting & Exhibition, MAR 11th–15th, 2012, Orlando, FL.

376. **Adlakha, I.**, Solanki, K.N., Moitra, A., Tschopp, M.A., "Influence of Size on Strength of Nickel Nanowires," TMS 2012 Annual Meeting & Exhibition, MAR 11th–15th, 2012, Orlando, FL.
377. **Bhattia, M.**, Solanki, K.N., Moitra, A., Tschopp, M.A., "Role of substitution elements on twinning nucleation mechanism in Magnesium," Deformation, Damage, and Fracture of Light Metals and Alloys, TMS 2012 Annual Meeting & Exhibition, MAR 11th–15th, 2012, Orlando, FL.
378. **Adlakha, I.**, Solanki, K.N., Moitra, A., Tschopp, M.A., "A nanoscale investigation on the effect of Hydrogen in confined volumes," TMS 2012 Annual Meeting & Exhibition, MAR 11th–15th, 2012, Orlando, FL.
379. **Asafa, O.**, Stone, T., Tschopp, M.A., Gullett, P., Horstemeyer, M.F., "Molecular Dynamics Study of Frictional Effects on the Compaction of Metal Nanoparticles," Multi Scale Modeling of Microstructure Deformation in Material Processing, MS&T 2011, OCT 16th–20th, 2011, Columbus, OH.
380. Moitra, A., **Solanki, K.N.**, Bhattia, M., Tschopp, M.A., "Orientation effect on dislocation nucleation and related interaction during void growth simulations in Aluminum," 11th US National Congress on Computational Mechanics, JUL 25th–28th, 2011, Minneapolis, MN.
381. **Bouvard, J.L.**, Tschopp, M.A., Bammann, D., Horstemeyer, M.F., "Multiscale Modeling of Amorphous Polymers: from Molecular Dynamic Simulations to Continuum Models," 11th US National Congress on Computational Mechanics, Computational science of soft matter in extreme environments: from molecules to finite elements symposium, JUL 25th–28th, 2011, Minneapolis, MN.
382. **Bouvard, J.-L.**, Tschopp, M.A., Bouvard, C., Denton, B., Horstemeyer, M.F., "Simulation of Impact Tests on Polycarbonate at Different Strain Rates and Temperatures," SEM 2011, JUN 13th–16th, 2011, Uncasville, CT.
383. **Zhang, X.E.**, Tschopp, M.A., Shi, S., Cao, J., "Molecular Dynamics Simulations of Deformation in Amorphous Cellulose," 11th International Conference on Wood & Biofiber Plastic Composites, Nanotechnology in Wood Composites Symposium, MAY 16th–17th, 2011, Madison, WI.
384. **Liyanage, L.**, Houze, J., Kim, S.-G., Tschopp, M.A., Kim, S., Baskes, M.I., Horstemeyer, M.F., "Modified Embedded Atom Method potential for Fe-C system," APS MAR Meeting 2011, Session L35: Metals: Alloys and Impurities, MAR 21st–25th, 2011, Dallas, TX.
385. **Barrett, C.D.**, Tschopp, M.A., El Kadiri, H., Li, B., "Influence of Crystallographic Orientation on Twin Nucleation in Single Crystal Magnesium," TMS 2011, Magnesium Technology 2011 symposium, FEB 27th–MAR 3rd, 2011, San Diego, CA.
386. **Bhattia, M.A.**, Solanki, K.N., Moitra, A., Tschopp, M.A., "The effect of crystallographic orientation on void growth: A molecular dynamics study," TMS 2011, Deformation, Damage, and Fracture of Light Metals and Alloys symposium, FEB 27th–MAR 3rd, 2011, San Diego, CA.
387. Lugo, M., Tschopp, M.A., Jordan, J.B., **Horstemeyer, M.F.**, "Microstructure relationship in the damage evolution process of an AZ61 magnesium alloy," TMS 2011, Magnesium Technology 2011 symposium, FEB 27th–MAR 3rd, 2011, San Diego, CA.
388. **Bhattia, M.**, Tschopp, M.A., Solanki, K., Horstemeyer, M.F., "Influence of Crystallographic Orientation on void growth in Al," MS&T 2010, Multi-Scale Modeling of Microstructure Deformation in Material Processing Symposium, OCT 17th–21st, 2010, Houston, TX.
389. Tschopp, M.A., **Tucker, G.J.**, McDowell, D.L., "Atomistic Simulations of Dislocation Nucleation in Copper Grain Boundaries under Uniaxial Tension and Compression," 2008 TMS Annual Meeting & Exhibition, MAR 9th–13th, 2008, New Orleans, LA.
390. **Wilks, G.B.**, Tschopp, M.A., Spowart, J.E., "Directional Multi-Scale Analysis of Area Fractions," 2008 MS&T, OCT 5th–9th, 2008, Pittsburgh, PA.
391. **Tucker, G.J.**, Tschopp, M.A., McDowell, D.L., "Atomistic Simulations of Free Volume in $\langle 100 \rangle$ and $\langle 110 \rangle$ Tilt Grain Boundaries in Cu and Al," TMS Conference, FEB 27th, 2007, Orlando, FL.
392. **McDowell, D.L.**, Tschopp, M.A., Spearot, D.E., "Atomistic Simulations of Grain Boundary

Structure and Evolution in FCC Metals," MRS Conference, NOV 28th, 2005, Boston, MA.

Short Course Presentations

Over the past several years, over 3000 people from around the world (majority DoD) have registered for several machine learning, artificial intelligence, and data science short courses (from 1–2 days to 1–2 weeks) that I developed and taught virtually and in-person, teaching the basic concepts, math, and algorithms in these areas starting from linear algebra through convolutional neural networks, autoencoders and generative adversarial networks, sequence models, natural language processing, and transformers—presented in both Python scripting as well as in Excel.

1. **Tschopp, M.A.**, "Machine Learning for Everyone: May The Fourth Be With You!," Microsoft TEAMS, 4–5 MAY 2026 (16-h total).
   - ⋆ Sixth and final iteration of the course; ≈370 registered participants.
   - ⋆ Post-course survey (n=21): overall course 4.63/5.0, instructor 4.95/5.0.
   - ⋆ "Truly, one of the best courses I've taken... Very entertaining, engaging, educational and excellent, the four E's."
2. **Tschopp, M.A.**, "Machine Learning for Everyone: May The Course Be With You," Microsoft TEAMS, 1–2 MAY 2025 (16-h total).
   - ⋆ >350 registered participants.
   - ⋆ "AWESOME!", "Excellent course! I've walked away with a better understanding of what ML is and how to set it up", "Fantastic course. Thank you for all the foundational knowledge to catch up with how the field has changed over the last 10 years."
3. **Tschopp, M.A.**, "Army HQ Strategic Broadening Seminar: AI for Soldiers," 1 Week In-Resident Course, 7-11 APR 2025 (40-h total).
   - ⋆ Led development and planning for course, adapting course to 1 week. Taught one day ML crash course.
   - ⋆ >29 Soldiers and civilians from bases around the country.
   - ⋆ Comments: "The instructors were fantastic. They brought interest into every concept and found a way to bring us back to the "'so what" of how learning the algorithms and math and concepts woudl better assist us in using AI/ML.", "Thank you! The course was excellent."
   - ⋆ "Army scientists train Soldiers on how to leverage AI technologies," ARL Public Affairs, 19 MAY 2025.
   - ⋆ "Artificial Intelligence for Soldiers 2025: Enhancing AI Readiness for the Army," ARL-SR-0506 (JUN 2025) 1-79.
   - ⋆ Requested by Army HQDA for 2 courses in FY26
4. **Tschopp, M.A.**, "Artificial Intelligence 101: A Gentle Introduction to AI," Rock Island Arsenal, AMC Army Sustainment Command HQ, 10-11 DEC 2024 (10-h total).
   - ⋆ Capstone course for AMC-ASC's month-long Data Literacy training series.
   - ⋆ >40 registered in-person participants.
5. **Tschopp, M.A.**, "Machine Learning 101," Rock Island Arsenal, AMC Joint Munitions Command HQ, 24-26 SEP 2024 (20-h total).
   - ⋆ >30 registered in-person participants.
   - ⋆ Comments: "Fantastic course", "Great Class, 10/10 recommended", "Probably one of the best multi-day presentations in terms of keeping engaged..."
   - ⋆ BG Ronnie Anderson Jr., JMC's Commander, recognized Dr. Tschopp with an award
   - ⋆ "Operationalizing Science at JMC with Artificial Intelligence and Machine Learning," Joint Munitions Command Public Affairs.
6. **Tschopp, M.A.**, "Machine Learning for Everyone: May The Fourth Be With You," Microsoft TEAMS, 2–3 MAY 2024 (16-h total).
   - ⋆ >300 registered participants, 4800 person-hours of ML instruction.
   - ⋆ "I'm taking some training on Machine Learning from ARL. This guy is delightfully obsessed with Star Wars. The course opened with script rolling up the screen. It has theme music for opening and breaks. He is wearing a Jedi cloak and occassionally brandishes a light saber. Don't end your government career without experiencing something like this. P.S. Oh, and the course content and delivery is phenomenal. It's making me feel smarter."

- ⋆ "The course was fabulous and it demystified ML for me! The instructor is extremely knowledgeable regarding ML. This is one of the best courses I have taken. A ton of material was presented and the instructor made it understandable and interesting. The Star Wars examples made the class fun as well :-) The instructor provided many references and tips on where to find additional information regarding our future ML endeavors. Many thanks to the instructor for all the time and effort put in and to offer the course."

7. **Tschopp, M.A.**, "Army HQ Strategic Broadening Seminar: AI for Soldiers," 2 Week In-Resident Course, 8-19 APR 2024 (80-h total).
   - ⋆ Only Strategic Broadening Seminar course selected by Army HQ that is taught within the federal government.
   - ⋆ Led development and planning for pilot course, which involved coordination of ≈100 people. Taught multiple days of instruction on AI and ML.
   - ⋆ >24 Soldiers from bases around the world.
   - ⋆ Comments: "Dr. Tschopp and Dr. Hobbs were phenomenal. [...] I loved the course, and it was encouraging to know that we have 1600 researchers pioneering the way ahead for the armed forces. With the outlook, skills, and knowledge gained from the course I have a significantly better understanding of the capabilities and limitations of AI."
   - ⋆ "Artificial Intelligence for Soldiers 2024," ARL-SR-0497 (112 pages), summarized the development and feedback from this inaugural course.
8. **Tschopp, M.A.**, "Artificial Intelligence 101," Rock Island Arsenal, AMC Joint Munitions Command HQ, 30 SEP 2023 (8-h total).
   - ⋆ >100 registered participants.
   - ⋆ Post-course survey: "Overall evaluation of course is excellent" (4.91/5.0), "Instructor is excellent" (4.97/5.0), "Highly recommend to others" (4.97/5.0)
   - ⋆ Comments: "I really loved this course! I have already recommended it to just about everyone I have spoken to, haha!", "Great class. Mark is also a very good instructor.", "Mark did a great job!", "S-tier break screens, Mark"
9. **Tschopp, M.A.**, "Machine Learning for Everyone: May The Fourth Be With You," Microsoft TEAMS, 4–5 MAY 2023 (15-h total).
   - ⋆ >350 registered participants, 3000 person-hours of ML instruction, 2 guest speakers.
   - ⋆ Post-course survey: "Overall evaluation of course is excellent" (4.91/5.0), "Instructor is excellent" (4.97/5.0), "Highly recommend to others" (4.97/5.0)
   - ⋆ "Dr. Tschopp's course was one of the rare courses that teaches an incredibly complex subject effectively to a diverse audience from PhDs to old engineers like me 22 years out of college (25 out of linear algebra!). Outstanding job!"
10. **Tschopp, M.A.**, "Dashboarding 101: Unlocking Your Data's Story with Excel Wizardry," Microsoft TEAMS, 15 DEC 2022 (2-h total).
    - ⋆ 90+ attendees, "THANK YOU SO MUCH!", "Great class!!!!", etc.
11. **Tschopp, M.A.**, "Artificial Intelligence 101," Continuing Education for Senior Leaders (CESL) Information Advantage, 31 OCT 2022 (3.5-h total).
    - ⋆ Collaboration with Army TRADOC CAC Army Management Staff College in Fort Leavenworth.
    - ⋆ "And on behalf of the remaining MDO faculty here at AMSC, I would like to say thank you, thank you, thank you. I had mentioned your name when asked about who might be able to step in, and I can't tell you how relieved I was that you were doing it."
12. **Tschopp, M.A.**, "Machine Learning for Everyone: May The End of the Fiscal Year Be With You," Microsoft TEAMS, 29–30 SEP 2022 & 27–28 OCT 2022 (each session, 15-h total).
    - ⋆ >350 registered participants, 85% Army/DoD audience, 1600 person-hours of ML instruction, 3 guest speakers.
    - ⋆ "The course was well presented and engaging. This was probably the most engaging course I've ever had, especially for such a complex and technical topic. You well exceeded expectations coming in. You should teach a course on how to build engaging courses, because a lot of people could use some help."
13. **Tschopp, M.A.**, "Machine Learning for Everyone: May The Fourth Be With You," Microsoft

TEAMS, 3–4 MAY 2022 (15-h total).
   - ⋆ >250 registered participants, 85% Army audience, 1600 person-hours of ML instruction, 3 guest speakers.
14. **Tschopp, M.A.**, "Machine Learning for Everyone: May The Course Be With You," Microsoft TEAMS, 28–29 OCT 2021 (12-hour total).
   - ⋆ >100 registered participants.
15. **Tschopp, M.A.**, "Machine Learning for Everyone: ML + Cyber," Army DEVCOM C5ISR, 3–5 AUG 2021 (20-hours total).
   - ⋆ Taught cyber applications of machine learning algorithms with ARL Cyber scientist Dr. Mike De Lucia.
16. **Tschopp, M.A.**, "Machine Learning for Everyone: May The Fourth Be With You," Army TRADOC CAC Army Management Staff College, 27–29 JULY 2021 (8-hour total).
   - ⋆ 15 faculty responsible for educating and developing Army Civilian Corps (including Army Senior Leaders) for leadership and management responsibilities.
17. **Tschopp, M.A.**, "Machine Learning for Everyone: May The Fourth Be With You," Microsoft TEAMS, 4 MAY 2021 (8-hours total).
   - ⋆ 800 registered participants from around the world.
18. **Tschopp, M.A.**, "Machine Learning for Everyone: Bullets, Armor, Weapons, and a little Additive Manufacturing," University of Memphis, 11–12 MAR 2021 (8-hours total).
   - ⋆ 90 registered participants, from over a dozen institutions around the country (majority from U Memphis, Mississippi State University, Ole Miss, industry).
   - ⋆ Multiple segments added for additive manufacturing examples with machine learning, including ML–XLS tutorial session
   - ⋆ "It is an excellent course. Breaking complex forms into simple excel documents is brilliant. One can visualize and understand what is going on."
19. **Tschopp, M.A.**, "Machine Learning for Everyone: Primer and Episode IV," Microsoft TEAMS, ARL Café, 5 MAR 2021 (2.5 hours).
   - ⋆ 60+ ARL attendees (plus AFC, PEO). "Course is excellent" (4.9/5), "Instuctor is excellent" (5.0/5)
20. **Tschopp, M.A.**, "Machine Learning for Everyone: Primer, Episodes IV, V, VI, and ML for Excel," Spelman University, 19–20 JAN 2021 (6-hour course).
   - ⋆ 28 attendees, mostly faculty from departments ranging from Computer Science to Physics to Economics. This course was supporting an ARL cooperative agreement with Spelman University designed to develop an AI/ML-based curriculum.
   - ⋆ Invited back to kickoff summer faculty forum
21. **Tschopp, M.A.**, "ML by XLS: Machine Learning by Microsoft Excel," Microsoft TEAMS, ARL Café, 11 DEC 2020 (2 hours).
   - ⋆ 34 ARL attendees.
   - ⋆ "Great presentation!", "Thanks for the insights!", "Thanks Mark, very insightful"
22. **Tschopp, M.A.**, "Machine Learning for Everyone: Episode V, VI," Microsoft TEAMS, ARL Café, 16 OCT 2020 (2 hours).
   - ⋆ 79 ARL attendees. Over 30 views on Microsoft Stream.
   - ⋆ "Bravo! Thanks again Mark!"
23. **Tschopp, M.A.**, "Machine Learning for Everyone: Primer and Episode IV," Microsoft TEAMS, ARL Café, 2 OCT 2020 (2 hours).
   - ⋆ 27 ARL attendees. Over 160 views on Microsoft Stream.
   - ⋆ "I enjoyed it!", "I second that!", "This is awesome!! Thank you for putting this together!", "Thank you, great talk and really appreciate all the thought and work you put into this. I'd like to know how to make those star wars scrolling dialog", "Thanks Mark! Probably the best and most concise presentation of the topic I have seen to date. I really appreciate the extra work with the V50 data. I would love to comb through the xlsx's for kicks and giggles."
24. **Tschopp, M.A.**, "Machine Learning 101: Pilot Seminar," Microsoft TEAMS, ARL–WMRD, AUG 2020 (1.5 hour).

UNIVERSITY COURSES TAUGHT

Mississippi State University
Advanced Mechanics of Materials
Textbook: A.C. Ugural and S.K. Fenster, Advanced Strength and Applied Elasticity
Instructor(s): M.A. Tschopp (instructor of record)
Engineering Mechanics 4213/6213 **Spring 2011**
Global Index: 4.5/5.0 (14 students)

- Student Evaluations (14 students):
  - Global Index: 4.5/5.0
  - The instructor created high expectations for the class: 4.8/5.0
  - The instructor was enthusiastic about the subject matter: 4.8/5.0
  - Tests and/or assignments were graded within a reasonable period of time: 4.8/5.0
  - The instructor was accessible outside of class time to respond to my questions or concerns: 4.7/5.0
  - The tests reflected material presented in lecture and/or assigned reading: 4.5/5.0
  - I learned a great deal in this class: 4.5/5.0
  - I would recommend this instructor to other students if they wanted to learn this subject: 4.5/5.0
- Student feedback from class (via email):
  - "I had a great time in your class this semester. You are a wonderful teacher and I learned a great deal from you."
  - "Your class was challenging and I enjoyed many parts of it. It definitely stretched me. Thanks for putting up with my 'squeaky wheel,' you were very attentive to the issues of us distance students and I really appreciate that."
  - "I really enjoyed the class and learned a lot, and from talking to everyone else I think they all feel the same way."
  - "Thanks for a great semester."
  - "Teach more classes!!!"

Georgia Institute of Technology
Statistics & Numerical Methods for Material Science and Engineering
Textbook: Chapra and Canale, Numerical Methods for Engineers
Instructor(s): M.A. Tschopp, D.L. McDowell (instructor of record)
Material Science & Engineering 3803 **Fall 2005**
Global Index: 4.5/5.0 (16 students)

- This course was a new undergraduate course that introduced MSE students to computational numerical methods for solving mathematical problems. This class was taken in conjunction with the ME 7757 – Teaching Practicum, a class designed to introduce Ph.D. students to different career paths after their doctoral studies.
- Responsible for *seven* 90-minute lectures throughout the semester. This involved preparing Powerpoint slides, in-class examples, and notes for these classes. Topics included: Roots of Polynomials, Gauss Elimination, LU decomposition and Matrix Inversion, Least-Squares Regression, Interpolation, Newton-Cotes Integration, and Boundary-Value and Eigenvalue Problems.
- Responsible for *four* programming sessions that introduced students to the Visual Basic application within Excel and MATLAB as programming languages. I prepared Powerpoint slides for all of these lectures.
- Responsible for grading and preparing solutions for homework #1 through #4, as well as answering questions during office hours each week for students.
- Student Evaluations (16 students):
  - Was approachable and willing to assist students: 4.94 out of 5
  - Knowledgable about subject: 4.63 out of 5
  - Encouraged students to consult with him: 4.63 out of 5
  - Was prepared and organized: 4.63 out of 5
  - Was dedicated to teaching: 4.63 out of 5

- Overall, has been an effective teacher: 4.50 out of 5

Mentoring / Advising

Formal Mentoring Programs

- 2020–Present, ARL Mentoring Program, **Five** ARL Civilians (formally).
- 2020–Present, NDSEG Fellow Mentor Program, **Two** NDSEG Fellows at UT-Austin, UNC.
- 2020–Present, ARL Mentor (informal), monthly/bimonthly meetings

Post-Doctoral Fellows and Visiting Scientists

- Dr. Philip Goins (2016–2017, ARL) "Mesoscale modeling of polycrystalline evolution during additive manufacturing," (now) Staff Scientist, Army Research Laboratory.
- Dr. Efrain Hernandez (2015–2017, ARL) "Hybrid statistical–deterministic models for microstructure evolution at the mesoscale," (now) Staff Scientist, Army Research Laboratory.
- Dr. Krista Limmer (2016, ARL) "Multiscale modeling and simulation of corrosion in magnesium and magnesium alloys," (now) Staff Scientist, Army Research Laboratory.
- Dr. Shawn Coleman (2014–2016, ARL) "Virtual diffraction methods in atomistic simulations," (now) Regional Lead, Army Research Laboratory.
- Dr. Andrew Oppedal (2012–2014, MSU) "High temperature creep and failure of single crystal nickel-based superalloys (AFOSR)," (now) Research Faculty, Center for Advanced Vehicular Systems, Mississippi State University.
- Dr. Ebrahim Asadi (2011, MSU) "Atomistic simulations of stacking fault energy interactions with point defects," (now) Associate Professor, University of Memphis.
- Dr. Sasan Nouranian (2011–2012, MSU) "Forcefield development for saturated hydrocarbons and polyolefins using MEAM," (now) Associate Professor, Ole Miss.
- Dr. Xing Qiao (Sheldon) Deng (2011–2012, MSU) "Out-of-position (OOP) air bag deployment and passenger impact," (now) Associate Professor, Xihua University, Chengdu, China.
- Dr. Marcos Lugo (2010–2012, MSU) "Damage and microstructure evolution in aluminum and magnesium," (now) Associate Professor, Liberty University.
- Dr. Delwar Hossain (2009–2010, MSU) "Atomistic simulations of deformation mechanisms in thermoplastic polymers," (now) Instructor and Lab Coordinator, Claflin University.

Graduate students (Ph.D., M.S.)

- Dr. Nick Lauersdorf (2022–2024, UNC-Chapel Hill), NDSEG Fellow, (now) Data Scientist, Advance Medical Designs.
- Mr. Kevin Scanlan (2021–2023, UT-Austin), NDSEG Fellow, (now) Graduate student, UT-Austin.
- Dr. Mojtaba Khanzadeh (2015–2019, MSU) "Advanced data analytic methodology for quality improvement in additive manufacturing," (now) Applied Scientist, Amazon.
- Mr. Yub Raj Paudel (2015–2018, MSU) "On the localized effects of twinning, mechanisms driving twin segmentation of the parent grain, and building a strategy to incorporate them in full-field plasticity," (now) Research Engineer II, Center for Advanced Vehicular Systems, Mississippi State University.
- Dr. Daniel Foley (Summer 2015, ARL) "Understanding Deformation Behavior of Nanocrystalline Metals Using Virtual Diffraction Characterization on Multi-million Atom Simulations," (now) Engineer, Savannah River Nuclear Solutions.
- Dr. Christopher Barrett (2011–2014, MSU) "Twin nucleation in single crystal Mg," (now) Associate Professor, Mississippi State University.
- Dr. Scott Turnage (2012–2014, ASU) "Relationship between material uncertainty and high temperature creep of single crystal nickel-based superalloys (AFOSR)," (now) ARL Staff Scientist, Army Research Laboratory.
- Dr. Xiumei (Emily) Zhang (2010–2011, MSU) "Molecular deformation in glucose and polypropylene/carbohydrate interfaces."
- Dr. Mehul Bhatia (2011–2015, MSU/ASU) "Molecular dynamics simulations of void growth in single crystal Al and Al grain boundaries," (now) Assistant Professor, Worcester Polytechnic

Institute.

- Dr. Ilaksh Adlakha (2011–2015, MSU/ASU) "Effect of hydrogen on the strength and embrittlement of materials in confined volumes," (now) Associate Professor, IIT-Madras.
- Dr. Mohsen Eshraghi (2012) "Effect of resistance spot welding parameters on weld pool properties in a DP600 dual-phase steel," (now) Professor, California State University–Los Angeles.
- Mr. Kris McKenzie (2012–2013, ARL) "Mesoscale Modeling of Dislocation Interactions during Twinning in HCP Metals."
- Dr. Mansa Rajagopalan (2014–2015, ASU) "Influence of grain boundary structure on segregation and fracture," (now) Manager, Engineering, Lam Research.
- Dr. Laalitha Liyanage (2010–2012, MSU) "Electronic and atomistic calculations of steel alloys using modified embedded atom method and density functional theory," (now) Senior lecturer, University of Kelaniya, Sri Lanka.
- Mr. Suryatej Potula (2010–2012, MSU) "Study of out-of-position (OOP) air bag deployment and passenger impact," (now) Safety CAE Analyst, Optimal Computer Aided Engineering, Inc.

Undergraduate students

- Ms. Mya Powers-Nash (2021–2022, Chicago State University) "Machine Learning and Energetic Materials: Using Machine Learning to characterize molecular structure for energetic materials," (now) Ph.D. student, University of Chicago.
- Mr. Phillip Spear (Summer 2012, MSU/Tuskegee) "Dislocation nucleation from Cu-Ni-Nb multilayers," (now) Project engineer, Pratt & Whitney.
- Ms. Tikelia Wright (Summer 2012, MSU/Tuskegee) "Generation and Mechanics of Cu-Ni-Nb multilayers," (now) Engineer Specialist, Honda Manufacturing.
- Mr. Nathan R. Rhodes (2011, MSU) "Grain boundary segregation for advanced materials design," (now) Ph.D. student, University of Florida.
- Mr. Mohit Shrivastava (Summer 2011, MSU) "Deformation in amorphous polyethylene using full-atom models," (now) Data Center Engineer, Amazon.
- Mr. Suman Kandel (2011, MSU) "Exploring deformation behavior of mono- and polycrystalline nanowires," (now) ME Contractor, Self-Employed.
- Mr. Dmitry Zhuk (2011, MSU) "Stress-state dependence of glassy polymers at the nanoscale," (now) Lead Engineer, Moscow Engineering Physics Institute.
- Mr. Christopher Barrett (Summer 2010, MSU) "Twin nucleation in single crystal Mg," (now) Assistant Professor, Mississippi State University.
- Mr. Chesley Rhodes (Summer 2010, MSU) "Grain boundary structure and energy in HCP metals," (now) Engineering Manager, Lockheed Martin.
- Mr. Mohit Shrivastava (Summer 2010, MSU) "Deformation in amorphous polyethylene using full-atom models," (now) Data Center Engineer, Amazon.
- Ms. Mukti Patel (Summer 2010, MSU) "Molecular deformation in amorphous polypropylene," (now) PhD, Associate Materials Engineer, Tesla.
- Mr. Shashwat Namdeo (Summer 2010, MSU) "Influence of impurities on dislocation/twin nucleation in Mg," (now) Application Developer, Fallon Health.

High school students

- Ms. Joanna Sun, "Segregation of Cr to Fe grain boundaries," PNNL summer intern (2012–2013).

Committee member (M.S., Ph.D.)

- Mr. Yubraj Paudel, "On the localized effects of twinning, mechanisms driving twin segmentation of the parent grain, and building a strategy to incorporate them in full-field plasticity," Ph.D. ME student, Mississippi State University (October 2018).
- Mr. Christopher Barrett, "Relations and interactions between twinning and grain boundaries in hexagonal close-packed structures," Ph.D. ME student, Mississippi State University (March 2014).
- Mr. Suryatej Potula, "Study of out-of-position (OOP) air bag deployment and passenger impact,"

M.S. ME student, Mississippi State University (May 2012).

Career Development, Mentoring, and STEM Outreach Activities

- Tschopp, M.A., "STEM Career Day," Neuqua Valley High School, Naperville, IL, 17 NOV 2023.
- Tschopp, M.A., "Research and Technology for Operating Environments of the Future, i.e., Cool Stuff that We are Working On"," Peoria Public School District & First Robotics Competition, Peoria, IL, 6 SEP 2019.
  - Peoria Public Schools, Manual Academy Robo Rams' FIRST Tech Challenge Kickoff, 6 SEP 2019.
  - 425 9th–12th grade students from Peoria Public Schools
  - I gave the kickoff talk about the value of STEM within the Army and the mission of the Army Research Laboratory.
- ARL 3rd annual Postdoc Research Symposium, Career Development panel (w/ David Stepp, Betsy Rice)
- Tschopp, M.A., "Materials Science and Engineering," STEM Outreach at local elementary school (Homestead Wakefield Elementary School), 7 APR 2017.
  - 50 fourth graders, 2 teachers (7 APR 2017)
  - ARL Press Release, "Army Researcher Makes Science Real for Elementary Students"
  - Asked to return for remaining classes.
- Tschopp, M.A., "Materials Science and Engineering," STEM Outreach at local elementary school (Homestead Wakefield Elementary School), 2 JUN 2017.
  - 100 fourth grade students, 4 teachers
- "Meet-A-Mentor," Professional Development & Special Lectures, TMS 2016, 02/15/2016. *This event matches mentors and mentees for scheduled meetings in an informal atmosphere.*
- "Student Career Forum" Invited Panel Member, TMS Young Professional Committee, TMS 2016, 02/14/2016. *Organized by the TMS Young Professional Committee, this session will feature speakers from various stages of their careers and diverse materials science backgrounds to discuss how to navigate a successful career path in the fields of minerals, metals, and materials.*
- "I got my degree. What now?" Invited Panel member at MS&T 2015
- "Undergraduate writing/presenting workshop," helped with workshop at MS&T Conference 2015, 10/05/2015.
- Symposium Organizer for Early Career Professionals
  - Symposium organizer for MS&T 2012, "Perspectives for the Emerging Professionals"
    - **Tschopp, M.A.**, "MS&T 2012 Symposium for Emerging Professionals: Early Strategies for Career Development," ASM International Advanced Materials & Processes, Fall 2012.
  - Symposium organizer for MS&T 2013, "Perspectives for the Emerging Professionals"
    - **Tschopp, M.A.**, "Career Opportunities and Experiences in Materials Science and Engineering," ASM International Advanced Materials & Processes, August 2013.
    - "Thank you Mark for your outstanding organization. The symposium was well received, and I heard many accolades and encomiums for you and your team! ASM thrives on your enthusiasm! Warmest regards, wishing you continued successes!", Dr. Ravi Ravindran, ASM President
  - Symposium organizer for MS&T 2014, "Perspectives for the Emerging Professionals"
    - 2 sessions, 2 keynote speakers, 9 invited speakers
    - Gave Introductory Presentation
    - Chaired 2 sessions
- Industry Mentor at "Lunch with Industry" Student Mentoring Event at MS&T 2013.

- Course instructor for "Materials Engineering" for 8-11th grade students, Wright STEPP program at Wright State University, 2009.
- Course instructor for "Materials Engineering for Automobiles and Monster Trucks" for 1st-3rd grad students, Saginaw Elementary Schools, 2001.

Funded Research Programs

- "An ICME-based Approach for Laser-Based Additive Manufacturing of Novel Metal Powder Feedstocks: Tailorable Local Material Properties by Design and on Demand," co-PI, ARL 6.2 (2016).
- "Atomistic Understanding of the Role of Grain Boundary Structure in Lightweight Armor Systems," Mentor/PI, 2016 DoD HPCMP Internship Program, ARL (2016).
- "Mesoscale Modeling of Polycrystalline Microstructure Evolution under Magnetic Fields," Co-PI and Mentor, ARL (2016).
- "Transitioning Material Systems from Laboratory to Fabrication (CA)," ARL TPOC, ARL (2015).
- "Interfacial Engineering of Aluminum-Based Alloys for Ballistic Protection," PI, ARL (2015).
- "Understanding Deformation Behavior of Nanocrystalline Metals Using Virtual Diffraction Characterization on Multi-million Atom Simulations," Mentor/PI, 2015 DoD HPCMP Internship Program, ARL (2015).
- "Realistic Implementation of Energy Coupled to Matter," co-PI, ARL (2015).
- "Virtual Diffraction: Connecting Atomistic Simulations with Experiments to Understand Nanocrystalline Deformation Behavior," co-PI and Mentor, ARL (2015).
- "Exploiting Oxide Dispersion Strengthening in Ferritic Alloys for Lethality Applications," co-PI, ARL 6.2 (2015).
- "Atomistic and Mesoscale Modeling for Grain Boundary Engineering: Computationally-Driven Approach for Exploiting Interfacial Structure-Property Relationships," PI, ARL 6.1 (2014).
- "Towards Predictive Models of Nanocrystalline Binary Metal Alloys: Role of Solutes and Interfaces on Segregation and Mechanics in Al-based Nanocrystalline Systems," co-PI, ARL (2013).
- "Low Cost Structural Thermoelectrics: New Possibilities for Turning Waste into Energy," PI, ARL (2013).
- "Hierarchically-driven approach for quantifying materials uncertainty in creep deformation and failure of aerospace materials," PI (MSU), AFOSR (2012).
  - Submitted as AFOSR YIP. Awarded as sole PI grant.
- "The Effects of the Uncertainty of Thermodynamic and Kinetic Properties on Nucleation and Evolution Kinetics of Cr-Rich Phase in Fe-Cr Alloys," PI (MSU), DOE NEAMS (2011).

Service

Army Research Laboratory

- ARL Fellows
  - Co-Chair (2021-2022), Chair (2022-2023)
- Employee Advisory Council (EAC) – Workforce Enrichment, Recruitment, Retention (WERR)
  - Chair, EAC-WERR (2022-2023), elected as inaugural chair
  - Chair/Member, Governance subcommittee
- Employee Advisory Council (EAC) – Diversity, Equity, Inclusion, and Accessibility (DEIA)
  - Governance subcommittee
  - Data Analytics & Metrics subcommittee

Journal Reviewer / Editorial Board

- Selected to the Editorial Board of Metallurgical Transactions A, 02/11/2016 (Key Reader).
- Modelling and Simulation in Materials Science and Engineering, Physical Review B, Physical Review Letters, Acta Materialia, Computational Materials Science, International Journal of Plasticity, Computers, Materials, and Continua, Philosophical Magazine, International Journal of Fatigue, Metallurgical and Materials Transactions, Applied Surface Science, Surface Science, Journal of Materials Science, Nanotechnology, Journal of Physics: Condensed Matter, Journal of Physics D: Applied Physics, Materials Research Letters, Nature Scientific Reports, etc.

- Metallurgical and Materials Transactions A: Excellent Reviewer (2012, 2015)
- Guest Editor, JOM, "Algorithm Development in Computational Materials," with Zimmerman, J., Sabau, A., Zaeem, M.A., Spearot, D.

Proposal Panels and Reviews

Reviewer of various NSF, DOE, OSD, AFOSR, ARO, and ARL program and proposals, including international proposals in Europe.

Invited member for AIR FORCE S&T 2030 INITIATIVE (Report)

ARL Workshops / Engagement
- "Data-Driven Design of Hierarchical Materials," co-organized with Evan Runnerstrom, Shawn Coleman, and U Chicago PIs, moderated the session on hard materials, 31 AUG 2020–1 SEP 2020.
- Contributed invited article for ARL Publication "Research@ARL: Materials Modeling at Multiple Scales" (editors: J. Andzelm, G. Gazonas, J. McCauley)
- Chair, breakout session on Computational Modeling for Additive Manufacturing in DOD at AHPCRC's "Computational Methods and Tools for Additive Manufacturing for Defense Applications," Adelphi, MD (12/16/15).

Professional Society Leadership
- Member, American Society of Mechanical Engineers (ASME), Fellow.
- Member, American Society of Metals (ASM), Fellow.
- Member, American Association for the Advancement of Science (AAAS).
- Member, Minerals, Metals, and Materials Society (TMS).
- "Profile of a Volunteer: Mark Tschopp," AM&P Magazine, p. 40.
- Member, ASM Award Selection Committee, 1/1/2017–1/1/2020.
- Chair, ASM Silver Medal Selection Committee, 1/1/2017–1/1/2018.
- Member, ASM Emerging Professionals Committee (EPC), 9/1/2011–8/31/2014.
- Member, ASM Silver Medal Selection Committee, 9/1/2014–8/31/2016.
- Member, ASM Materials Property Database Committee, 9/1/2015–8/31/2018.
- Chair, ASM EPC Programming SubCommittee, 9/1/2011–8/31/2014.
  - Symposium organizer for MS&T 2012, "Perspectives for the Emerging Professionals"
  - Symposium organizer for MS&T 2013, "Perspectives for the Emerging Professionals"
    - "Thank you Mark for your outstanding organization. The symposium was well received, and I heard many accolades and encomiums for you and your team! ASM thrives on your enthusiasm! Warmest regards, wishing you continued successes!", Dr. Ravi Ravindran, ASM President
  - Symposium organizer for MS&T 2014, "Perspectives for the Emerging Professionals"
    - 2 sessions, 2 keynote speakers, 9 invited speakers
    - Gave Introductory Comments
  - Chaired all sessions (6 total)
- Member, TMS Integrated Computational Materials Engineering Committee, 2010–Present.
  - Symposium co-organizer for TMS 2018, Francesca Tavazza; Mark Tschopp; Richard Hennig; Avinash Dongare; Shawn Coleman; Niaz Abdolrahim; Joseph Bishop; Fadi Abdeljawad; Li Ma, "Computational Method and Experimental Approaches for Model Development and Validation, Uncertainty Quantification, and Stochastic Predictions"
  - Lead organizer of multiple sessions on Interatomic Potential Development
  - Chair, Programming Subcommittee (2014–2016)
    - Co-organizer, Data and Tools for Materials Discovery and Design, MS&T 2017.
    - Symposium lead organizer for TMS 2016, Mark Tschopp, Carelyn Campbell, Francesca Tavazza, Sheng Yen Li, Dongwon Shin, Jiadong Gong, Junsheng Wang, "ICME Infrastructure Development for Accelerated Materials Design: Data Repositories, Informatics,

and Computational Tools"
    - Symposium co-organizer for TMS 2016, Francesca Tavazza, Richard Hennig, Mark Tschopp, Li Ma, "Computational methods for uncertainty quantification, model validation, and stochastic predictions"
    - Symposium co-organizer for TMS 2016, Michael Tonks, Julie Tucker, Mark Tschopp, Richard Williamson, "Computational Materials Engineering for Nuclear Reactor Applications"
    - Responsible for ICME programming within TMS for 4 year span
  - Secretary (2010–2012)
  - Cyberinfrastructure Subcommittee, 2010–2013
- Member, TMS High Temperature Alloys Committee, 2012–Present.
  - Symposium organizer for TMS 2015, "Multi-scale Microstructure, Mechanics & Prognosis of High Temperature Alloys"
    - 7 sessions, 2 keynote speakers, 20 invited speakers, 60 talks total
    - Gave Introductory and Closing Comments
    - Chaired 6 sessions
    - Editor for Special Issue in Metallurgical Transactions for Best Papers
- Member, TMS Computational Materials Science Committee, 2013–Present.
  - Symposium co-organizer for TMS 2014, "Algorithm Development in Computational Materials Science and Engineering"
- Member, TMS/ASM Mechanical Behavior Committee, 2013–Present.
- Member, ASME Applied Mechanics Division and Materials Division Joint Committee on Constitutive Equations, 2013–Present.
  - Secretary (2013–2015)
  - Symposium co-organizer for ASME 2013, "Multiscale Modeling of Fatigue Damage and Failure Mechanics"
  - Symposium co-organizer for ASME IMECE 2016, "Damage and Failure Mechanics: Multiscale Approach, Experimental Characterization, and Modeling" (all invited speaker symposium).
  - Symposium co-organizer for ASME IMECE 2017, "Damage and Failure Mechanics: Multiscale Approach, Experimental Characterization, and Modeling"
- Member, ASME Applied Mechanics Division Fracture and Failure Mechanics Committee, 2013–Present.
- Student assistant (A/V help, tour guide for GT campus), International Conference on Fatigue, 2006.
- Session chair (not mentioned above)
  - Multiple sessions on adhoc basis: International Conference on Fracture, ASME IMECE, TMS, MS&T.
  - 'Atomistic Fracture and Deformation' symposium, International Conference on Fracture, 2009.
  - 'Novel Approaches in Heterogeneous Materials Analysis and Characterization,' ASME IMECE, 2009.
  - 'Multi Scale Modeling of Microstructure Deformation in Material Processing,' MS&T 2011.
  - 'Integrated Computational Modeling of Nuclear Materials: Modeling and Simulation of Material Phenomena', TMS 2013.
  - 'Deformation and Transitions at Grain Boundaries' symposium,' MS&T 2015.
  - 'Data and Tools for Materials Discovery and Design symposium,' MS&T 2015.
  - 'Fracture and environmental defects symposium (12-32-1),' ASME IMECE 2015.
  - 'Computational Materials Engineering for Nuclear Reactor Applications,' TMS 2016.
  - 'Computational methods for uncertainty quantification, model validation, and stochastic predictions,' TMS 2016.
  - 'Damage and Failure Mechanics: Multiscale Approach, Experimental Characterization, and Modeling,' ASME IMECE 2016.
  - 'Damage and Failure Mechanics: Multiscale Approach, Experimental Characterization, and Modeling,' ASME IMECE 2017.

HOBBIES

NCAA Georgia Tech Men's Volleyball

- Starting Outside Hitter, Men's Volleyball Team at Georgia Tech
- 9^{th} Place 2004 Nationals Division 1-AA