
Curriculum Vitæ

Ohio State University
Materials Science and Engineering
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Appointments

- 2019 – Present Associate Professor, Materials Science and Engineering, Ohio State University.
- 2013 – 2019 Assistant Professor, Materials Science and Engineering, Ohio State University.
- 2017 – Present Assistant/Associate Professor by Courtesy, Department of Physics, Ohio State University.
- 2017 – Visiting Assistant Professor, EPFL, Switzerland. (06/2017–07/2017)
- 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

- 2017 Lumley Research Award, College of Engineering, Ohio State University.
- 2017 AFOSR Young Investigator Program award.
- 2015 NSF Faculty Early Career award (CAREER).

Research Grants

Current grants:

1. Compositional Dependence of Deformation Mechanisms Concentrated FCC Solid Solutions Sponsor, M. J. Mills (PI) and **M. Ghazisaeidi**; NSF/DMR (2019-2022)
2. Atomic Scale Computational and Experimental Investigation of Twinning Mechanisms in HCP Systems, **M. Ghazisaeidi (PI)** and M. J. Mills; DOE/BES (2014–2021)
3. 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 (2017–2021)
4. CAREER: Understanding novel characteristics of defects in concentrated solid solutions from first principles calculations. **M. Ghazisaeidi (PI)**; NSF/DMR (2016–2021)
5. Electronic Structure Basis for Solubility and Phase Stability in Metal Alloys, **Maryam Ghazisaeidi (PI)**; AFOSR (2017–2021)

6. 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)
7. Center for Emergent Materials (OSU MRSEC), IRG3, Ohio State University (2018-2020) (Added to the team in 2018.)

Past grants:

1. 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)
2. 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)
3. 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)
4. Microstructure investigation of environmentally accelerated crack growth, G. B. Viswanathan (PI), M. J. Mills, **M. Ghazisaeidi**; Rolls-Royce North American Technologies (2015-2017).
5. 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)
6. First-principles study of dislocation core structures and properties in multi-principal-element alloys, Center for Emergent Materials, Ohio State University (2015-2016)

Invited talks

- 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

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

Committee member: TMS technical committee: Chemistry and Physics of Materials, 2015 OSU Materials week, “Emergent Materials”.

Co-organizer: TMS 2015 symposium “Computational thermodynamics and kinetics”, Orlando, FL.

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

Refereed Publications

1. “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.* In Press (2020).
2. “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).

3. “Anisotropic Magnetoresistance and Nontrivial Spin Hall Magnetoresistance in Pt/ α -Fe₂O₃ 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).
4. “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).
5. “Solid solution strengthening theories of high-entropy alloys”
C.R. LaRosa, M. Shih, C. Varvenne, **M. Ghazisaeidi**, *Materials Characterization*, **151** 310-317 (2019).
6. “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).
7. “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).
8. “Segregation of Alloying Elements to Planar Faults in γ' -Ni₃Al”
Y. Rao, T. N. Smith, M. J. Mills and **M. Ghazisaeidi**, *Acta Mater* **148** 173-184 (2018).
9. “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).
10. “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).
11. “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).
12. “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).
13. “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).
14. “Solute Strengthening in Random Alloys”
C. Varvenne, G. P. M. Leyson, **M. Ghazisaeidi** and W. A. Curtin, *Acta Mater*, **124** 660–683 (2017).
15. “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).
16. “Atomistic simulation of $\langle c + a \rangle$ screw dislocation cross-slip in Mg”
D. Buey and **M. Ghazisaeidi** , *Scripta Mater* **117** 51-54 (2016).
17. “A new mechanism for twin growth in Mg alloys”
A. Luque, **M. Ghazisaeidi** and W. A. Curtin, *Acta Mater* **81** 442-456 (2014).

18. "Solute strengthening of twinning dislocations in Mg alloys"
M. Ghazisaeidi, L. G. Hector Jr. and W. A. Curtin, *Acta Mater* **80** 278-287 (2014).
19. "Interaction of oxygen interstitials with lattice faults in Ti "
M. Ghazisaeidi and D. R. Trinkle, *Acta Mater.* **76**, 82-86 (2014).
20. "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).
21. "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).
22. "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).
23. "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).
24. "Lattice Green's function for crystals containing a planar interface" M. Ghazisaeidi and D. R. Trinkle. *Physical Review B* **82**, 064115 (2010).
25. "Convergence rate for numerical computation of the lattice Green's function"
M. Ghazisaeidi and D. R. Trinkle, *Physical Review E* **79**, 037701 (2009).
26. "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).
27. "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).
28. "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).

Manuscripts in review

1. "Solute/Twin boundary interaction as a new atomic-scale mechanism for Dynamic Strain Aging",
M. S. Hooshmand and M. Ghazisaeidi, *under review in Acta Mater.*
2. "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, *under review in Scripta Materialia.*
3. "Multicell Monte Carlo method as a Gibbs-ensemble approach for solid-state phase prediction"
E. Antillon and M. Ghazisaeidi, *under review in Physical Review E.*

Teaching

All courses are taught at OSU

- 2016 - 2020 Advanced Atomistic Modeling, upper graduate level.
2014 - 2019 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 - Present Chair of the Graduate Admissions Committee.
2014 - 2018 Member of the Graduate Studies Committee.
2017 - Present 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

- Carlyn LaRosa (PhD, 2016–Present)
Mulaine Shih (PhD, 2016–Present)
Julian Brodie (PhD, 2018–Present)
Sevim Polat Genlik (PhD, 2018–Present)
Junxin Wang (PhD, 2020–Present)
Shakthipriya Baskar Kannan (PhD, 2020–Present)

Former group members

- You Rao (PhD, 2015–Present)
Mohammad Shahriar Hooshmand (PhD, 2014–2019), Now Postdoc at UC Berkeley
Daniel Buey (PhD, 2013–2018), Now 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