**Justin W. Wilkerson, Ph.D.**
Associate Professor & James J. Cain Fellow
J. Mike Walker '66 Department of Mechanical Eng.
Texas A&M University
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## Appointments

| | |
|---|---|
| Associate Professor & James J. Cain Fellow, Texas A&M | *9/2022 –* |
| Assistant Professor & James J. Cain Fellow, Texas A&M | *9/2017 – 8/2022* |
| Harrington Faculty Fellow, University of Texas at Austin | *9/2017 – 5/2018* |
| Assistant Professor, University of Texas at San Antonio | *1/2015 – 8/2017* |

## Editorial Positions

| | |
|---|---|
| Associate Editor, *Journal of Dynamic Behavior of Materials* | *1/2021 –* |
| Editorial Board Member, *International Journal of Plasticity* | *5/2022 –* |

## Education

**Johns Hopkins University**, Baltimore, MD — *8/2010 – 11/2014*

Ph.D., Mechanical Engineering
- Thesis: *Multiscale mechanics of failure in extreme environments*

M.S.E., Mechanical Engineering

**Texas A&M University**, College Station, TX — *8/2005 – 8/2010*

B.S., Aerospace Engineering, *Summa Cum Laude*
- University and Foundation Honors
- Thesis: *Fatigue enhancement of a carbon fiber reinforced nanocomposite*

## Honors and Awards

### National Honors and Awards

- National Science Foundation (NSF) CAREER Award — *2023*
- Donald D. Harrington Faculty Fellowship — *2017*
- Air Force Office of Scientific Research (AFOSR) Young Investigator Award — *2016*
- ORAU Ralph E. Powe Junior Faculty Award — *2015*
- National Science Foundation (NSF) Graduate Research Fellowship — *2010*
- National Defense Science and Engineering Graduate (NDSEG) Fellowship — *2009*
- National Science Foundation Graduate Engineering Education Fellowship — *2008*
- Ammon S. Andes Award — *2009*
  - Annual award recognizing nation's top aerospace engineering graduate.

### University Honors and Awards

- TEES Engineering Genesis Award — *2022*
- Best Instructor Award at $6^{th}$ Advanced Material Systems Summer School — *2020*
- TEES Engineering Genesis Award — *2019*
- James J. Cain '51 Faculty Fellowship II — *2017*
- Dee Howard Memorial Endowed Faculty Fellowship — *2017*
- President's Endowed Scholarship — *2005*
- Directors' Excellence Award — *2005*
- National Merit Recognition Award — *2005*

### Journal and Conference Awards

- Faculty Travel Award for the Multiscale Materials Modeling Conference — *2022*
- ASME AMD Haythornthwaite Research Initiation Grant Award — *2019*
- Top 10 Most Cited Article since 2011 – *Composites Science and Technology* — *2016*
- Oak Ridge Associated Universities Travel Award — *2015*
- Student Travel Award for APS – SCCM/AIRAPT Conference — *2013*
- Haythornthwaite Foundation Travel Award for ASME Conference — *2012*
- Best Paper Finalist in ASME – IMECE Student Paper Competition — *2012*

- Most Downloaded Article of 2011 – *Composites Science and Technology* *2012*
- Student Travel Award for AIAA Conference *2009*
- Best Paper Award at AIAA Regional Student Competition *2009*
- Best Poster Award at Student Research Week Competition *2009*
- Best Poster Award at Student Research Week Competition *2008*
- Outstanding Accomplishments in Interdisciplinary Research Award *2008*

## Refereed Journal Publications

Legend: PhD students, MS students, UG students, and Post-docs advised by Wilkerson. Superscript * denotes the corresponding author.

1. Caulkins, J., Fauver, C., Adibi, S., **Wilkerson*, J.W.** "Effect of grain boundary misorientation on spall strength in Ta via shock-free simulations with relatively few atoms." *Metals*, *12:1586, 2022.*

2. Rogers, J., Bass, N., Mead, P., Mote, A., Lukasik, G., Intardonato, M., Harrison, K., Leaverton, J., Kota, K.R., **Wilkerson, J.W.**, Reddy, J.N., Kulatilaka, W.D., Lacy*, T.E. "The Texas A&M University Hypervelocity Impact Laboratory: A modern aeroballistic range facility." *Rev. Sci. Instrum., 93:085106, 2022.*

3. Delbo, M.*, Walsh, K., Matonti, C., **Wilkerson, J.W.**, Pajola, M., Asad, M., Avdellidou C., Ballouz R., Bennett, C.A., Connolly, H., DellaGiustina, D., Golish, D., Molaro, J., Rizk, B., Schwartz, S., Lauretta, S., "Alignment of fractures on Bennu's boulders indicative of rapid asteroid surface evolution." *Nature Geoscience, 15:453-457, 2022.*

4. Ji, Y., Dagro, A., Dorgant, G., Starr, D. **Wilkerson*, J.W.** "A comparison of conventional gel stiffness characterization techniques with cavitation rheology." *Expt. Mech., 62:799-822, 2022.*[†]

5. Rogers, J., Mote, A., Mead, A., Harrison, K., Lukasik, G., Kota, K.R., Kulatilaka, W.D., **Wilkerson, J.W.**, Lacy*, T.E. "Hypervelocity Impact Response of Monolithic UHMWPE and HDPE plates." *Int. J. Impact Eng., 161:104081, 2022.*

6. Dagro*, A., **Wilkerson, J.W.**, Thomas, T., Kalinosky, B., Payne, J. "Computational modeling investigation of pulsed high peak power microwaves and the potential for traumatic brain injury." *Science Advances 7(44) 2021*[‡].

7. Wei*, Q., Ramesh*, K.T., Hufnagel, T.C., **Wilkerson, J.W.**, El-Awady, J., Kimberley, J., Ravaji, B., Joshi*, S. "Insights from the MEDE program: An overview of microstructure-property linkages in the dynamic behaviors of magnesium alloys." *Mech. Mater.*, *163:104084, 2021.*

8. Mallick*, D., Prameela, S., Ozturk, D., Williams, C., Kang, M., Valentino, G., Lloyd, J.T., **Wilkerson, J.W.**, Weihs, T.P., Ramesh, K.T. "Spall strength in alloyed magnesium: A compendium of research efforts from CMEDE 10-year effort." *Mech. Mater.*, *162:104065, 2021.*

9. Ravaji, B., Datta, S., Foster, C., Lloyd*, J.T., **Wilkerson*, J.W.**, Joshi*, S. "Texture effects and rate-dependent behaviors of notched magnesium bars." *Mech. Mater.*, *162:104042, 2021.*

10. Yang, X., Lin, L., **Wilkerson, J.W.**, Zeng*, X. "Computational investigation of crack-induced hot-spot generation in energetic composites." *J. Compos. Sci.* , *5 (8), 210, 2021.*

[†] ***Cover Article***
[‡] Received a U.S. State Department Challenge Coin for this work.

11. Adibi, S., **Wilkerson*, J.W.** "Time-temperature superposition for cavitation resistance of metals with nonequilibrium vacancy concentrations." *Ext. Mech. Lett.*, *47:101350, 2021.*

12. Iglesias, E., Rowe, T., Fernandez, K., Chocron, S., **Wilkerson*, J.W.** "Mechanical response of carbon nanotube reinforced particulate composites with implications for polymer bonded explosives." *J. Compos. Mater., 2021.*

13. Nguyen, T., Francom, D.C., Luscher, D.J., **Wilkerson*, J.W.** "Bayesian calibration of a dislocation-based crystal plasticity and damage model" *J. Mech. Phys. Solids, 149:104284, 2021.*

14. Ravaji, B., **Wilkerson*, J.W.** "Effects of crystallography on hot-spot formation in porous RDX single crystals." *Ext. Mech. Lett., 42:101112, 2021.*

15. Dagro*, A., **Wilkerson, J.W.** "A computational investigation of strain concentration in the brain in response to a rapid temperature rise." *J. Mech. Behav. Biomed. Mats., 115:104228, 2021.* (Publicity: Interviewed for *Science Vs*).

16. Tang, X.C., Yao, X.H., **Wilkerson*, J.W.** "A micromechanics-based framework to predict transitions between dimple and cup-cone fracture modes in shocked metallic glasses." *Int. J. Plasticity, 102884:2021.*

17. Huber, Z., **Wilkerson*, J.W.** "Revisiting the first Sandia Fracture Challenge with transient deformation heating and strain localization considerations." *Int. J. Fracture, 226:197–217, 2020.*

18. Olinger, A., Foster, C., **Wilkerson*, J.W.** "Homogenized modeling of anisotropic impact damage in rolled AZ31B magnesium with preferentially aligned second-phase particles," *J. Dyn. Behav. Mats., 6 (4), 445-458, 2020.*

19. Nitol, M., Adibi, S., Barrett, C., **Wilkerson*, J.W.** "Solid solution softening in dislocation-starved Mg-Al alloys," *Mech. Mater., 150:103588, 2020.*

20. Williams*, C.L., Mallick, D.D., **Wilkerson, J.W.** "A concise note on twinning and spall failure in magnesium at the extreme," *J. Dyn. Behav. Mats., 6 (4), 432-444, 2020.*

21. Tang, X.C., Nguyen, T., Yao, X.H., **Wilkerson*, J.W.** "A cavitation and void growth model for a class of strain-softening amorphous materials," *J. Mech. Phys. Solids, 141:104023, 2020.*

22. Mallick*, D.D., Parker, J., **Wilkerson, J.W.**, Ramesh, K.T. "Estimating void nucleation statistics in laser-driven spall[§]," *J. Dyn. Behav. Mats., 6:268-277, 2020.*

23. Adibi, S., **Wilkerson*, J.W.** "Evolving structure-property relationships in metals with nonequilibrium concentrations of vacancies[¶]," *J. App. Phys., 127:13, 2020.*

24. Nguyen, T., Luscher, D.J., **Wilkerson*, J.W.** "A physics-based model and simple scaling law to predict the pressure dependence of single crystal spall strength," *J. Mech. Phys. Solids, 137:103875, 2020.*

25. Mallick*, D.D., Williams, C.L., **Wilkerson, J.W.** "A brief review of spall failure in pure and alloyed magnesium," *J. Dyn. Behav. Mats., 1-9, 2020.*

[§] ***Cover Article***
[¶] ***Cover Article***

26. Ravaji, B., Ali Lagoa, V., Delbo, M., **Wilkerson*, J.W.** "Unraveling the mechanics of thermal stress weathering: rate-effects, size-effects, and scaling laws," *J. Geophys. Res. Planets, 121, 2019.*

27. Nguyen, T., Luscher, D.J., **Wilkerson*, J.W.** "The role of elastic and plastic anisotropy in intergranular spall failure," *Acta Materialia, 168:1-12, 2019.*

28. **Wilkerson*, J.W.** "Anomalous size effects in nanoporous materials induced by high surface energies‖," ***Invited Article*** in the *Journal of Materials Research* Focus Issue on *Intrinsic and Extrinsic Size Effects, 34 (13), 2337–2346, 2019.*

29. Nguyen, T., Luscher, D.J., **Wilkerson*, J.W.** "A dislocation-based crystal plasticity framework for dynamic ductile failure of single crystals," *J. Mech. Phys. Solids, 108:1–29, 2017.*

30. **Wilkerson*, J.W.** "On the micromechanics of void dynamics at extreme rates." *Int. J. Plasticity, 95:21–42, 2017*,

31. Wang, P., Gao, W., **Wilkerson, J.W.**, Liechti, K., Huang*, R. "Cavitation of water by volume-controlled stretching," *Ext. Mech. Lett., 11:59–67, 2017.*

32. **Wilkerson*, J.W.**, Ramesh, K.T. "Unraveling the anomalous grain size dependence of cavitation," *Phys. Rev. Lett., 117:215503, 2016.*

33. **Wilkerson*, J.W.**, Ramesh, K.T. "A closed-form criterion for dislocation emission in nano-porous materials under arbitrary thermomechanical loading," *J. Mech. Phys. Solids, 86:94–116, 2016.*

34. Delbo*, M., Libourel, G.,**Wilkerson, J.W.**, Murdoch, N., Michel, P., Ramesh, K.T., Ganino, C., Verati, C., Marchi, S. "Thermal fatigue as the origin of regolith on small asteroids," *Nature, 58:233–236, 2014.* (Publicity: Featured in *13* news articles, *2* scientific blogs, and *100+* Tweets).

35. **Wilkerson, J.W.**, Ramesh*, K.T. "A dynamic void growth model governed by dislocation kinetics," *J. Mech. Phys. Solids, 70:262–280, 2014.*

36. Daphalapurkar*, N.P.,**Wilkerson, J.W.**, Ramesh, K.T., Wright, T.W. "Kinetics of a fast moving twin boundary in nickel," *Acta Materialia, 68:82–92, 2014.*

37. Davis*, D.C.,**Wilkerson, J.W.**, Zhu, J., Hadjiev, V.G. "A strategy for improving mechanical properties of a fiber reinforced epoxy composite using functionalized carbon nanotubes," *Compos. Sci. Technol., 71(8):1089–1097, 2011.* (Top *10* Most Cited Article. Most downloaded article of *2011*).

38. Davis*, D.C.,**Wilkerson, J.W.**, Zhu, J., Ayewah, D. "Improvements in mechanical properties of a carbon fiber epoxy composite using nanotube science and technology," *Compos. Struct., 92(11):2653–2662, 2010.*

## Selected Conference Publications

39. Jacob Rogers, Paul Mead, **Justin W. Wilkerson**, Thomas E. Lacy and Neil Williams. "Simulating Hypervelocity Impacts to High-Density Polyethylene," *AIAA Scitech 2023 Forum, AIAA 2023-2021. January 2023.*

40. Marco Delbo, Kevin Walsh, Christophe Matonti, **Justin W. Wilkerson**, Manar Al Asad, Chrysa Avdellidou, Ronald Ballouz, Carina Bennett, Harold Connolly, Daniella DellaGiustina, Dathon Golish, Jamie Molaro, Stephen Schwartz, and Dante Lauretta, "Distribution of fractures on boulders on (101955) Bennu and their implication for asteroid surface evolutionary processes," *$44^{th}$ COSPAR Scientific Assembly, 44:168, July 2022.*

‖ ***Invited Article***

41. Jacob Rogers, Paul T. Mead, Khari Harrison, Kalyan Raj Kota, James D. Leaverton, Gavin Lukasik, Waruna D. Kulatilaka, **Justin W. Wilkerson**, Thomas E. Lacy. "Hypervelocity Impact Response of Polyethylene Plates." *AIAA Scitech 2021 Forum, AIAA 2021-0887. January 2021.*

42. Gavin Lukasik, Jacob Rogers, Kalyan Raj Kota, **Justin W. Wilkerson**, Thomas E. Lacy and Waruna D. Kulatilaka. "Application of Digital Particle Tracking and Schlieren Imaging to Study Debris Cloud and Shockwave Formation During Hypervelocity Impacts." *AIAA Scitech 2021 Forum, AIAA 2021-0725. January 2021.*

43. Ravaji, B., Ali Lagoa, V., Delbo, M., **Wilkerson, J.W.** "The Effect of Rotation Period on Thermal Stress Weathering." *Lunar and Planetary Science Conference, Vol. 49, p. 2628, 2018.*

44. Mazrouei, S., Ali Lagoa, V., Delbo, M., Ghent, R. R., & **Wilkerson, J.W.** "Does Thermal Fatigue Play a Role in Lunar Regolith Formation?" *Lunar and Planetary Science Conference, Vol. 47, LPI Contrib. No. 1785, 2016.*

45. El Mir, C., Hazeli, K., Ramesh, K. T., Delbo, M., & **Wilkerson, J.W.** "Thermal Fatigue: Lengthscales, Timescales, and Their Implications on Regolith Size-Frequency Distribution" *Lunar and Planetary Science Conference, Vol. 47, p. 2586, 2016.*

46. Delbo, M., Ali-Lagoa, V., **Wilkerson, J.W.**, & Libourel, G. "Thermal Fracture of Bennu, Phaethon, and Other Low-Perihelion Asteroids". *Lunar and Planetary Science Conference, Vol. 47, p. 2203, 2016.*

47. Libourel, G., Delbo, M., **Wilkerson, J.W.**, Ganino, C., & Michel, P. "Effects of Solar Heating on Asteroids". *Space Weathering of Airless Bodies, p. 2005, 2015.*

48. Delbo*, M., Libourel, G.,**Wilkerson, J.W.**, Murdoch, N., Michel, P., Ramesh, K.T., Ganino, C., Verati, C., Marchi, S. "Thermal cracking as a source of regolith on asteroids," *European Planetary Science Congress, Vol. 9, 2014.*

49. **Wilkerson, J.W.**, "Fatigue study of a nanocomposite laminate," *Proceedings of the 48th AIAA Aerospace Sciences Meeting Including the New Horizons Forum and Aerospace Exposition p. 190, 2010.*

50. **Wilkerson, J.W.**, Zhu, J., Davis, D.C., "Fatigue of a nanocomposite laminate," *Proceedings of the ASME 2008 International Mechanical Engineering Congress and Exposition. Volume 12: Mechanics of Solids, Structures and Fluids.* Boston, Massachusetts, USA. October 31–November 6, 2008. pp. 251-258. ASME.

## Patents

51. Davis, D.C., **Wilkerson, J.W.**, Zhu, J., "Carbon nanotube fiber-reinforced polymer composites having improved fatigue durability and methods for production thereof." U.S. Patent Application 12/475,734.

## Selected Keynote & Invited Talks

1. **Wilkerson, J.W.**[**], "High-fidelity and reduced-order models of intergranular spall failure," International Conference on Plasticity, Damage, and Fracture, Punta Cana, Dominican Republic, January *5, 2023.* (Keynote).

2. **Wilkerson, J.W.**, "Cavitation in metals, glasses, and biological tissues via rapid thermomechanical loading," Department of Mechanical Engineering, Brown University, Providence, RI, February *7, 2022.* (Department seminar).

**Underline denotes presenter.

3. **Wilkerson, J.W.**, "The role of elastic and plastic anisotropy in ductile damage nucleation along grain boundaries," International Conference on Plasticity, Damage, and Fracture, Riviera Maya, Mexico, January *6, 2020*.

4. **Wilkerson, J.W.**, "The perplexing role of microstructure in impact failure," Department of Aerospace Engineering, Auburn University, Auburn, AL, December *6, 2019*. (Department seminar).

5. **Wilkerson, J.W.**, "The perplexing role of microstructure in impact failure," Department of Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA, November *7, 2019*. (Department seminar).

6. **Wilkerson, J.W.**, "Mesoscale modeling of pore growth in spall failure and pore collapse in energetic materials," Damage, Shock and Characterization University Outreach Workshop, Los Alamos, NM, July *31, 2019*.

7. **Wilkerson, J.W.**, "The role of elastic and plastic anisotropy in ductile damage nucleation along grain boundaries," Los Alamos Workshop on Mesoscale Science at Extreme Conditions, Santa Fe, NM, August *6, 2019*.

8. **Wilkerson, J.W.**, "A dislocation-based crystal plasticity and damage framework for very high loading rates," International Conference on Plasticity, Damage, and Fracture, Panama City, Panama, January *7, 2019*. (Keynote).

9. **Wilkerson, J.W.**, "The role of crystallographic defects in the impact failure of armor materials," Department of Materials Science and Engineering, Texas A&M University, TX, September *24, 2018*. (Department seminar).

10. **Wilkerson, J.W.**, Nguyen, T., Luscher, D.J., "Dislocation-based crystal plasticity modeling of dynamic ductile failure," *13$^{th}$* World Congress on Computational Mechanics (WCCM), New York, NY, July *23, 2018*.

11. **Wilkerson, J.W.**, "Accelerating the development of armor materials: Edisonian trial-and-error vs. computational design," *2018* Harrington Annual Research Symposium, Amarillo, TX, April *10, 2018*.

12. **Wilkerson, J.W.** "Kinetics of defects and their role in shock physics of materials," Department of Aerospace Engineering, Texas A&M University, TX, March *1, 2018*. (Department seminar).

13. **Wilkerson, J.W.** "The role of crystallographic defects in dynamic ductile failure," Drexel, Philadelphia, PA, February *2, 2018*. (Department seminar).

14. **Wilkerson, J.W.** "The role of crystallographic defects in impact failure," University of Pennsylvania, Philadelphia, PA, February *1, 2018*. (Department seminar).

15. **Wilkerson, J.W.** "The role of crystallographic defects in the impact failure of armor materials," Texas Materials Institute Seminar, University of Texas at Austin, TX, October *4, 2017*. (Department seminar).

16. **Wilkerson, J.W.**, "High-fidelity and reduced-order models for materials in extreme environments," Center for Mechanics of Solids, Structures and Materials, University of Texas at Austin, TX, September *19, 2017*. (Department seminar).

17. **Wilkerson, J.W.**, "Micromechanics of dynamic void growth and spall failure," Mach Conference, Annapolis, MD, April *6, 2016*.

18. **Wilkerson, J.W.**, Nguyen, T. "An atomistically-informed kinetic model for dislocation emission from interfaces," International Conference on Plasticity, Damage and Fracture *2016*, Kona, HI, January *2016*.

19. **Wilkerson, J.W.**, "On the role of vacancy clusters in ductile failure of metals," Energy Dissipation to Defect Evolution (EDDE) Energy Frontier Research Center, Oak Ridge National Laboratory, Oak Ridge, Tennessee, September *22, 2015*.

20. **Wilkerson, J.W.**, "Simple scaling relations for spall failure," Caltech, Pasadena, CA, August *12, 2015*.

21. **Wilkerson, J.W.**, "Kinetic failure processes and their role in the Solar System," Nice Observatory, Nice, France, July *15, 2015*.

22. **Wilkerson, J.W.**, "From atoms to armor and back again," Army Research Laboratory, Aberdeen Proving Ground, MD, February *3, 2015*.

## Teaching Experience

**Instructor** – Texas A&M University

| | |
|---|---|
| *Engineering Laboratory – MEEN 404* | *Spring 2023* |
| *Solid Mechanics – MEEN 305* | *Spring 2023* |
| *Directed Studies: Solid Mechanics of Everyday Objects – MEEN 685* | *Spring 2023* |
| *Theory of Elasticity – MEEN 603* | *Fall 2022* |
| *Mechanics of Materials – MEEN 305* | *Spring 2022* |
| *Directed Studies: Waves, Shocks, & Dynamic Failure – MEEN 685* | *Spring 2022* |
| *Mechanics of Materials – MEEN 305* | *Fall 2021* |
| *Mechanics of Materials – MEEN 489* | *Spring 2021* |
| *Multiscale Modeling in Mechanics – MEEN 689* | *Fall 2020* |
| *Mechanics of Materials – MEEN 489* | *Spring 2020* |
| *Solid Mechanics in Mechanical Design – MEEN 368* | *Spring 2019* |
| *Solid Mechanics in Mechanical Design – MEEN 368* | *Fall 2018* |

**Instructor** – University of Texas at San Antonio

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|---|---|
| *Machine Element Design – ME 3823* | *Spring 2017* |
| *Theoretical and Computational Inelasticity – ME 6973* | *Fall 2016* |
| *Machine Element Design – ME 3823* | *Spring 2016* |
| *Continuum Mechanics – ME 6043* | *Fall 2015* |
| *Machine Element Design – ME 3823* | *Spring 2015* |

## Mentoring and Advising

**Postdoctoral Fellows**

- Sara Adibi, Ph.D. *March 2016 – August 2018*
  - Current position: Assistant Professor at San Diego State University
  - Ph.D., Mechanical Engineering, National University of Singapore *2015*
  - Thesis: On the mechanical properties of novel metallic glass architectures
  - Best Poster Award at San Antonio Postdoctoral Research Forum *2016 & 2017*
  - Best Poster Award at Int. Conf. on Materials for Advanced Technologies *2013*

- Thao Nguyen, Ph.D. *April 2019 – October 2019*
  - Current position: Scientist at Los Alamos National Laboratory
  - Ph.D., Mech. Eng., Texas A&M University *March 2019*

- Eliseo Enrique Iglesias *October 2021 – present*
  - Current position: Visiting Assistant Professor at Trinity University
  - Ph.D., Mech. Eng., University of Texas at San Antonio
  - Thesis topic: Multiscale experimental studies on energetic materials

**Visiting Scholars**

- Xiachang Tang, Ph.D. *October 2018 – October 2019*
  - Current position: Postdoctoral Fellow, Key Laboratory of Extreme Conditions

– Ph.D., Solid Mechanics, South China University of Technology *2019*
– Thesis topic: Spall failure of strain softening amorphous materials

**PhD students**

- Thao Nguyen *January 2015 – March 2019*
  – Ph.D., Mech. Eng., Texas A&M University *Defended March 2019*
  – Thesis: Mesoscale modeling of failure of shocked single crystals & polycrystals
  – M.S.E., Mechanical Engineering, Johns Hopkins University *2013*
  – Gold Medal at $17^{th}$ Vietnam National Mechanics Olympiad *2005*

- Babak Ravaji *April 2016 – present*
  – Current position: Engineer at Apple
  – Thesis: Multiscale transient thermomechanics of heterogeneous materials
  – M.S., Biomedical Engineering, Amir Kabir University of Technology *2006*
  – Best Paper Award at SPE sub-regional student competition *2013*

- Eliseo Enrique Iglesias (Co-advised with Dr. Sidney Chocron) *August 2015 – 2021*
  – Current position: Visiting Assistant Professor at Trinity University
  – Ph.D., Mech. Eng., University of Texas at San Antonio *Defended August 2021*
  – Thesis: Transient Thermomechanics of CNT-enhanced Simulant Explosives
  – M.S., Mechanical Engineering, University of Texas at San Antonio *2014*
  – B.S., Mechanical Engineering, Trinity University *2011*
  – Research Apprentice, Army Research Laboratory (VTD) *2013-2015*
  – AIAA Abe M. Zarem Award for Distinguished Achievement in Aeronautics *2013*

- Yuan Ji *August 2018 – December 2022*
  – Current position: Engineer at MathWorks
  – Ph.D., Mech. Eng., Texas A&M University *Defended October 2022*
  – Thesis: Development & Validation of a General Theory for the Onset of Cavitation

- Caleb Foster *August 2019 – present*
  – Ph.D., Mech. Eng., Texas A&M University *Expected 2024*
  – Thesis topic: Ballistic performance of magnesium alloys
  – NSF GRFP Fellow (Funding declined) *2021*
  – DOD NDSEG Fellow *2021*
  – Cain Award *($2,500 prize)* *2021*
  – Walker Award *($5,000 prize)* *2022*

- Carl Fauver *August 2019 – present*
  – Ph.D., Mech. Eng., Texas A&M University *Expected 2024*
  – Thesis topic: Crystal plasticity and damage modeling of impact failure
  – NSF GRFP Fellow *2020*

- Paul Mead (Co-advised with Prof. Tom Lacy) *August 2019 – present*
  – Ph.D., Mech. Eng., Texas A&M University *Expected 2024*
  – Thesis topic: Ballistic performance of high performance concrete
  – DOD SMART Fellow *2020*

- Jacob Rogers (Co-advised with Prof. Tom Lacy) *August 2019 – present*
  – Ph.D., Mech. Eng., Texas A&M University *Expected 2024*
  – Thesis topic: Ballistic performance of hypersonic materials
  – NSF GRFP Fellow *2020*
  – SMART Fellow (funding declined) *2019*
  – Walker Award *($5,000 prize)* *2022*

- Joshua VanCura *January 2020 – present*
  – Ph.D., Mech. Eng., Texas A&M University *Expected 2024*
  – Thesis topic: Machine learning for tire-soft terrain modeling

- Alexandra Salinas *January 2020 – present*
  – Ph.D., Mech. Eng., Texas A&M University *Expected 2026*
  – Thesis topic: Multiscale mechanics

**MS students**

- Angela Olinger *August 2018 – present*
  – Current position: Engineer at L3 Aerospace Systems
  – M.S., Mech. Eng., Texas A&M University *Defended December 12, 2019*
  – Thesis: "Modeling of impact damage in Mg nucleated from realistic particles"
  – Army Research Laboratory Summer Intern (Mentored by Dr. Jeff Lloyd)
  – Walker Impact Award *($5,000 prize)*

- Zachary Huber *March 2015 – April 2017*
  – Current position: Engineer at Pacific Northwest National Laboratory (PNNL)
  – M.S., Mech. Eng., University of Texas at San Antonio *Defended April 20$^{th}$ 2018*
  – Thesis: "Full-field experimental analysis of ductile and fatigue fracture and the accompanying thermal effects"

- Tyler Rowe *May 2016 – July 2018*
  – Current position: Engineer at Continental
  – M.S., Mech. Eng., University of Texas at San Antonio *Defended July 20$^{th}$ 2018*
  – Thesis: "Processing and characterization of CNT enhanced energetic materials"
  – AFRL Scholar Intern at Kirtland Air Force Base *Summer 2018*

- Mashroor Nitol *March 2016 – April 2018*
  – Current position: PhD student at Mississippi State University
  – M.S., Mech. Eng., University of Texas at San Antonio *Defended April 19$^{th}$ 2018*
  – Special project: "Solid solution weakening in nucleation dominated failure"
  – Engineering Intern at Fiat Chrysler Automobiles *Summer 2018*

**Undergraduate students**

- Christian Ramos *June 2022 – present*
- Jeremiah Elizabe *June 2022 – present*
- Travis Byrd *December 2021 – present*
- Christopher (CJ) Karber *January 2021 – present*
- James Ashton Conner *January 2021 – June 2021*
- Reuben Varghese *January 2021 – May 2021*
- Elizabeth File *December 2020 – May 2021*
- Cullen Miller *August 2020 – December 2022*
- Isabella Mihalic *May 2020 – December 2022*
- Jo Caulkins *May 2020 – present*
- Matthew Bui *January 2020 – May 2022*
- Robert Buck *December 2019 – May 2021*
- Taylor Rosen *May – August 2020*
- Gregory Dorgant *September 2019 – May 2020*
- Daniel (Rusty) Starr *September 2019 – August 2019*
- Joshua VanCura *December 2018 – December 2019*
- Michael Evans *September 2018 – December 2019*
- Kyle Fernandez *March 2017 – May 2018*

- Zachary Huber — *March 2015 – May 2016*
- Tyler Rowe — *March – May 2016*

**High school students**
- Gabriela Gonzalez — *June 2017 – August 2018*
- Matthew Barns — *July 2016 – May 2017*
- Isuru Somawardana — *May 2015 – July 2015*

## Professional Service

**Symposium and Seminar Organizer**

*"High strain-rate phenomena, fracture & fragmentation", Plasticity* — *8/2022 – 1/2023*
*"Chemo-thermo-mechanics of energetics and reacting flows", SES* — *4/2022 – 10/2022*
*"High-strain-rate behavior of heterogeneous materials", SES* — *4/2022 – 10/2022*
*"Failure of hypersonic materials", ASME – IMECE* — *11/2019 – 11/2020*
*"Computational poro-plasticity & ductile fracture modeling", WCCM* — *3/2019 – 7/2020*
*"Multiscale Mechanics of Ductile Failure", ASME – IMECE* — *1/2019 – 11/2019*
*"Multiscale Mechanics of Ductile Failure", ASME – IMECE* — *1/2018 – 11/2018*
*"Ductile Fracture", ASME – IMECE* — *1/2017 – 11/2017*
*"Physics and Mechanics of Ductile Failure", ASME – IMECE* — *1/2016 – 11/2016*
*Mechanics and Materials Seminar, UTSA* — *8/2016 – 8/2017*
*Dynamic Failure, Fragmentation, and Localization, SES* — *4/2016 – 10/2016*
*Mechanical Engineering Seminar, UTSA* — *1/2015 – 12/2015*
*Mechanics and Materials Seminar, Johns Hopkins University* — *8/2011 – 12/2011*

**President**

ΣΓΤ *Aerospace Engineering Honor Society* — *4/2008 – 4/2009*
- Led an initiative to expand tutoring services and community outreach.

**Reviewer**
- Journal reviews: *J. Mech. Phys. Solids, Int. J. Fracture, Int. J. Plasticity, Mech. Mater., J. Geophys. Res-Planet, Int. J. Damage Mech., J. Dyn. Behav. Mat., J. Appl. Phys., J. Compos. Mater., J. Eng. Mater. Technol., Scripta Materialia, Int. J. Modern Phys.*
- Conference proceedings reviews: *ASME – IMECE*
- Proposal reviews: *National Nuclear Security Administration (NNSA), National Aeronautics and Space Administration (NASA), National Science Foundation (NSF), Department of Energy (DOE), UTSA VPR Office, DoD SMART Program, DoD NDSEG Fellowship Program, Netherlands Organisation for Scientific Research, ACS Petroleum Research Fund*
- Textbook reviews: *Cambridge University Press*

## Professional Affiliations

American Society of Mechanical Engineers (ASME)
American Institute of Aeronautics and Astronautics (AIAA)
American Physical Society (APS)
Minerals, Metals, & Materials Society (TMS)
Society of Engineering Science (SES)

## Volunteer Outreach Positions

**STEM Advisor** — *8/2014 – 9/2022*
*Communities In Schools of San Antonio*
San Antonio, TX.
- Non-profit organization primarily serves disadvantaged Hispanic K-12 students.

**Board Member** — *5/2016 – 8/2020*
*SA Science*
San Antonio, TX.

- Non-profit organization focused on developing awareness, understanding, and enthusiasm for science in San Antonio.
- Most known for organizing Science Fiesta in San Antonio.

**STEM Instructor & Advisor** *8/2011 – 1/2014*
*Future Next Corporation*
Charles County Public Schools, Waldorf, MD.
- Organization primarily serves disadvantaged African-American K-12 students.

**Mentor & Tutor** *4/2006 – 5/2008*
*Excellence uniting Culture, Education, & Leadership*
Texas A&M University, College Station, TX.
- Organization primarily serves first generation African-American college students.

**Teacher of Teachers** *6/2007 – 7/2007*
*NSF Enrichment Experience in Engineering for Teachers*
Texas A&M University, College Station, TX.
- Helped train high school teachers on mechanical characterization of materials.

## Selected Outreach Activities

**Invited Panel Speaker** *1/11/2023*
*AGEP Alliance: A Model to Advance Historically Underrepresented Minorities in the STEM Professoriate (TxARM)*
Texas A&M System, College Station, TX.

**Invited Speaker** *8/30/2008*
*Changing the Face of Math and Science*
Houston Independent School District, Houston, TX.