TIMOTHY J. RUPERT

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ACADEMIC APPOINTMENTS

Johns Hopkins University — Baltimore, MD

2024 – present **Professor**
Department of Materials Science and Engineering

2024 – present **Director**
Hopkins Extreme Materials Institute (HEMI)

University of California, Irvine — Irvine, CA

2021 – 2024 **Professor**

2017 – 2021 **Associate Professor**

2011 – 2017 **Assistant Professor**
Department of Materials Science and Engineering
Department of Mechanical and Aerospace Engineering

2021 – 2024 **Founding Director**
Materials Discovery and Synthesis Center (MDSC)

EDUCATION

Massachusetts Institute of Technology — Cambridge, MA

2011 **Ph.D. in Materials Science and Engineering**
Thesis: "Nanocrystalline Alloys: Enhanced Strengthening Mechanisms and Mechanically-Driven Structural Evolution"
Advisor: Prof. Christopher A. Schuh
Committee: Prof. Samuel M. Allen, Prof. Michael J. Demkowicz
Minor: Teaching

Johns Hopkins University — Baltimore, MD

2007 **M.S. in Mechanical Engineering**
Thesis: "Understanding Mechanically-Induced Grain Growth in Nanocrystalline Aluminum Thin Films"
Advisor: Prof. Kevin J. Hemker
Committee: Prof. William N. Sharpe, Jr.
Concentration: Mechanics and Materials

2007 **B.S. in Mechanical Engineering**
Departmental and University Honors, Dean's List (all semesters)

AWARDS AND HONORS

- **Brimacombe Medalist, TMS** (2025)
- **Fellow, ASM International** (2022)
- **AIME-TMS Rossiter W. Raymond Memorial Award** (2020)
- Acta/Scripta Materialia, Outstanding Reviewer (2023, 2022, 2021, 2020, 2019, 2017, 2015)
- Invited Speaker, Gordon Research Conference – Physical Metallurgy (2019)

- Finalist, Robert W. Cahn Best Paper Prize – Journal of Materials Science (March 2019)
- **ASM International Bradley Stoughton Award for Young Teachers** (2017)
- **National Academy of Engineering U.S. Frontiers of Engineering Symposium** (2017)
- Invited Speaker, Gordon Research Conference – Structural Nanomaterials (2016)
- TMS Structural Materials Division, JOM Best Paper Award (2016)
- Modelling and Simulation in Materials Science and Engineering, Outstanding Reviewer (2016)
- UCI Engineering, Early Career Award for Faculty Excellence in Research (2016)
- **Army Research Office, Young Investigator Program (YIP) Award** (2016)
- **Department of Energy, Early Career Research Program Award** (2015)
- TMS Young Leader Professional Development Award (2015)
- **Hellman Faculty Fellow** (2014)
- **NSF Faculty Early Career Development (CAREER) Award** (2013)
- NSF Broadening Participation Research Initiation Grants in Engineering (BRIGE) Award (2012)

UNIVERSITY LEADERSHIP AND SERVICE

- JHU Leadership Development Program (2025 – 2026)
- Class of 2029 Undergraduate Faculty Mentor, Department of Materials Science and Engineering (2025 – present)
- Internal Advisory Committee, Materials Characterization and Processing (MCP) Facility (2025 – present)
- Space and Facilities Committee, Department of Materials Science and Engineering (2024 – present)
- **Director, Hopkins Extreme Materials Institute (HEMI)** (2024 – present)

  Lead a research institute focused on the fundamental science of materials and structures in extreme environments and demonstrating extreme performance. HEMI is comprised of over 50 faculty Fellows and 4 major research centers, with finance, communications, administrative, and technical support provided by the institute. In a typical year, HEMI has research expenditures of $25-30M.
- Steering Committee, Institutes for Engineering+ (2023 – 2024)
- **Founding Director, Materials Discovery and Synthesis Center (MDSC)** (2021 – 2024)

  Created and managed a user facility to enable the creation of novel and unprecedented materials, with a focus on discovery of new compounds and microstructures at a rapid pace. The MDSC provided users with access to flexible materials synthesis tools capable of fabricating nanomaterials, two-dimensional thin films, and bulk specimens from a wide range of metallic and ceramic systems.
- **Elected Representative for the School of Engineering, Council on Academic Personnel** (2021 – 2024)

  Conferred with and made recommendations to the Chancellor and Provost on appointments, advancement, and other personnel matters. Acted as an advisory body representing the Academic Senate in the faculty personnel review process.
- Interdisciplinary Science and Engineering Building (ISEB) Faculty Advisory Committee (2021 – 2024)
- **Founder and Lead, MSE Anti-Racism Working Group** (2020 – 2024)

  Led a team of faculty, students, and staff to address department climate issues, with a particular emphasis on identifying and fixing policies to improve racial and gender equality for our MSE community.
- Campus-wide Laboratory Safety Committee (2017 – 2024)

- **DECADE Mentor (promoting inclusive excellence)**, Department of Materials Science and Engineering (2018 – 2023)
  Served as a mentor and advocate for diversity and inclusion in all department activities.
- Integrated Nanosystems Research Facility (INRF) Task Force (2022 – 2023)
- Hellman Fellowship Advisory Panel (2023, 2018, 2016)
- Mentor, Proposal mentorship for Engineering Early faculty Researchers (PEER) Program (2022)
- Extramural Review Team for Mechanical Engineering graduate program at UC Riverside (2022)
- UCI Provost's Leadership Academy (2021 – 2022)
- School of Engineering - Executive Committee (2012 – 2019, Spring 2020 – 2022)
  Represented Faculty interests in planning the governance and academic administration of the School of Engineering.
- Academic Advisory Group - Division of Finance and Administration (2017 – 2022)
- Graduate Recruiting Committee, Materials Science and Engineering (2018 – 2021)
- UCI Academic Senate, Council on Equity and Inclusion (2019 – 2021)
  Advised the Irvine Division on matters related to equity, inclusion, and diversity, including the recommendation of new policies and practices to improve campus climate.
- Seminar Coordinator, Materials Science and Engineering (2019 – 2020)
- School of Engineering - Website Committee (2019)
- Review Committee for Continuing Graduate Student Fellowships (2019)
- **Academic Senate Representative from the School of Engineering** (2017 – 2019)
  Represented the School on campus-wide committee tasked with transaction of business and legislation of the Irvine Division.
- **Graduate Advisor, Mechanical and Aerospace Engineering** (2013 – 2015, 2017 – 2018)
  Revitalized the admissions and recruitment process for graduate students, to increase the number of high quality Ph.D. students and external funding within the department.
- **Chair, School of Engineering - Research Committee** (2013 – 2018)
  Advised the Associate Dean of Research on new research initiatives and programs. Organized competitions and made selections for internal seed grants to promote new research directions.
- Graduate Studies Committee, Mechanical and Aerospace Engineering (2013 – 2018)
- School of Engineering - Research Committee (2012 – 2018)
- **Chair, School of Engineering - Graduate Studies Committee** (2014 – 2015)
- Graduate Visit Day Coordinator, Mechanical and Aerospace Engineering (2012 – 2015, 2018)
- UCI Academic Senate, Council on Student Experience (2012 – 2015)
- Seminar Coordinator, Mechanical and Aerospace Engineering (2011 – 2014)
- Faculty Mentor, MAE Senior Design Group (2011 – 2012)

PROFESSIONAL LEADERSHIP AND SERVICE

- ***Editor***
  Acta Materialia (2025 – present)
  Scripta Materialia (2025 – present)
- *Editorial Board*
  Materials Science and Engineering A (2016 – present)
  Metallurgical and Materials Transactions A (2012 – 2025)
  Scientific Reports (2017 – 2025)
- ***The Minerals, Metals and Materials Society (TMS)***
  Steering Committee, TMS Specialty Congress (2024 – present)
  Board of Directors (2021 – 2024)

Director/Chair of Programming (2021 – 2024)
Senior Advisor, TMS Leadership Development Initiative (2021)
Mentor, TMS Leadership Development Initiative (2021 – 2023)
Chair, Frontiers of Materials Award Selection Committee (2019 – 2020)
Acta Materialia Inc. Undergraduate Scholarship Committee (2018 – 2021)

- ***ASM International***
  Multiple Awards Selection Committees (Exact dates and awards are confidential)
  Technical Committee and Academic Engagement Board Task Force (2021 – 2023)
  Immediate Past Chair, Awards Policy Committee (2021 – 2022)
  Chair, Awards Policy Committee (2020 – 2021)
  Vice Chair, Awards Policy Committee (2019 – 2020)
  Member, ASM Nominating Committee (2020)
  Member, Awards Policy Committee (2017 – 2022)
- *Structural Materials Division (SMD) Council of TMS*
  Programming Committee Representative (2016 – 2019)
  Awards Subcommittee (2017 – 2019)
  Young Leaders Representative (2015 – 2016)
- ***Thin Films and Interfaces Committee (TFIC) of TMS***
  Chair (2020 – 2022)
  Vice-Chair (2018 – 2020)
  Secretary (2016 – 2018)
- *Guest Editor*
  Journal of Materials Research, Focus Issue on *Advanced Nanomechanical Testing* (2020)
  MRS Advances (Fall 2016)
- *Technical Manuscript Reviewer* (>60 journals)
  ACS Applied Nano Materials, ACS Nano, Acta Materialia, Advanced Engineering Materials, Applied Materials Today, Applied Physics A, Applied Physics Letters, Ceramics International, Communications Materials, Computational Materials Science, Current Opinion in Solid State & Materials Science, European Journal of Mechanics - A/Solids, Extreme Mechanics Letters, Intermetallics, International Journal of Plasticity, Journal of Applied Physics, Journal of Alloys and Compounds, Journal of Engineering Tribology, Journal of Materials Research, Journal of Materials Science, Journal of Nuclear Materials, Journal of Physical Chemistry, Journal of Physics: Condensed Matter, Journal of Vacuum Science and Technology A, Materialia, Materials Characterization, Materials Horizons, Materials Letters, Materials Research Letters, Materials Science and Engineering A, Materials Today, Materials Today Communications, Matter, Mechanics of Materials, Metallurgical and Materials Transactions A, Microscopy and Microanalysis, Modelling and Simulation in Materials Science and Engineering, Molecular Simulation, Nano Letters, Nanoscale, Nature, Nature Communications, Nature Reviews Materials, npj Computational Materials, npj Materials Degradation, Nuclear Instruments and Methods in Physics Research, Philosophical Magazine, Philosophical Magazine Letters, Physical Review B, Physical Review Letters, Physical Review Materials, Physica Status Solidi (A), Physics Letters A, Progress in Materials Science, Review of Scientific Instruments, Science, Science Advances, Science of Advanced Materials, Scientific Data, Scientific Reports, Scripta Materialia, Surface and Coatings Technology, Thin Solid Films, Tribology International, Tribology Letters, Wear
- *Discussion Leader*
  iMechanica Journal Club: "Frontiers in Nanocrystalline Mechanical Behavior"
- *External Ph.D. Thesis Reviewer*

Department of Materials Engineering, Indian Institute of Science (IISc)
Metallurgical & Materials Engineering, National Institute of Technology Rourkela

- *Proposal or Award Reviewer*
  - Army Research Office (ARO) – Materials Science Division
  - Austrian Academy of Sciences (AAS) – Hans and Walter Thirring Award
  - Austrian Science Fund (FWF)
  - Department of Energy (DOE) – Center for Integrated Nanotechnologies (CINT)
  - Department of Energy (DOE) – Office of Basic Energy Sciences (BES)
  - Department of Energy (DOE) – Office of Nuclear Energy (NE)
  - Deutsche Forschungsgemeinschaft (DFG) – German Research Foundation
  - Israeli Ministry of Science and Technology
  - NASA Space Technology Graduate Research Opportunities (NSTGRO)
  - National Science Foundation (NSF) – Broadening Participation Research Initiation Grants in Engineering (BRIGE)
  - National Science Foundation (NSF) – Chemical, Bioengineering, Environmental and Transport Systems (CBET)
  - National Science Foundation (NSF) – Civil, Mechanical and Manufacturing Innovation (CMMI)
  - National Science Foundation (NSF) – Designing Materials to Revolutionize and Engineer our Future (DMREF)
  - National Science Foundation (NSF) – Division of Materials Research (DMR)
  - National Science Foundation (NSF) – Engineering Research Initiation (ERI) Program
  - National Science Foundation (NSF) – Major Research Instrumentation (MRI) Program
  - Natural Sciences and Engineering Research Council (NSERC) of Canada
  - University of California Institute for Mexico and the United States (UC MEXUS)
- *Conference Organizer or Steering Committee*
  - "TMS Specialty Congress 2025" in Anaheim, CA, June 2025.
  - "TMS Specialty Congress 2024" in Cleveland, OH, June 2024.
  - "18th International Conference on the Strength of Materials (ICSMA 18)" at Ohio State University, July 2018.
  - "Controversies Colloquium 2018: Stability of Nanostructures" at UC Irvine, Feb. 2018
- *Symposium Organizer*
  - "Understanding High Entropy Materials via Data-Science and Computational Approaches" at 2024 Materials Science & Technology (MS&T) Technical Meeting and Exhibition
  - "Advanced Mechanical Testing of Surfaces, Thin Films, Coatings and Small Volumes" at 2021 International Conference on Metallurgical Coatings and Thin Films (ICMCTF).
  - "Advanced Mechanical Testing of Surfaces, Thin Films, Coatings and Small Volumes" at 2019 International Conference on Metallurgical Coatings and Thin Films (ICMCTF).
  - "Interfacial Science and Engineering: Mechanics, Thermodynamics, Kinetics, and Chemistry" at 2019 MRS Spring Meeting
  - "Size Effects and Small-Scale Mechanical Behavior of Materials" at 2016 MRS Fall Meeting
  - "Ultrafine Grained Materials IX" at 2016 TMS Annual Meeting & Exhibition
  - "Interface and Surface-Dominated Plasticity, Fracture, and Fatigue in Metals" at 2016 International Symposium on Plasticity

"Light Alloys and Metal-based Composites" at 2014 International Conference of Young Researchers on Advanced Materials (ICYRAM)
"Elasticity, Plasticity and Inelastic Deformations in Hierarchical Materials: Mechanisms to Mechanics" at 2014 U.S. National Congress on Theoretical and Applied Mechanics (USNCTAM)
"Mechanics of Crystalline Nanostructures" at 2012 Society of Engineering Science (SES)

- *Member*
  The Minerals, Metals and Materials Society (TMS) - Member #462836
  Materials Research Society (MRS) - Member #267707
  ASM International - Member #C-00552835

RESEARCH GRANTS

Funding as PI or co-PI: $32,999,444 – Total
$9,422,152 – Direct Funding to Research Group

- "Collaborative Research: Kinetics of Defect Phases Emerging from Nanoscale Interfaces"
  Funding Agency: National Science Foundation
  Award Dates: 08/2025 – 07/2028
  Leadership: PIs: **TJ Rupert**, DS Gianola
  Amount: $885,000 (Rupert's share: $405,000)

- "Complexion Engineered Nanocrystalline Tungsten Alloy Plasma Facing Materials for Long Pulse Tokamak Operation"
  Funding Agency: Advanced Research Projects Agency – Energy (ARPA-E)
  Award Dates: 08/2025 – 07/2028
  Leadership: PI: **TJ Rupert**
  Amount: $3,090,000 (Rupert's share: $1,250,000)

- "Collaborative Research: DMREF: Data-Driven Discovery of the Processing Genome for Heterogenous Superalloy Microstructures"
  Funding Agency: National Science Foundation
  Award Dates: 10/2023 – 09/2027
  Leadership: PIs: **TJ Rupert**, IJ Beyerlein, PS Branicio, AM Hodge
  Amount: $1,999,452 (Rupert's share: $534,000)

- "Structural Short-Range Order and the Damage Tolerance of Amorphous Grain Boundary Complexions"
  Funding Agency: Department of Energy, Basic Energy Sciences (BES)
  Award Dates: 08/2023 – 07/2026
  Leadership: PI: **TJ Rupert**
  Amount: $495,000

- "Collaborative Research: Deformation Mechanisms of Microstructurally Tailored High Strength Alloys Near the Ideal Limit"
  Funding Agency: National Science Foundation, DMR
  Award Dates: 08/2023 – 07/2026
  Leadership: PIs: **TJ Rupert**, JR Trelewicz

Amount: $840,000 (Rupert's share: $420,000)

- "Multi-fidelity information fusion for accelerated predictive modeling and optimal design of high entropy alloys"
  Funding Agency: Marine and UnderSea Technology Research Program (University of Massachusetts Dartmouth)
  Award Dates: 12/2021 – 11/2022
  Leadership: PIs: M Tootkaboni, A Asadpoure, Y Chen, **TJ Rupert**, L Valdevit, N Alemazkoor
  Amount: $416,094 (Rupert's share: $40,000)

- "Mech-DEFECT: Mechanically-induced Defect Equilibria for Engineered Complexion Transitions"
  Funding Agency: Army Research Office
  Award Dates: 05/2021 – 05/2024
  Leadership: PIs: **TJ Rupert**, DS Gianola
  Amount: $900,000 (Rupert's share: $450,000)

- "Microstructure-within-a-Microstructure: Uncovering fundamental scaling laws connecting complexion network descriptors to damage tolerance"
  Funding Agency: Department of Energy, Basic Energy Sciences (BES)
  Award Dates: 08/2020 – 07/2023
  Leadership: PI: **TJ Rupert**
  Amount: $450,000

- "UCI MRSEC: Materials Discovery Through Atomic Level Structural Design and Charge Control"
  (Leader of IRG-1: Interfacial Science of Complex Concentrated Materials)
  Funding Agency: National Science Foundation
  Award Dates: 09/2020 – 08/2026
  Leadership: PIs: X Pan, Z Guan, R Ragan, **TJ Rupert**, R Wu
  Amount: $18,000,000

- "Accelerating Manufacturing of Powder-Processed Strong, Lightweight, and Thermally Stable Bulk Nanocrystalline Al Alloys via Engineered Interface States"
  Funding Agency: Department of Energy, Advanced Manufacturing Office
  Award Dates: 06/2020 – 05/2022
  Leadership: PIs: DS Gianola, **TJ Rupert**
  Amount: $500,000 (Rupert's share: $250,000)

- "BIAM-UCI Research Centre for the Fundamental Study of Novel Structural Materials"
  (Rupert's Project: Strengthening and Toughening Mechanisms of Al-Matrix Composites Reinforced by Multi-Scale, Hybrid Particles)
  Funding Agency: Beijing Institute of Aeronautical Materials (BIAM)
  Award Dates: 01/2018 – 12/2020
  Leadership: PIs: **TJ Rupert**, EJ Lavernia, JM Schoenung, L Valdevit
  Amount: $1,855,004 (Rupert's share: $458,557)

- "DMREF: Multiscale Alloy Design of HCP Alloys via Twin Mesh Engineering"

Funding Agency: National Science Foundation, CMMI
Award Dates: 10/2017 – 09/2021
Leadership: PI: JM Schoenung; Co-I: **TJ Rupert** and EJ Lavernia
Amount: $800,000 (Rupert's share: $353,515)

- "Using Complexions to Fabricate Bulk Nanocrystalline Metals with Enhanced Ductility"
  Funding Agency: Army Research Office, Young Investigator Program (YIP)
  Award Dates: 07/2016 – 06/2019
  Leadership: PI: **TJ Rupert**
  Amount: $359,100

- "Doping Metallic Grain Boundaries to Control Atomic Structure and Damage Tolerance"
  Funding Agency: Department of Energy, Early Career Research Program
  Award Dates: 07/2015 – 06/2020
  Leadership: PI: **TJ Rupert**
  Amount: $750,000

- "Predicting Changes in Structure and Properties During Wear in Metallic Systems"
  Funding Agency: National Science Foundation, CMMI
  Award Dates: 09/2015 – 08/2018
  Leadership: PI: **TJ Rupert**
  Amount: $344,998

- "Enabling Generation IV Nuclear Reactors with Interface-Dominated Materials"
  Funding Agency: Hellman Fellows Fund
  Award Dates: 07/2014 – 06/2015
  Leadership: PI: **TJ Rupert**
  Amount: $47,244

- "CAREER: Nanocrystalline Grain Boundary Network Engineering Enabled by New Deformation Mechanisms"
  Funding Agency: National Science Foundation, DMR
  Award Dates: 07/2013 – 06/2018 (no-cost extension to 06/2019)
  Leadership: PI: **TJ Rupert**
  Amount: $537,053

- "Tailoring Grain Boundary Chemistry for Failure Resistant Nanostructured Metals"
  Funding Agency: Army Research Office
  Award Dates: 09/2012 – 08/2015
  Leadership: PI: **TJ Rupert**
  Amount: $337,186

- "BRIGE: Interfacial Defects and the Failure of Nanostructured Metals"
  Funding Agency: National Science Foundation, CMMI
  Award Dates: 09/2012 – 08/2014
  Leadership: PI: **TJ Rupert**
  Amount: $174,994

- "MRI: Development of nano-CT-based elastography system for three-dimensional deformation field and elastic characterization of heterogeneous materials"
  Funding Agency: National Science Foundation, CMMI
  Award Dates: 09/2012 – 08/2015
  Leadership: PI: L Sun; Co-I: **TJ Rupert** and five others
  Amount: $555,505

PUBLICATIONS

Journal Articles:

UNDER REVIEW

[---] Geiger I, Cao P, **Rupert TJ**. "Local chemical order suppresses grain boundary migration under irradiation in CrCoNi," (Submitted to *Materials Advances*).
https://arxiv.org/abs/2512.01933

[---] Mondal S, Patki PV, Chen W, Chatterjee A, Darling KA, Trelewicz JR, **Rupert TJ**, Wharry JP. "Beyond Ballistic Mixing: New Mechanisms for Irradiation Resilience of Immiscible Interfaces," (Submitted to *Acta Materialia*).

[---] Hessong EC, Zhang Z, Lei T, Xu M, Aoki T, **Rupert TJ**. "Modulation of structural short-range order due to chemical patterning in multi-component amorphous interfacial complexions," (Submitted to *Acta Materialia*).
https://doi.org/10.48550/arXiv.2509.06166

[---] Geiger I, Tian Y, Han Y, Bi Y, Pan X, Cao P, **Rupert TJ**. "Grain boundaries amplify local chemical ordering in complex concentrated alloys," (submitted to *Acta Materialia*).
https://doi.org/10.48550/arXiv.2501.03901

[---] Yazdani MH, Liang A, Maldonado Otero AJ, Liu Y, Farkas D, Hodge AM, **Rupert TJ**, Beyerlein IJ, Branicio PS. "Composition-Driven Nanotwin Engineering in Sputtered Ni-Fe and Ni-Cr Films: Linking Fault Energetics to Twin Thickness,' (Submitted to *Acta Materialia*).

[---] Hunter A, Agrawal V, Beyerlein IJ, Ghosh S, Oskay C, Gu B, Chen Y, Foster SC, Wilkerson JW, Sun X, **Rupert TJ**, Chen C, Dongare AM, Blaschke DN, Echlin MP, Pollock TM, Katzer B, Schulz K, Croft Z, Chlupsa M, Shahani AJ, Thornton K, Fullwood DT, Homer ER, White EV. "Roadmap on Novel Computational Approaches for Bridging Length and Time scales: Addressing Challenges in Modeling Processes, Characterization, and Performance of Metals and Alloys," (Submitted to *Modelling and Simulation in Materials Science and Engineering*).

[---] Korte-Kerzel S, **Rupert TJ**, Gianola DS, Sandlöbes-Haut S, Xie Z. "Defect phases beyond grain boundaries," (Submitted to *MRS Bulletin*).

PUBLISHED

[J117] Cunningham WS, Lei T, Howard HC, **Rupert TJ**, Gianola DS. "Kinetics of Amorphous Defect Phases Measured Through Ultrafast Nanocalorimetry," *Acta Materialia*, (2026) 304, 121764.
https://doi.org/10.1016/j.actamat.2025.121764

[J116] Garg P, Gianola DS, **Rupert TJ**. "Enhanced strain rate sensitivity due to platelet linear complexions in Al-Cu," *Scripta Materialia*, (2026) 271, 117002. https://doi.org/10.1016/j.scriptamat.2025.117002

[J115] Aksoy D, Xin HL, **Rupert TJ**, Bowman WJ. "Human perception-inspired grain segmentation refinement using conditional random fields," *Materials Characterization*, (2025) 230, 115694. https://doi.org/10.1016/j.matchar.2025.115694

[J114] Lei T, Hessong EC, Fields B, Thiraux RP, Gianola DS, **Rupert TJ**. "Bulk nanocrystalline Al-Mg-Y alloys with amorphous grain boundary complexions display high strength and compressive plasticity," *Journal of Materials Science*, (2025) 60, 18486. https://doi.org/10.1007/s10853-025-11328-0

[J113] Hessong EC, Lei T, Fields B, Thiraux RP, Boyce BL, **Rupert TJ**. "Amorphous complexion-aided sintering enables scalable processing of bulk nanocrystalline Cu-Zr with high strength and compressive plasticity," *Materialia*, (2025) 43, 102510. https://doi.org/10.1016/j.mtla.2025.102510

[J112] Howard HC, Cunningham WS, Genc A, Rhodes BE, Merle B, **Rupert TJ**, Gianola DS. "Chemically ordered dislocation defect phases as a new strengthening pathway in Ni-Al alloys," *Acta Materialia*, (2025) 289, 120887. https://doi.org/10.1016/j.actamat.2025.120887

[J111] Ko S, Du C, Guo H, Vahidi H, Wardini JL, Lee T, Liu Y, Yang J, Guzman F, **Rupert TJ**, Bowman WJ, Dillon SJ, Pan X, Luo J. "Temperature-dependent microstructural evolution in a compositionally complex solid electrolyte: The role of a grain boundary transition," *Journal of Advanced Ceramics*, (2025) 14, 9221047. https://doi.org/10.26599/JAC.2025.9221047

[J110] Yu K, Wang X, Mahajan S, **Rupert TJ**, Beyerlein IJ, Cao P, Schoenung JM, Lavernia EJ. "Influence of non-glide stresses on {10-12} twin boundary migration in magnesium," *Computational Materials Science*, (2025) 246, 113414. https://doi.org/10.1016/j.commatsci.2024.113414

[J109] Aksoy D, Luo J, Cao P, **Rupert TJ**. "A Machine Learning Framework for the Prediction of Interfacial Segregation Behavior in Chemically Complex Environments," *Modelling and Simulation in Materials Science and Engineering*, (2024) 32, 065011. https://doi.org/10.1088/1361-651X/ad585f

[J108] Cortez J, Dupuy AD, Vahidi H, Donaldson OK, Bowman WJ, **Rupert TJ**, Schoenung JM. "Grain size dependent indentation response of single-phase (CoCuMgNiZn)O high entropy oxides," *Journal of the European Ceramic Society*, (2024) 44, 116673. https://doi.org/10.1016/j.jeurceramsoc.2024.116673

[J107] Geiger I, Apelian D, Pan X, Cao P, Luo J, **Rupert TJ**. "Frustrated metastable-to-equilibrium grain boundary structural transition in NbMoTaW due to segregation and chemical complexity," *Acta Materialia*, (2024) 272, 119939. https://doi.org/10.1016/j.actamat.2024.119939

[J106] Guo H, Vahidi H, Kang H, Shah S, Xu M, Aoki T, **Rupert TJ**, Luo J, Gilliard-Abdul Aziz KL, Bowman WJ. "Tuning grain boundary cation segregation with oxygen deficiency and atomic structure in a perovskite compositionally complex oxide thin film," *Applied Physics Letters*, (2024) 124, 171605.
https://doi.org/10.1063/5.0202249

[J105] Xing B, **Rupert TJ**, Pan X, Cao P. "Neural Network Kinetics for Exploring Diffusion Multiplicity and Chemical Ordering in Compositionally Complex Materials," *Nature Communications*, (2024) 15:3879.
https://doi.org/10.1038/s41467-024-47927-9

[J104] Garg P, Gianola DS, **Rupert TJ**. "Strengthening from dislocation restructuring and local climb at platelet linear complexions in Al-Cu alloys," *Journal of Materials Science: Materials Theory*, (2024) 8, 9.
https://doi.org/10.1186/s41313-024-00062-w

[J103] Wang F, Guo J, Weygand D, Wang F, **Rupert TJ**, Chen D, Gianola DS. "Topology and evolution of dislocation structures mediated by glissile reactions in face-centered cubic metals," *Acta Materialia*, (2024) 268, 119748.
https://doi.org/10.1016/j.actamat.2024.119748

[J102] Aksoy D, Cao P, Trelewicz JR, Wharry JP, **Rupert TJ**. "Enhanced radiation damage tolerance of amorphous interphase and grain boundary complexions in Cu-Ta," *JOM*, (2024) 76, 2870.
https://doi.org/10.1007/s11837-024-06382-z

[J101] Xing B, Zou W, **Rupert TJ**, Cao P. "Vacancy diffusion barrier spectrum and diffusion correlation in multicomponent alloys," *Acta Materialia*, (2024) 266, 119653.
https://doi.org/10.1016/j.actamat.2024.119653

[J100] Vahidi H, Dupuy AD, Lam BX, Cortez J, Garg P, **Rupert TJ**, Schoenung JM, Bowman WJ. "Reversible Enhancement of Electronic Conduction caused by Phase Transformation and Interfacial Segregation in an Entropy Stabilized Oxide," *Advanced Functional Materials*, (2024) 2315895.
https://doi.org/10.1002/adfm.202315895

[J99] Wang C, Qin M, Lei T, Wan L, Kisslinger K, **Rupert TJ**, Luo J, Xin HL. "Compositional inhomogeneity and its effect on the hardness of nanostructured refractory high-entropy alloys," *Materials Characterization*, (2024) 207, 113563.
https://doi.org/10.1016/j.matchar.2023.113563

[J98] Shivakumar S, Song K, Wang C, Lei T, Xin HL, **Rupert TJ**, Luo J. "Discovery of Ni activated sintering of MoNbTaW predicted by a computed grain boundary diagram," *Scripta Materialia*, (2024) 239, 115777.
https://doi.org/10.1016/j.scriptamat.2023.115777

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[J1] **Rupert TJ**, Gianola DS, Gan Y, Hemker KJ. "Experimental Observations of Stress-Driven Grain Boundary Migration," *Science,* (2009) 326, 1686. http://dx.doi.org/10.1126/science.1178226

Conference Proceedings:

[C4] Guo H, Vahidi H, Jang H, ShahS, Xu M, Aoki T, **Rupert TJ**, Luo J, Gilliard-AbdulAziz KL, Bowman WJ. "Atomic Structure and Chemistry of High-Entropy Oxide Grain Boundaries revealed by STEM Imaging, Strain Mapping, and Spectroscopy," *Microscopy and Microanalysis - Supplement*, (2024).

https://doi.org/10.1093/mam/ozae044.664

[C3] Balbus GH, Echlin MP, Grigorian CM, **Rupert TJ**, Pollock TM, Gianola DS. "Rejuvenation of Disorder-Containing Materials," *ICTAEM 2018: Proceedings of the First International Conference on Theoretical, Applied and Experimental Mechanics*, (2018). https://doi.org/10.1007/978-3-319-91989-8_85

[C2] Sharma S, Khalajhedayati A, **Rupert TJ**, Madou MJ. "SU8 Derived Glassy Carbon for Lithium Ion Batteries," *Electrochemical Society (ECS) Transactions*, (2014). http://dx.doi.org/10.1149/06107.0075ecst

[C1] Moodie ALR, Angle JP, Tackett EC, **Rupert TJ**, Mecartney ML, Valdevit L. "Ceramic and Hybrid Micro-architected Materials for High Temperature Applications," *Society for the Advancement of Material and Process Engineering (SAMPE) Proceedings*, (2013).

PATENTS

[P1] Rupert TJ, Khalajhedayati A. "Enhancing Mechanical Properties of Nanostructured Materials with Interfacial Films," U.S. Patent No. US 10,934,606 B2, Awarded on 03/02/2021.

PRESENTATIONS

Invited Lectures:

[L116] "Local Chemical Ordering Due to Defect Phase Transitions of Different Dimensionalities," *Materials Research Society (MRS) Spring Meeting & Exhibit*, April 2026, Honolulu, HI.

[L115] "Using entropy to stabilize unique (and useful) grain boundary states," *Rutgers University - Malcolm G. McLaren Symposium*, April 2026, Piscataway, NJ.

[L114] "Chemical patterning to enable new property combinations in multicomponent nanocrystalline alloys," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2026, San Diego, CA.

[L113] "Grain boundaries and dislocations can amplify local chemical ordering," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2026, San Diego, CA.

[L112] "Complexion engineered nanocrystalline alloys for improved radiation damage tolerance," *Materials in Nuclear Energy Systems 2025 (MiNES 2025)*, December 2025, Cleveland, OH.

[L111] "Designing interfacial structure to improve the performance of nanocrystalline alloys," *Georgia Institute of Technology – Department of Materials Science and Engineering*, November 2025, Atlanta, GA.

[L110] "Dislocation Defect Phases for the Control of Higher Order Mechanical Properties," *7th Dislocations Conference*, November 2025, Miami, FL.

[L109] "Complexion engineering enables nanocrystalline alloys that thrive in extreme environments," *University of Maryland – Department of Materials Science and Engineering*, November 2025, College Park, MD.

[L108] "Complexion engineering enables nanocrystalline alloys that thrive in extreme environments," *Johns Hopkins University – Department of Mechanical Engineering*, September 2025, Baltimore, MD.

[L107] "Deformation Physics and Structural Descriptors of Amorphous Grain Boundary Complexions," *2nd Cairo Symposium on the Physics of Metal Plasticity*, April 2025, Cairo, Egypt.

[L106] "Complex concentrated grain boundaries and the stabilization of unexpected interfacial structures," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2025, Las Vegas, NV.

[L105] "Dislocation defect phases as a pathway for the manipulation of higher order mechanical properties," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2025, Las Vegas, NV.

[L104] "Disordering of grain boundaries enables defect-tolerant nanomaterials," *Ames National Laboratory*, January 2025, Ames, IA.

[L103] "Disordering of grain boundaries enables nanomaterials that thrive in extreme environments," *Lawrence Livermore National Laboratory – Mechanics of Materials Seminar*, November 2024, virtual.

[L102] "High Entropy Grain Boundaries," *6th International Workshop on Interfaces at Bear Creek*, August 2024, Macungie, PA.

[L101] "Modifying plasticity with chemically-ordered defect phases along dislocation lines," *Schöntal Symposium on Dislocation-based Plasticity*, April 2024, Monastery Bad Schöntal, Germany.

[L100] "Defect engineering of structural and chemical short-range order to enable materials for extreme environments," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2024, Orlando, FL.

[L99] "Defect engineering of structural and chemical short-range order within grain boundaries," *Sandia National Laboratories*, January 2024, Albuquerque, NM.

[L98] "Segregation-induced complexion transitions: Manipulating defects to improve the performance of nanostructured metals," *Carnegie Mellon University – Department of Materials Science and Engineering*, September 2023, Pittsburgh, PA.

[L97] "Segregation-induced complexion transitions: Manipulating defects to improve mechanical properties," *North Carolina State University – Department of Mechanical and Aerospace Engineering*, August 2023, Raleigh, NC.

[L96] "Manipulating defect structure and behavior through segregation-induced complexion transitions," *Johns Hopkins University – Whiting School of Engineering*, July 2023, Baltimore, MD.

[L95] "High Strength, Hierarchically Nanostructured Al Alloys through an Interfacial Nucleation Pathway," *THERMEC International Conference on Processing and Manufacturing of Advanced Materials*, July 2023, Vienna, Austria.

[L94] "Nanoscale templating of reinforcing phases with dislocation complexions," *Army Research Laboratory – Sciences of Extreme Materials Competency (SEMC)*, June 2023, Adelphi, MD.

[L93] "Nanoscale templating of reinforcing phases with linear complexions to achieve extreme strength," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2023, San Diego, CA.

[L92] "Tunable short-range order within amorphous complexions and its connection to damage nucleation," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2023, San Diego, CA.

[L91] "Segregation-induced complexion transitions: Manipulating defects to improve the performance of nanostructured materials," *Texas A&M University – Materials Science and Engineering Department*, October 2022, College Station, TX.

[L90] "Novel grain boundary phenomena in complex concentrated alloys," *Air Force Research Laboratory (AFRL) Workshop on Strength & Deformation in Refractory Complex Concentrated Alloys*, September 2022, Dayton, OH.

[L89] "Extended near-boundary segregation zones in complex concentrated metals and oxides," *Workshop on New Experimental and Theoretical Developments of High-Entropy Materials*, June 2022, Telluride, CO.

[L88] "Segregation-induced complexion transitions: Manipulating interfaces to improve the performance of nanocrystalline metals," *Arizona State University – School for Engineering of Matter, Transport and Energy*, April 2022, Tempe, AZ.

[L87] "In situ nanoscale mechanical testing to isolate the effect of grain boundary complexions," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2022, Anaheim, CA.

[L86] "Disordered interfacial features as local equilibrium states capable of modifying nanocrystalline metals," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2022, Anaheim, CA.

[L85] "Using a typically brittle structure to toughen nanocrystalline metals," *Université de Lille - TimeMan Seminar Series*, October 2021, Lille, France.

[L84] "Microstructure-within-a-microstructure: Understanding critical structural variations within grain boundary networks," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2021, Columbus, OH.

[L83] "Defects-by-design: Tailoring material behavior with grain boundary and dislocation complexions," *RWTH Aachen - Collaborative Research Centre SFB1394 Workshop on Defect Phases*, September 2021, Aachen, Germany.

[L82] "Creating nanoalloys that actually prefer extreme environments using amorphous interfacial complexions," *International Materials Applications & Technologies (IMAT) 2021*, September 2021, St. Louis, MO.

[L81] "Designing grain boundary state to improve nanocrystalline metals," *Sandia National Laboratories*, May 2021, Albuquerque, NM.

[L80] "Making strong, tough, thermally-stable, and radiation tolerant nanocrystalline materials in bulk form," *Savannah River National Laboratory*, January 2021, Jackson, SC.

[L79] "In situ mechanical testing of an Al matrix composite to investigate plasticity and failure on multiple length scales," *Beijing Institute for Aeronautical Materials*, December 2020, Beijing, China.

[L78] "Segregation-Induced Complexion Transitions: New Opportunities for Materials Design," *Apple Inc. - Alloy Engineering*, December 2020, Cupertino, CA.

[L77] "Controlling the structure of interfaces and dislocations to directly alter mechanical response," *Materials Research Society (MRS) Fall Meeting*, December 2020, Boston, MA.

[L76] "Unique migration of faceted Σ11 boundaries in face centered cubic metals," *Society of Engineering Science (SES) 57th Annual Technical Meeting, September 2020*, Minneapolis, MN.
* Postponed due to COVID-19 *

[L75] "Creating nanoalloys that actually prefer extreme environments using amorphous interfacial complexions," *International Materials Applications & Technologies (IMAT) 2020*, September 2020, Cleveland, OH.
* Cancelled due to COVID-19 *

[L74] "Segregation-induced structural transformations near interfaces and dislocations," *5th International Workshop on Mechanical Behavior at Small Length Scales*, July 2020, Bangalore, India.
* Postponed due to COVID-19 *

[L73] "Moving closer to equilibrium but maintaining the defects (and the properties)," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2020, San Diego, CA.

[L72] "Making strong, tough, thermally-stable, and radiation tolerant nanocrystalline materials in bulk form," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2020, San Diego, CA.

[L71] "Optimizing the mechanical behavior of metals with grain boundary and dislocation complexions," *International Conference on Plasticity, Damage, and Fracture*, January 2020, Rivera Maya, Mexico.

[L70] "The thermodynamics and kinetics of defect-driven complexion formation," *International Conference on Plasticity, Damage, and Fracture*, January 2020, Rivera Maya, Mexico.

[L69] "Using TEM to isolate the importance of complexion transitions on the behavior of nanocrystalline materials," *Second International Symposium on Advanced Microscopy and Spectroscopy (ISAMS-2)*, December 2019, Irvine, CA.

[L68] "Micro-Scale In Situ Mechanical Testing to Uncover Deformation Mechanisms in Al-Matrix Composites," *Beijing Institute of Aeronautical Materials*, October 2019, Beijing, China.

[L67] "Coupled experimental and computational studies of amorphous grain boundary complexions," *Materials Science & Technology (MS&T) Conference and Exhibition*, September 2019, Portland, OR.

[L66] "Linear complexion formation driven by local stress concentrations near dislocations," *Dislocations 2019*, September 2019, Haifa, Israel.

[L65] "Probing nanoscale complexion transformations with computational techniques that complement experiments," *Recent Advances in the Modeling and Simulation of the Mechanics of Nanoscale Materials Workshop*, August 2019, Philadelphia, PA.

[L64] "Segregation-Induced Complexion Transitions: New Opportunities for Materials Design," *Gordon Research Conference – Physical Metallurgy*, July 2019, Manchester, NH.

[L63] "Amorphous intergranular films for improved performance under irradiation," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2019, San Antonio, TX.

[L62] "Tailoring mechanical behavior with one- and two-dimensional complexions," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2019, San Antonio, TX.

[L61] "Promoting beneficial complexion transitions: Tuning defect structure to make better materials," *University of California, Los Angeles – Department of Materials Science and Engineering*, March 2019, Los Angeles, CA.

[L60] "Promoting beneficial complexion transitions: Tuning defect structure to make better materials," *University of Illinois at Urbana-Champaign – Department of Materials Science and Engineering*, February 2019, Urbana, IL.

[L59] "Promoting beneficial complexion transitions: Using defects to make better materials," *Dartmouth College – Thayer School of Engineering*, January 2019, Hanover, NH.

[L58] "Enabling tough and stable nanocrystalline metals through the incorporation of amorphous complexions," *International Conference on Plasticity, Damage, and Fracture*, January 2019, Panama City, Panama.

[L57] "Repetitive deformation at high temperatures leads to grain boundary network restructuring in nanocrystalline metals," *International Conference on Plasticity, Damage, and Fracture*, January 2019, Panama City, Panama.

[L56] "Decorating defects with segregating dopants to tailor mechanical properties," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2018, Columbus, OH.

[L55] "Dislocation-assisted linear complexion formation in body-centered cubic and face-centered cubic alloys," *Society of Engineering Science (SES) Annual Technical Meeting*, October 2018, Madrid, Spain. (KEYNOTE)

[L54] "Controlled alteration of nanocrystalline grain boundary networks using cyclic plasticity at elevated temperatures," *Society of Engineering Science (SES) Annual Technical Meeting*, October 2018, Madrid, Spain.

[L53] "Stabilization and toughening of nanocrystalline alloys through the incorporation of amorphous complexions," *THERMEC International Conference on Processing and Manufacturing of Advanced Materials*, July 2018, Paris, France.

[L52] "In situ mechanical testing of hierarchical and gradient nanostructures," *International Conference on Metallurgical Coatings and Thin Films (ICMCTF)*, April 2018, San Diego, CA.

[L51] "Promoting Beneficial Grain Boundary Phase Transitions with Segregation Engineering," *University of Pennsylvania – Department of Materials Science and Engineering*, April 2018, Philadelphia, PA.

[L50] "Manipulating the Structure and Properties of Nanocrystalline Metals using Segregation Engineering," *University of California, Berkeley – Department of Mechanical Engineering*, March 2018, Berkeley, CA.

[L49] "Competing effects of nonmetal impurities and planned metallic dopants on grain boundary deformation," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2018, Phoenix, AZ.

[L48] "Stabilization of nanocrystalline alloys through the incorporation of grain boundary complexions," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2018, Phoenix, AZ.

[L47] "Small-scale mechanical testing of hierarchical nanostructured materials," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2018, Phoenix, AZ.

[L46] "Modeling of complexion transitions at one- and two-dimensional defects," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2018, Phoenix, AZ.

[L45] "Surface structure transitions during sliding contact of nanostructured metals," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2018, Phoenix, AZ.

[L44] "Nanometallurgy: Current directions at UC Irvine and extension to Al-matrix composites," *Beijing Institute of Aeronautical Materials*, October 2017, Beijing, China.

[L43] "Decorating defects with segregating dopants to tailor mechanical properties," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2017, Pittsburgh, PA.

[L42] "Tribology of nanostructured metals: Connecting transitions in surface structure and wear rate," *Rice University – Contact Mechanics Workshop*, May 2017, Houston, TX.

[L41] "Complexion transitions in metals: Unique opportunities for mechanical behavior and materials processing," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2017, San Diego, CA.

[L40] "Collective deformation mechanisms and their effect on nanoscale interfacial networks," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2017, San Diego, CA.

[L39] "Controlling Nanocrystalline Structure and Properties with Segregation Engineering," *California Institute of Technology – Department of Mechanical and Civil Engineering*, February 2017, Pasadena, CA.

[L38] "Promoting Beneficial Grain Boundary Phase Transitions with Segregation Engineering," *University of California, Santa Barbara – Materials Department*, November 2016, Santa Barbara, CA.

[L37] "Using Grain Boundary Complexion Transitions to Toughen Nanocrystalline Metals," *University of California, Irvine - Department of Chemical Engineering and Materials Science*, October 2016, Irvine, CA.

[L36] "Controlling Nanocrystalline Structure and Properties with Segregation Engineering," *Wuhan University of Technology*, September 2016, Wuhan, China.

[L35] "Adding Complexions to Nanostructured Metals to Achieve a Unique Combination of Strength and Ductility," *Functional and Nanomaterials 2025*, September 2016, Irvine, CA.

[L34] "Using Interfacial Structure to Control the Properties of Nanocrystalline Metals," *Sandia National Laboratories*, September 2016, Albuquerque, NM.

[L33] "Promoting Beneficial Grain Boundary Phase Transitions with Segregation Engineering," *University of Southern California – Chemical Engineering & Materials Science*, September 2016, Los Angeles, CA.

[L32] "Effect of Interfacial Doping and Complexion Formation on Nanocrystalline Mechanical Behavior," *Gordon Research Conference – Structural Nanomaterials*, July 2016, Hong Kong, China.

[L31] "Doping Nanocrystalline Alloys to Improve Strength and Toughness," *THERMEC International Conference on Processing and Manufacturing of Advanced Materials*, May 2016, Graz, Austria.

[L30] "Formation and Toughening Effects of Amorphous Interfacial Phases," *International Symposium on Plasticity*, January 2016, Kona, HI.

[L29] "Nanocrystalline Grain Boundary Engineering with Cyclic Plastic Deformation," *International Symposium on Plasticity*, January 2016, Kona, HI.

[L28] "Tuning Grain Boundary Structure to Control the Mechanical Behavior of Nanostructured Metallic Alloys," *Materials Research Society (MRS) Fall Meeting*, December 2015, Boston, MA.

[L27] "Controlling Grain Boundary Structure and Properties with Segregation Engineering," *University of Florida – Department of Materials Science and Engineering*, November 2015, Gainesville, FL.

[L26] "Nanoscale Amorphous Intergranular Films: Mechanical Properties and Interfacial Thermodynamics," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2015, Columbus, OH.

[L25] "Using amorphous complexions to tailor the mechanical behavior of nanostructured metals," *International Workshop on Interfaces*, September 2015, Bear Creek, PA.

[L24] "Characterizing and Modifying Grain Boundary Networks in Nanocrystalline Metals," *University of North Carolina at Charlotte – Nanoscale Science Seminar Series*, September 2015, Charlotte, NC.

[L23] "Doping Nanocrystalline Metals to Improve Ductility and Toughness," *Mackenzie Presbyterian University*, April 2015, São Paulo, Brazil.

[L22] "Controlling Grain Boundary Structure and Properties with Segregation Engineering," *Boise State University – Materials Science and Engineering*, March 2015, Boise, ID.

[L21] "Cyclic Plasticity and Microstructural Modification in Nanocrystalline Thin Films," *International Symposium on Plasticity*, January 2015, Montego Bay, Jamaica.

[L20] "Connecting Computational and Experimental Tools for Tracking the Evolution of Nanostructured Materials," *International Symposium on Plasticity*, January 2015, Montego Bay, Jamaica.

[L19] "Complexion Engineering in Nanostructured Materials," *Pennsylvania State University – Materials Science and Engineering*, December 2014, State College, PA.

[L18] "Nanocrystalline Grain Boundary Networks and Their Evolution during Thermomechanical Cycling," *International Conference of Young Researchers on Advanced Materials (ICYRAM)*, October 2014, Haikou, China.

[L17] "Catastrophic Failure of Nanocrystalline Metals: Mechanisms and Novel Toughening Strategies," *Fraunhofer Institute for Mechanics of Materials IWM*, September 2014, Freiburg, Germany.

[L16] "Doping Nanocrystalline Alloys to Improve Strength and Toughness," *Materials Science Engineering (MSE 2014)*, September 2014, Darmstadt, Germany. (KEYNOTE)

[L15] "Mechanical and Tribological Behavior of Nanocrystalline Ni-W Coatings: Importance of Grain Size and Grain Boundary State," *International Conference on Metallurgical Coatings and Thin Films (ICMCTF)*, April 2014, San Diego, CA.

[L14] "Tailoring Grain Boundary Structure to Control the Mechanical Behavior of Nanocrystalline Alloys," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2014, San Diego, CA.

[L13] "Nanocrystalline Grain Boundary Engineering Enabled by Novel Deformation Physics," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2014, San Diego, CA.

[L12] "Plasticity and failure of nanocrystalline alloys: the importance of grain boundary structure," *International Symposium on Plasticity*, January 2014, Freeport, Bahamas.

[L11] "Nano-Metallurgy: Taking Advantage of Novel Deformation Physics," *California State University Fullerton – College of Engineering,* December 2013, Fullerton, CA.

[L10] "The Influence of Grain Boundary Structure on Plastic Flow and Failure in Nanocrystalline Alloys," *THERMEC International Conference on Processing and Manufacturing of Advanced Materials*, December 2013, Las Vegas, NV.

[L9] "Catastrophic Shear Banding in Nanocrystalline Metals and the Importance of Grain Boundary Structure," *University of California, Riverside – Materials Science and Engineering*, November 2013, Riverside, CA

[L8] "Shear Localization in Nanocrystalline Metals: A Combined Atomistic and Experimental Study," *Society of Engineering Science (SES) Annual Technical Meeting*, July 2013, Providence, RI.

[L7] "Nanocrystalline Metallurgy: Taking Advantage of Novel Deformation Physics," *ASM – Orange Coast Chapter*, January 2013, Irvine, CA.

[L6] "Tribology of Nanocrystalline Ni-W: Evolving Structure and Properties," *Materials Research Society (MRS) Fall Meeting*, November 2012, Boston, MA.

[L5] "Nanocrystalline Metallurgy: Taking Advantage of Novel Deformation Physics," *Lawrence Livermore National Laboratory*, August 2012, Livermore, CA.

[L4] "Enhanced Strengthening Mechanisms in Nanocrystalline Alloys," *University of California, Irvine - Department of Chemical Engineering and Materials Science*, November 2011, Irvine, CA.

[L3] "Nanocrystalline metals: Dynamic nanostructures and properties under loading," *University of Minnesota - Department of Chemical Engineering and Materials Science*, February 2011, Minneapolis, MN.

[L2] "Nanocrystalline metals: Dynamic nanostructures and properties under loading," *University of California, Irvine - Department of Mechanical and Aerospace Engineering*, January 2011, Irvine, CA.

[L1] "Microstructure-Property Relationships in Nanocrystalline Metals," *University of Pennsylvania - Materials Science and Engineering*, January 2010, Philadelphia, PA.

Contributed Talks *(Presenter's name is in bold)**:***

[T110] **Yazdani MH**, Liang A, Maldonado Otero A, Liu Y, Farkas D, Hodge AM, Rupert TJ, Beyerlein IJ, Branicio P. "Composition-Guided Engineering of Growth Twins in Ni-Cr-Fe Thin Films through Coupled Atomistic Deposition Simulations and In-Situ TEM," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2026, San Diego, CA.

[T109] **Dhal A**, Sharma P, Cao R, Rupert TJ. "From Order to Disorder: Ball Milling Pathways for Forced Dissolution and Supersaturated Solid Solution Formation of Nanocrystalline Alloys," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2026, San Diego, CA.

[T108] **HC Howard**, Cunningham WS, Bierwagen C, Genc A, Rhodes BE, Rupert TJ, Gianola DS. "Prediction and characterization of linear complexions in binary metallic alloys and their impact on dislocation mechanics," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2026, San Diego, CA.

[T107] **Maldonado Otero A**, Liu Y, Yazdani MH, Liang A, Hodge AM, Rupert TJ, Branicio P, Farkas D, Beyerlein IJ. "Examining growth twinning in Ni-based films via a high-throughput methodology," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2026, San Diego, CA.

[T106] **Liu Y**, Rupert TJ. "Extreme Strength in Multi-Component Nanocrystalline Ni Alloys Enabled by Grain Boundary Segregation and Lattice Stiffening," *2025 MRS Fall Meeting & Exhibit*, December 2025, Boston, MA.

[T105] **Rupert TJ**, Taheri ML, Trelewicz JR, Sprouster DJ, Field KG, Marian J, Yildirim E, Washington AL, Dennett CA, Guglin J. "Complexion Engineered Nanocrystalline Tungsten (CENT) Alloys," *ARPA-E CHADWICK Program Kickoff Meeting*, March 2025, Las Vegas, NV.

[T104] **Cunningham WS**, Lei T, Howard HC, Rupert TJ, Gianola DS. "Quantifying the kinetics of defect phase transitions through ultrafast calorimetry," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2025, Las Vegas, NV.

[T103] **Zou W**, Apelian D, Rupert TJ, Pan X, Cao P. "Dislocation Pattern and Motion Mechanisms of Twist Grain Boundaries in High-Entropy Alloys," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2025, Las Vegas, NV.

[T102] **Xing B**, Rupert TJ, Pan X, Cao P. "Predicting diffusion kinetics and its resulting local chemical ordering in compositionally complex materials," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2025, Las Vegas, NV.

[T101] **Rupert TJ**. "Chemically-ordered dislocation defect phases as a pathway for controlling plasticity," *Army Research Office (ARO) Mechanics & Materials Tri-Program Review*, December 2024, Aberdeen Proving Ground, MD.

[T100] **Hessong E**, Niu T, Della Ventura NM, Boyce B, Fensin S, Rupert TJ. "Thicker Amorphous Grain Boundary Complexions Lead to Increased Plasticity in Nanocrystalline Cu Alloys," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2024, Pittsburgh, PA.

[T99] **Geiger I**, Rupert TJ. "Chemical Ordering Delays Grain Boundary Complexion Transitions in NbMoTaW," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2024, Pittsburgh, PA.

[T98] **Rupert TJ**. "Improving Interfacial Damage Tolerance with Amorphous Complexion Transitions," *Department of Energy (DOE), Basic Energy Sciences PI Meeting*, September 2024, Gaithersburg, MD.

[T97] Hodge AM, **Rupert TJ**, **Branicio P**, Beyerlein IJ. "DMREF: Data-driven Recursive AI-powered Generator of Optimized Nanostructured Superalloys (DRAGONS)," *U.S. Materials Genome Initiative (MGI) Principal Investigator Meeting*, July 2024, Washington, DC. (poster)

[T96] **Bajpai S**, Tian Y, Bi Y, Wang X, Belcher C, Verma V, MacDonald B, Rupert TJ, Pan X, Lavernia EJ, Apelian D. "Understanding processing pathways for chemical short-range order in equiatomic CoCrNi alloy," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2024, Orlando, FL.

[T95] **Howard H**, Cunningham WS, Singh D, Garg P, Li E, Merle B, Rupert TJ, Gianola DS. "Linear Complexions in FCC Alloys and Their Impact on Mechanical Properties," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2024, Orlando, FL.

[T94] **Cunningham WS**, Howard H, Garg P, Li E, Singh D, Genc A, Rupert TJ, Gianola DS. "The Role of Deformation on Local Ordering in FCC Alloys," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2024, Orlando, FL.

[T93] **Bajpai S**, Tian Y, Bi Y, Xin Wang, Belcher CH, Verma V, MacDonald B, Rupert TJ, Pan X, Lavernia EJ, Apelian D. "Understanding processing pathways for chemical short-range order in equiatomic CoCrNi alloy," *3rd World Congress on High Entropy Alloys (HEA 2023)*, November 2023, Pittsburgh, PA.

[T92] **Vahidi H**, Lam B, Dupuy A, Cortez J, Garg P, Rupert TJ, Schoenung JS, Bowman WJ. "Mixed Ionic Electronic Conduction Caused by Phase Transformation and Interfacial Segregation in an Entropy Stabilized Oxide," *244th ECS Meeting*, October 2023, Gothenburg, Sweden.

[T91] **Geiger I**, Rupert TJ. "Chemical Ordering Delays Grain Boundary Complexion Transitions in NbMoTaW," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2023, Columbus, OH.

[T90] **Balbus G**, Kappacher J, Sprouster D, Wang F, Shin J, Eggeler Y, Rupert TJ, Trelewicz JR, Kiener D, Maier-Kiener V, Gianola DS. "Disordered interfaces in nanocrystalline Al-Ni-Ce: origins of

microstructural stability and mechanical performance," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2023, Columbus, OH.

[T89] **Bajpai S**, Belcher CH, MacDonald B, Verma V, Rupert TJ, Pan X, Lavernia EJ, Apelian D. "Processing Pathways for Chemical Short-Range Order in Equiatomic CoCrNi alloy," *Materials Research Society (MRS) Spring Meeting*, April 2023, San Francisco, CA.

[T88] **Aksoy D**, Wardini JL, Rupert TJ, Bowman WJ. "Computer Vision Assisted Automated Grain Segmentation and High-Throughput Composition Analysis with Scanning Electron Transmission Microscopy," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2023, San Diego, CA.

[T87] **Garg P**, Rupert TJ. "Local structural ordering affects the toughening ability of amorphous grain boundary complexions," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2023, San Diego, CA.

[T86] **Lei T**, Hessong EC, Shin J, Gianola DS, Rupert TJ. "Submicron Intermetallic Particle Heterogeneity Controls Shear Localization in High-strength Nanostructured Al Alloys," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2023, San Diego, CA.

[T85] Shin J, Wang F, Balbus G, Lei T, Cunningham WS, Silverstein R, Rupert TJ, **Gianola DS**. "Thermal Stability and Mechanical Behavior in Segregation Engineered Nanocrystalline Ternary Al Alloys," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2023, San Diego, CA.

[T84] Shin J, Lei T, Howard H, Balbus G, Rupert TJ, **Gianola DS**. "Engineering the Extent of Grain Boundary Ordering via Pre-Melting in Nanocrystalline Al Alloys," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2023, San Diego, CA.

[T83] **Hessong EC**, Lei T, Xu M, Rupert TJ. "Chemical and structural ordering in amorphous complexions determines the plasticity of nanocrystalline Cu alloys," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2023, San Diego, CA.

[T82] **Aksoy D**, McCarthy MJ, Geiger I, Rupert TJ. "Structural Transitioning in Near Boundary Segregation Zones due to Chemical Ordering in NbMoTaW," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2023, San Diego, CA.

[T81] **Aksoy D**, Rupert TJ. "Linking Local Atomic Environments to Interfacial Co-Segregation Behavior in NbMoTaW Complex Concentrated Alloy Using Machine Learning Methods," *Materials Research Society (MRS) Fall Meeting*, November 2022, Boston, MA.

[T80] **Rupert TJ**. "Improving Interfacial Damage Tolerance with Amorphous Complexion Transitions," *Department of Energy (DOE), Basic Energy Sciences PI Meeting*, November 2022, virtual.

[T79] **Lei T**, Hessong EC, Shin J, Gianola DS, Rupert TJ. "Intermetallic Particle Heterogeneity Controls Shear Localization in High-strength Nanostructured Al Alloys," *SES 2022 Annual Conference*, October 2022, College Station, TX.

[T78] **Garg P**, Rupert TJ. "Incompatibility Between Neighboring Grains Determines the Local Structure of Amorphous Grain Boundary Complexions," *The 10th International Conference on Multiscale Materials Modeling (MMM10)*, October 2022, Baltimore, MD.

[T77] **Singh D**, Gianola DS, Rupert TJ. "Linear Complexions Provide Extreme Strengthening in Face-Centered Cubic Alloys," *The 10th International Conference on Multiscale Materials Modeling (MMM10)*, October 2022, Baltimore, MD.

[T76] **Geiger I**, Rupert TJ. "Exploring the structure and chemistry contributions to interfacial segregation in NbMoTaW with high-throughput atomistic simulations," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2022, Anaheim, CA.

[T75] **Aksoy D**, Rupert TJ. "Machine Learning-Assisted Prediction of Interfacial Segregation in a Refractory Multi-Principal Element Alloy," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2022, Anaheim, CA.

[T74] **Yu K**, Wang X, Mahajan S, Rupert TJ, Beyerlein IJ, Cao P, Schoenung JM, Lavernia EJ. "Nudged elastic band-based modeling of stress-dependent twin boundary migration in magnesium," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2022, Anaheim, CA.

[T73] **Cortez J**, Dupuy A, Vahidi H, Donaldson O, Rupert TJ, Bowman WJ, Schoenung JM. "Influence of Microstructure on Mechanical Properties in High Entropy Oxides," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2022, Anaheim, CA.

[T72] **Wharry JP**, Patki P, Aksoy D, Rupert TJ, Chen W, Wu Y, Darling KA. "Immiscible Phase Interfaces: Controlling Irradiation Amorphization and Void Swelling," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2022, Anaheim, CA.

[T71] **Acord KA**, Wang X, Donaldson OK, Dupuy AD, Rupert TJ, Wu J, Chen QN, Schoenung JM. "Mechanical properties and ionic conductivity of Li_2O-Al_2O_3-TiO_2-P_2O_5 prepared using laser powder bed fusion," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2021, Columbus, OH.

[T70] **Patki P**, Aksoy D, Chen W, Wang S, Wu Y, Rupert TJ, Wharry JP. "Competition between cavity evolution and amorphization in radiation-tolerant nanocrystalline Cu-10 at.% Ta alloy," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2021, Orlando, FL.
* Moved to virtual format due to COVID-19 *

[T69] **Garg P**, Pan Z, Turlo V, Rupert TJ. "Interfacial segregation and segregation-induced transitions in a polycrystalline grain boundary network," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2021, Orlando, FL.
* Moved to virtual format due to COVID-19 *

[T68] **McCarthy MJ**, Rupert TJ. "Directionally-Anisotropic Mobility of Faceted Boundaries Explained through Interfacial Dislocation Mechanisms," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2020, Pittsburgh, PA.
* Moved to virtual format due to COVID-19 *

[T67] **Yu K**, Wang X, Donaldson OK, Mahajan S, Beyerlein IJ, Rupert TJ, Schoenung JM, Lavernia EJ. "Microscratch-induced deformation twins in Mg single crystals," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2020, San Diego, CA.

[T66] **Wang X**, Wang J, Yu K, Rupert TJ, Mahajan S, Lavernia EJ, Beyerlein IJ, Schoenung JM. "Effects of Y Concentration on Mechanical Response of Mg-Y Alloys," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2020, San Diego, CA.

[T65] **Su Y**, Kumar M, Wang X, Hu Y, Yu K, Wang J, Mahajan S, Lavernia EJ, Rupert TJ, Schoenung JM, Beyerlein IJ. "Characterization of twin-twin interactions in Mg," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2020, San Diego, CA.

[T64] **McCarthy MJ**, Rupert TJ. "Anisotropic mobility in faceted Σ11 <110> tilt FCC grain boundaries and the effect of subsequent doping," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2020, San Diego, CA.

[T63] **Wang X**, Hu Y, Yu K, Mahajan S, Beyerlein IJ, Lavernia EJ, Rupert TJ, Schoenung JM. "{10-12} Twin Boundary Segregation of Y in Mg alloys," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2020, San Diego, CA.

[T62] **Grigorian CM**, Rupert TJ. "Thick Amorphous Complexions Enabled by Compositional and Thermal Manipulation," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2020, San Diego, CA.

[T61] **Hu Y**, Turlo V, Mahajan S, Lavernia EJ, Beyerlein IJ, Schoenung JM, Rupert TJ. "Manipulating twin morphology in Mg alloys by varying solute concentration," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2020, San Diego, CA.

[T60] Donaldson OK, Wardini JL, **Rupert TJ**. "Probing the Deformation Mechanisms of Al-Matrix Composites with Small-Scale Mechanical Testing," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2020, San Diego, CA.

[T59] **Turlo V**, Rupert TJ. "Linear complexion formation and their effect on the strength of metallic alloys," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2020, San Diego, CA.

[T58] Wang X, Yu K, Jiang L, Zhang D, Rupert TJ, Beyerlein IJ, Mahajan S, Lavernia EJ, **Schoenung JM**. "Multiscale investigation of the microstructure-mechanical property-processing relationships in Mg and Mg alloys," *Materials Research Society (MRS) Fall Meeting*, December 2019, Boston, MA.

[T57] Balbus GH, Echlin MP, Grigorian CM, Rupert TJ, Pollock TM, **Gianola DS**. "Controlling Disorder-Property Relationships in Metallic Alloys via Targeted Processing," *Society of Engineering Science (SES) Annual Technical Meeting*, October 2019, St. Louis, MO.

[T56] **McCarthy MJ**, Rupert TJ. "Anisotropic mobility of faceted Σ11 <110> tilt grain boundaries in face centered cubic metals," *Materials Science & Technology (MS&T) Conference and Exhibition*, September 2019, Portland, OR.

[T55] **Turlo V**, Rupert TJ. "Discovery of a wide variety of linear complexions in metallic alloys," *Materials Science & Technology (MS&T) Conference and Exhibition*, September 2019, Portland, OR.

[T54] **Hu Y**, Turlo V, Beyerlein IJ, Lavernia EJ, Mahajan S, Schoenung JM, Rupert TJ. "Growth of twin embryos by disconnection propagation in Mg: Molecular dynamics and phenomenological modeling," *Materials Science & Technology (MS&T) Conference and Exhibition*, September 2019, Portland, OR.

[T53] **Rupert TJ**. "Doping Metallic Grain Boundaries to Control Atomic Structure and Damage Tolerance," *Department of Energy (DOE), Basic Energy Sciences PI Meeting*, August 2019, Gaithersburg, MD.

[T52] **Balbus GH**, Echlin MP, Eggeler YM, Grigorian CM, Rupert TJ, Pollock TM, Gianola DS. "Exploring the Grain Boundary Energy Landscape in Nanocrystalline Al-Ni-Ce," *Gordon Research Conference – Physical Metallurgy*, July 2019, Manchester, NH. (poster)

[T51] **Donaldson OK**, Rupert TJ. "Structural evolution and wear-rate transitions in nanocrystalline alloys," *International Conference on Metallurgical Coatings and Thin Films (ICMCTF)*, May 2019, San Diego, CA.

[T50] Schuler JD, Wardini JL, **Rupert TJ**. "Nanocrystalline Alloys with Disordered Complexions Probed by In Situ Mechanical Testing," *International Conference on Metallurgical Coatings and Thin Films (ICMCTF)*, May 2019, San Diego, CA.

[T49] Balbus GH, Echlin MP, Grigorian CM, Gammer C, Kiener D, Maier-Kiener V, Rupert TJ, Pollock TM, **Gianola DS**. "Processing Routes for Controlling Disorder-Property Relationships in Metallic Alloys," *Materials Research Society (MRS) Spring Meeting*, April 2019, Phoenix, AZ.

[T48] **Balbus GH**, Echlin MP, Grigorian CM, Gammer C, Renk O, Maier-Kiener V, Kiener D, Rupert TJ, Pollock TM, Gianola DS. "Rejuvenation of Nanocrystalline Metals," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2019, San Antonio, TX.

[T47] **Donaldson OK**, Rupert TJ. "Fabrication of bulk nanostructured materials with high toughness through simple powder processing," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2019, San Antonio, TX.

[T46] **Schuler JD**, Barr C, Briggs S, Heckman NM, Hattar K, Boyce BL, Rupert TJ. "Irradiation and Mechanical Behavior of Nanocrystalline Alloys with Amorphous Intergranular Films," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2019, San Antonio, TX.

[T45] **Grigorian CM**, Rupert TJ. "Extreme thermal stability in ternary nanocrystalline Cu-Zr-Hf and Cu-Zr-Al alloys with amorphous complexions," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2018, Columbus, OH.

[T44] **Hu Y**, Rupert TJ. "Atomistic modeling of interfacial segregation and structural transitions in ternary alloys," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2018, Columbus, OH.

[T43] Balbus GH, Echlin MP, Grigorian CM, Rupert TJ, Pollock TM, **Gianola DS**. "Rejuvenation of Nanocrystalline Metals using Femtosecond Laser Treatments," *18th International Conference on the Strength of Materials (ICSMA)*, July 2018, Columbus, OH.

[T42] **Turlo V**, Rupert TJ. "Grain boundary complexions and the strength of nanocrystalline metals," *18th International Conference on the Strength of Materials (ICSMA)*, July 2018, Columbus, OH.

[T41] **Rupert TJ**, McCarthy MJ. "Anisotropic mobility of faceted grain boundaries," *18th International Conference on the Strength of Materials (ICSMA)*, July 2018, Columbus, OH.

[T40] **Rupert TJ**, Mahajan S, Beyerlein IJ, Lavernia EJ, Schoenung JM. "Multiscalealloy design of HCP alloys via twin mesh engineering," *2018 Materials Genome Initiative PI Meeting*, March 2018, College Park, MD. (poster)

[T39] **Balbus G**, Echlin M, Grigorian CM, Rupert TJ, Pollock TM, Gianola DS. "Sub-Ablation Femtosecond Laser Processing of Nanocrystalline Alloys," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2018, Phoenix, AZ.

[T38] **Wang X**, Jiang L, Zhang D, Cooper C, Wang R, Hernandez A, Rupert TJ, Mahajan S, Beyerlein IJ, Lavernia EJ, Schoenung JM. "Strengthening and Toughening Effects of Twin Mesh Structures in Polycrystalline Mg," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2018, Phoenix, AZ.

[T37] **Huang Z**, Rupert TJ. "Impact of impurities and transition metal dopants on the stability and strength of grain boundaries via first-principles calculations," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2017, Pittsburgh, PA.

[T36] **Hu Y**, Rupert TJ. "Identifying interatomic potentials for the accurate modeling of interfacial segregation and structural transitions," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2017, Pittsburgh, PA. (poster)

[T35] Schuler JD, Pan Z, **Rupert TJ**. "Doping Metallic Grain Boundaries to Control Atomic Structure and Damage Tolerance," *Department of Energy (DOE), Basic Energy Sciences PI Meeting*, September 2017, Gaithersburg, MD.

[T34] **Schuler JD**, Rupert TJ. "Unambiguous Complexion Identification and Inspection in High Purity Binary Alloy Systems," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2017, San Diego, CA.

[T33] **Rupert TJ**. "Restructuring of Nanoscale Grain Boundary Networks during Cycling," *Materials Research Society (MRS) Fall Meeting*, December 2016, Boston, MA.

[T32] Pan Z, **Rupert TJ**. "The Mechanics and Thermodynamics of Interfacial Complexions in Transition Metal Alloys," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2016, Salt Lake City, UT.

[T31] **Panzarino JF**, Rupert TJ. "Plasticity-induced Restructuring of Nanocrystalline Grain Boundary Networks," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2016, Salt Lake City, UT.

[T30] **Schuler JD**, Rupert TJ. "Formation and Characterization of Interfacial Complexions in a Range of Transition Metal Alloy Systems," *Gordon Research Conference – Structural Nanomaterials*, July 2016, Hong Kong, China. (poster)

[T29] **Pan Z**, Rupert TJ. "Atomistic Simulations of Wear-Driven Structural Evolution in Nanocrystalline Materials," *Gordon Research Conference – Structural Nanomaterials*, July 2016, Hong Kong, China. (poster)

[T28] **Bober DB**, Lind J, Mulay R, Rupert TJ, Kumar M. "Large Twin Related Domains in Grain Boundary Engineered FCC Metals," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2016, Nashville, TN.

[T27] Ludy JE, Pan Z, **Rupert TJ**. "Doping Metallic Grain Boundaries to Control Atomic Structure and Damage Tolerance," *Department of Energy (DOE), Basic Energy Sciences PI Meeting*, September 2015, Gaithersburg, MD. (poster)

[T26] Khalajhedayati A, **Rupert TJ**. "Plasticity and failure of nanocrystalline alloys probed with small-scale mechanical testing," *International Materials Research Congress*, August 2015, Cancun, Mexico.

[T25] **Pan Z**, Rupert TJ. "Atomistic Modeling of Grain Boundary Complexions: Toughening Effects and Interface Thermodynamics," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2015, Orlando, FL.

[T24] **Panzarino JF**, Rupert TJ. "Mapping grains and interface networks in atomistic simulations: Tracking dynamic nanocrystalline microstructures," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2015, Orlando, FL.

[T23] **Bustamante J**, Panzarino JF, Rupert TJ, Loudon C. "Characterization of material properties of bed bug cuticle (Cimex lectularius)," *Society of Integrative and Comparative Biology (SICB) Annual Meeting*, January 2015, West Palm Beach, FL.

[T22] **Bober DB**, Panzarino JF, Rupert TJ. "Nanocrystalline Grain Boundary Engineering: Experiments and Atomistic Modeling," *Materials Research Society (MRS) Fall Meeting*, November 2014, Boston, MA.

[T21] **Khalajhedayati A**, Pan Z, Rupert TJ. "Creating tough and thermally stable nanocrystalline Cu by grain boundary doping and complexion engineering," *Materials Research Society (MRS) Fall Meeting*, November 2014, Boston, MA.

[T20] **Bustamante J**, Panzarino JF, Rupert TJ, Loudon C. "Characterization of material properties of bed bug cuticle (Cimex lectularius)," *Entomological Society of America (ESA) Annual Meeting*, November 2014, Portland, OR.

[T19] **Pan Z**, Rupert TJ. "Damage Nucleation from Dislocation-Grain Boundary Interactions: Mechanisms and Toughening Strategies," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2014, Pittsburgh, PA.

[T18] **Rupert TJ**. "Novel Solid Solution Effects on the Strength of Nanocrystalline Metals," *UCI-UNIST Engineering Workshop*, February 2014, Irvine, CA.

[T17] **Khalajhedayati A**, Rupert TJ. "The Effects of Grain Boundary Volume Fraction and Relaxation State on Uniaxial Plasticity of Nanocrystalline Metals," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2014, San Diego, CA.

[T16] **Panzarino J**, Rupert TJ. "Tracking Microstructure Evolution in Crystalline Materials: A Post-Processing Algorithm for Atomistic Simulations," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, February 2014, San Diego, CA.

[T15] **Rupert TJ**. "Interfacial Defects and the Failure of Nanostructured Metals," *Third Annual Meeting of Principal Investigators in the NSF Broadening Participation Research Initiation Grants in Engineering (BRIGE) Program*, August 2013, Arlington, VA. **(**poster**)**

[T14] Moodie ALR, Angle JP, Tackett EC, Rupert TJ, Mecartney ML, **Valdevit L**. "Ceramic and Hybrid Micro-architected Materials for High Temperature Applications," *Society for the Advancement of Material and Process Engineering (SAMPE) Conference and Exhibition*, May 2013, Long Beach, CA.

[T13] **Khalajhedayati A**, Rupert TJ. "Uniaxial Flow and Failure of Nanocrystalline Alloys Investigated by Focused Ion Beam Microscopy," *Southern California Society for Microscopy and Microanalysis Spring Symposium*, March 2013, Los Angeles, CA.

[T12] Bober DB, **Rupert TJ**. "The Evolution of Nanocrystalline Grain Boundary Networks under Thermomechanical Cycling," *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2013, San Antonio, TX.

[T11] Khalajhedayati A, **Rupert TJ**. "The Influence of Atomic Grain Boundary Structure on Plastic Flow in Nanocrystalline Alloys," *Materials Research Society (MRS) Fall Meeting*, November 2012, Boston, MA. (*poster*)

[T10] Khalajhedayati A, **Rupert TJ**. "Grain Boundary Structure and Chemistry: Impact on Nanocrystalline Plasticity," *Society of Engineering Science (SES) Annual Technical Meeting*, October 2012, Atlanta, GA.

[T9] **Rupert TJ**, Schuh CA. "Isolating the Relationship between Grain Size and Strength in Nanocrystalline Alloys," *Materials Research Society (MRS) Fall Meeting*, November 2011, Boston, MA.

[T8] **Rupert TJ**, Schuh CA. "Grain Boundary Relaxation and the Plastic Deformation of Nanocrystalline Alloys," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2011, Columbus, OH.

[T7] **Rupert TJ**, Schuh CA. "Separating Solid Solution and Grain Size Strengthening in Nanocrystalline Alloys," *Materials Research Society (MRS) Fall Meeting*, December 2010, Boston, MA.

[T6] **Rupert TJ**, Schuh CA. "Structural Evolution during Sliding Wear of Nanocrystalline Ni-W Alloys," *Materials Science & Technology (MS&T) Conference and Exhibition*, October 2010, Houston, TX.

[T5] **Rupert TJ**, Schuh CA. "Strengthening in Nanocrystalline Metals as a Result of Mechanically-Driven Grain Boundary Relaxation," *Gordon Research Conference on Thin Film & Small Scale Mechanical Behavior*, July 2010, Waterville, ME. (*poster*)

[T4] **Rupert TJ**, Schuh CA. "Tribology of Nanocrystalline Ni-W across the Hall-Petch Breakdown," *Winter School on Nanoscale Materials: Structure - Property - Relations*, March 2009, Stuttgart, Germany. (*poster*)

[T3] **Rupert TJ**, Schuh CA. "Tribology of a nanocrystalline alloy across the Hall-Petch breakdown," *Materials Research Society (MRS) Fall Meeting*, December 2008, Boston, MA.

[T2] **Rupert TJ**, Sharon JA, Gianola DS, Hemker, KJ. "Microtensile Testing of Nanocrystalline Thin Films for MEMS" *The Minerals, Metals and Materials Society (TMS) Annual Meeting & Exhibition*, March 2008, New Orleans, LA.

[T1] **Rupert TJ**, Hemker KJ. "High Temperature Microtensile Testing of Ni-Pt-Al Alloys for Implementation in Thermal Barrier Coating Systems" *2006 ICMR Advanced Thermostructural Materials Summer School*, August 2006, University of California-Santa Barbara, Santa Barbara, CA. (poster)

MENTORING AND ADVISING

- *Postdoctoral Scholars:*

Ruqing Cao	JHU	Winter 2025 – present
Zhengyu Zhang	JHU	Winter 2025 – present
Abhijeet Dhal	JHU	Fall 2024 – present
Prince Sharma	JHU	Fall 2024 – present
Doruk Aksoy	UC Irvine	Fall 2020 – Spring 2024
Currently at Intel Corporation		
Pulkit Garg	UC Irvine	Spring 2020 – Fall 2023
Currently at University of California, Santa Barbara		
Tianjiao Lei	UC Irvine	Summer 2020 – Fall 2022

Currently at University of Alabama

Divya Singh UC Irvine Fall 2021 – Summer 2022
Currently at Utah Tech University

Olivia Donaldson UC Irvine Summer 2017 – Winter 2020
Currently at Pratt & Whitney

Vladyslav Turlo UC Irvine Fall 2016 – Winter 2020
Currently at Empa - Swiss Federal Laboratories for Materials Sci. and Tech.

Zhiliang Pan UC Irvine Fall 2013 – Summer 2016
Currently at Guilin University of Electronic Technology

- *Graduate Advisees:*

<u>*Ph.D.*</u>

Dominic Piccone JHU, DMSE Fall 2025 – present

Julia Kilgore JHU, DMSE Fall 2025 – present

Tianning Shi JHU, DMSE Fall 2024 – present

Junjie (Jay) Wu JHU, DMSE Fall 2024 – present

Yi Liu UC Irvine, MSE Fall 2022 – present

Edward Li UC Irvine, MSE Fall 2021 – present

Esther Hessong UC Irvine, MSE Summer 2020 – Fall 2025
Thesis: "Tailoring the structure of amorphous grain boundary complexions in nanocrystalline copper alloys for enhanced plasticity"
Currently at Sandia National Laboratories

Ian Geiger UC Irvine, MMT Fall 2020 – Spring 2025
Thesis: "Grain Boundary Structure and Stability in Complex Concentrated Alloys"
Currently at Boeing Research & Technology

Megan McCarthy UC Irvine, MMT Winter 2017 – Winter 2021
Thesis: "*Faceted Σ11 Grain Boundaries: Unique Migration Mechanisms and the Effects of Alloying*"
Currently at Sandia National Laboratories

Yang Hu UC Irvine, MSE Spring 2016 – Summer 2020
Thesis: "*Probing solute-grain boundary interactions in alloys*"
Currently at ETH Zürich

Charlette (Grigorian) McDevitt UC Irvine, CBE Spring 2016 – Summer 2020
Thesis: "*Enhanced Stability of Nanocrystalline Metals with Amorphous Grain Boundary Complexions via Compositional Manipulation*"
Currently at Edwards Lifesciences

Jennifer Schuler UC Irvine, MSE Spring 2015 – Spring 2019
Thesis: "*Amorphous Intergranular Film Design Criteria and Application as Damage Tolerant Features*"
Currently at Lehigh University

David Bober UC Irvine, MAE Winter 2012 – Winter 2017
Thesis: "*Local Crystallographic Orientation Correlation Measurements Connecting the Processing and Properties of Face-Centered Cubic Metals*"
Currently at Lawrence Livermore National Laboratory

Jason Panzarino UC Irvine, MAE Fall 2012 – Summer 2016
Thesis: "*Quantification of Grain Boundary Mediated Plasticity Mechanisms in Nanocrystalline Metals*"
Currently at SpaceX

Amir Khalajhedayati UC Irvine, MSE Fall 2011 – Summer 2015
Thesis: "*Grain boundary structure and interfacial complexions for the creation of tough, stable nanostructured metals*"
Currently at Amazon Web Services

Visiting Ph.D. Students

Jiantuo Zhao	Xi'an Jiaotong Univ.	Winter 2019 – Winter 2020
Zhifeng Huang	Wuhan Univ. Tech.	Fall 2017 – Spring 2019

Currently at Wuhan University of Technology

M.S.

Jenna Wardini UC Irvine, MSE Winter 2017 – Summer 2019
Currently at UC Irvine

Joseph Ludy UC Irvine, MAE Summer 2014 – Spring 2016
Thesis: "*Radiation Tolerant Interface Design and Complexion Dynamics via Atomistic Modeling*"
Currently at ClearlyRated

Simon Pun UC Irvine, MAE Summer 2014 – Winter 2016
Thesis: "*Nanocrystalline Al-Mg with extreme strength due to grain boundary doping*"
Currently at Divergent 3D

- *Undergraduate Researchers:*

Vara Qi Gunananthan	JHU	Winter 2025 – present
Matthew Lindwall	CSU Fullerton	Summer 2023 (REU)
Charles Drew	Syracuse Univ	Summer 2022 (REU)
Matthew Foong	UC Irvine	Fall 2021 – Spring 2022
Gillian Tubay	Univ. Michigan	Summer 2021 (REU)
Jingting Chen	UC Irvine	Fall 2020 – Summer 2021
Ian Geiger	UC Irvine	Winter 2020 – Summer 2020
Brenda Cruz	UC Irvine	Summer 2017 – Fall 2018
Kelsey Safar	UC Irvine	Fall 2016 – Summer 2017
Carlos Ramirez	UC Irvine	Spring 2015 – Summer 2016
Jim Mendez-Lopez	UC Merced	Summer 2015
Jesus Ramos	UC Irvine	Fall 2013 – Spring 2014
Simon Pun	UC Irvine	Fall 2013 – Spring 2014
Manash Sharma	UC Irvine	Spring 2013 – Fall 2013
Abdullaah Tarif	UC Irvine	Spring 2013 – Fall 2013
Trent Nash	UC Riverside	Summer 2013
Daniel Grant	UC Irvine	Spring 2012 – Summer 2013
Andrew Moodie	UC Irvine	Winter 2012 – Spring 2013
Clarita Vargas	UC Irvine	Spring 2012 – Spring 2013
Danny Rodriguez	UC Irvine	Summer 2012
Kent Codilla	UC Irvine	Summer 2011
Chao Shen	UC Irvine	Summer 2011
Jason Douglas	MIT	Spring 2010
Pantea Khodami	MIT	Spring 2008

- *High School Researchers:*

Kirthin Rajkumar	Northwood High School	Summer 2018
Snehin Rajkumar	Northwood High School	Summer 2018
Rocky Mandayam	Irvine High School	Summer 2013 – Summer 2014
Maria Zepeda	Century High School	Summer 2014
Jesus Garcia	Saddleback High School	Summer 2014
Meril Tomy	University High School	Summer 2012 – Summer 2013

Student Awards:

David Bober	JMR Early Career Scholar in Materials Science	2019
	Lawrence Graduate Scholar Program Fellowship	2014
Ian Geiger	Henry Samueli Endowed Fellow	2021
Charlette Grigorian	UCI Pedagogical Fellow	2019
Esther Hessong	U.S. Department of Energy (DOE) Office of Science Graduate Student Research (SCGSR) award	2024
	Rose Hills Foundation Science & Engineering Fellowship	2024
	Graduate Student of the Year, UCI MSE	2023
	UCI-Los Alamos National Laboratory Grad. Fellowship	2023
	Rose Hills Foundation Science & Engineering Fellowship	2023
Yang Hu	Finalist, Robert W. Cahn Best Paper Prize (J. Mater. Sci.)	2019
Amir Khalajhedayati	2nd Place, MRS Science as Art	2014
Megan McCarthy	Complex Systems Summer School (CSSS) at the Santa Fe Institute	2020
	Rose Hills Foundation Science & Engineering Fellowship	2020
Jason Panzarino	Best Graduate Student, UCI MAE	2016
	Mazda Foundation Scholarship	2015
	Hysitron Presentation Silver Medal Award	2015
Jennifer Schuler	U.S. Department of Energy (DOE) Office of Science Graduate Student Research (SCGSR) award	2017

GRADUATE COMMITTEE SERVICE

Jing Luo	JHU, ME	Ph.D. Defense, Grad. Board Oral, 2025
Sharon Park	JHU, DMSE	Ph.D. Defense, Grad. Board Oral, 2025
Emily Mang	JHU, DMSE	Ph.D. Defense, Grad. Board Oral, 2025
Michael Patullo	JHU, ME	Ph.D. Defense, Grad. Board Oral, 2025
Joshua Stickel	JHU, CaSE	Ph.D. Defense, Grad. Board Oral, 2025
Ardalan Nejat	JHU, CaSE	Ph.D. Defense, Grad. Board Oral, 2024
Yanrong Xiao	JHU, CaSE	Ph.D. Defense, Grad. Board Oral, 2024
Dung-Yi (Jackson) Wu	JHU, DMSE	Ph.D. Defense, Grad. Board Oral, 2024
Ian Geiger	UC Irvine, MMT	Ph.D. Thesis Committee, 2025
Mari-Therese Burton	Lehigh U. (External member)	Ph.D. Thesis Committee, 2024
Xinyi Wang	UC Irvine, MMT	Ph.D. Thesis Committee, 2023
Megan McCarthy	UC Irvine, MMT	Ph.D. Thesis Committee, 2021
Yunfei Zhang	UC Irvine, MSE	Ph.D. Thesis Committee, 2021
Ali Morshedifard	UC Irvine, CEE	Ph.D. Thesis Committee, 2021
Quang Pham	UC Irvine, MMT	Ph.D. Thesis Committee, 2020
Sen Jiang	UC Irvine, MSE	Ph.D. Thesis Committee, 2020
Yang Hu	UC Irvine, MSE	Ph.D. Thesis Committee, 2020
Charlette Grigorian	UC Irvine, CBE	Ph.D. Thesis Committee, 2020

Parnian Kiani	UC Irvine, MSE	Ph.D. Thesis Committee, 2020
Ben MacDonald	UC Irvine, MSE	Ph.D. Thesis Committee, 2020
Thao Nguyen	UC Irvine, CBE	Ph.D. Thesis Committee, 2020
Kara Bridges	UC Irvine, MSE	Ph.D. Thesis Committee, 2019
Xin Wang	UC Irvine, MSE	Ph.D. Thesis Committee, 2019
Jennifer Schuler	UC Irvine, MSE	Ph.D. Thesis Committee, 2019
Kenta Ohtaki	UC Irvine, ChEMS	Ph.D. Thesis Committee, 2018
Shuai Fan	UC Irvine, CEE	Ph.D. Thesis Committee, 2018
David Bober	UC Irvine, MAE	Ph.D. Thesis Committee, 2017
Elham Vakil	UC Irvine, MAE	Ph.D. Thesis Committee, 2017
Ladan Sharif	UC Irvine, MAE	Ph.D. Thesis Committee, 2016
Jason Panzarino	UC Irvine, MAE	Ph.D. Thesis Committee, 2016
Enric Grustan	UC Irvine, MAE	Ph.D. Thesis Committee, 2015
Colin Arnold	UC Irvine, ChEMS	Ph.D. Thesis Committee, 2015
Amir Khalajhedayati	UC Irvine, ChEMS	Ph.D. Thesis Committee, 2015
Timothy Montalbano	UC Irvine, ChEMS	Ph.D. Thesis Committee, 2015
Peter Bishay	UC Irvine, MAE	Ph.D. Thesis Committee, 2014
Jessie Angle	UC Irvine, ChEMS	Ph.D. Thesis Committee, 2014
Patrick Nguyen	UC Irvine, MMT	Ph.D. Thesis Committee, 2014
Matthew Schnoor	UC Irvine, MAE	Ph.D. Thesis Committee, 2013
Leiting Dong	UC Irvine, MAE	Ph.D. Thesis Committee, 2013
Zhongyan Qian	UC Irvine, MAE	Ph.D. Thesis Committee, 2013
Danju Men	UC Irvine, ChEMS	Ph.D. Thesis Committee, 2012
Shehreen Dheda	UC Irvine, ChEMS	Ph.D. Thesis Committee, 2012
Daniel Magnuson	JHU, ME	Ph.D. Thesis Proposal, 2025
Maddy Selby	JHU, ME	Ph.D. Thesis Proposal, 2025
Leshan Zhao	JHU, Phys & Astron.	Graduate Board Oral Exam, 2024
Wyatt Bunstine	JHU, Phys & Astron.	Graduate Board Oral Exam, 2024
Hannah Howard	UCSB (External member)	Qualifying Exam Committee, 2023
Sakshi Bajpai	UC Irvine, MSE	Qualifying Exam Committee, 2023
Calvin Belcher	UC Irvine, MSE	Qualifying Exam Committee, 2023
Mari-Therese Burton	Lehigh U. (External member)	Qualifying Exam Committee, 2023
Qian Li	UC Irvine, MMT	Qualifying Exam Committee, 2022
Hasti Vahidi	UC Irvine, MSE	Qualifying Exam Committee, 2021
Kehang Yu	UC Irvine, MSE	Qualifying Exam Committee, 2021
Sen Jiang	UC Irvine, MSE	Qualifying Exam Committee, 2020
Hong Wei	UC Irvine, MSE	Qualifying Exam Committee, 2020
Megan McCarthy	UC Irvine, MMT	Qualifying Exam Committee, 2020
Cameron Crook	UC Irvine, MSE	Qualifying Exam Committee, 2020
Yunfei Zhang	UC Irvine, MSE	Qualifying Exam Committee, 2020
Cassidy Feltenberger	UC Irvine, Chemistry	Qualifying Exam Committee, 2020
Quang Pham	UC Irvine, MMT	Qualifying Exam Committee, 2019
Thao Nguyen	UC Irvine, CBE	Qualifying Exam Committee, 2019
Charlette Grigorian	UC Irvine, CBE	Qualifying Exam Committee, 2018
Yang Hu	UC Irvine, MSE	Qualifying Exam Committee, 2018
Ben MacDonald	UC Irvine, MSE	Qualifying Exam Committee, 2018
Parnian Kiani	UC Irvine, MSE	Qualifying Exam Committee, 2018
Kara Bridges	UC Irvine, ChEMS	Qualifying Exam Committee, 2017
Arghavan Arafati	UC Irvine, MAE	Qualifying Exam Committee, 2017

Ali Morshedifard	UC Irvine, CEE	Qualifying Exam Committee, 2017
Anna Guell	UC Irvine, MAE	Qualifying Exam Committee, 2017
Ziqi Yu	UC Irvine, MAE	Qualifying Exam Committee, 2017
Jason Panzarino	UC Irvine, MAE	Qualifying Exam Committee, 2016
David Bober	UC Irvine, MAE	Qualifying Exam Committee, 2016
Shuai Fan	UC Irvine, CEE	Qualifying Exam Committee, 2016
Kelsey Miller	UC Irvine, Chemistry	Qualifying Exam Committee, 2016
Camilla Favaretti	UC Irvine, CEE	Qualifying Exam Committee, 2015
Kenta Ohtaki	UC Irvine, ChEMS	Qualifying Exam Committee, 2015
Timothy Montalbano	UC Irvine, ChEMS	Qualifying Exam Committee, 2014
Patrick Nguyen	UC Irvine, MMT	Qualifying Exam Committee, 2014
Luis Herrera	UC Irvine, CEE	Qualifying Exam Committee, 2014
Sam Mann	UC Irvine, Chemistry	Qualifying Exam Committee, 2014
Zhongyan Qian	UC Irvine, MAE	Qualifying Exam Committee, 2013
Enric Grustan	UC Irvine, MAE	Qualifying Exam Committee, 2013
Amir Khalajhedayati	UC Irvine, ChEMS	Qualifying Exam Committee, 2013
Ladan Sharif	UC Irvine, MAE	Qualifying Exam Committee, 2013
Elham Vakil	UC Irvine, MAE	Qualifying Exam Committee, 2013
Ethan Hill	UC Irvine, Chemistry	Qualifying Exam Committee, 2013
Fernan Saiz	UC Irvine, MAE	Qualifying Exam Committee, 2012
Leiting Dong	UC Irvine, MAE	Qualifying Exam Committee, 2012
Peter Bishay	UC Irvine, MAE	Qualifying Exam Committee, 2012
Matthew Schnoor	UC Irvine, MAE	Qualifying Exam Committee, 2012
Rafael Borrajo	UC Irvine, MAE	Qualifying Exam Committee, 2012
Shehreen Dheda	UC Irvine, ChEMS	Qualifying Exam Committee, 2011
Jianyang Chen	UC Irvine, MMT	M.S. Comp. Exam Committee, 2019
Andrew Bond	UC Irvine, MMT	M.S. Comp. Exam Committee, 2019
Ahmed Shirazi	UC Irvine, MMT	M.S. Comp. Exam Committee, 2016
Yong Wang	UC Irvine, MMT	M.S. Comp. Exam Committee, 2015
Patrick Wong	UC Irvine, MMT	M.S. Comp. Exam Committee, 2015
Jeffery Catterlin	UC Irvine, MMT	M.S. Comp. Exam Committee, 2014
Charlene Bermudez	UC Irvine, MMT	M.S. Comp. Exam Committee, 2014
Xiao Song	UC Irvine, MMT	M.S. Comp. Exam Committee, 2013
Han Wang	UC Irvine, MSE	M.S. Thesis Committee, 2021
Calvin Belcher	UC Irvine, MSE	M.S. Thesis Committee, 2021
Zhengyu Zhang	UC Irvine, MSE	M.S. Thesis Committee, 2019
Nick Auwaijan	UC Irvine, MAE	M.S. Thesis Committee, 2019
Liming Zhao	UC Irvine, MAE	M.S. Thesis Committee, 2019
Nithya Ramesh	UC Irvine, ChEMS	M.S. Thesis Committee, 2018
Blake Lane	UC Irvine, MAE	M.S. Thesis Committee, 2017
Bianca Endo	UC Irvine, MAE	M.S. Thesis Committee, 2017
Katherine Terrassa	UC Irvine, ChEMS	M.S. Thesis Committee, 2017
Van Wifvat	UC Irvine, MAE	M.S. Thesis Committee, 2016
Simon Pun	UC Irvine, MAE	M.S. Thesis Committee, 2016
Joseph Ludy	UC Irvine, MAE	M.S. Thesis Committee, 2016
Sharada Bhavanam	UC Irvine, MAE	M.S. Thesis Committee, 2014
Jianan Zhu	UC Irvine, MAE	M.S. Thesis Committee, 2014
Albert Luu	UC Irvine, CEE	M.S. Thesis Committee, 2013

TEACHING EXPERIENCE

Johns Hopkins University		MSE Department
Fall 2025	510.313 Mechanical Properties of Materials	
Fall 2024	510.313 Mechanical Properties of Materials	(4.29/5.00)

University of California, Irvine		MSE and MAE Departments
Fall 2023	MSE 256A Mechanical Behavior of Engineering Materials	(86% rec. instr.)
Fall 2022	MSE 256A Mechanical Behavior of Engineering Materials	(100% rec. instr.)
Spring 2022	MSE 165CL Lab in Materials Kinetics and Phase Transformations	(100% rec. instr.)
Spring 2021	MSE 165CL Lab in Materials Kinetics and Phase Transformations	(4.00/4.00)
Winter 2021	ENGR 54 Principles of Materials Science and Engineering	(3.75/4.00)
Spring 2020	ENGR 54 Principles of Materials Science and Engineering	(3.82/4.00)
Winter 2020	MAE 256 Nanomechanics	(3.92/4.00)
Spring 2019	ENGR 54 Principles of Materials Science and Engineering	(3.63/4.00)
Winter 2019	MAE 256 Nanomechanics	(3.99/4.00)
Fall 2018	MAE 259 Mechanical Behavior of Solids: Atomistic Theories	(3.63/4.00)
Winter 2018	MAE 157 Lightweight Structures	(3.62/4.00)
Fall 2017	MAE 259 Mechanical Behavior of Solids: Atomistic Theories	(3.86/4.00)
Spring 2017	MAE 295 Nanomechanics	(3.95/4.00)
Winter 2017	MAE 157 Lightweight Structures	(3.47/4.00)
Fall 2016	MAE 259 Mechanical Behavior of Solids: Atomistic Theories	(3.71/4.00)
Spring 2016	MAE 295 Nanomechanics	(4.00/4.00)
Winter 2016	MAE 157 Lightweight Structures	(3.56/4.00)
Fall 2015	MAE 259 Mechanical Behavior of Solids: Atomistic Theories	(3.84/4.00)
Spring 2015	MAE 259 Mechanical Behavior of Solids: Atomistic Theories	(3.77/4.00)
Winter 2015	MAE 157 Lightweight Structures	(3.68/4.00)
Fall 2014	MAE 295 Nanomechanics	(3.97/4.00)
Spring 2014	MAE 259 Mechanical Behavior of Solids: Atomistic Theories	(3.86/4.00)
Winter 2014	MAE 157 Lightweight Structures	(3.79/4.00)
Fall 2013	MAE 295 Nanomechanics	(4.00/4.00)
Spring 2013	MAE 295 Mechanical Behavior of Solids: Atomistic Theories	(Evals. Not Activated)
Winter 2013	MAE 157 Lightweight Structures	(3.48/4.00)
Fall 2012	MAE 295 Nanomechanics	(3.97/4.00)
Spring 2012	MAE 295 Mechanical Behavior of Solids: Microscopic Theories	(3.93/4.00)
Winter 2012	MAE 157 Lightweight Structures	(3.51/4.00)

Massachusetts Institute of Technology	Department of Materials Science and Engineering
Fall 2010	3.012 Fundamentals of Materials Science and Engineering (Teaching Assistant)
Fall 2009	3.032 Mechanical Behavior of Materials (Teaching Assistant)
	3.034 Organic and Biomaterials Chemistry (Teaching Assistant)

Johns Hopkins University	Department of Mechanical Engineering
Fall 2006	530.352 Materials Selection (Teaching Assistant)

OUTREACH ACTIVITIES

- ***Lead Organizer and Speaker***, "UC Irvine: Materials Discovery in Engineering and Science" STEM outreach event (2019, 2016, 2014)
- *Judge*, MRS Graduate Student Awards (2017, 2016, 2014)

- *Research Mentor*, The University of California's Leadership Excellence through Advanced Degrees (UC LEADS) Program for disadvantaged students (2013 – 2015)
- *Research Mentor*, California Alliance for Minority Participation (CAMP) Summer Science Scholars Program for underrepresented minorities (2012 – 2014)
- *Panel Speaker*, Graduate Admissions Workshop at UC Irvine (2014)
- *Panel Speaker*, Young Investigator Workshop at UC Irvine (2015, 2013)
- *Panel Speaker*, Graduate Women in Engineering Group and the Engineering Diversity Council at UC Irvine (2013)
- *Panel Speaker*, Science-Technology-Engineering-Math Careers, CAMP Summer Science Scholars Program for underrepresented minorities (2011)
- *Faculty Host*, UC Irvine/Salman Bin Abdel-Aziz University Summer Exchange Program (2012)
- *Mentor*, MIT Undergraduate Research Opportunities Program (2008 – 2010)
- Participant in Science-Engineering-Technology Congressional Visit Day, Washington, D.C. (2007, 2006)