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## Curriculum Vitæ

The Ohio State University  
Materials Science and Engineering  
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### Appointments

- 2021–2022 Visiting Associate Professor, EPFL, Switzerland. [On Sabbatical]
- 2019–Present Associate Professor, Materials Science and Engineering, The Ohio State University.
- 2013–2019 Assistant Professor, Materials Science and Engineering, The Ohio State University.
- 2017–Present Assistant/Associate Professor by Courtesy, Department of Physics, The Ohio State University.
- 2011–2013 Postdoctoral Research Associate, School of Engineering, Brown University.

### Education

- 2011 Ph.D. University of Illinois at Urbana-Champaign, Urbana, Illinois, USA  
Theoretical and Applied Mechanics.
- 2005 M.Sc. Sharif University of Technology, Tehran, Iran  
Mechanics of Solids and Structures.
- 2003 B.Sc. Sharif University of Technology, Tehran, Iran  
Civil Engineering.

### Honors and Awards

- 2020 Rising Stars in Computational Materials Science Award.
- 2020 Faculty Diversity Award, College of Engineering, The Ohio State University.
- 2017 Lumley Research Award, College of Engineering, The Ohio State University.
- 2017 AFOSR Young Investigator Program award.
- 2015 NSF Faculty Early Career award (CAREER).

### Research Grants

#### *Current grants:*

1. MURI: Dislocations as Interconnects for Spin Qubits. **M. Ghazisaeidi (lead PI)**, Co-PIs: Giulia Galli (U Chicago), David Awschalom (U Chicago), Roberto Myers (OSU), Tyler Grassman (OSU); AFOSR (2023-2028)
2. Dislocations as nature's quantum wires. **M. Ghazisaeidi (PI)** and Roberto Myers; AFOSR (2021–2025)
3. Mechanisms of Deformation and Slip Transmission in Two Phase BCC/B2 Refractory High Entropy Alloys, **M. Ghazisaeidi (PI)** and M. J. Mills; DOE/BES (2021–2024)
4. Compositional Dependence of Deformation Mechanisms Concentrated FCC Solid Solutions Sponsor, M. J. Mills (PI) and **M. Ghazisaeidi**; NSF/DMR (2019-2023)

5. DMREF-GOALI: Localized Phase Transformations (LPT) strengthening for next-generation superalloys, M. J. Mills (PI), **M. Ghazisaeidi**, Y. Wang and S. R. Niezgod; NSF (2019-2023)
6. Center for Emergent Materials (OSU MRSEC), IRG1, Ohio State University (2020-2026).

*Past grants:*

1. Collaborative Research: Computational and experimental study of alloying effects on  $\langle c + a \rangle$  slip in Mg alloys, **M. Ghazisaeidi (PI)** and Sharvan Kumar (Brown University); NSF/DMR (2017–2022)
2. CAREER: Understanding novel characteristics of defects in concentrated solid solutions from first principles calculations. **M. Ghazisaeidi (PI)**; NSF/DMR (2016–2022)
3. Atomic Scale Computational and Experimental Investigation of Twinning Mechanisms in HCP Systems, **M. Ghazisaeidi (PI)** and M. J. Mills; DOE/BES (2014–2021)
4. Electronic Structure Basis for Solubility and Phase Stability in Metal Alloys, **Maryam Ghazisaeidi (PI)**; AFOSR (2017–2021)
5. DMREF-GOALI: Mechanistic and Microstructure-Based Design Approach for Rapid Prototyping of Superalloys, M. J. Mills (PI), Y. Wang, **M. Ghazisaeidi** and S. R. Niezgod; NSF (2015-2019)
6. Structure, Defects, and Emergent Properties at Magnetic Oxide Interfaces, Jinwoo Hwang (PI), Fengyuan Yang and **M. Ghazisaeidi**; Materials Research Seed Grant Program, Ohio State University (2017-2018)
7. Quantitative Determination of Dislocation Core Structure and Mobility Using Atomic Resolution Microscopy and Multiscale Modeling: Application to High Entropy Alloys, M. J. Mills (PI), P. M. Anderson and **M. Ghazisaeidi**; NSF/DMR (2015-2018)
8. Microstructure investigation of environmentally accelerated crack growth, G. B. Viswanathan (PI), M. J. Mills, **M. Ghazisaeidi**; Rolls-Royce North American Technologies (2015-2017).
9. CDMR-GOALI: Atomic Scale Modeling and Experimental Characterization of Non-Basal Deformation Modes in Mg Alloys, Sharvan Kumar, **M. Ghazisaeidi** and L. G. Hector Jr; NSF/CDMR (2013–2015)
10. First-principles study of dislocation core structures and properties in multi-principal-element alloys, Center for Emergent Materials, Ohio State University (2015-2016)

**Plenary talks**

2022 Jun ICSMA, Metz, France : Stacking fault energy in concentrated alloys

2021 Dec World Congress on High Entropy Alloys, Charlotte, NC :  
“The interplay between phase transformation and mechanical properties in high entropy alloys”

**Invited talks**

- 2023 Jul Physical Metallurgy Gordon Research Conference:  
“Stability and properties of refractory High entropy alloys”
- 2023 Mar TMS, San Diego, CA: (1) “Phase prediction in multicomponent alloys” in Easo George Honorary symposium  
(2) “First principles study of local phase transformation in Ni base superalloys”
- 2023 Mar APS March meeting, Las Vegas, NV:  
“Multicell Monte Carlo method for phase prediction”
- 2022 Sep Virginia Tech MSE Seminar (Virtual visit): Phase transformation and deformation mechanisms in multicomponent alloys.
- 2022 Jul Computational Materials Science Gordon Research Conference, Maine, USA  
“Multicell Monte Carlo method for phase prediction”
- 2021 Jun Canadian Materials Science Conference, SDi2 symposium (virtual):  
“Stacking fault energy in concentrated alloys”
- 2021 Mar TMS(Virtual): (1) “Effect of bulk and local phase transformation on deformation mechanisms”  
(2) “Multi-cell Monte Carlo method for phase prediction in multicomponent alloys”
- 2020 Oct University of Pennsylvania MSE Seminar (Virtual visit): The interplay between phase transformation and deformation mechanisms in multicomponent alloys.
- 2020 Feb TMS, San Diego, CA: Multi-cell Monte Carlo for Phase Prediction.
- 2019 Dec MRS Fall Meeting, Boston, MA: Atomic-Scale Deformation Mechanisms in FCC High-Entropy Alloys
- 2019 Sep University of Michigan MSE Seminar, Ann Arbor, MI: High entropy alloys: mechanical properties and phase stability.
- 2019 Mar TMS: San Antonio, TX:  
(1) “Phase transformation strengthening in high entropy alloys”  
(2) “Multi-cell Monte Carlo method for phase prediction in multicomponent alloys”
- 2019 Feb University of Florida, Gainesville, FL: High entropy alloys: mechanical properties and phase stability.
- 2018 Nov Case Western Reserve University Physics Seminar, Cleveland, OH: High entropy alloys: mechanical properties and phase stability.
- 2018 Oct Northwestern University MSE Seminar, Evanston, IL: High entropy alloys: mechanical properties and phase stability.
- 2018 Sep HexMat Workshop, University of Oxford, UK: Effect of solutes on twin nucleation and growth in Mg and Ti.
- 2018 Aug PRISM Workshop, Ann Arbor, MI: First principles of nonbasal deformation modes in Mg alloys
- 2018 Mar TMS: Phoenix, AZ:  
(1) “New Observations of Phase Transformations During Deformation in Superalloys and High Entropy Alloys: Modeling”  
(2) “Atomic Scale Modeling and Experimental Observations of Deformation Mechanisms in Ni Base Superalloys.”
- 2018 Feb Schöntal Symposium on Dislocation-based Plasticity, Germany.
- 2018 Feb Sanibel Workshop on quantum chemistry and condensed matter physics St. Simons Island, GA
- 2018 Jan Brown University Seminar, Providence, RI.
- 2017 Jul Physical Metallurgy, Gordon Research Conference, Biddeford, ME.
- 2017 March TMS, San Diego, CA: Diffusion of oxygen interstitials near twin boundaries in Ti.

- 2017 Mar Mechanical Engineering colloquium, Johns Hopkins University, Baltimore, MD
- 2016 Sep Dislocations, West Lafayette, IN: First Principles modeling of  $\langle c + a \rangle$  dislocations geometry and interactions with solutes in Mg alloys.
- 2016 Aug Recent Advances in Computational Methods for Nanoscale Phenomena, Ann Arbor, MI: First Principles modeling of  $\langle c + a \rangle$  dislocations geometry and interactions with solutes in Mg alloys.
- 2016 Aug PRISM Workshop, Ann Arbor, MI: First principles modeling of twinning in HCP systems
- 2015 Oct MS&T, Columbus, OH: First principles modeling of twinning in hcp systems
- 2015 May ICMM4, Berkeley, CA: Atomic-scale investigation of deformation mechanisms in Mg and Ti alloys
- 2014 Oct SES, Purdue University, West Lafayette, IN: Atomic-scale investigation of deformation mechanisms in Mg Alloys
- May OSU Materials Week (cross-cutting session), Columbus, OH: Materials behavior from first principles: Atomic-scale investigation of deformation mechanisms in Mg Alloys
- Feb TMS, San Diego, CA: Twinning in Mg from first principles.  
Ohio State University, Columbus, OH: MSE Colloquium, Atomic-scale study of deformation mechanisms

## Professional Activities

### Editorial activities:

**Associate Editor:** Acta Materialia and Scripta Materialia (2021-Present)

**Editorial Advisory Board Member:** Computational Materials Science (2021-Present), High Entropy Alloys and Materials (2021-Present).

### Other activities:

**Member of the Executive Committee:** Center for Emergent Materials, OSU-MRSEC (2021-2022)

**Outstanding Reviewer:** Acta Materialia and Scripta Materialia (2019)

**Faculty Mentor:** 2019 Physical Metallurgy Gordon Research Seminar, Manchester, NH

**Chair:** 2011 Physical Metallurgy Gordon Research Seminar, Easton, MA

## Refereed Publications

[Link to Google Scholar Page](#)

1. “Dislocations and natural quantum wires in diamond”  
S. Polat Genlik, RC Myers and **M Ghazisaeidi**  
*Physical Review Materials* **7** (2), 024601 (2023)
2. “First-principles calculations of the temperature dependence of stacking fault energies in Mg”  
J Brodie, **M Ghazisaeidi**  
*Scripta Materialia* **224**, 115075 (2022)
3. “Localized phase transformation at stacking faults and mechanism-based alloy design”  
L Feng, SB Kannan, A Egan, T Smith, MJ Mills, **M Ghazisaeidi**, Y Wang *Acta Materialia* **240**, 118287 (2022)
4. “A “local” stacking fault energy model for concentrated alloys”  
CR LaRosa, **M Ghazisaeidi**  
*Acta Materialia* **238**, 118165 (2022)
5. “Local Phase Transformation Strengthening at Microtwin Boundaries in Nickel-Based Superalloys”  
AJ Egan, F Xue, Y Rao, G Sparks, E Marquis, **M Ghazisaeidi**, S Tin, Michael J Mills  
*Acta Materialia* **238**, 118206 (2022)
6. “High-temperature deformation mechanisms in a BCC+ B2 refractory complex concentrated alloy”  
JP Couzinié, M Heczko, V Mazánová, ON Senkov, **M Ghazisaeidi**, Rajarshi Banerjee, Michael J Mills  
*Acta Materialia* **233**, 117995 (2022)
7. “Mechanistic Insight and Local Structure Evolution of NiPS3 upon Electrochemical Lithiation”  
C Choi, D Ashby, Y Rao, E Anber, JL Hart, D Butts, C Wilson, E Levin, Mitra Taheri, **Maryam Ghazisaeidi**, Bruce Dunn, Vicky Doan-Nguyen  
*ACS Applied Materials and Interfaces* **14** (3), 3980-3990 (2022)
8. “Role of deformation twinning in fatigue of CrCoNi medium-entropy alloy at room temperature”  
M Heczko, V Mazanova, CE Slone, M Shih, EP George, M Ghazisaeidi, Jaroslav Polak, Michael J Mills  
*Scripta Materialia* **202**, 113985 (2021)
9. “Enhancing fatigue life by ductile-transformable multicomponent B2 precipitates in a high-entropy alloy”  
R Feng, Y Rao, C Liu, X Xie, D Yu, Y Chen, **M Ghazisaeidi**, T Ungar, Huamiao Wang, Ke An and Peter Liaw  
*Nature communications* **12** (1), 1-10
10. “Stacking fault energy in concentrated alloys”  
M. Shih, J. Miao, M. J. Mills and **M. Ghazisaeidi**, *Nature Communications* **12** (1) 1–10 (2021).
11. “Quantitative prediction of Suzuki segregation at stacking faults of the  $\gamma'$  phase in Ni-base superalloys”  
L. Feng, Y. Rao, **M. Ghazisaeidi** and M.J. Mills, Y. Wang, *Acta Mater* **200** 223-235 (2020).

12. “Efficient determination of solid-state phase equilibrium with the multi-cell Monte Carlo method”  
E. Antillon and **M. Ghazisaeidi**, *Physical Review E.*, **101** (6) 063306 (2020).
13. “Solute/Twin boundary interaction as a new atomic-scale mechanism for Dynamic Strain Aging”,  
M. S. Hooshmand and **M. Ghazisaeidi**, *Acta Mater.*, **188** 711–719 (2020).
14. “The effect of solute cloud formation on the second order pyramidal to basal transition of  $\langle c + a \rangle$  edge dislocations in Mg-Y solid solutions”  
D. Utt, A. Stukowski, **M. Ghazisaeidi**, *Scripta Materialia.*, **182** 53–56 (2020).
15. “An integrated experimental and computational study of diffusion and atomic mobility of the aluminum-magnesium system”  
Wei Zhong, M. S. Hooshmand, **Maryam Ghazisaeidi**, Wolfgang Windl, Ji-Cheng Zhao, *Acta Mater.*, **189** 214–231 (2020).
16. “Data on the comprehensive first-principles diffusion study of the aluminum-magnesium system”  
M. S. Hooshmand, Wei Zhong, Ji-Cheng Zhao, Wolfgang Windl, **Maryam Ghazisaeidi**, *Data in Brief*, 105381 (2020).
17. “Deactivating deformation twinning in medium-entropy CrCoNi with small additions of aluminum and titanium”  
C.E. Slone, C.R. LaRosa, C.H. Zenk, E.P. George, **M. Ghazisaeidi**, M.J. Mills, *Scripta Materialia*, **178** 295–300 (2020).
18. “Anisotropic Magnetoresistance and Nontrivial Spin Hall Magnetoresistance in Pt/ $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> Bilayers”  
Y. Cheng, S. Yu, A. S. Ahmed, M. Zhu, Y. Rao, **M. Ghazisaeidi**, J. Hwang, Fengyuan Yang, *Physical Review B* **100** (22) 220408 (2019).
19. “Multi-Cell Monte Carlo method for phase prediction”  
C. Niu, Y. Rao, W. Windl and **M. Ghazisaeidi**, *npj Computational Materials*. **5**(1) 1–5 (2019).
20. “Solid solution strengthening theories of high-entropy alloys”  
C.R. LaRosa, M. Shih, C. Varvenne, **M. Ghazisaeidi**, *Materials Characterization*, **151** 310-317 (2019).
21. “Oxygen Diffusion Near (10-12) Twin Boundary in Titanium”  
M. S. Hooshmand, C. Niu, D. R. Trinkle and **M. Ghazisaeidi** *Acta Materialia*, **156**, 11-19, (2018).
22. “Magnetically-driven phase transformation strengthening in high entropy alloys”  
C. Niu, C. LaRosa, J. Miao, M. J. Mills and **M. Ghazisaeidi**, *Nature Communications*, **9** 1363, (2018).
23. “Segregation of Alloying Elements to Planar Faults in  $\gamma'$ -Ni<sub>3</sub>Al”  
Y. Rao, T. N. Smith, M. J. Mills and **M. Ghazisaeidi**, *Acta Mater* **148** 173-184 (2018).
24. “Core structure and solute strengthening of second-order pyramidal  $\langle c + a \rangle$  dislocations in Mg-Y alloys”  
D. Buey, L. G. Hector Jr and **M. Ghazisaeidi**, *Acta Mater* **147** 1-9 (2018).
25. “Diffusion Processes During Creep at Intermediate Temperatures in a Ni-based Superalloy”  
T.M. Smith, Y. Rao, Y. Wang, **M. Ghazisaeidi** and M.J. Mills, *Acta Mater* **141** 261?272 (2017).

26. “The Evolution of the Deformation Substructure in a Ni-Co-Cr Equiatomic Solid Solution Alloy”  
J. Miao, C. E. Slone, T. M. Smith , C. Niu, H. Bei, **M. Ghazisaeidi**, G. M. Pharr and M. J. Mills, *Acta Mater* **132** 35–48 (2017).
27. “Atomistic modeling of dislocation interactions with twin boundaries in Ti ”  
M. S. Hooshmand, M. J. Mills and **M. Ghazisaeidi**, *Modelling Simul. Mater. Sci. Eng.* **25(4)** 045003 (2017).
28. “Multi-Cell Monte Carlo Relaxation Method for Predicting Phase Stability of Alloys”  
C. Niu, W. Windl and **M. Ghazisaeidi**, *Scripta Mater*, **132** 9–12 (2017).
29. “Solute Strengthening in Random Alloys”  
C. Varvenne, G. P. M. Leyson, **M. Ghazisaeidi** and W. A. Curtin, *Acta Mater*, **124** 660–683 (2017).
30. “Atomic-Scale characterization and Modeling of 60 degree Dislocations in a High-Entropy Alloy”  
T. M. smith, M. S. Hooshmand, B. D. Esser, F. Otto, D. W. McComb, E. P. George, **M. Ghazisaeidi** and M. J. Mills, *Acta Mater.* **110** 352-363 (2016).
31. “Atomistic simulation of  $\langle c + a \rangle$  screw dislocation cross-slip in Mg”  
D. Buey and **M. Ghazisaeidi** , *Scripta Mater* **117** 51-54 (2016).
32. “A new mechanism for twin growth in Mg alloys”  
A. Luque, **M. Ghazisaeidi** and W. A. Curtin, *Acta Mater* **81** 442-456 (2014).
33. “Solute strengthening of twinning dislocations in Mg alloys”  
**M. Ghazisaeidi**, L. G. Hector Jr. and W. A. Curtin, *Acta Mater* **80** 278-287 (2014).
34. “Interaction of oxygen interstitials with lattice faults in Ti ”  
**M. Ghazisaeidi** and D. R. Trinkle, *Acta Mater.* **76**, 82-86 (2014).
35. “First-principles structure of  $\langle c + a \rangle$  edge and screw dislocations in Mg”  
**M. Ghazisaeidi**, L. G. Hector Jr. and W. A. Curtin, *Scripta Mater.* **75**, 42-45 (2014).
36. “Analysis of dissociation of  $\langle c \rangle$  and  $\langle c + a \rangle$  dislocations to nucleate (10-12) twins in Mg”  
**M. Ghazisaeidi** and W. A. Curtin, *Modelling Simul. Mater. Sci. Eng.* **21**, 055007 (2013).
37. “Deformation modes in Mg (0001) and (01-11) single crystals: simulations vs. experiments”  
A. Luque, **M. Ghazisaeidi** and W. A. Curtin, *Modelling Simul. Mater. Sci. Eng.* **21**, 045010 (2013).
38. “Core structure of a screw dislocation in Ti from density functional theory and classical potentials”  
**M. Ghazisaeidi** and D. R. Trinkle, , *Acta Materialia* **60**, 1287-1292 (2012).
39. “Lattice Green’s function for crystals containing a planar interface” **M. Ghazisaeidi** and D. R. Trinkle. *Physical Review B* **82**, 064115 (2010).
40. “Convergence rate for numerical computation of the lattice Green’s function”  
**M. Ghazisaeidi** and D. R. Trinkle, *Physical Review E* **79**, 037701 (2009).
41. “Statistical characterization of surface defects created by Ar ion bombardment of crystalline silicon”  
**M. Ghazisaeidi**, J. B. Freund, and H. T. Johnson, *Journal of Applied Physics*, **104**, 054304 (2008).

42. “Single impact crater functions for ion bombardment of silicon”  
N. Kalyanasundaram, **M. Ghazisaeidi**, J. B. Freund, and H. T. Johnson, *Applied Physics Letters*, **92**, 131909 (2008).
43. “Effects of couple stresses on anti-plane problems of piezoelectric media with inhomogeneities”  
H. M. Shodja, **M. Ghazisaeidi**, *European Journal of Mechanics A: Solids*, **26(4)**, 647-658 (2007).

## Teaching

### All courses are taught at OSU

- 2023 – Defects in Crystalline Materials, upper graduate level.
- 2022 – Quantitative Introduction to Materials Science, for first year graduate students without MSE backgrounds.
- 2020 – Quantitative Introduction to Materials Science.
- 2016 2021 Advanced Atomistic Modeling, upper graduate level.
- 2014 2020 Structures and Defects, graduate core course, responsible for the second half of the course on Defects.
- 2013 2019 Fracture and Fatigue, senior undergraduate/early graduate course.
- 2015 2017 Composite Materials, senior undergraduate/early graduate course.
- 2015 2019 Modeling and simulation lab II, undergraduate computer lab, (Last 4 weeks), OSU.

### Administrative Service

- 2019 - 2023 Chair of the Graduate Admissions Committee.
- 2014 - 2023 Member of the Graduate Studies Committee.
- 2017 - 2019 Member of the Diversity and Inclusion Committee.
- 2013 and 2018 Organizer of the MSE Department Colloquia.

### Professional Memberships

- TMS (The Minerals, Metals and Materials Society).

### Current Advisees

- Julian Brodie (PhD, 2018–Present)
- Sevim Polat Genlik (PhD, 2018–Present)
- Junxin Wang (PhD, 2020–Present)
- Ali Barooni (PhD, 2023–Present)
- Dr. Harsha Gunda (Postdoc, 2022–Present)

### Former group members

- Mulaine Shih (PhD, 2016–2021), First job after graduation: AFRL
- Carlyn LaRosa (PhD, 2016–2020), First job after graduation: AFRL
- You Rao (PhD, 2015–2020), First job after graduation: Postdoc at EPFL
- Mohammad Shahriar Hooshmand (PhD, 2014–2019), First job after graduation: Postdoc at UC Berkeley
- Daniel Buey (PhD, 2013–2018), First job after graduation: Lecturer at The Ohio State University
- Changning Niu (Postdoc, 09/2015–04/2018), Now at QuesTek
- Edwin Antillon (Postdoc, 09/2018–09/2019), Now at the Naval Research Lab