

Curriculum Vitae

Weilong (Ben) Cong
Ph.D.

Department of Industrial, Manufacturing,
and Systems Engineering,
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1. EDUCATION

Ph.D. in Industrial Engineering

Kansas State University (KSU), Manhattan, KS, USA

May 2013

- Dissertation: Drilling of high-performance materials: experimental, numerical, and theoretical investigations. Advisor: Professor Z.J. Pei.

B.S. in Heat and Power Engineering

Dalian Ocean University, Dalian, Liaoning, China

July 2007

2. WORK EXPERIENCE

Associate Professor with Tenure, Department of Industrial, Manufacturing, and Systems Engineering

Texas Tech University (TTU), Lubbock, TX

08/2020 – Present

Assistant Professor, Department of Industrial, Manufacturing, and Systems Engineering

Texas Tech University (TTU), Lubbock, TX

08/2014 – 08/2020

Research Assistant Professor, Department of Industrial and Manufacturing Systems Engineering

Kansas State University, Manhattan, KS

01/2014 – 08/2014

Post-Doctoral Fellow, Department of Industrial and Manufacturing Systems Engineering

Kansas State University, Manhattan, KS

07/2013 – 12/2013

3. SUMMARY ON NUMBER OF PUBLICATIONS AND CITATIONS

- Authored or co-authored 156 published (including accepted) papers, book, and book chapters. (106 journal papers, 47 conference papers, 3 book / book chapters)
After Joining TTU, authored or co-authored 104 published (including accepted) papers / book chapters (77 journal papers, 26 conference papers, and 1 book chapter).
- 6883 citations with an h-index of 40 according to Google Scholar (as on 10/07/2022).
- 5360 citations with an h-index of 35 according to Scopus (as on 10/07/2022).

4. GRANT PROPOSALS EXPERIENCES

Proposals funded / approved

(Total Amount: ~\$3 million)

1. NSF CMMI-2102181, “Microfeature Fabrication in Brittle Materials Using Rotary Ultrasonic Micro-Machining” (as the sole PI, 11/2021-10/2024, \$358,738).
2. NSF DUE-1712311, “Collaborative Research: Creating an Upper Division Additive Manufacturing Course and Laboratory for Enhancing Undergraduate Research and Innovation”, (as the PI, 09/01/2017-08/31/2022, \$146,539).
3. NSF CMMI-1538381, “Fundamental Research on Hole Drilling and Surface Grinding of Carbon Fiber Reinforced Plastic Composites with Rotary Ultrasonic Machining”, (as the sole PI, 12/01/2015-11/30/2020, \$316,691).
4. DOD DURIP (Through ARO), “Nano-mechanical Testing Equipment for Laser Deposition-Additive Manufacturing of Superior Performance Nano-structured Metal-based Materials”, (as the PI, 07/15/2017-07/14/2018, \$186,651).
5. DHS, “NextGen Firefighter Helmet: A Prototype Design Through Computer-Aided Reverse Engineering and Biomechanical Modeling” (as the Co-PI, 09/2021-08/2023, \$562,253 in total).

6. DHS, “Mission-Adaptive, Modular Law Enforcement Helmet Design” (as the Co-PI, 09/2022-03/2024, \$994,500 in total).
7. NSF DUE-2013484, “An Interdisciplinary Team-based Framework to Engage Undergraduate Students in Biomedical Innovation”, (as the Senior Personal, 07/01/2020-06/30/2023, \$485,236 in total).
8. DOE, “Clean Energy Manufacturing Innovation Institute (CEMII) for Reducing Embodied-energy and Decreasing Emissions (REMADE) in Material Manufacturing”, TTU is one of joint institute, (TTU portion, as the Co-PI, selected by DOE, 01/2017, no direct budget).

5. TEACHING EXPERIENCE

- Teaching at Kansas State University, Manhattan, KS 07/2011 – 05/2014
- **IMSE 250**, Introduction to Manufacturing Processes and Systems (sophomore, 2 credit hours).
 - **IMSE 602**, Introduction of Renewable Energy Manufacturing (senior level, 3 credit hours).
- Teaching at Texas Tech University, Lubbock, TX 09/2014 – Present
- **IE 5352**, Advanced Manufacturing Engineering (graduate level, 3 credit hours).
 - **IE 5351**, Advanced Manufacturing Processes (graduate level, 3 credit hours).
 - **IE 4352**, Manufacturing Engineering II (undergraduate upper level, 3 credit hours).
 - **IE 3351**, Manufacturing Engineering I (junior level, 3 credit hours).
 - **IE 4358**, 3D Printing and Additive Manufacturing (senior level, 3 credit hours).

Students’ Teaching Evaluations at TTU

| Item | Objectives | Effectiveness | Learning experience |
|---------|------------|---------------|---------------------|
| Average | 4.5 | 4.36 | 4.4 |

6. STUDENTS ADVISING

- Fuda Ning, Ph.D. Graduated: 05/2018
- **Research topic:** Ultrasonic vibration-assisted mechanical and thermal manufacturing processes
 - **Current position:** Assistant Professor at SUNY Binghamton University
- Yingbin Hu, Ph.D. Graduated: 08/2019
- **Research topic:** Laser deposition additive manufacturing of ceramic and ceramic reinforced composites
 - **Current position:** Assistant Professor at Miami University
- Hui Wang, Ph.D. Graduated: 08/2020
- **Research topic:** Rotary ultrasonic surfacing machining of carbon fiber reinforced plastic composites
 - **Current position:** Postdoctoral Scholar at Texas A&M University
- Dongzhe Zhang, Ph.D. Graduated: 08/2022
- **Research topic:** In-situ Synthesis of NiTi Alloys by Laser-directed Energy Deposition
 - **Current position:** TBD
- Olusanmi, Adeniran, Distance Ph.D. Graduated: 08/2022
- **Research topic:** Mechanical Performance of Carbon Fiber Reinforced Plastic Composites Fabricated by Additive Manufacturing
 - **Current position:** Siemens Energy USA
- Yunze Li, Ph.D. Student Expected: 12/2023
- **Research topic:** Advanced coating fabrication, machining, and testing

7. AWARDS AND RECOGNITIONS

- Top 2% of Global Researchers List (Stanford University), 2021
- TTU President's Excellence in Engaged Scholarship Award, 2021
- SME Outstanding Young Manufacturing Engineering Award, 2019.
- Dean's Outstanding Researcher Chair, 2020-2023.
- TTU Proposal Assistance Program Award (\$4000), 2020.
- TTU Faculty Travel Awards (\$1500), 2019.
- TTU WCOE Dr. Charles L. Burford Faculty Award, 2019.
- TTU WCOE Engineering Safety Champion, 2019.
- TTU WCOE Whitacre Engineering Research Award, 2017.

Cong's Student Award

- TTU Horn Professors Graduate Achievement Award, 2022: [Dongzhe Zhang](#).
- TTU Horn Professors Graduate Achievement Award, 2020: [Hui Wang](#).
- TTU Horn Professors Graduate Achievement Award, 2016: [Fuda Ning](#).
- TTU Graduate Student Research Support Award (\$1000), 2019: [Hui Wang](#).
- TTU Graduate Student Research Support Award (\$1000), 2018: [Yingbin Hu](#).
- TTU Doctoral Dissertation Completion Fellowship (\$29 k), 2019: [Hui Wang](#).
- TTU Doctoral Dissertation Completion Fellowship (\$29 k), 2018: [Yingbin Hu](#).
- TTU Doctoral Dissertation Completion Fellowship (\$29 k), 2017: [Fuda Ning](#).
- First Runner-up in NAMRI/SME Outstanding Student Research Presentation Competition, 2017: [Fuda Ning](#).
- Second place in 16th Annual Graduate School Poster Competition at TTU, 2017: [Yingbin Hu](#).
- First place in 15th Annual Graduate School Poster Competition at TTU, 2016: [Fuda Ning](#).
- 12 NSF travel awards to 7 different conferences.

8. SERVICES AND ACTIVITIES

- Editorial board of Ultrasonics (10/2021 – Present).
- Editorial board of Journal of Composites Science (08/2020 – Present).
- Executive Committee, Advanced Manufacturing Research & Education Symposium (2022).
- North American Manufacturing Research Institution (NAMRI) / SME Scientific Committee Member, 2018-2020.
- Symposium organizer / co-organizer of “Advances in Assisted and Augmented Manufacturing Processes”, in the ASME 2019, 2020, 2021, and 2022 International Manufacturing Science and Engineering Conference (MSEC).
- Symposium co-organizer of “Additive Manufacturing of Ceramics, Concretes, and Composites”, in the ASME 2020, 2021, and 2022 International Manufacturing Science and Engineering Conference (MSEC).
- Section Chair or co-Chair in the ASME 2015-2022 International Manufacturing Science and Engineering Conference (MSEC).
- Section Chair or co-Chair in the 2016 44th SME North American Manufacturing Research Conference (NAMRC).
- Technical Organizing Committee, National Energetic Materials Consortium (2015).
- Panel list and reviewer for NSF proposals (2015, 2019, 2021).
- Proposal reviewer for DoD ARO (2022).

- Proposal reviewer for Swiss NSF (2021)
- Proposal reviewer for Oak Ridge Associated Universities (ORAU) consortium (2019, 2021)
- Served for 12 different departmental servicing committees (Two active below)
- TTU IMSE departmental graduate students' academic advisor (08/2015 – present).
- TTU IMSE departmental graduate recruitment committee (09/2022 – present).

9. RESEARCH INTERESTS

- Ultrasonic machining of high-performance materials
- Laser additive manufacturing of metal and ceramic based materials
- Ultrasonic vibration-assisted manufacturing processes
- Composite materials fabrication and machining
- Additive manufacturing educational research

9. PUBLICATIONS (Selected peer-reviewed journal papers published at TTU)

Peer-reviewed journal papers at Texas Tech with impact factor > 5 in 2022

****Not a full list.****

1. Li, Y.Z., Zhang, D.Z., Wang, H., Ye, G., He, R., and Cong, W.L., 2022 “Theoretical and Experimental Investigations on Rotary Ultrasonic Surface Micro-machining of Brittle Materials”, Ultrasonics Sonochemistry, Accepted for publication. **(IF 7.491)**
2. Li, Y.Z., Zhang, D.Z., and Cong, W.L., 2022, “Feasibility study of adding buffer layers for the laser deposition of high-ceramic content (TiB+ TiC)-Ti coatings using B4C/Ti powders,” Ceramics International, Vol. 48, No. 16, 23387-23396. **(IF 5.532)**
3. Zhang, D.Z., Li, Y.Z., and Cong, W.L., 2022, “In-situ synthesis of high-quality pseudoelastic NiTi alloys with intrinsic Ni₄Ti₃ phase precipitation using laser DED”, Journal of Manufacturing Processes, Vol. 74, 308-318. **(IF 5.684)**
4. Wang J.Y, Tang, Y., Wu, G.Z., Zhang S., Rouh H. Cong, W.L., and Li, G.G., 2021, “Asymmetric Catalytic Assembly of Triple-Columned and Multiple-Layered Chiral Folding Polymers Showing Aggregation-Induced Emission (AIE)”, Chemistry - A European Journal, Published Online. **(IF 5.02)**
5. Zhang, D.Z., Li, Y.Z., Wang, H., and Cong, W.L., 2021, “An investigation on Ni₄Ti₃ phase precipitation and its effects in laser directed energy deposition of TiC-NiTi composites,” Materials Sciences and Engineering: A. Vol. 809, 140976. **(IF 6.044)**
6. Zhang, D.Z., Li, Y.Z., and Cong, W.L., 2021, “Multi-scale pseudoelasticity of NiTi alloys fabricated by laser additive manufacturing,” Materials Sciences and Engineering: A. Vol. 821, 141600. **(IF 6.044)**
7. Wang, H., Pei, Z.J., and Cong, W.L., 2020, “A feeding-directional cutting force model for end surface grinding of CFRP composites using rotary ultrasonic machining with elliptical ultrasonic vibration,” International Journal of Machine Tools and Manufacture, Vol. 152, 103540. **(IF 10.331)**
8. Wang, H., Pei, Z.J., and Cong, W.L., 2020, “A mechanistic cutting force model based on ductile and brittle fracture material removal modes for edge surface grinding of CFRP composites using rotary ultrasonic machining,” International Journal of Mechanical Sciences, Vol. 176, 105551. **(IF 6.772)**
9. Wang, H., Hu, Y.B., Ning, F.D., and Cong, W.L., 2020, “Ultrasonic vibration-assisted laser engineered net shaping of Inconel 718 parts: Effects of ultrasonic frequency on microstructural and mechanical properties,” Journal of Materials Processing Technology, Vol. 276, 116395. **(IF 6.162)**
10. Wang, H., Hu, Y.B., Cong, W.L., Hu, Z.Y., and Wang, Y.Q., 2020, “A novel investigation on horizontal and 3D elliptical ultrasonic vibrations in rotary ultrasonic surface machining of CFRP composites,” Journal of Manufacturing Processes, Vol. 52, pp. 12-25. **(IF 5.684)**
11. Zhang, D.Z., Li, Y.Z., Wang, H., and Cong, W.L., 2020, “Ultrasonic vibration-assisted laser directed energy deposition in-situ synthesis of NiTi alloys: Effects on microstructure and mechanical properties,” Journal of Manufacturing Processes. Vol. 60, pp.328-339. **(IF 5.684)**

12. Ning, F.D., and Cong, W.L., 2020, "Ultrasonic vibration-assisted (UV-A) manufacturing processes: State of the art and future perspectives," *Journal of Manufacturing Processes*, Vol. 51, pp. 174-190. **(IF 5.684)**
13. Maharubin, S., Hu, Y.B.; Sooriyaarachchi, D., Cong, W.L., and Tan, G.Z., 2019, "Laser engineered net shaping of antimicrobial and biocompatible titanium-silver alloys," *Materials Science and Engineering: C*, Vol. 105, pp. 1100598(1-8). **(IF 7.328)**
14. Liu, Z.C., Zhang, H.C., Peng, S.T., Kim, H., Liu, W.W., Du, D.P., and Cong, W.L., 2019, "Analytical modeling and experimental validation of powder stream distribution during direct energy deposition," *Additive manufacturing*, Vol. 30, December 2019, 100848. **(IF 11.632)**
15. Wang, H., Hu, Y.B., Cong, W.L., and Hu, Z.L., 2019, "A mechanistic model on feeding-directional cutting force in surface grinding of CFRP composites using rotary ultrasonic machining with horizontal ultrasonic vibration," *International Journal of Mechanical Sciences*, Vol. 155, pp. 450-460. **(IF 6.772)**
16. Liu, Z.C., Kim, H., Liu, W.W., Cong, W.L., Jiang, Q.H., and Zhang, H.C., 2019, "Influence of energy density on macro/micro structures and mechanical properties of as-deposited Inconel 718 parts fabricated by laser engineered net shaping," *Journal of Manufacturing Processes*, Vol. 42, pp. 96-105. **(IF 5.684)**
17. Li, Y.C., Ge, X., Wang, H., Hu, Y.B., Ning, F.D., Cong, W.L., and Ren, C.Z., 2019, "Study of material removal mechanisms in grinding of C/SiC composites via single-abrasive scratch tests," *Ceramics International*, Vol. 45, No. 4, pp. 4729-4738. **(IF 5.532)**
18. Hu, Y.B., and Cong, W.L., 2018, "A review on laser deposition-additive manufacturing of ceramics and ceramic reinforced metal matrix composites," *Ceramics International*, Vol. 44, No. 17, pp. 20599-20612. **(IF 5.532)**
19. Jiang, Q.H., Liu, Z.C., Liu, W.W., Li, T., Cong, W.L., Zhang, H.C., and Shi, J.L., 2018, "A principal component analysis based three-dimensional sustainability assessment model to evaluate corporate sustainable performance," *Journal of Cleaner Production*, Vol. 187, pp. 625-637. **(IF 11.072)**
20. Hu, Y.B., Ning, F.D., Cong, W.L., Li, Y.C., Wang, X.L., and Wang, H., 2018, "Ultrasonic vibration-assisted laser engineering net shaping of ZrO₂-Al₂O₃ bulk parts: effects on crack suppression, microstructure, and mechanical properties," *Ceramics International*, Vol. 44, No. 3, pp. 2752-2760. **(IF 5.532)**
21. Hu, Y.B., Cong, W.L., Wang, X.L., Li, Y.C., Ning, F.D., and Wang, H., 2018, "Laser deposition-additive manufacturing of titanium matrix composites with novel three-dimensional quasi-continuous network microstructure: effects on strengthening and toughening," *Composites Part B: Engineering*, Vol. 133, pp. 91-100. **(IF 11.322)**
22. Hu, Y.B., Ning, F.D., Wang, H., Cong, W.L., and Zhao, B., 2018, "Laser engineered net shaping of quasi-continuous network microstructural TiB reinforced titanium matrix bulk composites: microstructure and wear performance," *Optics & Laser Technology*, Vol. 99, pp. 174-183. **(IF 4.862)**
23. Cong, W.L., and Ning, F.D., 2017, "A fundamental investigation on ultrasonic vibration-assisted laser engineered net shaping process," *International Journal of Machine Tools and Manufacture*, Vol. 121, pp. 61-69. **(IF 10.331)**
24. Li, Y.Z., Cong, W.L., Hu, Y.B., Zhi, L., and Guo, Z.N., 2017, "Additive manufacturing of alumina using laser engineered net shaping: effects of deposition variables," *Ceramics International*, Vol. 43, No. 10, pp. 7768-7775. **(IF 5.532)**
25. Li, Y.Z., Ning, F.D., Cong, W.L., Zhang, M., and Tang, Y.J., 2016, "Investigating pellet charring and temperature in ultrasonic vibration-assisted pelleting of wheat straw for cellulosic biofuel manufacturing," *Renewable Energy*, Vol. 92, pp. 312-320. **(IF 8.834)**
26. Ning, F.D., Cong, W.L., Qiu, J.J., Wei, J.H., and Wang, S.R., 2015, "Additive manufacturing of carbon fiber reinforced thermoplastic composites using fused deposition modeling," *Composite Part B: Engineering*, Vol. 80, October 2015, pp. 369-378. **(IF 11.322) (Citation: 1350)**
27. Tang, Y.J., Cong, W.L., Xu, J., Zhang, P.F., and Liu, D.F., 2015, "Ultrasonic vibration-assisted pelleting for cellulosic biofuels manufacturing: A study on in-pellet temperatures," *Renewable Energy*, Vol. 76, No. 4, pp. 296-302. **(IF 8.834)**