

Semih Akin

Assistant Professor of Mechanical Engineering
Department of Mechanical, Aerospace, and Nuclear Engineering
Rensselaer Polytechnic Institute, Troy, New York, 12180

📍 Rensselaer Polytech. Inst. [🔗](#) [✉ akins@rpi.edu](mailto:akins@rpi.edu) [🌐 https://semilab-rpi.com](https://semilab-rpi.com) [in Semih Akin](#)

EDUCATION

- Ph.D. Purdue University**, Mechanical Engineering, (West Lafayette, USA) 2017 – 2022
- **Thesis:** *Scalable spray deposition of micro-and nanoparticles and fabrication of functional coatings* [🔗](#)
- Supervisor: Prof. Martin Byung-Guk Jun
- M.S. Bursa Technical University**, Mechanical Engineering, (Turkey) 2013 – 2016
- B.S. Uludag University**, Industrial Engineering, (Turkey) 2010 – 2013
- *Double Major in Industrial Engineering*
- B.S. Uludag University**, Mechanical Engineering, (Turkey) 2008 – 2013
- *Honor student, Ranked 1st in the class diploma*

RESEARCH & PROFESSIONAL EXPERIENCE

- Assistant Professor**, Rensselaer Polytechnic Institute, USA Jan 2024 - Now
- Post-Doctoral Associate**, Purdue University, USA 2022 - 2023
- Lecturer**, Purdue University, USA 2021 - 2022
- Teaching Assistant**, Purdue University, USA 2019 - 2021
- Research Assistant**, Purdue University, USA 2017 - 2021
- Research Assistant**, Bursa Technical University, Turkey 2013 - 2016

RESEARCH INTEREST

Additive Manufacturing: Cold spray additive manufacturing, Directed energy deposition, Aerosol jet printing, Multi-material 3-D printing, Smart structures

Surface Engineering: Surface-matter interaction, Meta-material surface deposition, Smart thin-films, Electroless deposition, Functional surface metallization of polymers and glass

Printed Electronics: Flexible electronics, Electronic textiles, Microheaters

Energy Devices: Triboelectric nanogenerators, Dye-sensitized solar cells, Lithium-ion batteries

Space Manufacturing: Space resource utilization, Manufacturing for space

HONORS, AWARDS & RECOGNITION

Research Awards:

- **Outstanding Graduate Student Research Award**, Purdue University, CoE, 2023
- **Best Researcher Awards**, International Research Awards on Computer-Aided Design in Mechanical Engineering, 2023
- **Italian Packaging Technology Award** by the Italian Trade Agency, 2023
- **Graduate School Summer Research Grant**, Purdue University, CoE, 2022
- **Featured article** in the Purdue News, (e-textiles for health monitoring), 2022
- **Master thesis scholarship** by the Technological Research Council of Turkey, 2015
- **Honor student, ranked 1st** in Mechanical Engineering, Bursa Uludag University, 2013
- **Outstanding student scholarship** by the Turkish Automobile Factory (TOFAS), 2009-2013

Teaching Awards:

- **Ward A. Lambert Graduate Teaching Fellowship**, Purdue University, 2022
- **Graduate Teaching Award**, Purdue University Teaching Academy, 2022



Paper Awards:

- **Best paper award**, *International Mechanical Engineering Congress & Exposition*, (IMECE), 2024
- **Frontispiece cover article**, *Advanced Materials*, 2022
- **Editor's choice article**, *Journal of Thermal Spray Technology*, 2021
- **Best paper award**, *World Congress on Micro and Nano Manufacturing* (WCMNM), 2021

Travel Awards:

- **National Science Foundation (NSF) travel award** for the WCMNM 2023
- **NSF Early-Career travel award** for NAMRC 51/MSEC 2023
- **NSF student travel award** for the WCMNM 2019
- **Technical trip award** to Germany by the Durmazlar Machine Company, 2013

INTELLECTUAL PROPERTY

4. **S. Akin**, J. Samuel, F. Kopsaftopoulos, J. Ren, P. Zhou, G. Saunders, "*Method for enhanced adhesion across fully encapsulated metal-ceramic interfaces in additive manufacturing processes*", (U.S. Patent application), (2025).
3. C.H. Lee, T. Chang, **S. Akin**, MBG. Jun, "*In-situ spray polymerization of conductive polymers*" (U.S. Patent application-pending), (2023).
2. MBG. Jun, **S. Akin**, "Cold spray printed flexible electronics and method for manufacturing the same" (U.S. Patent application-pending), (2022). [\[Link\]](#) 
1. C.H. Lee, T. Chang, **S. Akin**, MBG. Jun, L. Couetil, "Electronic textiles and methods for fabrication thereof", (U.S. Patent), (Active by 2043). [\[Link\]](#) 






EXTRAMURAL RESEARCH GRANTS

- **Funding Agency:** NSF Engines R&D Awards - New York Energy Storage Engine Projects
Title: "Dry-coating of lithium-ion battery anodes by cold spray"
Role: Lead PI
Project budget = \$220,000 (S. Akin's share = 50%)
Project term: 01/01/25 - 01/01/26
- **Funding Agency:** Defense Advanced Research Projects Agency (DARPA)
Title: "Convergent manufacturing of smart metal structures with embedded sensing capabilities"
Role: Co-PI
Project budget = \$1,000,000 (S. Akin's share = 30%)
Project term: 01/22/24 - 01/22/26









JOURNAL PUBLICATIONS

†: Equal contribution

*: Corresponding author

30. H. Lee, C. Han, T. Gabor, **S. Akin**^{*}, MBG. Jun, J. Lee^{*}, "Cold spray-enabled physically unclonable and dual-encrypted surfaces", (in preparation).
29. SH. Abir, C. Smith, J. Zorniter, J. Samuel^{*}, **S. Akin**^{*}, "A composite bacterial cellulose for enhanced performance triboelectric and piezoelectric nanogenerators", (In-preparation).
28. S. Rahman, **S. Akin**^{*}, J. Ren, P. Zhou, F. Kopsaftopoulos, J. Samuel, "Additive manufacturing of smart metallic structures with embedded sensors: A review", (In-preparation).
27. T. Gabor, Y. Wang, **S. Akin**, F. Zhou, J. Chen, MBG. Jun^{*}, "Design, modeling, and characterization of a pulsed cold spray, **Surface & Coatings Technology**, (Under review).
26. F. Zhou, S. Chen, **S. Akin**, T. Gabor, MBG. Jun^{*}, "Real-time monitoring of thin film thickness and surface roughness using a single mode optical fiber", **Mechanical Systems and Signal Processing**, (<https://doi.org/10.1016/j.ymssp.2024.112219>) .
25. J. Lee, **S. Akin**^{*}, Y. Kim, E. Kim, J. Nam, K. Song, MBG. Jun^{*}, "A stethoscope-guided interpretable deep learning framework for powder flow diagnosis in cold spray additive manufacturing", **Manufacturing Letters**, (2024), (<https://doi.org/10.1016/j.mfglet.2024.09.178>) .
24. **S. Akin**^{†*}, T. Chang[†], S.H. Abir[†], Y. W. Kim, S. Xu, J. Lim, Y. Sim, J. Lee, J.T. Tsai, C. Nath, H. Lee, W. Wu, J. Samuel, C.H. Lee^{*}, MBG. Jun^{*}, "One-step fabrication of functionalized electrodes on 3D-printed polymers for triboelectric nanogenerators", **Nano Energy**, (2024), (<https://doi.org/10.1016/j.nanoen.2024.110082>) .
23. DG. Ruzgar, **S. Akin**, S. Lee, J. Walsh, YH. Jeong, H. Lee, MBG. Jun^{*}, "Highly flexible, conductive, and antibacterial surfaces toward multifunctional flexible electronics", **International Journal of Precision Engineering and Manufacturing Green Technology**, (2024), (doi.org/10.1007/s40684-024-00608-w) .
22. **S. Akin**^{*}, S. Kim, C.K. Song, S.Y. Nam, MBG. Jun^{*}, "Fully additively manufactured counter electrodes for dye-sensitized solar cells", **Micromachines**, (2024), (doi.org/10.3390/mi15040464) .

21. JT. Tsai*, **S. Akin**, DF. Bahr, MBG. Jun, “A predictive modeling approach for cold spray metallization on polymers”, **Surface & Coatings Technology**, (2024), (doi.org/10.1016/j.surfcoat.2024) 🔗.
20. T. Gabor, **S. Akin**, MBG. Jun*, “Numerical studies on cold spray gas dynamics and powder flow in circular and rectangular nozzles”, **Journal of Manufacturing Process**, (2024), (<https://doi.org/10.1016/j.jmapro.2024.02.005>) 🔗.
19. Jeong H. Kim, **S. Akin**, MBG. Jun, Y. H, Jeong*, “Fabrication of electrospun nanofibers with spray direct-write conductive patterns”, **Journal of the Korean Society for Precision Engineering**, (2024), (doi.org/10.7736/jkspe) 🔗.
18. T. Chang†, **S. Akin**†, S. Cho†, S. Lee, J. Lee, S. Lee, T. Park, S. Hong, T. Yu, Y. Ji, S. Gong, D.R. Kim, Y.L. Kim, MBG. Jun*, C.H. Lee*, “*In-situ* spray polymerization of conductive polymers for personalized e-textiles”, **ACS Nano**, (2023), (<https://doi.org/10.1021/acsnano.3c07283>) 🔗.
17. **S. Akin***, C. Nath, MBG. Jun, “Selective surface metallization of 3D-printed polymers by cold spray-assisted electroless deposition”, **ACS Applied Electronic Materials**, (2023), (<https://doi.org/10.1021/acsaelm.3c00893>) 🔗.
16. J. Lee, **S. Akin**, J. Walsh, H. Lee, MBG. Jun, Y. Shin*, “A Nitinol structure with functionally gradient pure titanium layers and hydroxyapatite over-coating for orthopedic implant applications”, **Progress in Additive Manufacturing**, (2023), (<https://doi.org/10.1007/s40964>) 🔗.
15. **S. Akin***, Y.W. Kim, S. Xu, C. Nath, W. Wu, MBG. Jun, “Cold spray direct writing of flexible electrodes for enhanced performance triboelectric nanogenerators”, **Journal of Manufacturing Process**, (2023), (<https://doi.org/10.1016/j.jmapro.2023.05.015>) 🔗.
14. **S. Akin**, P. Wu, C. Nath, J. Chen, MBG. Jun*, “A study on converging-diverging nozzle design for supersonic spraying of liquid droplets towards nanocoating applications”, **ASME Journal of Manufacturing Science and Engineering**, (2023), (<https://doi.org/10.1115/1.4062351>) 🔗.
13. DG. Ruzgar, **S. Akin**, S. Lee, J. Walsh, YH. Jeong, H. Lee, MBG. Jun*, “Multifunctional Cold Spray Hybrid Coatings on Flexible Polymers for Improved Surface Properties”, **SSRN Pre-print**, (2023), (<https://dx.doi.org/10.2139/ssrn>) 🔗.
12. **S. Akin**, S. Jo, MBG. Jun*, “A cold spray-based novel manufacturing route for flexible electronics”, **Journal of Manufacturing Process**, (2023), (<https://doi.org/10.1016/j.jmapro.2022>) 🔗.
11. **S. Akin**, S. Lee, S. Jo, DG. Ruzgar, JT. Tsai, MBG. Jun*, “Cold spray-based rapid and scalable production of printed flexible electronics”, **Additive Manufacturing**, (2022), (<https://doi.org/10.1016/j.addma.2022.103244>) 🔗.
10. Y.W. Kim*, **S. Akin**, H. Yun, S. Xu, W. Wu, MBG. Jun, “Enhanced performance of triboelectric nanogenerator and sensor via cold spray particle deposition”, **ACS Applied Materials & Interfaces**, (2022), (<https://pubs.acs.org/doi/10.1021>) 🔗.
9. T. Gabor, H. Yun, **S. Akin**, K.H. Kim, J.K. Park, MBG. Jun*, “Continuous coaxial nozzle designs for improved powder focusing in direct laser metal deposition”, **Journal of Manufacturing Process**, (2022), (<https://doi.org/10.1016/j.jmapro.2022.08.03900>) 🔗.
8. JT. Tsai, **S. Akin**, F. Zhou, MS Park, D.F. Bahr, MBG. Jun*, “Electrically conductive metallized polymers by cold spray and co-electroless deposition”, **ASME Open Journal of Engineering**, (2022), (<https://doi.org/10.1115/1.4053781>) 🔗.

7. T. Chang[†], **S. Akin**[†], M.K. Kim, L. Murray, S. Cho, L. Couetil, MBG. Jun*, C.H. Lee* “A Programmable dual regime spray for large-scale and custom-designed electronic textiles”, **Advanced Materials**, (2022), (<https://doi.org/10.1002/adma.202108021>) , (*Frontispiece Cover Article*, [[Link](#)] ).
6. S. Jo, **S. Akin**, MS. Park, MBG. Jun*, “Selective metallization on glass surface by laser direct writing combined with supersonic particle deposition”, **Manufacturing Letters**, (2022), (<https://doi.org/10.1016/j.mfglet.2021.07.009>) .
5. **S. Akin**, P. Wu, JT. Tsai, C. Nath, J. Chen, MBG. Jun*, “A study on droplets dispersion and deposition characteristics under supersonic spray flow for nanomaterial coating applications”, **Surface & Coatings Technology**, (2021), (<https://doi.org/10.1016/j.surfcoat.2021.127788>) .
4. JT. Tsai, **S. Akin**, F. Zhou, DF. Bahr*, MBG. Jun, “Establishing a cold spray particle deposition window on polymer substrate”, **Journal of Thermal Spray Technology**, (2021), (doi.org/10.1007/s11666-021-01179-x) , (*Editor's choice article*)
3. **S. Akin**, JT. Tsai, MS. Park, YH. Jeong, MBG. Jun*, “Fabrication of electrically conductive patterns on ABS polymer using low-pressure cold spray and electroless plating”, **ASME Journal of Micro and Nano-Manufacturing**, (2020), (<https://doi.org/10.1115/1.4049578>) .
2. **S. Akin**, T. Gabor, S. Jo, H. Joe, JT. Tsai, Y. Park, C.H. Lee, MS. Park, MBG. Jun*, “Dual regime spray deposition based laser direct writing of metal patterns on polymer substrates”, **ASME Journal of Micro and Nano-Manufacturing**, (2020), (<https://doi.org/10.1115/1.4046282>) .
1. **S. Akin**^{*}, Y. Kara, “An assessment of wind power potential along the coast of Bursa, Turkey: A wind power plant feasibility study for Gemlik Region”, **Journal of Clean Energy Technologies**, (2017), ([doi:10.18178/jocet.2017.5.2.352](https://doi.org/10.18178/jocet.2017.5.2.352)) .

CONFERENCE PROCEEDINGS & PRESENTATIONS

Ψ: Presenter

*: Corresponding author

19. M. Muhtadin, **S. Akin**, JT. Tsai*, "Additive manufacturing of radially-oriented gyroid carbon fiber composites for low-temperature thermal absorber applications, *North American Manufacturing Research Conference, NAMRC-53* , Greenville, South Carolina, (Under review).
18. S. Chen, F. Zhou, BN. Reggetz, EG. Lee, MA. Virji, AA. Afshari, MBG. Jun, **S. Akin**^{*}, "Polymer metalization via cold spray: an investigation into the effects of particle hardness and morphology, *North American Manufacturing Research Conference, NAMRC-53* , Greenville, South Carolina, (Under review).
17. J. Lee, **S. Akin**, J. Walsh, H. Lee, MBG. Jun, Y. Shin^{Ψ*}, “A Nitinol structure with functionally gradient pure titanium layers and hydroxyapatite over-coating for orthopedic implant applications”, *TMS Annual Meeting & Exhibition* , Las Vegas, Nevada USA, 2025.
16. Y.W. Kim, **S. Akin**^{Ψ*}, MBG. Jun, J. Sutherland, “Cold spray-produced functional surfaces for tribo-electric nanogenerators”, *ASME International Mechanical Engineering Congress & Exposition, IMECE* , Portland, OR, USA, 2024, (*Best Paper Award*).
15. S. Jo, **S. Akin**, MS. Park, MBG. Jun^{Ψ*}, “A study on supersonic spray-assisted laser-induced ultra-fine selective metallization of glass surface”, *World Congress on Micro and Nano Manufacturing (WCMNM)* , Pattaya, Thailand, 2024.

14. S. Jo, **S. Akin**, H. Yun, M. Park, MBG. Jun^{Ψ*}, “Laser-assisted ultrafine selective metallization of glass surface using supersonic spray deposition”, *International Conference on Precision Engineering and Sustainable Manufacturing* [\[link\]](#), Chiang Mai, Thailand, (Under review).
13. J. Lee^Ψ, **S. Akin**^{*}, Y. Kim, E. Kim, J. Nam, K. Song, MBG. Jun^{*}, “A stethoscope-guided interpretable deep learning framework for powder flow diagnosis in cold spray additive manufacturing”, *North American Manufacturing Research Conference, NAMRC-52* [\[link\]](#), Knoxville, Tennessee, US, (In Press).
12. JT. Tsai^{Ψ*}, **S. Akin**, DF. Bahr, MBG. Jun, “A predictive modeling for cold spray deposition and the resulting microstructure toward additive manufacturing using polymeric templates”, *International Thin Films Conference (TACT-2023)* [\[link\]](#), Taipei, Taiwan, (2023).
11. **S. Akin**^{Ψ*}, MBG. Jun, “Additively manufactured counter electrodes for dye-sensitized solar cells”, *World Congress on Micro and Nano Manufacturing (WCMNM)* [\[link\]](#), Evanston, IL, USA (2023).
10. MBG. Jun^{Ψ*}, **S. Akin**, “Unleashing the potential of cold spray additive manufacturing in triboelectric energy harvesting”, *US-Korea Conference on Science, Technology and Entrepreneurship* [\[link\]](#).
9. **S. Akin**^{Ψ*}, Y.W. Kim, S. Xu, C. Nath, W. Wu, MBG. Jun, “Cold spray direct writing of flexible electrodes for enhanced performance triboelectric nanogenerators”, *North American Manufacturing Research Conference, NAMRC* [\[link\]](#), New Brunswick, New Jersey, USA, (2023).
8. **S. Akin**^{Ψ*}, P. Wu, C. Nath, J. Chen, MBG. Jun^{*}, “A study on the effect of nozzle geometrical parameters on supersonic cold spraying of droplets”, *ASME International Manufacturing Science and Engineering Conference*, (2022), West Lafayette, Indiana, USA, (doi.org/10.1115/MSEC2022-85703) [\[link\]](#).
7. T. Gabor^Ψ, **S. Akin**, JT. Tsai, S. Jo, F. Najjar, MBG. Jun^{*}, “Numerical studies on cold spray particle deposition using a rectangular nozzle”, *ASME MSEC*, (2022), West Lafayette, Indiana, USA, (doi.org/10.1115/MSEC2022-85673) [\[link\]](#).
6. **S. Akin**^{Ψ*}, J.H. Kim, MBG. Jun^{*}, “Electrically conductive textiles based on decoupled atomized spray coating and electroless plating”, *International Symposium on Precision Engineering and Sustainable Manufacturing (PRESM)* [\[link\]](#), South Korea, (2021).
5. S. Jo, **S. Akin**, MS. Park, MBG. Jun^{Ψ*}, “An integrated method for selective metallization on glass surface: Laser direct writing coupled with supersonic spray coating”, *World Congress on Micro and Nano Manufacturing (WCMNM)* [\[link\]](#), IIT Bombay, India, (2021), (Best Paper Award).
4. T. Gabor^Ψ, H. Joe, **S. Akin**, KH. Kim, JK. Park, MBG. Jun^{*}, “Numerical investigations of various coaxial nozzle designs for direct laser deposition”, *ASME International Manufacturing Science and Engineering Conference (MSEC)*, Cincinnati, Ohio, USA, (2020), (<https://doi.org/10.1115/MSEC2020-8444>) [\[link\]](#).
3. JT. Tsai^Ψ, **S. Akin**, F. Zhou, DF. Bahr, MBG. Jun^{*}, “Simulation and characterization of cold spray deposition of metal powders on polymer substrate electrically conductive application”, *ASME International Manufacturing Science and Engineering Conference*, Cincinnati, Ohio, USA, (2020), (<https://doi.org/10.1115/MSEC2020-8461>) [\[link\]](#).
2. **S. Akin**^Ψ, JT. Tsai, MS. Park, YH. Jeong, MBG. Jun^{*}, “Fabrication of electrically conductive patterns on ABS polymer using low-pressure cold spray and electroless plating”, *ASME International Manufacturing Science and Engineering Conference*, Cincinnati, Ohio, USA, (2020), (<https://doi.org/10.1115/MSEC2020-8437>) [\[link\]](#).
1. **S. Akin**^Ψ, T. Gabor, S. Jo, H. Joe, JT. Tsai, Y. Park, CH. Lee, MS. Park, MBG. Jun^{*}, “Dual regime spray deposition based laser direct writing of metal patterns on polymer substrates”, *The 3rd World Congress on Micro and Nano-Manufacturing*, Raleigh, North Carolina, USA, (2019), (WCMNM-2019) [\[link\]](#).

POSTER PRESENTATIONS

5. **S. Akin**, DA. Borca-Tasciuc, W. Ji, F. Kopsaftopoulos, A. Maniatty, K. Panneerselvam, C. Picu, A. Svirsky, "Curriculum integration through collaborative teaching", *ASME International Mechanical Engineering Congress & Exposition, IMECE* [🔗](#), Portland, OR, USA, **2024**, (*Best Poster Award*).
4. B. Reggetz, A. Virji, S. Friend, MBG. Jun, **S. Akin**, D. Hard, EG. Lee, "Assessment of cold spray powder emissions in a controlled laboratory Setting", *Cold Spray Action Team (CSAT)* [🔗](#), (**2024**).
3. B. Reggetz, EG. Lee, A. Virji, S. Friend, MBG. Jun, **S. Akin**, "Cold spray powder emissions in a laboratory setting", *AIHA Connect* [🔗](#), (**2024**).
2. T. Chang, **S. Akin**, L. Couetil, MBG. Jun, C.H. Lee "Dual regime spray of functional nanomaterials for electronic textiles", *Material Research Society (MRS)* [🔗](#), (**2022**).
1. **S. Akin**, JT. Tsai, H. Joe, H. Joe, MBG. Jun, "Smart thin film on polymer and textile substrates by controlled spray and electroless plating", *NextFlex*, (**2020**).

TEACHING & MENTORING EXPERIENCE

Instructor:

Rensselaer Polytechnic Institute

- **ENGR 2050:** Introduction to Engineering Design Spring 2024
- **ENGR 2050:** Introduction to Engineering Design Fall 2024

Purdue University, West Lafayette

Aug 2022-Dec 2022

Instructor as the *Ward A. Lambert Fellow*

- **ME 354:** Machine Design
Course Quality: 4.3/5 Teaching Effectiveness: 4.4/5

Teaching Assistant:

Purdue University, West Lafayette

2019-2022

- **ME 352:** Machine Design I (Fall 2019, Spring 2020, Spring 2022)
- **ME 354:** Machine Design II (Fall 2020, Spring 2021, Fall 2021)

Bursa Technical University, TURKEY

2013- 2016

- Computer-aided design (CAD), Thermodynamics, Machine Laboratory, Senior Design Project

INDUSTRIAL EXPERIENCE

Intern at the **OYAK-RENAULT Automotive Company** [🔗](#), TURKEY

2012-2013

- Assisted a project from concept to minimize quality errors in vehicle batteries.
- Collected and analyzed data on quality errors of the vehicle batteries.
- Designed the software for quality control of the batteries.

TECHNICAL SKILLS

Programming languages: Python, MATLAB

Engineering software:

- **Computer-aided design (CAD):** Solidworks, CATIA, NX, AutoCAD, SpaceClaim
- **Computer-aided engineering (CAE):** ANSYS (Workbench, Fluent), Abaqus, HyperMesh
- **Other:** MS Office, \LaTeX , Jupyter Notebook, Google Colab, OriginPro, MS Visio

INVITED TALKS & SEMINARS

9. "Cold spray-produced functional surfaces for triboelectric nanogenerators"
- *ASME International Mechanical Engineering Congress & Exposition, IMECE, November (2024)*
8. "Additive manufacturing of functional smart surfaces"
- *RPI MANE Department Graduate Seminar, (2024)*
7. "Spray-based additive manufacturing of functional smart surfaces"
- *University of Illinois Chicago (UIC) - Mechanical and Industrial Engineering, October (2023)*
6. "Additively manufactured counter electrodes for dye-sensitized solar cells"
- *World Congress on Micro and Nano Manufacturing (WCMNM), Evanston, IL, USA (2023)*
5. "Cold spray direct writing of flexible electrodes for enhanced performance TENGs"
- *North American Manufacturing Research Conference, NAMRC, New Jersey, USA, (2023)*
4. "A study on the effect of nozzle geometrical parameters on supersonic cold spraying of droplets"
- *ASME International Manufacturing Science and Engineering Conference (MSEC), West Lafayette, Indiana, USA, (2022)*
3. "Electrically conductive textiles based on decoupled spray coating and electroless plating"
- *International Symposium on Precision Engineering and Sustainable Manufacturing (PRESM), South Korea, (2021)*
2. "Fabrication of electrically conductive patterns on ABS polymer using low-pressure cold spray and electroless plating"
- *ASME International Manufacturing Science and Engineering Conference, Cincinnati, Ohio, USA, (2020)*
1. "Dual regime spray deposition based laser direct writing of metal patterns on polymer substrates"
- *World Congress on Micro and Nano-Manufacturing, Raleigh, North Carolina, USA, (2019)*

PROFESSIONAL SOCIETY MEMBERSHIP

- American Society of Mechanical Engineering (ASME)
- Society of Manufacturing Engineers (SME)
- SigmaXI Scientific Research Honor Society (Full Member)

PROFESSIONAL SERVICES

Editorial Experience:

Guest Editor: *Sustainability* [↗](#)

Special Issue: "*Advanced Manufacturing for Sustainable and Renewable Energy Technologies*" [↗](#)

Journal Paper Peer-Reviewer:

- | | |
|--|---------------------------|
| • Journal of Manufacturing Process | • Applied Surface Science |
| • ASME Journal of Micro and Nano Science and Engineering | • Additive Manufacturing |
| • Journal of Manufacturing and Materials Processing | • Energy Technology |
| • International Journal of Heat and Mass Transfer | • Applied Mechanics |
| • Applied Surface Science Advances | • Micromachines |
| | • Electronics |
| | • Coatings |

Conference Reviewer:

- ASME Manufacturing Science and Engineering Conference (MSEC, 2025)
- North American Manufacturing Research Conference (NAMRC-53, 2025)
- North American Manufacturing Research Conference (NAMRC-52, 2024)
- North American Manufacturing Research Conference (NAMRC-51, 2023)
- World Congress on Micro-and Nano-Manufacturing (WCMNM-2023)

Services:

- Symposium Organizer, "*Advances in Manufacturing of Thin Films and Coatings*", ASME/MSEC 2025
- Head volunteer, ASME MSEC/SME NAMRC-2022

GRADUATE STUDENT MENTORING

- **Advisor - Ph.D. Students:**

Sazedur Rahman (Aug 2024 - Present), Jaehun Jeon (Spring 2025 - Present)

- **Advisor - Master of Eng. Students:**

Faydia Thompson (Spring 2025 - Present)

- **Mentor - Ph.D. Students:**

Jinhan Ren, Joni C. Dhar, Shamim H. Abir (Jan 2024 - Present)

- **Mentor - Master of Eng. Students:**

Charli Smith, Jared Zornitger (Spring 2024 - Fall 2024)





UNDERGRADUATE STUDENT MENTORING

- **Advisor - Undergraduate Research Students:**

Brandon Villanueva, Zach Goncalves, Zhi Guan, (Spring 2024)

Alex Wong, Travis Johnson, Hongfei Liu, Hongru Liu, (Fall 2024 - Present)

SELECTED MEDIA COVERAGE

- "Outstanding Research Award" *Purdue University, College of Engineering*, 2023. [\[Link\]](#) 
- "Remote horse slicker monitors chronic health conditions" *Veterinary33*, July 2022. [\[Link\]](#) 
- "How do you test for equine asthma and heart disease using a remote horse slicker? Put the horse on a treadmill" *Purdue Research News*, April 2022. [\[Link\]](#) 
- "Specially designed slicker captures horse's vital signs on a laptop via Bluetooth" *Phys.org*, February 2022. [\[Link\]](#) 
- "Horse slicker may help tell of animal's chronic diseases" *Newsbug*, February 2022. [\[Link\]](#) 