

Ozgur Keles, PhD

Assistant Professor

Director, Advanced Materials Discovery Laboratory

Co-director, Advanced Manufacturing Laboratory

Chemical and Materials Engineering Department, San José State University, San Jose, CA 95192-0082

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Fields of Interest

Materials informatics towards the development of the Atlas of Materials Complexity, multi-scale structure control, materials discovery, high-throughput approaches, machine learning for processing-structure-property exploration, and virtual reality applications on engineering education.

Education

PhD, **Purdue University**, 2013

School of Materials Engineering

Thesis title: *Modeling failure in brittle porous ceramics*

Advisors: Dr. Keith J. Bowman and Dr. R. Edwin García

MS, **Middle East Technical University**, 2008

Department of Metallurgical and Materials Engineering

Thesis title: *Production and characterization of alumina fiber reinforced squeeze cast aluminum alloy matrix composites*

BS, **Middle East Technical University**, 2005

Department of Metallurgical and Materials Engineering

Work Experience

Assistant Professor, Aug 2015–Present

Chemical and Materials Engineering Department (CME)

San José State University

Directing my Advanced Materials Discovery Laboratory and co-directing the Advanced Manufacturing Laboratory. Research on processing-structure-property interrelationships in composites, ceramics, and metals using informatics and high-throughput experiments; research on engineering education; and teach foundational/graduate-level classes.

Senior Research Associate and Lecturer, Jul 2013–Jul 2015

Mechanical, Materials and Aerospace Engineering (MMAE)

Illinois Institute of Technology

Teach foundational level classes. Set up a laboratory. Test mechanical behavior of ceramic and pharmaceutical materials. Simulated fracture behavior of porous materials.

Graduate Research Assistant, Jan 2009–May 2013

School of Materials Engineering

Purdue University

Performed fundamental research on finite element modeling of brittle fracture. Taught parts of undergraduate classes and assisted teaching.

Graduate Research Assistant, Aug 2005–Aug 2008
Department of Metallurgical and Materials Engineering
Middle East Technical University

Performed research on processing and characterization of alumina fiber reinforced aluminum matrix composites.

Co-founder, 2006-2007
Mert Klips Automotive Co. Ltd.

Co-founded and co-managed an automotive parts company.

Summer internships, Jul-Aug 2003 & 2004
Eregli Iron and Steel Co.

Received training on steelmaking, operational control, and limestone processing.

Summer internships, Jul-Aug 1993–2002
Kelessan Co. A.S.

Co-managed a medium-size automotive service company and worked in all departments, including spare parts, body, engine, and customer relationships.

Honors and awards

- Advisor of the year for Society of Plastics Engineers, San Jose State University, 2019 (out of 450 societies).
- Graduate Student Mentoring Award, San Jose State University, 2018.
- Service Learning and Community Engagement Recognition for High School and Elementary School Outreach, San Jose State University, 2017.
- Graduate Excellence in Materials Science Award, The American Ceramic Society, 2012.
- Member of Tau Beta Pi, 2011.
- Finalist in national business plan competition, “Hybrid manufacturing of plastic injection molds: 3D Printing and casting,” Entrepreneur-Investor Meeting, Turkey, 2007.

Grants and contracts: NSF awarded: \$326,960 & SJSU funding: \$112,500

—Awarded proposals:

8. National Science Foundation, Division of Civil, Mechanical and Manufacturing Innovation, Major Research Instrumentation Program, *MRI: Acquisition of a metal additive manufacturing system for multi-disciplinary research and education at a minority-serving institution*, \$326,960, **PI: O. Keles**, co-PIs: B. Sirkeci, F. Amirkulova, R. Yee, and D. Yan, 2019, Award #1920363.

7. San Jose State University, Central Research Award, *Machine learned prediction of structure-property relationships in 3D printed composites*, \$7,500, **PI: O. Keles**, 2019.

6. San Jose State University, College of Engineering, Kordestani Endowed Chair Position, *Mechanics of bulk shape memory ceramics*, \$39,999, **PI: O. Keles**, 2018.

5. San Jose State University, Central Research Award, *Mechanical reliability of additively manufactured polymer composites*, \$4,998, **PI: O. Keles**, 2017.
4. San Jose State University, College of Engineering, Kordestani Endowed Chair Position, *Reliability in additively manufactured materials and textured ceramics*, \$39,509, **PI: O. Keles**, 2016.
3. San Jose State University, College of Engineering, Faculty Mini Grant, *Effect of porosity on mechanical reliability of fused deposition modeled ABS*, \$9,990, **PI: O. Keles**, 2015.
2. Total of six undergraduate research grants, San Jose State University, College of Engineering, \$3,000, **PI: O. Keles**, 2015-2017.
1. Total of five travel grants, San Jose State University, College of Engineering, \$7,500, **PI: O. Keles**, 2015-2019.

—**Pending proposal:**

1. Department of Energy, Office of Energy Efficiency & Renewable Energy, *Scalable Ceramic Alignment for Electro-active Structures (SCALES)*, \$500,000, PI: E. Karatay (Xerox PARC), **Subcontractor: O. Keles**, 2019.

—**To be submitted soon proposals:**

1. National Science Foundation, Division of Civil, Mechanical and Manufacturing Innovation, *Nano-scale toughening mechanisms in quantum-dot-reinforced thermosetting composites*, ~\$460,000, **PI: O. Keles**, co-PI: Dr. F. Erogbogbo, 2020, Revising.
2. National Science Foundation, Division of Undergraduate Education - IUSE- Exploration Design: Engaged Student Learning, *Experiential learning of engineering concepts in Virtual Learning Environments (VLEs)*, \$300,000, **PI: O. Keles**, 2020, Revising.
3. National Science Foundation, Division of Civil, Mechanical and Manufacturing Innovation, *Defect-based hierarchical toughening in selective laser melted metals*, ~\$460,000, **PI: O. Keles**, co-PI: Dr. B. Sirkeci, 2020.

Peer-reviewed Journal Publications

15. A. Karakoc and **O. Keles**, “A predictive failure framework for brittle porous materials via machine learning and geometric matching methods,” *Journal of Materials Science*, (2019) Accepted.
14. J.R. Seibert, **O. Keles**, J. Wang and F. Erogbogbo, “Data on Thermal Conductivity and Dynamic Mechanical Properties of Graphene Quantum dots in epoxy,” *Data in Brief*, (2019) Accepted.
13. J.R. Seibert, **O. Keles**, J. Wang and F. Erogbogbo, “Infusion of graphene quantum dots to modulate thermal conductivity and dynamic mechanical properties of polymers,” *Polymer*, Vol. 185 (2019) 121988.

12. P. Pokhatel, D. Xiao, F. Erogbogbo, **O. Keles**, and D.S. Lee, “A Hierarchical Approach for Creating Electrically Conductive Network Structure in Polyurethane Nanocomposites Using a Hybrid of Graphene Nanoplatelets, Carbon Black and Multi-Walled Carbon Nanotubes,” *Composites Part B: Engineering*, Vol. 161 (2019) pp. 169–182.
11. **O. Keles**, E. Anderson, J. Huynh, J. Gelb, J. Freund and A. Karakoc, “Stochastic fracture of additively manufactured porous composites,” *Scientific Reports*, Vol. 8 (2018) 15437.
10. **O. Keles**, E. Anderson, and J. Huynh, “Mechanical reliability of short carbon fiber reinforced ABS produced via vibration assisted fused deposition modeling,” *Rapid Prototyping Journal*, Vol. 24 (2018) pp.1572–1578.
9. N. Gobi, D. Vijayakumar, **O. Keles** and F. Erogbogbo, “Graphene Quantum Dots Infusion to Create Stronger, Tougher, and Brighter Polymer Composites,” *ACS Omega*, Vol. 2 (2017) pp.4356–4362.
8. **O. Keles**, C. W. Blewins, and K.J. Bowman, “Effect of build orientation on the mechanical reliability of 3D printed ABS,” *Rapid Prototyping Journal*, Vol. 23 (2017) pp. 320-328.
7. **O. Keles**, R.E. García and K.J. Bowman, “Sensitivity of fracture strength in porous glass,” *International Journal of Applied Glass Science*, Vol. 8 (2017) pp. 116–123.
6. P. Boylan-Ashraf, **O. Keles**, S. Freeman, M. Shelley, R. Calfee, “Can Students Flourish in Engineering Classrooms?,” *Journal of STEM Education: Innovations and Research*, Vol. 18 (2017) pp. 16–24.
5. **O. Keles**, N.P. Barcenas, D.H. Sprys and K.J. Bowman, “Effect of porosity on strength distribution of microcrystalline cellulose,” *AAPS PharmSciTech*, Vol. 16 (2015) pp. 1455-64.
4. **O. Keles**, R.E. García and K.J. Bowman, “Pore-crack orientation effects on fracture behavior of brittle porous materials,” *International Journal of Fracture*, Vol. 187 (2014) pp. 293–299.
3. **O. Keles**, R.E. García and K.J. Bowman, “Failure variability in porous glasses: Stress interactions, crack orientation, and crack size distributions,” *Journal of the American Ceramic Society*, Vol. 97 (2014) pp. 3967–3972.
2. **O. Keles**, R.E. García and K.J. Bowman, “Stochastic failure of isotropic, brittle materials with uniform porosity,” *Acta Materialia*, Vol. 61 (2013) pp. 2853–2862.
1. **O. Keles**, R.E. García and K.J. Bowman, “Deviations from Weibull statistics in brittle porous materials,” *Acta Materialia*, Vol. 61 (2013) pp. 7207–7215.

—**Under review**

1. A.K. Cress, J. Huynh, E.H. Anderson, R. O’neill, Y. Schneider and **O. Keles**, “Effect of recycling on the mechanical behavior and structure of additively manufactured acrylonitrile butadiene styrene (ABS),” *Journal of Cleaner Production*, (2019) Under review.
2. A. Bokare, A. Wolcott, **O. Keles**, D. Nordlund, C. Melendrez, R. Robinson and F. Erogbogbo, “Surface Functionality and Formation Mechanism of Graphene Quantum Dots,” *Physical Chemistry Chemical Physics*, Under review.

3. J. Dei Rossi, **O. Keles**, and V. Viswanathan, “Fused Deposition Modeling with Added Vibrations: A Parametric Study on the Accuracy and Mechanical Properties of Printed Parts,” ASME Transactions: Journal of Manufacturing Science and Engineering (JMSE), (2019) Under review .

—**To be submitted soon articles:**

1. A. Dina, D. Fok, Y. Grozman, J. Wang, Y. Yanika, F. Erogbogbo, and **O. Keles**, “Solution synthesis and characterization of ceria-zirconia containing graphene quantum dots,” *Ceramics International*, (2020).

2. S. Luke, D. Soares, A. Siddiqi, J. Marshall, X. Mu, J. Shedden, and **O. Keles**, “Mechanical behavior of FDMed continuous-glass-fiber-reinforced nylon with porous infill,” *Additive Manufacturing*, (2020).

Conference publications

3. J. Dei Rossi, **O. Keles**, and V. Viswanathan, “Fused deposition modeling with added vibrations: a parametric study on the accuracy of printed parts,” *Proceedings of the ASME 2019 International Mechanical Engineering Congress and Exposition (IMECE2019)* November 11-14, 2019, Salt Lake City, UT, USA.

2. **O. Keles** and E. Anderson, “Mechanical reliability of fused deposition modeled polymers and composites,” *TechConnect Briefs 2018*, Vol. 4 (2018) pp. 126–129.

1. S. Swaminathan, T. Shah, B. Sirkeci-Mergen, and **O. Keles**, “Machine Learning Models for Predicting Fracture Strength of Porous Ceramics and Glasses,” *Proceedings of the 2018 International Conference on Data Science*, (2018) pp. 147–150.

Teaching modules and related highlights

- **O. Keles**, “Virtual learning environments for engineers.”

I actively develop virtual reality learning environments, in which students can perform mechanical tests and observe material behavior.

Highlighted at wearable.com as SJSU’s Science Lab

- **O. Keles**, “Weibull fit to computer generated fracture data,” *Wolfram demonstrations project*, 2012.

I made an interactive tool that generates fracture data and Weibull CDF to help students learn stochastic fracture.

- **O. Keles**, “Lecture series on fracture mechanics in Turkish,” *Online lectures*, 2012.

I prepared an introduction to fracture mechanics lecture series in Turkish.

- Featured in the February 2015 issue of *JOM*, the magazine of the Minerals, Metals, and Materials Society. The article, “Meet a Member: **Ozgur Keles**’s Symmetry Art Makes You Look Twice,” discusses Ozgur’s approach to digital art, which he describes as: “the junction of arts, engineering, and education where I would like to see teachers promote learning.”

Teaching experience: 2 new courses developed, 11 different courses taught

26. **MatE 244**, Introduction to Materials Informatics and Data Sciences, Graduate, F20, SJSU
I developed this course on materials informatics and data sciences.
25. **MatE 25**, Introduction to Materials, Undergraduate, F19, SJSU
24. **MatE 195**, Mechanical behavior of solids, Undergraduate, F19, SJSU
23. **MatE 131**, Fundamentals of Additive Manufacturing, Undergraduate, F19, SJSU
I developed this course on additive manufacturing.
22. **MatE 205**, Advanced Mechanical Behavior of Solids, Graduate, S19, SJSU
21. **MatE 115**, Structure/Properties of Solids, Undergraduate, S19, SJSU
20. **MatE 25**, Introduction to Materials, Undergraduate, S19, SJSU
19. **MatE 115**, Structure/Properties of Solids, Undergraduate, F18, SJSU
18. **MatE 25**, Introduction to Materials, Undergraduate, F18, SJSU
17. **MatE 265**, Nanomaterials, S18, Graduate, SJSU
16. **MatE 25**, Introduction to Materials, Undergraduate, S18, SJSU
15. **MatE 210**, Experimental Methods in Materials Engineering, Graduate, F17, SJSU
14. **MatE 115**, Structure/Properties of Solids, Undergraduate, F17, SJSU
13. **MatE 25**, Introduction to Materials, Undergraduate, S17, SJSU
12. **MatE 115**, Structure/Properties of Solids, Undergraduate, F16, Undergraduate, SJSU
11. **MatE 25**, Introduction to Materials, Undergraduate, F16, SJSU
10. **MatE 205**, Advanced Mechanical Behavior of Solids, Graduate, S16, SJSU
9. **MatE 115**, Structure/Properties of Solids, Undergraduate, F15, SJSU
8. **MatE 25**, Introduction to Materials, Laboratory Section, Undergraduate, F15, SJSU
7. **MS 201**, Materials Science, Undergraduate, Sm15, Illinois Institute of Technology
6. **MMAE 232**, Design for Innovation, Undergraduate, S15, Illinois Institute of Technology
5. **MMAE 232**, Design for Innovation, Undergraduate, F14, Illinois Institute of Technology
Graded the reports and gave a lecture.
4. **MS 201**, Materials Science, Undergraduate, Sm14, Illinois Institute of Technology
3. **MMAE 200**, Introduction to Mechanics, Undergraduate, S14, Illinois Institute of Technology
2. **MSE 335**, Materials Characterization Laboratory, Undergraduate, F12, Purdue University
1. **MSE 250**, Physical Properties in Engineering Systems, Undergraduate, S10, Purdue University
Conducted homework reviews and tutorials during the lecture.

Supervised Students: 8 M.S. students graduated, one won the best CoE thesis award

25. Andrew Dina, M.S., 2019, SJSU

Project title: “Synthesis of ceria-doped zirconia containing graphene quantum dot nanocomposites using sodium borohydride reduction.”

24. Shreeya Mahadevaswamy and Mustafa Yavuz, M.S., 2019, co-advised-Dr. Birsen Sirkeci

Project title: “Analysis of Publications in Material Science using Natural Language Processing.”

23. Eric Anderson, M.S. graduated, 2019, SJSU

College of Engineering **Donald Beall Student Award for Engineering Accomplishment** for thesis: “The effect of porosity on mechanical properties of fused deposition manufactured polymers and composites.”

22. Praneeth Varma Alluri, M.S. graduated, 2019, co-advised-Dr. Birsen Sirkeci, SJSU

Project title: “Improving the performance of machine learning for predicting fracture strength of porous ceramics and glasses.”

21. Suvid Anand and Shruthi Kondeti, M.S. graduated, 2019, co-advised-Dr. Birsen Sirkeci, SJSU

Project title: “Neural networks to analyze the strength-microstructure relationships in porous ceramics and glasses.”

20. Cheng-Lun Wu, M.S. graduated, 2019, SJSU

Project title: “Effect of porosity and Bouligand structure on mechanical behavior of fused deposition modeled ABS.”

19. Stephanie Luke, M.S. graduated, 2019, SJSU

Project title: “Effect of fiber content and fiber orientation on fracture behavior of FDMed continuous-glass-fiber-reinforced nylon.”

18. David Soares, M.S. graduated, 2019, SJSU

Project title: “Mechanical Behavior of Hierarchical 3D Printed Continuous Glass Fiber Reinforced Nylon.”

17. Alex K. Cress, M.S. graduated, 2019, SJSU

Project title: “Effect of recycling on the strength and mechanical reliability of additively manufactured ABS.”

16. Ghazal Mowlavi, M.S. graduated, 2019, SJSU

Project title: “Effects of build orientation on the mechanical behavior of Polyjet printed acrylic-based polymers.”

15. Afrah Siddiqi, UG researcher, 2018-present, SJSU

Project title: “Machine learning approaches to predict crack path and toughness.”

14. Nicholas Tomas and Barry Mulingtapang, 2016-17, SJSU

Senior Design Project Advisor: Additive Manufacturing in Thermoplastics for Patient-specific Knee Replacement and Bone Remodeling.

13. Jimmy Huynh, 2015-16, SJSU
Senior Design Project Advisor: Mechanical Reliability of Nylon 12 Parts Produced via HP Multi Jet Fusion.
12. Pamela Rochelle Ong, Kalkidan Zewdu, and Daniel Fok, 2015-16, SJSU
Senior Design Project co-Advisor: Development of a Spine Template Using Metal 3D Printing.
11. Caleb Blevins, Senior, 2015-16, SJSU
Effect of fill density on the fracture behavior and Weibull statistics of PLA and ABS produced by 3D printing.
10. Daniel Fok, Junior, 2015-17, SJSU
Solution-based synthesis of zirconia platelets.
9. Skhandesh Srinivasan, Senior project advisee, 2015-16, SJSU
Additive manufacturing research in collaboration with Jabil Circuit Inc.
8. Tim Langston, Senior project advisee, 2015, SJSU
Additive manufacturing research in collaboration with Jabil Circuit Inc.
7. Nicholas P. Barcenas, Senior, 2013-15, IIT
Effect of porosity on reliability and Weibull statistics of pharmaceutical tablets.
6. Daniel Sprys, Senior, 2014-15, IIT
Effect of porosity on reliability and Weibull statistics of pharmaceutical tablets.
5. Shan-Ju Chiang, Ph.D. student, 2013-15, IIT
Production of textured shape memory ceramics through gel-casting method.
4. Miguel Bocanegra-Martinez, Senior, 2014-15, IIT
Finite element modeling of stress evolution in functional ceramics.
3. Tuong Le, Junior, 2014, IIT
Ultrasonic testing of mechanical properties of pharmaceutical compacts.
2. Andrea Velazquez, Sophomore, 2014, IIT
Ultrasonic testing of mechanical properties of ceramics.
1. Erin Colleen Cummings, Senior, 2011, Purdue Univeristy
Stochastic fracture of microcrystalline cellulose tablets.

Presentations

- O. Keles**, “Multi-scale structure control for advanced functional materials,” Mechanical Engineering, UC Berkeley, December 2019.
- O. Keles**, S. Luke, D. Soares, A. Siddiqi, “Mechanical behavior of 3D printed continuous-glass-fiber-reinforced nylon,” Materials Science & Technology, October, 2019.
- O. Keles**, “Mechanical reliability of fused deposition modeled materials,” NASA Ames TPS, 2018.

O. Keles, E. Anderson, J. Huynh, J. Gelb, J. Freund and A. Karakoc, “Effect of lattice density on the mechanical behavior of FDMed composites,” *Materials Science & Technology*, 2018.

O. Keles and E. Anderson, “Mechanical reliability of fused deposition modeled polymers and composites,” *TechConnect World Innovation Conference*, 2018.

O. Keles, “Additive Manufacturing and Mechanical Reliability,” *ASM International Santa Clara Valley Chapter*, 2018.

E. Anderson and **O. Keles**, “Effect of Porosity on Stochastic Fracture of Additive Manufactured Polymer Matrix Composites,” *Materials Science & Technology*, 2017.

A. K. Cress and **O. Keles**, “Effect of Build Parameters on the Variation in Mechanical Properties of Fused Deposition Modeled ABS,” *Materials Science & Technology*, 2016.

O. Keles, “Impact of materials science on society,” *Science for Everyone*, Public talk, January 2013.

O. Keles, “History of fracture mechanics,” *Science for Everyone*, Public talk, November 2012.

O. Keles, “Bone and teeth fracture,” *Science for Everyone*, Public talk, October 2012.

O. Keles, R.E. García and K.J. Bowman, “Statistical failure analysis of crystallographically isotropic porous materials,” *MS & T*, 2012.

O. Keles, R.E. García and K.J. Bowman, “Statistical approaches applied to failure of isotropic materials with random cracks,” *MS & T*, 2011.

O. Keles, R.E. García and K.J. Bowman, “Object oriented finite element modeling of brittle fracture,” *Integrated computational materials education summer school*, University of Michigan, 2011.

O. Keles, R.E. García and K.J. Bowman, “Mechanical properties and reliability of pharmaceutical powder processing tablets: A modeling approach,” *Materials Science & Technology*, 2010.

O. Keles, R.E. García and K.J. Bowman, “Modeling and experimental investigation of fracture behavior of pharmaceutical powder compacts,” *Eli Lilly and Company*, 2010.

Posters

O. Keles, V. Brubaker-Gianakos, V. Viswanathan, and F. Marbouti, “Virtual reality learning environments for materials education,” *10th North American Materials Education Symposium*, August 2019, Stanford University.

Y. Schneider, G. Strossman, A.K. Cress, **O. Keles**, “Characterization of Trace Impurities in 3D Printed Recycled ABS Materials,” *The 67th Annual Denver X-ray Conference*, 2018.

O. Keles, D. Fok, and A. Dina, “Synthesis and characterization of graphene quantum dot containing ceria-zirconia,” *Gordon Research Conferences*, 2018.

O. Keles, E.H. Anderson, J. Huynh, J. Gelb, J. Freund, and A. Karakoc, “Stochastic Fracture of Additively Manufactured Composites,” *IDTechX Show*, Santa Clara, CA, 2017.

O. Keles, R.E. García and K.J. Bowman, “Brittle fracture in pharmaceutical powder compacts,” Next Generation Scholars Research Fair, Purdue University, 2013.

O. Keles, R.E. García and K.J. Bowman, “Modeling and experimental investigation of fracture behavior of pharmaceutical powder compacts,” Next Generation Scholars Research Fair, Purdue University, 2012.

O. Keles, R.E. García and K.J. Bowman, “Pore-pore interaction effects on fracture behavior of brittle materials and Weibull statistics,” Gordon Research Conferences, 2012.

O. Keles, R.E. García and K.J. Bowman, “Discrete element and peridynamics modeling of fracture behavior of pharmaceutical powder compacts,” Center for Pharmaceutical Processing Research meeting, Purdue University, 2010.

O. Keles, R.E. García and K.J. Bowman, “Modeling and experimental investigation of fracture behavior of pharmaceutical powder compacts,” Center for Pharmaceutical Processing Research meeting, Puerto Rico, 2010.

O. Keles, R.E. García and K.J. Bowman, “Modeling and experimental investigation of pharmaceutical powder processing,” Center for Pharmaceutical Processing Research meeting, Purdue University, 2009.

Service contributions

- Research Committee, College of Engineering, San Jose State University, 2018-Present.
- Faculty advisor of the Society of Plastics Engineers student club, College of Engineering, San Jose State University, 2017-Present.
- Faculty advisor of the Materials Advantage, College of Engineering, San Jose State University, 2017-Present.
- Faculty Search Committee, CME Department, San Jose State University, 2018-2019.
- Faculty Search Committee, CME Department, San Jose State University, 2016-2017.
- Technical Staff Search Committee, CME Department, San Jose State University, 2017.
- Undergraduate Student Committee, CME Department, San Jose State University, 2015-Present.
- Graduate Student Committee, CME Department, San Jose State University, 2015-2018.

Professional societies

- Member of The ASM International, 2019-Present
- Member of The Society of Plastics Engineers, 2018-Present
- Member of The American Society of Mechanical Engineers, 2014-Present
- Member of The Minerals, Metals & Materials Society, 2014-Present
- Member of The American Ceramic Society, 2010-present

Professional Activities

- Organizer, ASM Teacher Camp, San Jose State University, 2021.
- Co-organizer, TMS 2021, Symposium: Structure and Defects in Composites: Recent advances in processing, modeling and mechanics, Orlando, Florida.
- NSF reviewer, CMMI, MME, DMREF, 2016, 2017, 2019.
- Reviewer for various journals.
- **Board member** of the Society of Plastics Engineers-Golden Gate Section, 2018-Present
- Chair of the Metal and Polymer Matrix Composites IV, Polymer Matrix Composites I session, Materials Science & Technology, 2019.
- Organizer of the additive manufacturing workshop, Society of Plastics Engineers–Golden Gate Section, SJSU, San Jose, CA, 2019.
- Education expo chair, Society of Plastics Engineers–Golden Gate Section, SJSU, San Jose, CA, 2019.
- Co-organizer, Mentoring program, Society of Plastics Engineers–Golden Gate Section, SJSU, San Jose, CA, 2018.
- Co-organizer, Career Panel, Society of Plastics Engineers–Golden Gate Section, SJSU, San Jose, CA, 2018.
- Education expo chair, Society of Plastics Engineers–Golden Gate Section, SJSU, San Jose, CA, 2018.
- Chair of the 3D printing with metals session, IDTechEx Show, 3D Printing USA, Santa Clara, CA, 2017.

Technical training and workshops

- Theories of Failure: Why, How, and When – Modeling and Prediction, ANSYS, CA, 2019.
- California State University, Faculty Proposal Development Workshop, SJSU, 2017.
- Habits of Mind for enhancing student learning, workshop, SJSU, 2017.
- University Grants Academy, semester-long proposal writing workshop, SJSU, 2016.
- NSF CAREER Proposal Writing Workshop, St. Louis, Missouri, 2016.
- *In-situ* synchrotron X-ray characterization of lead-free ferroelectric ceramics under electric field, Argonne National Laboratories, 2014.
- Summer School on Materials in 3D: Modeling and Imaging at Multiple Length Scales, University of California Santa Barbara (UCSB), 2013 (for two weeks).
- Biomechanics of tissue and tissue-cell interaction summer school, Purdue University, 2012.

- Integrated computational materials education summer school, University of Michigan, 2011 (for two weeks).
- Advanced materials characterization workshop, University of Illinois at Urbana-Champaign, 2010.
- Bruker D8 X-Ray applications training, Bruker AXS, Madison, WI, 2009.
- Valorization and business plan training, VALOR Project, European Union Sixth Framework Program, 2007.

Experimental Skills

Additive manufacturing · 3D printing · Gel casting · Tape casting · Synchrotron X-ray and energy dispersive spectroscopy · Near-edge X-ray absorption fine structure (NEXAFS) spectroscopy · FTIR · Raman spectroscopy · DSC · TGA · Vacuum infiltration and squeeze casting for metal matrix composite production · Conventional aluminum and steel casting · Metallography · Uniform droplet spray for powder manufacturing · Metal powder extrusion · SEM-TEM · Optical microscopy · Tensile, compression and bend tests · Diametral compression test · Charpy impact test · Micro and normal hardness tests · Ultrasonic testing of material properties · Metal and ceramic sintering · Ball milling · Roller and uniaxial powder compaction

Computer Skills

Finite element method-OOF2 and ANSYS · Finite volume method-FiPy · Discrete element method-LIGGGHTS · Peridynamics-LAMMPS · Autodesk-Inventor · mathematica · python · matlab · LabVIEW · L^AT_EX · Linux · Mac OS · Keynote · Microsoft Windows and Office · Photoshop · Photomatix