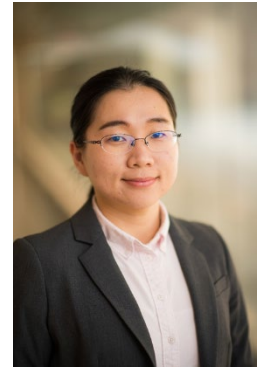


# Xun Liu

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Website: <https://mfgx.engineering.osu.edu/>



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## Appointments

2018-present	<b>Assistant Professor</b> , <i>Department of Material Science and Engineering</i> , The Ohio State University
2016-2017	<b>Postdoctoral Research Fellow</b> , <i>Department of Material Science and Engineering, Department of Mechanical Engineering</i> , University of Michigan, Ann Arbor

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## Education

2016	<b>Ph.D. Mechanical Engineering</b> , University of Michigan, Ann Arbor
2016	<b>M.Sc. Material Science and Engineering</b> , University of Michigan, Ann Arbor
2012	<b>M.Sc. Mechanical Engineering</b> , University of Michigan, Ann Arbor
2011	<b>B.S.E. Mechanical Engineering</b> , Huazhong University of Science and Technology, Wuhan, China

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## Research Interests

- Advanced thermo-mechanical manufacturing processes
- Power Ultrasound
- Innovative hybrid manufacturing process development and analysis
- Welding and wire-based additive manufacturing
- Process-microstructure-property analysis
- Integrated computational manufacturing engineering

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## Research Projects

1. *CAREER: Ultrasonically Assisted Wire Arc Additive Manufacturing of Metal Matrix Nanocomposites for High-strength, Lightweight Structures*. NSF/CMMI, **PI: Xun Liu**, 2021 – 2026
  - Enhance wire arc additive manufacturing with *in situ* ultrasonic vibration
    - Experimental system development and comprehensive characterizations
    - Hybrid physics-based and data-driven multiscale analysis on the process-microstructure-property relationships
2. *Understanding nugget formation and microstructure evolution in multilayer welds of battery foils*, NSF-IUCRC Ma2JIC Center, General Motors Company, **PI: Xun Liu**, 2022 – 2024
  - Modeling and experimental analysis of ultrasonically assisted resistance spot welding for battery cell internal welds
    - Development of a coupled electrical-thermal-mechanical FEM model of the URW process.
    - Combination of the FEM model with microstructure evolution model for weld property prediction
    - Experimental validation of the Multiphysics models
    - Model optimization of process parameters for URW welding of higher number of foil layers

3. *An innovative hybrid ultrasonic resistance welding process for joining advanced lightweight and dissimilar materials*, NSF/CMMI, **PI: Xun Liu**, Co-PI: Avi Benatar, 2019 – 2023
  - Improve conventional RSW process with simultaneous ultrasonic vibration during the passage of electrical current
    - URW system developments
    - Weld quality and microstructure evaluation of various lightweight materials
    - Coupled thermo-mechanical-electrical process modeling, validated with high speed imaging and infrared imaging
  - Attracted in-kind support from Novelis company
4. *Multiphysics Integrated Modeling of Self-Reacting Friction Stir Welding*, NASA ESI, **PI: Xun Liu**, Co-PI: Wei Zhang, Antonio Ramirez, 2019 – 2023
  - Integrated computational analysis on Self-reacting Friction Stir Welding
    - Physics based process modeling with coupled microstructure analysis to predict potential macroscopic weld defects and strength given input process parameters and tool geometry
    - Gleeble hot torsion physical simulation of the material mechanical behavior in the string zone of FSW
5. *Effect of niobium on weld metal and heat-affected zone toughness of pipeline steels Phase III*, NSF-IUCRC Ma2JIC Center, ArcelorMittal, Lincoln Electric and CBMM, **PI: Xun Liu**, 2021 – 2023
  - Study of microalloying effects on submerged arc weld properties
    - Weld toughness comparison for different compositions of steel and weld consumables
    - Multi-scale microstructure characterizations, optical macrograph analysis of iron constituents, along with TEM, STEM and APT analysis of precipitates composition, crystallographic structure and distribution
6. *GOALI/Collaborative Research: Improving Incremental Sheet Forming by Ultrasonically Enhanced Material Deformation*, NSF/CMMI, **PI: Xun Liu**, Alan Taub, Ravi Verma, 2020 – 2023
  - Ultrasonically assisted material mechanical behavior analysis
    - Ultrasonically assisted micro-tensile tests of different materials with in-situ high speed micro-DIC analysis
    - Crystal plasticity modeling analysis on the softening mechanism
7. *Nutrient-Dense Bars Production by Ultrasonic Compression*, NIFA USDA, **PI: Gonul Kaletunc**, **Co-PI: Xun Liu**, Ann Barrett, 2020 – 2023
  - Understanding ultrasonic effects on compression of nutrient bars
    - Ultrasonic effects on the mechanical and physical properties of nutrient bars with different formula
8. *EAGER: Collaborative Research: Fundamentals of acousto-plasticity and tribology in ultrasonically enhanced incremental sheet forming of free form geometries*, NSF/CMMI, **PI: Xun Liu**, Alan Taub, 2018 – 2020
  - Analysis of ultrasonic effects on single point and two point incremental sheet forming (ISF) process
    - Development of ultrasonically assisted ISF experimental system and preliminary analysis
    - Development of ultrasonically assisted micro-tensile testbed and preliminary analysis on pure copper
9. *Ultrasonic resistance spot welding process development for battery cell internal welds*, General Motors Company, **PI: Xun Liu**, 2021 – 2022

- Analysis of an innovative ultrasonically assisted resistance spot welding process for battery cell internal welds
  - Welding process development and microstructure analysis for multiple layers of thin metal foils and cell tabs

10. Institute for Materials Research Spring 2018 Kickstart Facility Grant: Ultrasonic resistance spot welding of dissimilar materials, OSU, PI: **Xun Liu**, 2018 – 2019, 2500\$

- Analysis of ultrasonic effects on single point and two point incremental sheet forming (ISF) process
  - Development of ultrasonically assisted ISF experimental system and preliminary analysis
  - Development of ultrasonically assisted micro-tensile testbed and preliminary analysis on pure copper

### Journal Publications (\* Corresponding Author)

Google Scholar: <https://scholar.google.com/citations?user=6a2qfiUAAAAJ&hl=en>

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- [1] Wang, T., Liu, X. and Darnell, M., 2023. Ultrasonic effects with different vibration positions on gas tungsten arc wire additive manufactured aluminum nanocomposite. *Journal of Manufacturing Processes*, 105, pp.359-369.
  - [2] Kwon, H., Shah, U., Liu, X., Rinker, T.J. and Cai, W., 2023. Ultrasonic-assisted resistance spot welding of multilayered Al foil stacks for Li-ion battery applications. *Journal of Materials Processing Technology*, 317, p.117990.
  - [3] Venkatraman, G., Shah, U., Liu, X., Dapino, M., 2023, In-situ IR imaging for modeling energy transfer and its relationship to shear strength of the weld interface in ultrasonic additive manufacturing, *CIRP Journal of Manufacturing Science and Technology*, accepted.
  - [4] Kwon, H., Shah, U., Liu, X.\*, Julio Malpica, Patrick Lester, Harini Bonam. 2023. Experimental Analysis on Ultrasonic Resistance Spot Welding of Aluminum Alloys. *The Welding Journal Research Supplement*, Accepted
  - [5] Wang, T., Kang, J., Darnell, M. and Liu, X.\*, 2023. Ultrasonically assisted hot-wire arc additive manufacturing process of AA7075 metal matrix nanocomposite. *Journal of Alloys and Compounds*, 936, p.168298.
  - [6] Kang, J., Liu, X.\* and Wang, T., 2023. The effects of ultrasonic vibration on Portevin–Le Chatelier (PLC) effect and stress-strain behavior in aluminum alloy 2024. *Scripta Materialia*, 224, p.115121.
  - [7] Gilmore, A. and Liu, X.\*, 2022. Mechanical Behavior and Microstructure Evolution during Hot Torsion Deformation of Aluminum Alloy AA2219. *Advanced Engineering Materials*, 24(9), p.2200048.
  - [8] Shah, U., Liu, X.\*, Benatar, A., Kuprienko, A. and Zhang, W., 2022. Computational analysis of the ultrasonic effects on resistance spot welding process. *Journal of Manufacturing Processes*, 81, pp.191-201.
  - [9] Kang, J., Liu, X.\* and Niezgodá, S.R., 2022. Crystal plasticity modeling of ultrasonic softening effect considering anisotropy in the softening of slip systems. *International Journal of Plasticity*, 156, p.103343.
  - [10] Zhao, C., Pei, X. and Liu, X.\*, 2022. Computational investigation on void defects formation and periodic tool-workpiece sliding-to-sticking transition in self-reacting friction stir welding. *The International Journal of Advanced Manufacturing Technology*, 120(11-12), pp.8075-8088.
  - [11] Wang T, Mazánová V, Liu X.\*, 2022. Ultrasonic effects on gas tungsten arc based wire additive manufacturing of aluminum matrix nanocomposite. *Materials & Design*. Jan 10:110393.
  - [12] Kang, J. and Liu, X.\*, 2021. Ultrasonic Effect on the Deformation Behavior and Microstructure Evolution of a TRIP-Assisted Steel. *Metallurgical and Materials Transactions A*, pp.1-11.
  - [13] Zhao, C. and Liu, X.\*, 2021. An alternative pressure-dependent velocity boundary condition for modeling self-reacting friction stir welding. *The International Journal of Advanced Manufacturing Technology*, pp.1-13.
  - [14] Cheng, R., Bansal, A., Kang, J., Liu, X. and Taub, A., 2021. The Effect of Ultrasonic Vibration on Material Movement in Incremental Sheet Forming. In *Forming the Future* (pp. 383-394). Springer, Cham.
  - [15] Wang, X., Gao, Y., Liu, X., McDonnell, M. and Feng, Z., 2021. Tool-workpiece stick-slip conditions and their

effects on torque and heat generation rate in the friction stir welding. *Acta Materialia*, 213, p.116969.

- [16] Barrett, A., Ahnrad, G., Ziegler, D., Liu, X. and Kaletunc, G., 2021. Ultrasonic agglomeration of model flour systems: Process parameter-product physico-thermal property relationships. *Journal of Food Science*.
- [17] Zhao, C. and Liu, X.\*, 2020. Computational Analysis on Weld Formation Mechanism during Self-Reacting Friction Stir Welding. *Journal of Manufacturing Science and Engineering*, pp.1-15.
- [18] Kang, J., Liu, X.\* and Xu, M., 2020. Plastic deformation of pure copper in ultrasonic assisted micro-tensile test. *Materials Science and Engineering: A*, p.139364.
- [19] Liu, X., Shi, Q., Xu, M., Kang, J. and Webb, S., 2020. Mechanisms of Ti and B on improving weld metal toughness of a Nb-alloyed steel. *Materials Science and Engineering: A*, p.139535.
- [20] Shah, U. and Liu, X.\*, 2020. Effect of ultrasonic energy on the spot weldability of aluminum alloy AA6061. *Materials & Design*, p.108690.
- [21] Shah, U., Liu, X.\*, 2019, Effects of ultrasonic vibration on resistance spot welding of transformation induced plasticity steel 780 to aluminum alloy AA6061, *Materials & Design*, 182, 108053.
- [22] Shah, U., Liu, X.\*, 2019, Ultrasonic resistance welding of TRIP-780 steel, *Journal of Materials Processing Technology*, p. 116287.
- [23] Liu, X.\*, Xu, M., Shi, Q., Kang, J., Procario, J., Hou, W., Manohar, M., 2019, Analysis of niobium-rich phases in the submerged arc welds of high strength low alloy steel. *Materialia*, 7, 100340.
- [24] Chen, K., Liu, X.\*, & Ni, J. 2019. A review of friction stir-based processes for joining dissimilar materials. *The International Journal of Advanced Manufacturing Technology*, 1-23.
- [25] Liu, X.\*, Zhao, S., Chen, K., Ni, J., 2018, Material flow visualization of dissimilar friction stir welding process using nano-CT, *Journal of Manufacturing Science and Engineering*, 140(11).
- [26] Chen, K., Liu, X.\*, Ni, J., 2018, Friction stir resistance spot welding of aluminum alloy to advanced high strength steel, *Journal of Manufacturing Science and Engineering*, 140(11), p.111007
- [27] Momeni, F., Sabzpooshan S., Valizadeh, R., Morad, M. , Liu, X., Ni, J., 2018, Plant Leaf-Mimetic Smart Wind Turbine Blades by 4D Printing, *Renewable Energy*, 130, pp.329-351.
- [28] Zhao, S., Ni, J., Wang, G., Bi, Q., Zhao, Y., Liu X., 2018, Effects of tool geometry on friction stir welding of AA6061 to TRIP steel, *Journal of Materials Processing Technology*, 261, pp. 39-49.
- [29] Momeni, F., M.Mehdi Hassani.N, S., Liu, X.\*, and Ni, J., 2017, A review of 4D printing, *Materials & Design*, 122(Supplement C), 42-79.
- [30] Chen, K., Liu, X.\*, and Ni, J., 2017, Effects of Process Parameters on Friction Stir Spot Welding of Aluminum Alloy to Advanced High-Strength Steel, *Journal of Manufacturing Science and Engineering*, 139(8), 081016-081016-081019.
- [31] Chen, K., Liu, X.\*, Ni, J., 2017. Keyhole refilled friction stir spot welding of aluminum alloy to advanced high strength steel, *Journal of Materials Processing Technology*, 249, 452-462.
- [32] Chen, K., Liu, X.\*, Ni, J., 2016. Thermal Mechanical Modeling on Friction Stir Spot Welding of Dissimilar Materials Based on Coupled Eulerian-Lagrangian Approach, *The International Journal of Advanced Manufacturing Technology*, 1-11.
- [33] Liu, X., Chen, G., Feng, Z., Ni, J., 2016, CFD modeling on steady state friction stir welding of aluminum alloy 6061 to TRIP steel, *ASME Journal of Manufacturing Science and Engineering*, 139(5), 051004-051004-12
- [34] Liu, X., Lim, YC., Li, Y., Tang, W., Feng, Z., Ni, J., 2016, Effects of process parameters on friction self-piercing riveting of dissimilar materials, *Journal of Material Processing Technology*, 237, 19-30
- [35] Liu, X., Lan, S., Ni, J., 2015, Thermal mechanical modelling of the plunge stage during friction stir welding of dissimilar Al 6061 to TRIP 780 steel. *ASME Journal of Manufacturing Science and Engineering*, 137(5), 051017
- [36] Liu, X., Lan, S., Ni, J., 2015, Experimental Investigation on Joining Dissimilar Aluminum Alloy 6061 to TRIP

780/800 Steel through FSW. ASME Journal of Engineering Materials and Technology, 137(4), 041001

- [37] Liu, X., Lan, S., Ni, J., 2015, Electrically assisted friction stir welding for joining Al 6061 to TRIP 780 steel. Journal of Materials Processing Technology, 219, 112-123
- [38] Liu, X., Lan, S., Ni, J., 2014, Analysis of process parameters effects on friction stir welding of dissimilar aluminum alloy to advanced high strength steel. Materials & Design, 59, 50-62
- [39] Liu, X., Lan, S., Ni, J., 2013, Experimental study of Electro-Plastic Effect on Advanced High Strength Steels. Materials Science and Engineering: A, 582(0), 211-18
- [40] Lin, W., Yu, D. Y., Zhang, C., Liu, X., Zhang, S., Tian, Y., Liu, S., Xie, Z., 2015. A multi-objective teaching-learning-based optimization algorithm to scheduling in turning processes for minimizing makespan and carbon footprint. Journal of Cleaner Production, 101, 337-347.

### **Selected Conference Presentations**

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- [1] Thomas, J.C. Adesina, J., Liu, X., Kaletunç, G., Processability of Cereal Flours by ultrasonic compression for the production of nutrient bars, 2023, International Congress on Engineering and Food (ICEF14), June 19, Nantes, France
- [2] Liu, X., Wang, T. 2023, Ultrasonic Effects on Gas Tungsten Arc Based Wire Additive Manufacturing of Aluminum Nanocomposite, February 27 – March 3, San Diego, California (Invited talk)
- [3] Kwon, H., Liu, X., 2023, Ultrasonically Assisted Resistance Spot Welding of Multiple Thin Foil Stacks for Battery Cell Joining, , TMS Conference, February 27–March 3, San Diego, California
- [4] Thomas, J.C. Adesina, J., Liu, X., Kaletunç, G., 2022, Optimizing Ultrasonic Welding Parameters for Manufacturing Cereal-Based Nutrient Bars. The Society of Food Engineering (SoFE) 15th Conference of Food Engineering, September 18-21, Raleigh, NC
- [5] Kang, J., Liu, X., Niezgoda, S., 2022, Crystal Plasticity Modeling of Ultrasonic Softening Effect Considering Anisotropy in the Softening of Slip Systems, Material Science and Technology MS&T conference, October 9-12, Pittsburgh, PA
- [6] Darnell, M., Liu, X., Harwig, D., 2022, Experimental analysis of metal inert gas based wire arc additive manufacturing of aluminum nanocomposite AA7075, ASME Manufacturing Science and Engineering Conference (MSEC), June 27 - July 1, West Lafayette, IN
- [7] Liu, X., Kang, J., Wang, T., 2022, Power Ultrasound in Advanced Manufacturing, TMS Conference, February 27–March 3, Anaheim, California (Invited talk)
- [8] Shah, U., Liu, X., 2021, Experimental Analysis on Ultrasonic Resistance Spot Welding Process for Aluminum Alloys, Sheet Metal Welding Conference, November 2-4, Livonia, Michigan
- [9] Shah, U., Liu, X., Avraham Benatar, Alexey Kuprienko, Wei Zhang, 2021, Computational Analysis of the Ultrasonic Effects on Resistance Spot Welding Process, Sheet Metal Welding Conference, November 2-4, Livonia, Michigan
- [10] Shah, U., Liu, X., 2021, Ultrasonic resistance welding of aluminum welds, International Materials, Applications and Technology (IMAT) conference, September 13-16, St. Louis, Missouri
- [11] Kang, J., Cheng, R., Liu, X., Taub, A., (2021) Ultrasonic effects on plastic deformation behavior of AA2024, Material Science and Technology MS&T conference, Columbus, OH, October 17-21
- [12] Gilmore, A., Liu, X. (2021), Microstructural Evolution from Hot Torsion Tests for Material Modeling and Parameterization, Material Science and Technology MS&T conference, Columbus, OH, October 17-21
- [13] Cheng, R., Kang, J., Liu, X., Taub, A., (2021) Comparison of acoustic softening phenomenon in tensile tests and incremental sheet forming, Material Science and Technology MS&T conference, Columbus, OH, October 17-21
- [14] Cheng, R., Bansal, A., Kang, J., Liu, X., Taub, A., The effect of ultrasonic vibration on material movement in

- incremental sheet forming, The 13<sup>th</sup> International Conference on the Technology of Plasticity ICTP, July 25-30, 2021, Columbus, OH
- [15] Shah, U., Liu, X., 2021, Experimental Analysis on Ultrasonic Resistance Welding process for Aluminum Alloys, March 8-10, IIW Solid State Welding Commission III annual meeting. (virtual)
- [16] Kang, J. Liu, X., Ultrasonically assisted tensile test of TRIP steel and delayed martensitic transformation, TMS Annual Meeting, March 15-18, 2021 (virtual)
- [17] Zhao, C., Liu, X., Computational Modeling on Defect Formation during Self-Reacting Friction Stir Welding, AWS FABTECH Professional program, November, 2020 (virtual)
- [18] Zhao, C., Liu, X., Cao, W., Zhang, W., Sowards, J., Numerical analysis of in-process heat transfer and material flow during dissimilar friction stir welding process, ASME Manufacturing Science and Engineering Conference (MSEC), June 22-26, 2020 Cincinnati, OH (The conference is cancelled due to COVID-19. The paper is accepted in the Conference proceedings)
- [19] Shah, U., Liu, X., 2019, High frequency ultrasonic resistance spot joining of advanced high strength TRIP 780 Steel, Joining of Advanced and Specialty Materials XXI, Materials Science & Technology 2019, Sep 29- Oct 03, 2019 Portland, OR.
- [20] Shah, U., Liu, X., 2019, Resistance Spot Welding Coupled with High Frequency Acoustic Waves for Better Weldability of Dissimilar Materials, W600 - Resistance & Arc Welding for Better Weldability and Hazard Reduction, FABTECH 2019, Nov 11- 14, Chicago, IL.
- [21] Chen, G., Liu, X., Shi, Q., 2019. Numerical analysis of in-process heat transfer and material flow during dissimilar friction stir welding process, In ASME 2019 Manufacturing Science and Engineering Conference (MSEC), June, Erie, PA
- [22] Cheng, R., Wiley, N., Short, M., Liu, X., and Taub, A., 2019. Applying ultrasonic vibration during single-point and two-point incremental sheet forming, in 47th SME North American Manufacturing Research Conference, NAMRC 47, June, Erie, PA
- [23] Liu, X., Shah, U. 2019, Advancements of Friction Stir Spot Welding for Joining Dissimilar Materials IIW Solid State Welding Commission III annual meeting, March, Detroit, MI
- [24] Liu, X., Chen, K., Ni, J., 2019, Advancements of Friction Stir Spot Welding for Joining Dissimilar Materials, IIW Solid State Welding Commission III annual meeting, March, Detroit, MI
- [25] Chen, K., Liu, X., Ni, J. 2018. Process-Structure-Property Study on Friction Stir Spot Welding of Al Alloy to TRIP 780 Steel, in AWS Sheet Metal Welding Conference XVIII, Oct, Livonia, MI
- [26] Liu, X., Zhao, S., Ni, J. 2018. Material flow visualization of dissimilar friction stir welding process using nano-CT. In ASME 2018 Manufacturing Science and Engineering Conference (MSEC), June, College Station, TX (**Journal quality recommended, Best paper recommended**)
- [27] Chen, K., Liu, X., Ni, J. 2017. Electrically Assisted Friction Stir Spot Welding of Aluminum Alloy to Advanced High Strength Steel. In ASME 2017 Manufacturing Science and Engineering Conference (MSEC), June, Los Angeles, CA (**Journal quality recommended**)
- [28] Chen, K., Liu, X., Ni, J. 2016. Effects of process parameters on friction stir spot welding of aluminum alloy to advanced high strength steel. In ASME 2016 MSEC Conference, June, Blacksburg, VA
- [29] Liu, X., Lan, S., Qiao, X., Ni, J. 2015. Study of plunge stage for a hybrid friction stir welding process based on electro-plastic effect. In ASME 2015 MSEC Conference, June, Charlotte, NC
- [30] Liu, X., Lan, S., Ni, J. 2014. Experimental study on friction stir welding of dissimilar Al 6061 to TRIP 780/800 steel. In ASME 2014 MSEC Conference, June, Ann Arbor, MI
- [31] Liu, X., Lan, S., Ni, J. 2013. Experimental study of Electro-Plastic Effect on Advanced High Strength Steels. In

## Book Chapters

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- [1] Liu, X., Graff, K., CH14 Ultrasonic metal forming—material, Power ultrasonics: applications of high-intensity ultrasound, 2nd Edition, Paperback ISBN: 9780128202548.
- [2] Liu, X., Graff, K., CH15, Ultrasonic metal forming—processing, Power ultrasonics: applications of high-intensity ultrasound, 2nd Edition, Paperback ISBN: 9780128202548

## Patents

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- [1] Liu, X. Self-filling friction stir processing tool and methods of using the same, (2022) Application No. 17/943,748
- [2] Rinker, T., Xi, L., Liu, X., Shah, U., Kwon, H., Interlayer material in ultrasonic resistance welding of battery foils (2022), US Application No. US 17/668,708
- [3] Liu, X., Benatar, A., and Kimchi, M., Ultrasonic Resistance Welding Process and Apparatus, 2022, US 2022/0001483 A1
- [4] Liu, X., Wang T., Pfeifer E., Ultrasonically assisted wire additive manufacturing process and apparatus, (2021) International Application No. PCT/US21/65536
- [5] Liu, X., Lan, S., and Ni, J., 2015, Hybrid friction stir welding for dissimilar materials through electro-plastic effect. U.S. Patent and PCT Patent, U.S. Patent No. 20150375335
- [6] Huang, Y., Yin, Z., Bu, N., Liu, X., 2012, A method for measurement of the particle velocity during helical stage of electrospinning, Chinese invention patent, No. CN102353807A
- [7] Huang, Y., Yin, Z., Peng, Bo., Liu, X., 2011, An equipment for exfoliating chips from films with protective pins, Chinese invention patent, No. CN102254792A

## Invited Talks

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- Automotive joining circle conference, Ultrasonic Resistance Spot Welding Process for Lightweight Materials, April 26-27, 2022, Rochester, MI
- NASA Marshall Space Center EM32 Seminar, Numerical Simulation of Weld Formation Mechanisms in Self-Reacting Friction Stir Welding, Nov 2020 (Virtual)
- Colorado School of Mines, Material Science and Engineering departmental seminar, Ultrasonic Enhancement on Resistance Spot Welding of Lightweight Materials, Oct 2020, Golden, CO (Virtual)
- Worcester Polytechnic Institute, Mechanical Engineering departmental seminar, Ultrasonic Enhancement on Resistance Spot Welding of Lightweight Materials, May 2020, Worcester, MA (Virtual)
- NSF/IUCRC MAJ<sup>2</sup>IC Center, Friction stir resistance spot welding of dissimilar materials and keyhole refilled process, Jan 2018, Columbus, OH
- Coldwater Machine Company, Friction stir spot welding of dissimilar materials and ultrasonic innovations, Oct 2018, Coldwater, OH
- University of Tennessee, Advanced Friction Stir Related Process for Joining Dissimilar Materials, Oct 2018, Knoxville, TN
- Oak Ridge National Lab, Advanced Friction Stir Related Process for Joining Dissimilar Materials, Oct 2018, Oak Ridge, TN
- The Ohio State University, Advanced Friction Stir Joining of Dissimilar Materials, April 2017, Columbus, OH
- Rutgers University, Advanced Manufacturing Processes for Lightweight Materials, Feb 2017, New Brunswick, NJ

## Current Advisees

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- Ho Kwon, PhD pre-candidate (2021-present)
- Wenguang Liao, PhD pre-candidate (2021-present)
- Joshua Adesina, PhD pre-candidate (2022-present)
- Taosif Alam, PhD pre-candidate (2022-present)
  
- Thomas Kang, Master student (2022-present)
- Mason Darnell, Master student (2020-present)

## Past Advisees

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- PhD graduate
  - Dr. Umair Shah, 2018-2021, Current position: Research engineer, RIVIAN
  - Dr. Jiarui Kang, 2018-2022, Current position: Engineer, EXPONENT, Shanghai, China
  - Dr. Chenyu Zhao, 2019-2023
  - Dr. Tianzhao Wang, 2020-2023, Current position: Postdoc research fellow, OSU
  
- Master graduate
  - Andrew Gilmore, 2020-2022, Current position: Mechanical Engineer, General Dynamics Electric Boat
  
- Undergraduate
  - Andrew Trejo, Gavin Gonowski, Mason France, Jenna Richter, Yuxiang Zhang, Thuy Nguyen, Breana Rabasca
  
- Postdoctoral research fellow
  - Dr. Veronika Mazanova, 2020-2021, co-advised with Prof. Michael Mills
  - Dr. Jiarui Kang, 2022
  
- Lab research engineer
  - Ed Pfeifer, 2020-2021
  
- Undergraduate student organizations
  - OSU NASA MSFC Undergraduate Rover Challenge team, 2020-2021. The team was deactivated during COVID and are planning to restart in Fall 2023.
  
- High school student
  - Anya Zhang, 2022 - 2023

## TEACHING EXPERIENCE

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### Assistant Professor

*Welding Engineering Program, The Ohio State University*



- WE 4021/7021 Solid State Welding process (Combined undergraduate, graduate and distance students)
  - Fall 2018, SEI score: 4.75
  - Fall 2019, SEI score: 4.70
  - Fall 2020, SEI score: 4.73
  - Fall 2021, SEI score: 4.67
  
- WE 4202/7202 Welding Design (Combined undergraduate, graduate and distance students, core course)
  - Spring 2019, SEI score: 4.48
  - Spring 2020, SEI score: 4.70
  - Spring 2021, SEI score: 4.32
  - Spring 2022, SEI score: 4.42
  - Spring 2023, SEI score: 4.53

**Lecturer (Co-Lecture with Prof. Jun Ni)**

*Department of Mechanical Engineering, University of Michigan*

- ME 401: Statistical Quality Design and Control Winter 2017
- ME 563: Time Series and System Analysis (Graduate level core course) Fall 2016

**Professional Service**

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- Principal Reviewer for the Welding Journal Research Supplement 2022-Present
- Principal Reviewer for Welding in the World 2018-Present
- Journal paper reviewer (Journal of Manufacturing Science and Engineering, Journal of Manufacturing Process, Materials and Design, Metallurgical and Materials Transactions A, Journal of Material Processing Technology, Journal of Material Research, Welding in the World, Philosophical Magazine, International Journal of Advanced Manufacturing, Scripta Materialia, Science and Technology of Welding and Joining)
- Conference paper reviewer (e.g. North American Manufacturing Research Conference, ASME International Manufacturing Science and Engineering Conference, IISE Annual Conference)
- Membership: ASME, AWS, ASM 2017-Present
- Symposium organizer: ASME International Manufacturing Science and Engineering Conference 2017-Present
- Session Chair/Co-Chair for ASME International Manufacturing Science and Engineering Conference 2016-2019
- Proposal reviewer: NSF Review Panel, Ad hoc panel, SBIR Review, DOE NEUP, SBIR/STTR, NEET, CINR, TCF 2018-present