

Christopher J. Marvel, Ph.D.

Curriculum Vitae

Department of Mechanical and Industrial Engineering

Louisiana State University

cmarvel@lsu.edu

[Google Scholar](#)

PROFESSIONAL APPOINTMENTS

- Assistant Professor** 2022 – present
Louisiana State University, Baton Rouge, LA
Mechanical and Industrial Engineering
- Research Scientist I** 2019 – 2022
Lehigh University, Bethlehem, PA
Materials Science and Engineering
Research Areas: High Entropy Alloys, Grain Growth Simulations, Augmented Reality
- Associate Director of the Nano|Human Interfaces Initiative** 2019 – 2022
Lehigh University, Bethlehem, PA

EDUCATION

- Postdoctoral Research Associate** 2019
Lehigh University, Bethlehem, PA
Materials Science and Engineering
Research Areas: Anti-thermal Behavior, Grain Boundary Complexions, Ultrahard Ceramics, Analytical Electron Microscopy
- Doctor of Philosophy** 2016
Lehigh University, Bethlehem, PA
Materials Science and Engineering
Adviser: Martin P. Harmer
Dissertation: Investigating the Thermal and Phase Stability of Nanocrystalline Ni-W Produced by Electrodeposition, Sputtering, and Mechanical Alloying
- Bachelor of Science** 2012
Lehigh University, Bethlehem, PA
Materials Science and Engineering

TEACHING

Teaching History

- Instructor for Defects, Diffusion, and Phase Transformations (ME 7743)** 2023
Louisiana State University, Department of Mechanical and Industrial Engineering

Instructor for Advanced Materials Analysis (ME 4723)	2023
Louisiana State University, Department of Mechanical and Industrial Engineering	
<i>Personal Teaching Effectiveness Evaluation (Fall 2023): 4.58 / 5.0</i>	
<i>Average Department Teaching Effectiveness Evaluation (Fall 2023): 3.97 / 5.0</i>	
Instructor for Materials of Engineering (ME 2733)	2022 – 2023
Louisiana State University, Department of Mechanical and Industrial Engineering	
<i>Personal Teaching Effectiveness Evaluation (Spring 2023): 4.06 / 5.0</i>	
<i>Average Department Teaching Effectiveness Evaluation (Spring 2023): 4.04 / 5.0</i>	
<i>Personal Teaching Effectiveness Evaluation (Fall 2022): 4.26 / 5.0</i>	
<i>Average Department Teaching Effectiveness Evaluation (Fall 2022): 4.01 / 5.0</i>	
Co-Lecturer for Processing and Properties of Ceramic Materials	2018
Lehigh University, Department of Materials Science and Engineering	
<i>Personal Teaching Effectiveness Evaluation: 4.44 / 5.0</i>	
<i>Average Department Teaching Effectiveness Evaluation: 4.23 / 5.0</i>	
Teaching Assistant for Processing and Properties of Ceramic Materials	2013 – 2014
Lehigh University, Department of Materials Science and Engineering	
Teaching Assistant for Electron Microscopy and Microanalysis	2013
Lehigh University, Department of Materials Science and Engineering	

SERVICE

Awards and Honors

ASM International Bronze Medal Award	2023
MEDE-MSA Research Fellowship	2020
Lehigh University Mentorship Appreciation Award	2020, 2019
Journal of the American Ceramic Society Best Paper Award	2018
Roland B. Snow Award at ACerS Ceramographic Competition	2018, 2014
Acta Materialia Student Award	2016
George P. Conard II Graduate Student Award of Lehigh University	2016
Lehigh Valley Chapter of ASM Outstanding Young Member Award	2016
Honorable Mention for Teaching Assistant Award of Lehigh University	2015
Cyril John Osbourne Undergraduate Student Award of Lehigh University	2012
Alpha Sigma Mu International Honor Society	2012
Jacquet-Lucas Award at International Metallographic Society Competition	2011
George L. Kehl Award at International Metallographic Society Competition	2011

Postdoctoral Research Associate Advisement

Vipul Jain	July 2024 – Present
Thomas Koenig (Lehigh University)	July 2022 – Present
Alicia Koenig (Lehigh University)	July 2022 – Present

Graduate Student Advisement

Angelina Jorgenson (ME MS)	Aug 2024 - Present
Rashed Mia (ME PhD)	Aug 2024 - Present
Cassidy Thompson (ME PhD)	Jan 2023 - Present

Graduate Committees

Member: MSME Philip Melton – LSU (MIE)	2026
Member: PhD Mohammad Derikvand – LSU (MIE)	2026
Member: PhD Md Asmat Ullah – LSU (MIE)	2026
Member: MSME Emily Friedman – LSU (MIE)	2025
Member: PhD Anit Gurung – LSU (Chemistry)	2025
Member: PhD Mari-Therese Burton – Lehigh University (MSE)	2024
Member: PhD Huan Ding – LSU (MIE)	2023

Undergraduate Student Research Advisement

Samantha Esselstyn	2024 - Present
Austin Knight	2024 - Present
Gary Ramee (EE BS)	2024 - Present
Angelina Jorgenson (ME BS)	2024 - Present
Emma McCarthy (ME BS)	2024 - Present
Hank Williams (ME BS)	2023 - Present
Landon Dorman (ME BS)	2023 - Present
Preston Wilburn (ME BS)	2023
Charles Lee (ME BS)	2023
Jason Rodriguez (ME BS)	2023

College of Engineering

Reviewer for Chevron Energy Leaders Scholarship Program	2023
Faculty Advisor of Distinguished Communicators – Emily Friedman	2023-2024
Kenilworth Science and Technology Academy Science Research Mentorship (SRM)	2023-2024

Journal Reviewer

Acta Materialia, ACS Nano Letters, Advanced Engineering Materials, Crystal Research and Technology, Journal of Alloys and Compounds, Journal of the American Ceramic Society, Journal of Materials Research, Journal of Materials Science and Engineering A, Materialia, Materials and Design, Metallurgical and Materials Transactions A, Measurement, Metallurgical and Materials Transactions A, Microscopy and Microanalysis, Nature Communications, Nature Materials, npj Computational Materials, PLOS ONE, Science, Scripta Materialia, Steel Research International

Ad-hoc Proposal Reviewer

Army Research Office (ARO), Department of Energy Office of Basic Energy Sciences (BES)

NSF Panel Reviewer

Division of Materials Research <i>Metals and Metallic Nanostructures Program – Fall 2023</i>	2020 – 2023
Division of Civil, Mechanical and Manufacturing Innovation	2020

Professional Society Volunteering

International Metallographic Society Board Member ASM International	2023 – 2026
ASM International Local Chapter Executive Board Lehigh Valley, Pennsylvania	2017 – 2021
ASM International Local Chapter Awards Chair Lehigh Valley, Pennsylvania	2019 – 2021
ASM International Local Chapter Vice President Lehigh Valley, Pennsylvania	2018 – 2020
ASM International Emerging Professionals Committee	2017 – 2020
ASM International Materials Camp Organizer, Lehigh Valley Lehigh Valley, Pennsylvania	2014 – 2015
Pennsylvania Governor’s School for Engineering and Technology Lehigh University, P.C. Rossin College of Engineering	2014 – 2015

SCHOLARSHIP

Peer-reviewed Journal Publications

1. Burton MTS, Hornbuckle BC, Hammand VH, Darling KA, Chan HM, **Marvel CJ**, Harmer MP. Enhanced Microstructural Stability and Hardness of Multi-component Nanocrystalline Nickel Alloys Processed via Mechanical Alloying. *Metallurgical and Materials Transactions A* 1-13 (2024)
2. Cantwell PR, Stanescu JD, Harmer AJ, Harmer MP, **Marvel CJ**. Transmission Electron Microscopy Meets Mixed Reality. *Advanced Materials & Processes* 182 (1) 14-17 (2023)
3. Darling KA, Hornbuckle BC, **Marvel CJ**, Hammond VH, Solanki K. Effect of Effect of constrained inter-granular regions on the inverse Hall-petch phenomena. *Materials Science and Engineering A* 875 145125 (2023)
4. Muralikrishnan V, Liu H, Yang L, Conry B, **Marvel CJ**, Harmer MP, Rohrer GS, Tonks MR, Suter RM, Krill III CE, Krause AR. Observations of unexpected grain boundary migration in SrTiO₃. *Scripta Materialia* 222:115055 (2023)
5. Yang Q, **Marvel CJ**, Shen Y, He MR, Du J, Hwang C, Gronske ED, Xie KY, Mercurio SR, An Q, Harmer MP. Activating dislocation mediated plasticity in boron carbide through Al-doping. *Acta Materialia*. 241:118412 (2022)
6. **Marvel CJ**, Riedel C, Frazier WE, Rollett AD, Rickman JM, Harmer MP. Relating the kinetics of grain-boundary complexion transitions and abnormal grain growth: A Monte Carlo time-temperature-transformation approach. *Acta Materialia* 15;239:118262 (2022)

7. He MR, Banerjee A, **Marvel CJ**, Price S, McCue I, Schwalbach EJ, Hemker KJ. Strong Impact of Minor Elements on the Microstructural Evolution of an Additively Manufactured Inconel 625 Alloy. *Metallurgical and Materials Transactions A*. 53(8):2926-42 (2022)
8. Xie KY, Yang Q, **Marvel CJ**, He MR, LaSalvia JC, Harmer MP, Hwang C, Haber RA, Hemker KJ. Experimental observations of amorphization in multiple generations of boron carbide. *Journal of the American Ceramic Society*. 105(5):3008-29 (2022)
9. **Marvel CJ**, Yang Q, Walck SD, Xie KY, Behler KD, LaSalvia JC, Watanabe M, Haber RA, Harmer MP. Applications of analytical electron microscopy to guide the design of boron carbide. *Journal of the American Ceramic Society*. 105(5):2990-3007 (2022)
10. **Marvel CJ**, Behler KD, LaSalvia JC, Haber RA, Harmer MP. Grain boundary segregation in Si-doped B-based ceramics and its effect on grain boundary cohesion. *Acta Materialia*. 227 117684 (2022)
11. **Marvel CJ**, Frueh T, Compson C, Harmer MP. Linking grain boundary structure and composition to microstructure in commercial-grade-doped specialty Aluminas. *Journal of the American Ceramic Society*. 105(1):626-38 (2022).
12. Smeltzer JA, Burton MT, Hornbuckle BC, Giri AK, Darling KA, Harmer MP, **Marvel CJ**. Optimization of cryogenic mechanical alloying parameters to synthesize ultrahard refractory high entropy materials. *Materials & Design*. 210:110070 (2021)
13. **Marvel CJ**, Krause AR, Harmer MP. Effect of Eu-doping and grain boundary plane on complexion transitions in MgAl₂O₄. *Journal of the American Ceramic Society*, 104(8), 4203-13, (2021)
14. Smeltzer JA, Hornbuckle BC, Giri AK, Darling KA, Harmer MP, Chan HM, **Marvel CJ**. Nitrogen-induced hardening of refractory high entropy alloys containing laminar ordered phases. *Acta Materialia*, 211, 116884 (2021)
15. **Marvel CJ**, Bates JE, Hambric CE, Braun DA, Arrington CM, Harmer MP. The Lehigh Presidential Nano-Human Interface Initiative: Convergence of materials and cognitive sciences, *Materials Research Bulletin*, 1-5 (2021)
16. Rickman JM, Balasubramanian G, **Marvel CJ**, Chan HM, Burton MT. Machine learning strategies for high-entropy alloys, *Journal of Applied Physics*, 128(22), 221101 (2020)
17. Cantwell PR, Frolov T, Rupert TJ, Krause AR, **Marvel CJ**, Rohrer GS, Rickman JM, Harmer MP. Grain Boundary Complexion Transitions, *Annual Review of Materials Research*, 50 (2020)
18. **Marvel CJ**, Smeltzer JA, Hornbuckle BC, Darling KA, Harmer MP. On the reduction and effect of non-metallic impurities in mechanically alloyed nanocrystalline Ni-W alloys. *Acta Materialia*, 200, 12-23 (2020)
19. **Marvel CJ**, Hornbuckle BC, Smeltzer JA, Darling KA, Harmer MP. Athermal behavior of core-shell particles in nanocrystalline Cu-Ta. *Scripta Materialia*, 188, 69-73 (2020)
20. Straker M, Chauhan A, Sinha M, Phelan WA, Chandrashekhara MV, Hemker KJ, **Marvel CJ**, Spencer M. Growth of high purity zone-refined Boron Carbide single crystals by Laser Diode

- Floating Zone method. *Journal of Crystal Growth*, 28:125700 (2020)
21. Rickman JM, Chan HM, Harmer MP, Smeltzer JA, **Marvel CJ**, Roy A, Balasubramanian G. Materials informatics for the screening of multi-principal elements and high-entropy alloys. *Nature communications*, 10(1), 2618 (2019)
 22. **Marvel CJ**, Behler KD, LaSalvia JC, Domnich V, Haber RA, Watanabe M, Harmer MP. Extending ζ -factor microanalysis to boron-rich ceramics: Quantification of bulk stoichiometry and grain boundary composition. *Ultramicroscopy*, 202, 163-72 (2019)
 23. Yang Q, Hwang C, **Marvel CJ**, Chauhan A, Domnich V, Khan AU, LaSalvia JC, Harmer MP, Hemker KJ, Haber RA. Fabrication and characterization of arc melted Si/B co-doped boron carbide. *Journal of the European Ceramic Society*, 39(16), 5156-66 (2019)
 24. Smeltzer JA, **Marvel CJ**, Hornbuckle BC, Roberts AJ, Marsico JM, Giri AK, Darling KA, Rickman JM, Chan HM, Harmer MP. Achieving ultra-hard refractory multi-principal element alloys via mechanical alloying. *Materials Science and Engineering: A*, 19, 763, 138140 (2019)
 25. **Marvel CJ**, Hornbuckle BC, Darling KA, Harmer MP. Intentional and Unintentional Elemental Segregation to Grain Boundaries in a Ni-rich Nanocrystalline Alloy. *Journal of Materials Science*, 54(4), 3496-508 (2019)
 26. Krause AR, Cantwell PR, **Marvel CJ**, Compson C, Rickman JM, Harmer MP. Review of Grain Boundary Complexion Engineering: Know your boundaries. *Journal of the American Ceramics Society*, 0, 1-23 (2019)
 27. Hammond VH, Luckenbaugh TI, Aniska M, Gray DM, Smeltzer JA, Hornbuckle BC, **Marvel CJ**, Solanki K, Schmit T, Darling KA. An insight into machining of thermally stable bulk nanocrystalline metals. *Journal of Advanced Engineering Materials* (2018)
 28. **Marvel CJ**, Kracum MR, Yu Z, Harmer MP, Chan HM. Observation of Cu-rich grain boundary nanoparticles and complexions in Cu/Ti-doped alumina. *Scripta Materialia*, 157, 34–38 (2018)
 29. Kracum MR, **Marvel CJ**, Albu M, Hofer F, Harmer MP, Chan HM. Copper-alumina nanocomposites derived from CuAlO₂: Phase transformation and microstructural coarsening. *Journal of the American Ceramics Society*, 101, 5801-5810 (2018)
 30. Behler KD, **Marvel CJ**, LaSalvia JC, Walck SD, Harmer MP. Observations of Grain Boundary Chemistry Variations in Boron Carbide Processed with Oxide Additives. *Scripta Materialia*, 42, 106–110 (2018)
 31. Zeng G, Yang X, Tan CK, **Marvel CJ**, Koel BE, Tansu N, Krick BA. Shear-Induced Changes of Electronic Properties in Gallium Nitride, *ACS Applied Materials & Interfaces*, 10, 29048-29057 (2018)
 32. Yin D, **Marvel CJ**, Vince RP, Harmer MP. Microstructure and Fracture Toughness of Electrodeposited Ni-21 at.% W Alloy Thick Films. *Acta Materialia*, 143, 272-280 (2018)
 33. Yao S, Gao Q, Widom M, **Marvel CJ**, Harmer MP. Phase Diagram of Carbon Nickel Tungsten: Superatom Model. *Physical Review B - Condensed Matter and Materials Physics*, 1, 043402 (2017)

34. Ventura AP, **Marvel CJ**, Pawlikowski G, Bayes M, Watanabe M, Vinci RP, Misiolek WZ. The Effect of Aging on the Microstructure of Selective Laser Melted Cu-Ni-Si. *Metallurgical and Materials Transactions A*, 48, 6070–6082 (2017)
35. **Marvel CJ**, Sabol JC, Watanabe M, Pasang T, Misiolek WZ. Improving the Mechanical Properties of the Fusion Zone in Electron-Beam Welded Ti-5Al-5Mo-5V-3Cr Alloys. *Metallurgical and Materials Transactions A*, 48, 1-10 (2017)
36. **Marvel CJ**, Yin D, Cantwell PR, Harmer MP. The influence of oxygen contamination on the thermal stability and hardness of nanocrystalline Ni-W alloys. *Materials Science and Engineering A*, 664, 49-57 (2016)
37. Schumacher O, **Marvel CJ**, Kelly MN, Cantwell PR, Vinci RP, Rickman JM, Rohrer GS, Harmer MP. Complexion time-temperature-transformation (TTT) diagrams: opportunities and challenges. *Current Opinion in Solid State and Materials Science*, 20, 316-323 (2016)
38. Cao W, **Marvel CJ**, Yin D, Zhang Y, Cantwell PR, Harmer MP, Luo J, Vinci RP. Correlations between microstructure, fracture morphology, and fracture toughness of Ni-W alloys. *Scripta Materialia*, 113, 84–88 (2016)
39. **Marvel CJ**, Cantwell PR, Harmer MP. The critical influence of carbon on thermal stability of nanocrystalline Ni-W alloys. *Scripta Materialia*, 96, 45-48 (2015)
40. Huang T, **Marvel CJ**, Cantwell PR, Schuh CA, Harmer MP. Grain boundary segregation in Al-Mn electrodeposits prepared from ionic liquid. *Journal of Materials Science*, 51, 438-448 (2015)
41. Sabol JC, **Marvel CJ**, Watanabe M, Pasang T, Misiolek WZ. Confirmation of the ω -phase in electron beam welded Ti-5Al-5V-5Mo-3Cr by high-resolution scanning transmission electron microscopy: An initial investigation into its effect on embrittlement. *Scripta Materialia*, 92, 15-18 (2014)
42. **Marvel CJ**, Lenthe W, Logan JA. Jacquet-Lucas Award - Microstructural analysis of a silver-plated brass trombone. *Advanced Materials and Processes* 170.2 18-19 (2012)
43. **Marvel CJ**, Lenthe W, Logan JA. Microstructural analysis of a silver-plated brass trombone. *Metallography Microstructure and Analysis*, 1, 73–75 (2012)

Conference Symposium Organizer

1. 6th International Workshop on Interfaces at Bear Creek Mt. Resort - Contentious Issues in Grain Boundary Science, Macungie, PA (2024)
2. Armor Ceramics - Challenges and New Developments, ICACC, Daytona Beach, FL (2019-2020)
3. Perspectives for Emerging Materials Professionals, ASM IMAT, Cleveland, OH (2020) (*cancelled*)
4. Perspectives for Emerging Materials Professionals, MS&T, Columbus, OH (2019)

Invited Conference Presentations

(First author denotes the speaker)

1. **Marvel CJ**, Behler KD, LaSalvia JC, Haber RA, Watanabe M, Harmer MP. Application of ζ -factor Microanalysis to Quantify Grain Boundary Enrichment in Eu-doped B_6O . M&M, Cleveland, OH (2024)
2. **Marvel CJ**, Riedel C, Koenig AL, Harmer MP. Kinetics of multiple complexion transitions at 1800 °C in Eu-doped $MgAl_2O_4$, ICACC, Daytona Beach, FL (2023)
3. **Marvel CJ**, Riedel C, Rickman JM, Harmer MP. Experimental and Computational Investigation of Grain-Boundary Transformation Induced Abnormal Grain Growth, ICACC, Daytona Beach, FL (2022)
4. **Marvel CJ**, Behler KD, Synowczynski-Dunn J, LaSalvia JC, Harmer MP. Grain Boundary Complexion Engineering: A Case Study of Silica and Rare-earth Doped Boron Suboxide Armor Ceramics, MG McLaren Lecture, Rutgers University, Piscataway, NJ (2022)
5. **Marvel CJ**. The Lehigh Nano/Human Interface Initiative: A Futuristic Vision of Electron Microscopy, GMC/IMS, Virtual (2021)
6. **Marvel CJ**. The Lehigh Nano/Human Interface Initiative: A Futuristic Vision of Electron Microscopy, IMAT, Virtual (2021)
7. **Marvel CJ**, Smeltzer JA, BC Hornbuckle, Darling KA, Behler KD, LaSalvia JC, Watanabe M, Harmer MP. ζ -factor Microanalysis of Light Elements in Boron-based Ceramics and Complex Concentrated Alloys, M&M, Pittsburgh, PA (2021)
8. Harmer MP, **Marvel CJ**. Developments in Grain Boundary Complexions Research. ACerS Robert B. Sosman Award Symposium, MS&T, Columbus, OH (2021)
9. **Marvel CJ**, Behler KD, Domnich V, LaSalvia JC, Haber RA, Watanabe M, Harmer MP. Recent Developments of ζ -factor Microanalysis and its Application to Armor Ceramics, M&M, Virtual (2020)
10. Krause AR, Cantwell PR, **Marvel CJ**, Compson C, Rickman JM, Harmer MP. The Future of Grain Boundary Complexion Engineering, MS&T, Portland, OR (2019)
11. Harmer MP, **Marvel CJ**, Behler KD, Synowczynski-Dunn J, LaSalvia JC. Grain Boundary Complexion Engineering: A Case Study of Silica and Rare-earth Doped Boron Suboxide Armor Ceramics, MRS Spring, Phoenix, AZ (2019)
12. **Marvel CJ**, Etzold A, Domnich V, Behler KD, LaSalvia JC, Haber RA, Harmer MP. Quantification of Grain Boundary Chemistries in a Boron Carbide and Silicon Hexaboride Diffusion Couple, ICACC, Daytona Beach, FL (2019)
13. **Marvel CJ**. GrainBound – A Perspective Into Starting a “Consulting” Company, ICACC, Daytona Beach, FL (2019)
14. **Marvel CJ**, Behler KD, LaSalvia JC, Harmer MP. Sintering and Grain Boundary Segregation Behavior of Silica and Rare-earth Doped Boron Suboxide Armor Ceramics, MS&T, Columbus, OH (2018)

15. Harmer MP, **Marvel CJ**, Hornbuckle BC, Darling KA. Strategies to Control Microstructure and Properties of Nanocrystalline Materials, MRS Fall, Boston, MA (2017)
16. Kracum M, Anderson K, **Marvel CJ**, Albu M, Harmer MP, Chan HM. Phase Transformation and Evolution of Ceramic-Metal Composites with Unique Hierarchical Microstructures, MS&T, Pittsburgh, PA (2017)
17. **Marvel CJ**. Delving into the World of Grain Boundaries with Electron Microscopy, MS&T, Pittsburgh, PA (2017)
18. Harmer MP, Harmer AJ, Krause AR, **Marvel CJ**. Tenth Anniversary of Grain Boundary Complexions Research, ACerS Robert B. Sosman Symposium, MS&T, Pittsburgh, PA (2017)
19. **Marvel CJ**, Darling KA, Hornbuckle BC, Harmer MP. Probing Grain Boundaries to Determine the Thermal Stability Mechanisms of Nanocrystalline Ni-W, MS&T, Salt Lake City, UT (2016)
20. Harmer MP, **Marvel CJ**, Cantwell PR. A Grain Boundary TTT – Tribute to Thomas, M&M, Columbus, OH (2016)
21. **Marvel CJ**, Yin D, Harmer MP. The Influence of Contamination on the Thermal and Phase Stability of Nanocrystalline Ni-W Alloys, Bear Creek International Workshop on Interfaces, Macungie, PA (2015)

Conference Proceedings

1. Huang S, Kellerk J, Chen B, Bharati A, Watanabe M, Cantwell P, **Marvel CJ**, Harmer M. “Push-Button Microscopy”: Automated Instrument Alignment and Reciprocal-space Navigation using PyJEM. *Microscopy and Microanalysis*. 28(S1):3172-3 (2022)
2. **Marvel CJ**, Smeltzer J, Behler K, Hornbuckle BC, LaSalvia J, Darling K, Watanabe M, Harmer M. Application of ζ -factor Microanalysis to Measure Phase Compositions in Ultrahard Ceramics and Complex Concentrated Alloys. *Microscopy and Microanalysis*. 27(S1):3046-8 (2021)
3. Smeltzer JA, **Marvel CJ**, Hornbuckle BC, Roberts AJ, Marsico J, Giri A, Darling KA, Rickman JM, Chan HM, Harmer MP, TEM Characterization of a Refractory HEA Synthesized by High Energy Milling. *Microscopy and Microanalysis*, 25(S2), 2272-2273 (2019).
4. Krause AR, Bale H, Sun J, Harris W, Lauridsen E, **Marvel CJ**, Krill CE, Harmer MP, Mapping the Evolution of Grains in Strontium Titanate through Laboratory based 4D Diffraction Contrast Tomography. *Microscopy and Microanalysis*, 25(S2), 412-413 (2019).
5. Synowczynski-Dunn J, Behler KD, LaSalvia JC, **Marvel CJ**, Harmer MP, First Principles Model of Yttrium Adsorption on Boron Suboxide (0001) Surface. *Proceeding of the 42nd International Conference on Advanced Ceramics and Composites, Ceramic Engineering and Science Proceedings* (2019)
6. **Marvel CJ**, Etzold A, Domnich V, Behler KD, LaSalvia JC, Haber RA, Watanabe M, Harmer MP, ζ -Factor Development and Quantification of a Boron Carbide and Silicon Hexaboride Diffusion Couple. *Microscopy and Microanalysis*, 24 (S1), 742–743 (2018)

7. Yin D, **Marvel CJ**. Elastic-plastic Fracture Toughness of Electrodeposited Ni-W Thick Films Using In-situ Microcantilever Bend Tests. *Nanomechanical Testing in Materials Research and Development VI, ECI Symposium Series (2017)*
8. **Marvel CJ**, Yin D, Harmer MP. Connecting Phase Stability to the Grain Growth Behavior of Ni-W Alloys. *Microscopy and Microanalysis 22 (S3), 270-271 (2016)*
9. Harmer MP, **Marvel CJ**, Cantwell PR. A Grain Boundary “TTT”–“Tribute to Thomas”!. *Microscopy and Microanalysis 22 (S3), 1230-1231 (2016)*

Workshop Participation

Workshop on Hypersonic Materials, Aberdeen Proving Ground, MD	2023
Workshop on Hypersonic Materials and Manufacturing, Knoxville, TN	2022
Microstructures Workshop, Gaithersburg, MD	2019
Materials Microscopy Data Conference, Evanston, IL	2018
Gordon Research Conference: Solid State Studies in Ceramics, Mount Holyoke, MA	2018
Convergence of Materials Research and Multi-Sensory Data Science, Macungie, PA	2018
Controversies Colloquium: Stability of Nanostructures, Irvine, CA	2018
Gordon Research Conference: Solid State Studies in Ceramics, Mount Holyoke, MA	2016
Bear Creek International Workshop on Interfaces, Macungie, PA	2015
Bear Creek International Workshop on Interfaces, Macungie, PA	2012

Conference Presentations

(First author denotes the speaker)

1. Hornbuckle BC, Roberts A, Giri A, Fudger S, Luckenbaugh T, **Marvel CJ**, Solank K, Darling KA. Evolution of Thermally Stable CuTa Nanocrystalline Alloys, TMS, Orlando, FL (2024)
2. **Marvel CJ**, Riedel C, Zhou H, Zalatan B, Chen B, Harmer MP. Monte Carlo Grain Growth Simulations of Discontinuous Changes in Grain Boundary Velocity Induced by Grain Boundary Transformations, MS&T, Columbus, OH (2023)
3. **Marvel CJ**, Smeltzer JA, Solanki K, Harmer MP. Effect of Li Concentration on Morphology of Precipitates in Nanocrystalline Cu-3Ta, MS&T, Columbus, OH (2023)
4. **Marvel CJ**, Riedel C, Zhou H, Zalatan B, Chen B, Harmer MP. Examination of Discontinuous Changes in Grain Boundary Velocity Induced by Grain Boundary Transformations, ICACC, Daytona Beach, FL (2023)
5. **Marvel CJ**, Behler KD, LaSalvia JC, Haber RA, Harmer MP. Extracting Grain Boundary Thermodynamic Properties in Si-doped B4C and B6O, ICACC, Daytona Beach, FL (2022)
6. **Marvel CJ**, Behler KD, LaSalvia JC, Harmer MP. High-resolution Characterization of Fracture and Fragmentation of Ballistically Impacted Monolithic Boron Carbide, MACH, Annapolis, MD (2021)
7. **Marvel CJ**, Leide, AJ, Behler KD, LaSalvia JC, Todd RI, Harmer MP. Correlating Grain

- Boundary Complexions to Grain Boundary Toughness in Yb-doped Boron Suboxide, MACH, Annapolis, MD (2021)
8. Bale H, Krause AR, Sun J, **Marvel CJ**, Krill CE, Harmer MP. Mapping the Evolution of Grains in Strontium Titanate through Laboratory based 4D Diffraction Contrast Tomography, International Congress on Ceramics, Busan, Korea (2021)
 9. **Marvel CJ**, Riedel C, Krause AR, Harmer MP. Relating Grain Size Distributions and Grain Boundary Excess Coverages to Complexion Transitions in Eu-doped MgAl₂O₄, MS&T, Virtual, (2020)
 10. Smeltzer JA, **Marvel CJ**, Giri A, Hornbuckle BC, Darling KA, Harmer MP. ζ-Factor Microanalysis, a Quantitative Chemical Analysis Technique for the Characterization of High Entropy Alloys, MS&T, Virtual, (2020)
 11. Smeltzer JA, **Marvel CJ**, Giri A, Hornbuckle BC, Darling KA, Harmer MP. Effect of Milling Parameters on Microstructure and Mechanical Properties of Mechanically Alloyed, Refractory High Entropy Alloy, MS&T, Virtual, (2020)
 12. Krause AR, Liu H, **Marvel CJ**, Conry B, Hoffmann M, Suter R, Krill CE, Harmer MP. Grain Growth Measurements of Anti-thermal Strontium Titanate with Non-destructive High Energy X-ray Diffraction Microscopy (HEDM), MS&T, Virtual, (2020)
 13. **Marvel CJ**, LaSalvia JC, Harmer MP. High-resolution Characterization of Fracture and Fragmentation of Ballistically Impacted Monolithic Boron Carbide, MACH, Annapolis, MD (*accepted but cancelled - 2020*)
 14. Luoning M, **Marvel CJ**, Raabe D, Hemker KJ. Influence of rare-earth alloying on the <c+a> dislocation cores in Mg alloys, MACH, Annapolis, MD (*accepted but cancelled - 2020*)
 15. **Marvel CJ**, Behler KD, Synowczynski-Dunn J, Hornbuckle BC, LaSalvia JC, Harmer MP. Structures and Compositions of Grain Boundary Complexions in Eu-Doped Boron Suboxide, ICACC, Daytona Beach, FL (2020)
 16. Yang Q, **Marvel CJ**, Hwang °C, Christian K, Schaefer MC, LaSalvia JC, Harmer MP, Haber RA. Suppressing of Amorphization in Boron Carbide: Silicon vs Boron Doping, ICACC, Daytona Beach, FL (2020)
 17. Payne HE, Behler KD, LaSalvia JC, **Marvel CJ**, Shoulders T, Harmer MP. Effect of Heating Rate, Temperature and Additive Content on the Densification and Microstructure of Hot-Pressed Boron Suboxide (B₆O), ICACC, Daytona Beach, FL (2020)
 18. Dunn JS, Behler KD, LaSalvia JC, **Marvel CJ**, Harmer MP. DFT Study of the Effect of Rare Earth Dopants on the Cohesive Energy of Amorphous Si - B₆O Interface, ICACC, Daytona Beach, FL (2020)
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