

JACK L. SKINNER, PH.D., P.E.

DEPARTMENT HEAD AND ASSOCIATE PROFESSOR
MECHANICAL ENGINEERING
MONTANA TECHNOLOGICAL UNIVERSITY
1300 WEST PARK ST.
BUTTE, MT 59701
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JSKINNER@MTECH.EDU

EDUCATION & LICENSING

Doctor of Philosophy in Mechanical Engineering (September 2004-December 2007)
Dissertation Title: Diffractive Optical MEMS Technology for Tunable Filters and Modulators
Advisor: David A. Horsley
Major: Dynamics and Control Systems / Microelectromechanical Systems (MEMS)
Minors: Materials Mechanics and Thermal Fluids
University of California, Davis, CA
GPA: 4.0/4.0

Master of Science in Mechanical Engineering (January 2001-December 2002)
Thesis Title: Characterization and Optimization of Piezoelectric Membrane Generators
Advisor: Robert F. Richards
Major: Thermal Fluids
Washington State University, Pullman, WA
GPA: 4.0/4.0

Bachelor of Science in General Engineering with a Mechanical Engineering Option (September 1996-December 2000)
Montana Tech of the University of Montana, Butte, MT
GPA: 3.98/4.0

Licensed Professional Engineer
Registration Number: PE 14963, WY (March 27, 2015-Present)

Licensed Engineer Intern
Registration Number: PEL-EI-LIC-14581, MT (October 28, 2000)

WORK EXPERIENCE

Department Head (Spring 2018-Present) Mechanical Engineering, Montana Tech, Butte, MT - Responsible for departmental vision and direction and ensuring faculty, staff, and students have access to adequate resources to meet our vision.

Program Coordinator (Fall 2017-Spring 2018) Mechanical Engineering, Montana Tech, Butte, MT - Act as Mechanical Engineering Program Head until Mechanical Engineering Department is created. Responsible for departmental vision and direction and ensuring faculty, staff, and students have access to adequate resources to meet our vision.

Associate Professor (Summer 2016–Present), *Assistant Professor* (Summer 2012–Summer 2016)
Department of Mechanical and Civil (formerly General) Engineering, Montana Tech, Butte, MT - Teach engineering science, mechanical engineering, and interdisciplinary nanotechnology courses, conduct research relating to micro/nanotechnology with an emphasis on materials and sensing technologies, provide service to the department, school, and community. I also serve as a faculty member of the Electrical Engineering Department and the Montana Materials Science Ph.D. Program.

President (Fall 2014–Present) Alpha Technology, LLC - Responsible for technical direction for this technology-based company.

Chief Technical Officer (Spring 2018–Present) sp2nano, LLC - Responsible for leading technological development within this nanotechnology-based company.

Technical Mentor (Winter 2013–Spring 2016) Sandia National Laboratories, Livermore, CA - Acted as technical mentor in the area of nanotechnology methods, materials, and equipment.

Principal Member of Technical Staff (Winter 2011–Spring 2012), *Senior Member of Technical Staff* (Spring 2008–Winter 2011), *Member of Technical Staff* (Spring 2003–Spring 2008) Sandia National Laboratories, Livermore, CA - Led and performed research and development in the area of microscale and nanoscale engineering and science.

- Acted as Principal Investigator and lead researcher for multiple projects (total budget >\$1M) including conductive carbon-nanotube-filled polymers for enhanced electrical and mechanical performance, nanopatterned plasmonic surfaces for enhanced solar energy conversion and optical cloaking, passive wireless sensor tags for security applications, MEMS switches for high voltage applications, and carbon nanotube transistors for infrared detection. These projects required coordination of and collaboration with interdisciplinary teams including mechanical engineers, electrical engineers, materials scientists, and chemists. Success in these projects was demonstrated by peer-reviewed publications, presentations, and continued funding.
- Acted as primary science and technology point of contact for a major National Security area within Sandia National Laboratories.
- Served as mentor to university students and new staff members in the design, fabrication, and testing of novel devices and metamaterials. I educated these individuals in both the theoretical and experimental aspects of microscale and nanoscale technology and devices.
- Served as recruiting team lead for the University of California, Davis. I was responsible for ensuring that our recruiting efforts attract the best students from UC Davis. This included organizing recruiting teams of engineers and scientists from Sandia National Laboratories to give technical presentations, attend career fairs, and sponsor student activities.
- Served as principal investigator of the Center for Critical Application Sensing (CCAS) at Sandia National Laboratories, Livermore, CA. This center provided sensing solutions through expertise in technology development and systems engineering for National Security applications.
- Led and performed research and development for multiple projects including design and nanofabrication of surface acoustic wave devices for ultra-low power wireless

communication, electrical breakdown in high-voltage microsystems, and low-power non-contact voltage sensing with a MEMS device. These projects involved the design, fabrication, and characterization of devices and systems. Success was in large part demonstrated by peer reviewed publications and presentations.

- Acted as co-lead for the Microsystems and Engineering Sciences Applications (MESA), California, technical seminar series. I worked closely with my colleague to arrange monthly technical seminars from outside and inside researchers relevant to microsystems and National Security applications.

Graduate Student Researcher (Fall 2004-Fall 2007) Berkeley Sensor and Actuator Center, Berkeley, CA - Performed research in the area of diffractive optical microsystems for tunable filters and modulators.

- Developed optical modulator and filter with the use of nanofabrication and microfabrication. This research integrated a MEMS electrostatic transducer with a nanopatterned plasmonic surface to provide active control of the reflection of a narrow band of visible-wavelength light.
- Developed a nanopatterned optical metamaterial for use in refractive index measurement and biological and chemical detection.
- Developed optical modular and filter for infrared wavelengths. This research integrated a MEMS actuator with a micropatterned surface to control the transmission and reflection of infrared light.

Graduate Assistant (Summer 2001-Fall 2002) Washington State University, Pullman, WA - Characterized and optimized mechanical and electrical performance of piezoelectric membrane generators for use in a microelectromechanical (MEMS) micro heat engine.

- Developed a piezoelectric membrane generator to convert mechanical energy from a saturated liquid-vapor heat engine to electrical energy for a portable power system.
- Developed a pneumatic bulge tester to simulate heat engine performance for characterization of piezoelectric membrane generators.

Teaching Assistant (Spring 2001) Washington State University, Pullman, WA - Instructed students in a classroom and lab environment on the behavior and application of materials for engineering structures.

- Prepared lectures to convey in a clear and concise manner the fundamental behavior of materials in various static and dynamic loading conditions.
- Provided additional education to students on an individual basis outside of class hours to maximize each student's understanding of the subject matter.

Track Laborer (Summer 2000) Rarus Railway Company, Anaconda, MT - Repaired and installed railway track and associated hardware.

Engineering Tutor (Fall 1999-Spring 2000) Tech Learning Center, Montana Tech, Butte, MT - Tutored all undergraduate general engineering courses, as well as mathematics and physics as required.

Engineering Intern (Summer 1999) Burlington Resources, Farmington, NM - Increased natural gas production through daily planning, monitoring, and actions as field engineer.

HONORS & AWARDS

Rose and Anna Busch Teacher of the Year, Montana Tech (2015, 2018)
Honorable Mention in EIPBN Micrograph Contest (2018)
Best in Show, Montana Tech Expo (2018)
Best Materials Science PhD Poster, Montana Tech Expo (2018)
Best Materials Science PhD Booth, Montana Tech Expo (2018)
Best General Engineering Booth, Montana Tech Expo (2018)
Best Biology Booth, Montana Tech Expo (2018)
Best Metallurgical and Materials Engineering Poster, Montana Tech Expo (2017)
Best Biomedical Engineering IIP Poster, Montana Tech Expo (2017)
Best Materials Science PhD Poster, Montana Tech Expo (2017)
Best Mechanical Engineering Booth, Montana Tech Expo (2017)
Best Mechanical Engineering Poster, Montana Tech Expo (2017)
Best General Engineering Poster, Montana Tech Expo (2017)
Merit Award for Excellence in Teaching, Research, and Service, Montana Tech (2014, 2017)
Best in Show, Montana Tech Expo (2016)
Best Materials Science PhD Poster, Montana Tech Expo (2016)
Best in Show - High School Student Selected (2016)
Best Mechanical Engineering Booth, Montana Tech Expo (2016)
Best Mechanical Engineering Poster, Montana Tech Expo (2016)
Best Bioengineering IIP Poster, Montana Tech Expo (2016)
Best General Engineering Poster, Montana Tech Expo (2016)
Alumni Recognition Award, General Engineering, Montana Tech (2015)
Nominated for Montana Tech Homecoming Grand Marshal (2015)
Classified Intellectual Property Award (PI), Sandia National Laboratories (2015)
Distinguished Researcher Award, Montana Tech (2015)
Honorable Mention in EIPBN Micrograph Contest (2015)
Best Mechanical Engineering Booth, Montana Tech Expo (2015)
Best Mechanical Engineering Poster, Montana Tech Expo (2015)
Best General Engineering Poster, Montana Tech Expo (2015)
Best Chemistry Poster, Montana Tech Expo (2015)
Best Electrical Engineering Poster, Montana Tech Expo (2015)
Winner of American Society of Microbiology Photo Contest (2015)
Top 5 Most Read September Paper for JVST-B (2014)
Faculty Advisor of the Year, Montana Tech (2014)
Best Chemistry Poster, Montana Tech Expo (2014)
Best Electrical Engineering Poster, Montana Tech Expo (2014)
Best General Engineering Poster, Montana Tech Expo (2014)
Best Mechanical Engineering Booth, Montana Tech Expo (2014)
Best General Engineering Booth, Montana Tech Expo (2014)
Top 25 Downloaded May Paper for IEEE Sensors Journal (2013)
Best General Engineering Senior Design Project, TechXpo, Montana Tech (2013)
Best Mechanical Engineering Senior Design Project, TechXpo, Montana Tech (2013)
Classified Intellectual Property Award (PI), Sandia National Laboratories (2012)
NSF travel grant for Bryan Loyola (UCD PhD student) to attend ASME IMECE (2011)
NSF travel grant for Heather Chiamori (UCB PhD student) to attend ASME IMECE (2011)
Outstanding Mentor Award Recipient, Sandia National Laboratories (2011)

Classified Intellectual Property Award (PI), Sandia National Laboratories (2011)
Spot Award for Outstanding Recruiting Efforts, Sandia National Laboratories (2010)
Outstanding Research Poster, Berkeley Sensor and Actuator Center Industrial Advisory Board Meeting, "Large, ordered 3D nanocup arrays for plasmonic applications," J. C. Lo, D. A. Horsley, and J. L. Skinner (2010)
Sandia Special Degree Program Doctoral Funding Award, University of California (2004-2007)
Alfred Suksdorf Graduate Fellowship, Washington State University (2001-2002)
Outstanding General Engineering Graduate, Montana Tech (2001)
R.V. Subramanian Graduate Fellowship, Washington State University (2001)
Selected for Who's Who Among Students in American Universities and Colleges, Montana Tech (1999-2000)
Selected for the National Dean's List, Montana Tech (1996-2000)
Nominated for All-USA Academic Team, Montana Tech (1997-1998)

SOCIETIES & SERVICE

Faculty Advisor, SAE Baja Club, Montana Tech (2012-Present)
Faculty Advisor, ASME, Montana Tech (2017-Present)
Faculty Advisor, Tau Beta Pi Engineering Honor Society, Montana Tech (2016-Present)
Member, Society of Automotive Engineers (2013-Present)
Member, American Society for Engineering Education (2011-Present)
Member, Materials Research Society (2011-Present)
Member, Institute of Electrical and Electronics Engineers (2007-Present)
Member, American Institute of Aeronautics and Astronautics (2002-Present)
Member, Tau Beta Pi Engineering Honor Society (1998-Present)
Member, American Society of Mechanical Engineers (ASME) (1996-Present)
Member, Butte-Silver Bow Building Board of Appeals (2018-Present)
Reviewer, Sensors Journal (2019)
Chair, Neuromorphic Hardware, International Conference on Electron, Ion, Photon Beam Technology and Nanofabrication (2019)
Reviewer, Scientific Reports (2018)
Reviewer, Microelectronic Engineering (2016, 2017, 2018)
Program Advisor, International Conference on Electron, Ion, Photon Beam Technology and Nanofabrication (2016, 2017, 2018, 2019)
Reviewer, Energy Journal (2017)
Member, Natural Resources Research Center Planning Committee, Montana Tech (2014-2017)
Chair, Research Awards Subcommittee, Montana Tech (2017)
Member, Research Awards Subcommittee, Montana Tech (2016)
Reviewer, IEEE Sensors Journal (2013, 2014, 2016)
Chair, Nanophotonics and Plasmonics Session, International Conference on Electron, Ion, Photon Beam Technology and Nanofabrication (2017)
Member, Faculty Search Committee, Department of Electrical Engineering, Montana Tech (2016)
Member, Faculty Search Committee, Department of General Engineering, Montana Tech (2016)
Member, Montana Tech Science and Engineering Fair and Symposium Advisory Board (2016-Present)

Chair, Nanophotonics Session, International Conference on Electron, Ion, Photon Beam Technology and Nanofabrication (2016)
Program Committee Member, International Conference on Electron, Ion, Photon Beam Technology and Nanofabrication (2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019)
Chair, Two Faculty Search Committees, Department of General Engineering, Montana Tech (2015)
Reviewer, Materials Research Society Communications (2015)
Reviewer, Materials Engineering and Processing, National Science Foundation (2015)
Judge, Montana Tech Regional Science and Engineering Fair (2013, 2014, 2015, 2016)
Presenter, 21st Century Community Learning Center High School Initiative, Montana Tech (2014)
Reviewer, Partnerships for Innovation: Accelerating Innovation Research - Technology Transfer - Sensing and Electronic Devices Panel, National Science Foundation (2014)
Chair, Faculty Search Committee, Department of General Engineering, Montana Tech (2014)
Chair, Research Subcommittee of Strategic Planning Committee, Montana Tech (2012-2013)
Senator, Faculty Senate of Montana Tech (2012-2014)
Member, Undergraduate Research Committee, Montana Tech (2013-Present)
Reviewer, Proposal Review Panel, National Science Foundation Partnerships for Innovation: Accelerating Innovation Research (2014)
Co-Chair, Nanophotonics Session, International Conference on Electron, Ion, Photon Beam Technology and Nanofabrication (2013)
Reviewer, American Chemical Society Petroleum Research Fund (2014)
Reviewer, Langmuir (2009, 2012, 2013, 2014, 2015)
Member, Faculty Search Committee, Department of Mathematical Sciences (2013)
Reviewer, Plasma Science and Technology (2013)
Reviewer, Journal of Microelectromechanical Systems (2012)
Chief Judge, Intel-Affiliated Contra Costa County Science and Engineering Fair, Pittsburg, CA (2012)
Reviewer, Nano Letters (2011)
Reviewer, Journal of Materials Research (2011)
Judge, Sandia National Laboratories MEMS University Alliance Design Competition (2009, 2010, 2011)
Judge, Excelsior Middle School Science Fair, Byron, CA (2011)
Mentor, Livermore High School Green Engineering Academy, Livermore, CA (2011)
Volunteer, Mock Interview Event for Society of Women Engineers, University of California, Davis (2010, 2011)
Volunteer, Society of Women Engineers Evening with Industry, University of California, Davis (2010, 2011)
Reviewer, Journal of Vacuum Science and Technology B (2010)
Reviewer, Biomedical Engineering Society Annual Meeting (2010)
Reviewer, Journal of Nanoscience and Nanotechnology (2009)
Reviewer, Optics Letters (2008)
Reviewer, International Mechanical Engineering Congress and Exposition (2004, 2006)
Senator, Associated Students of Montana Tech (2000)
President, ASME Student Chapter of Montana Tech (1996-2000)

Prepared agenda and organized and oversaw activities for Region VIII Regional Student Conference and Graduate Student Technical Conference, Montana Tech, Butte, MT (1998)

Acted as liaison for Montana Tech section of ASME at Region VIII Regional Student Leadership Seminar, Richland, WA (1997)

Competed in Micro-Baja car design and race competition, University of Washington, Seattle, WA (1997)

PATENTS

US Provisional Patent - Antiviral composition and applications of iron-doped apatite nanoparticles

US Provisional Patent - Hybrid electrospinner for core-shell fiber fabrication

US Provisional Patent - IDANP-assisted phage therapy treatment delivered via small-scale morphology materials for antibacterial applications

US Pending Patent 15/610,014 - Method for the synthesis of hybrid organic-inorganic perovskites via melt electrospinning

US Pending Patent 62/166392 - Method of particulate transport via small-scale morphology materials

US Pending Patent 14/879,924 - Thermal high-voltage extrusion apparatus with pneumatic polymer delivery

US Pending Patent 62/125,795 - Foldable food grade cooking surface and method of use

US Patent 9989355- Method and apparatus for conducting real-time electrospinning diagnostics using laser extinction

US Patent 8986576B1 - Carbon nanotube composite materials

US Patent 8852998 - Method to fabricate micro and nano diamond devices

US Patent 20120114841/8728566B2 - Method of making carbon nanotube composite materials

US Patent 8339219 - Passive hybrid sensing tag with flexible substrate SAW device

US Provisional Patent SD10357 - Sensors and tunable optical elements

US Patent 7030355 - Low power photomultiplier tube circuit and method therefor

ACQUIRED FUNDING

RII Track-1 Consortium for Research on Environmental Water Systems, \$20M, 2018-2023, National Science Foundation.

A Novel Portable Electrospinning Device for Functionalized Fiber Materials, \$105k, 2018-2021, Slater Family Research Trust.

Polymer Functional Materials by Design, \$2.2M, 2015-2019, Army Research Laboratory, Aberdeen Proving Grounds, MD.

MRI: Acquisition of a confocal microscope to enhance biological and materials research at Montana Tech, \$364,383, 2018, National Science Foundation.

Mechanical Enhancement of Para-aramid Fabrics with CNTs and Graphene, \$200k, 2016-2018, sp2nano, Butte, MT.

Electrospinning Equipment for Large-Area Production, \$100k, 2017, Sandia National Laboratories, Livermore, CA.

Electrospinning Hardware and Fixture Funds, \$20k, 2015, Capital Equipment Funds, Montana Tech.

Experimental and Modeling Methods in Electrospinning, \$108530, 2015, Sandia National Laboratories, Livermore, CA.

Materials Technology Science and Engineering Research for the Army (MT-SERA), \$1.164M, 2015, Army Research Laboratory, Aberdeen Proving Ground, MD.

Fabrication and Characterization Equipment, \$1M, Applied Materials, Kalispell, MT, 2015.

Reproducible Antibacterial Surfaces Using Thermal Imprint Technology, \$1502, AY 2014-2015, Undergraduate Research Committee, Montana Tech.

Utilization of Electrospinning Technique to Decorate Nanofibers for Biomedical Applications, \$2100, AY 2015-2015, Undergraduate Research Committee, Montana Tech.

Study of NANO Modified Moisture Cured Polyurethane Polymer Resins, \$2050, AY 2014-2015, Undergraduate Research Committee, Montana Tech.

Electrospinning Methods, Materials, and Hardware, \$75k, 2014, Sandia National Laboratories, Livermore, CA.

Excellence in Engineering Funds, \$20k, Spring 2014, School of Mines and Engineering, Montana Tech.

Melt Electrospinning Hardware Development, \$4k, Fall 2013, Sandia National Laboratories, Livermore, CA.

Nanoparticle-Mediated Increase in Viral Plaque Formation, \$99906, 2013-2015, CBET - Enviro Health & Safety of Nano, National Science Foundation.

A Study on the Fluorescent Properties of Nanoapatite Particles Under Externally Applied Magnetic Fields, \$2100, AY 2013-1014, Undergraduate Research Committee, Montana Tech.

Investigating the Formation of Hydroxyapatite Nanoparticle Copolymers, \$1935, AY 2013-1014, Undergraduate Research Committee, Montana Tech.

Fabrication and Characterization of Nanoscale Sensors Made Via Electrospinning, \$2099, AY 2013-1014, Undergraduate Research Committee, Montana Tech.

Nanotechnology Research Equipment – Near Field Scanning Optical Microscope, \$250k, Spring 2013, Research Office, Montana Tech.

Faculty Seed Grant - An Investment in Emerging Nanotechnology at Montana Tech, \$5k, Spring 2013, Research Office, Montana Tech.

Excellence in Engineering Funds, \$20k, Fall 2012 – Spring 2013, School of Mines and Engineering, Montana Tech.

Nanotechnology Equipment Funding, \$10k, Fall 2012, Department of General Engineering, Montana Tech.

Structural Health Monitoring with Composites and CNTs, \$12k, Summer 2011, National Science Foundation supplemental funding with Prof. La Saponara from University of California at Davis, co-author and Sandia National Laboratories mentor.

Chemical Delivery Through Nanopatterned Shape Memory Polymers, \$12k, Summer 2011, National Science Foundation supplemental funding with Prof. Zhang from University of Texas at Austin, co-author and Sandia National Laboratories mentor.

Integration of Plasmonics with Graphene, \$12k, Summer 2011, National Science Foundation supplemental funding with Prof. Lin from University of California at Berkeley, co-author and Sandia National Laboratories mentor.

Nanopatterning Optical Metasurfaces for Light Focusing and Control, \$15k, Summer 2010, National Science Foundation supplemental funding with Prof. Zhang from University of Texas at Austin, co-author and Sandia National Laboratories mentor.

Nanowire Based Energy Devices on Amorphous Substrates with Transparent and Flexible Electrodes, \$7.5k, Summer 2010, National Science Foundation supplemental funding with Prof. Islam from University of California at Davis, co-author and Sandia National Laboratories mentor.

Integration of Block-Copolymer with Nanoimprint Lithography: Pushing the Boundaries of Emerging Nanopatterning Technology, \$670k/year, FY2010-2012, National Institute for Nano Engineering (NINE) funding, co-author.

Carbon Nanotube Filled Polymers, \$465k/year, FY2008-2009, Laboratory Directed Research and Development (LDRD) grant, PI.

A MEMS Switch for High Voltage Applications, \$75k/year, FY2004-2006, Microsystems and Engineering Sciences Applications (MESA) Institute funding, PI.

UNIVERSITY STUDENTS MENTORED

Luke Suttley (PhD MatSci 2022, Montana Tech, Butte) - thesis advisor
Lane Huston (MS GE 2020, Montana Tech, Butte) - thesis advisor
Molly Brockway (PhD MatSci 2021, Montana Tech, Butte) - thesis advisor
Sowmya Sudhakar (MS ME 2020, Montana Tech, Butte) - thesis advisor
McKenzie Joseph (MS GE 2020, Montana Tech, Butte) - thesis advisor
Emily Kooistra-Manning (MS GE 2020, Montana Tech, Butte) - thesis advisor
John Murphy (PhD MatSci 2018, Montana Tech, Butte) - thesis advisor

Jessica Andriolo Gregory (PhD IIP 2017, Montana Tech, Butte) - thesis advisor
McKenzie Joseph (BS ME 2019, Montana Tech, Butte) - research advisor
Madisen Sickler (PhD MatSci 2019, Montana State University, Bozeman) - thesis committee
Julie Muretta (PhD MatSci 2018, Montana State University, Bozeman) - thesis committee
Andrew Hill (PhD MatSci 2018, Montana State University, Bozeman) - thesis committee
Robert West (MS IMS 2019, Montana Tech, Butte) - thesis advisor
Nathan Sutton (MS GE 2017, Montana Tech, Butte) - thesis advisor
Sowmya Sudhakar (BS ME 2019, Montana Tech, Butte) - research mentor
Zachary Burckhard (BS ME 2019, Montana Tech, Butte) - research mentor
Anthony Ottolini-Messuri (MS GE 2017, Montana Tech, Butte) - thesis advisor
Emily Kooistra-Manning (BS GE&Met 2017, Montana Tech, Butte) - research mentor
Bill Ryan (MS IMS 2017, Montana Tech, Butte) - thesis committee
Josh Beisel (MS EE 2016, Montana Tech, Butte) - thesis advisor
Brandon Ross (MS GE 2016, Montana Tech, Butte) - thesis advisor
Kelly Benton (MS EnvEng 2016, Montana Tech, Butte) - thesis committee
Ethan Wood (MS Met 2015, Montana Tech, Butte) - thesis committee
Dan Douglass (BS GE, 2015, Montana Tech, Butte) - research mentor
Ryan Hensleigh (BS Chemistry 2015, Montana Tech, Butte) - research mentor
Josh Beisel (BS EE 2015, Montana Tech, Butte) - research mentor
Heidi Reid (BS GE 2015, Montana Tech, Butte) - research mentor
Lance Purkett (MS GE 2015, Montana Tech, Butte) - thesis advisor
Jerry Kyeremateng (MS GE 2014, Montana Tech, Butte) - thesis advisor
Scott Kelleher (BS GE 2014, Montana Tech, Butte) - research mentor
Hank Pratte (BS GE 2014, Montana Tech, Butte) - research mentor
Andrew Erickson (BS GE 2014, Montana Tech, Butte) - research mentor
Brandon Ross (BS GE 2014, Montana Tech, Butte) - research mentor
Luke Carlson (MS GE 2013, Montana Tech, Butte) - thesis committee
Chance Wilson (BS GE 2013, Montana Tech, Butte) - research mentor
Bryan Loyola (PhD ME 2012, University of California, Davis) - research mentor, dissertation committee
Heather Chiamori (PhD ME 2012, University of California, Berkeley) - research mentor
Jean Fakhoury (MS BME 2011, University of Texas, Austin) - research mentor
Heim Kirin Grewal (MS EE 2011, University of California, Davis) - research mentor
Ellen Blinka (BS BME 2010, University of Texas, Austin) - research mentor
Joanne Lo (MS EE 2010, University of California, Davis) - research mentor, thesis committee
Fabian Strong (PhD EE 2007, University of California, Davis) - research mentor

PUBLICATIONS

1. "Variable phase and electrochemical capacitance of electrospun MnOx fibers via controlled calcination," M. C. Brockway and J. L. Skinner, *MRS Advances*, 2019.
2. "Plasmonic response of light-activated, nano-gold doped polymers," J. M. Andriolo, M. L. Joseph, M. C. Brockway, and J. L. Skinner, *MRS Advances*, 2019.
3. "Electrospun charge transport structures for hybrid perovskite solar cells," J. P. Murphy, M. C. Brockway, J. M. Andriolo, and J. L. Skinner, *Journal of Vacuum Science and Technology B*, 2018.

4. "Optically active fiber mats fabricated via melt electrospinning," by J. P. Murphy, M. C. Brockway, J. M. Andriolo, N. J. Sutton, and J. L. Skinner, *MRS Communications*, 2018.
5. "Electrospun fibers for controlled release of nanoparticle-assisted phage therapy treatment of topical wounds," J. M. Andriolo, N. J. Sutton, J. P. Murphy, L. G. Huston, E. A. Kooistra-Manning, R. F. West, M. L. Pedulla, M. K. Hailer, and J. L. Skinner, *MRS Advances*, 2018.
6. "Coaxial hybrid perovskite fibers: Synthesis and encapsulation in situ via electrospinning," J. P. Murphy, J. M. Andriolo, N. J. Sutton, M. C. Brockway, and J. L. Skinner, *Journal of Vacuum Science and Technology B*, 2017.
7. "Nanomechanics and testing of core-shell composite ligaments for high strength, light weight foams," A. Yermembetova, R. M. Rahimi, C.-E. Kim, J. L. Skinner, J. M. Andriolo, J. P. Murphy, and D. F. Bahr, *MRS Advances*, 2017.
8. "Iron-doped apatite nanoparticles delivered via electrospun fiber mesh for maximized bacterial killing by bacteriophage," J. M. Andriolo, G. F. Wyss, M. L. Pedulla, M. K. Hailer, and J. L. Skinner, *MRS Advances*, 2017.
9. "Loading dependent electrical properties of hybrid perovskite composite media," J. P. Murphy, J. M. Andriolo, G. F. Wyss, and J. L. Skinner, *MRS Advances*, 2017.
10. "Electrospinning for nano to mesoscale photonic structures," J. L. Skinner, J. M. Andriolo, J. P. Murphy, and B. M. Ross, *Nanophotonics*, 2016.
11. "Lithography via electrospun fibers with quantitative morphology analysis," J. D. Beisel, J. P. Murphy, J. M. Andriolo, E. A. Kooistra-Manning, S. Nicolaysen, O. Boese, J. Fleming, W. Nakagawa, and J. L. Skinner, *Journal of Vacuum Science and Technology B*, 2016.
12. "Hybrid organic-inorganic perovskite composite fibers produced via melt electrospinning," J. P. Murphy, B. M. Ross, J. M. Andriolo, J. L. Skinner, *Journal of Vacuum Science and Technology B*, Vol. 34, No. 6, pp. 06KM01, November 2016.
13. "Performance analysis of a ground-source heat pump system using mine water as heat sink and source," X. Liu, M. Malhotra, A. Walburger, J. L. Skinner, and D. M. Blackketter, *ASHRAE Transactions*, Vol. 122, Part 2, pp. 160-172, 2016.
14. "Influence of iron-doped apatite nanoparticles on viral infection examined in prokaryotic and eukaryotic systems," J. M. Andriolo, R. J. Rossi, C. A. McConnell, B. I. Connors, M. K. Hailer, M. L. Pedulla, and J. L. Skinner, *IEEE Transactions on BioNanoscience*, 2016.
15. "Organometallic halide perovskite synthesis in polymer melt for improved stability in high humidity," J. P. Murphy, J. M. Andriolo, B. M. Ross, G. F. Wyss, N. E. Zander, and J. L. Skinner, *MRS Advances*, May 2016.
16. "Using electric field manipulation to fabricate nanoscale fibers on large areas: a path to electronic and photonic devices," J. L. Skinner, J. M. Andriolo, J. D. Beisel, B. M. Ross, L. M. Purkett, J. P. Murphy, J. Kyeremateng, M. J. Franson, E. A. Kooistra-Manning, B. E. Hill, and

B. R. Loyola, *Proceedings of SPIE 9553, Low-Dimensional Materials and Devices*, Vol. 9553, No. 1, pp. 955302, August 2015.

17. "Analytical parametric model used to study the influence of electrostatic force on surface coverage during electrospinning of polymer fibers," J. D. Beisel, J. B. Kyeremateng, L. Purkett, J. M. Andriolo, and J. L. Skinner, *Journal of Vacuum Science and Technology B*, Vol. 32, No. 6, pp. 06FI03, November 2014.
18. "Iron-doped apatite nanoparticles for improvement of phage therapy," J. M. Andriolo, R. M. Hensleigh, C. A. McConnell, M. Pedulla, K. Hailer, R. Kasinath, G. Wyss, W. Gleason, and J. L. Skinner, *Journal of Vacuum Science and Technology B*, Vol. 32, No. 6, pp. 06FD01, September 2014. (Top 5 Most Read September Paper)
19. "Spatial sensing using electrical impedance tomography," Bryan R. Loyola, Valeria La Saponara, Kenneth J. Loh, Timothy M. Briggs, Gregory O'Bryan, and Jack L. Skinner, *IEEE Sensors Journal*, Vol. 13, No. 6, pp. 2357-2367, June 2013. (Top 25 Downloaded May Paper)
20. "Detection of spatially distributed damage in fiber-reinforced polymer composites," Bryan R. Loyola, Timothy M. Briggs, Luciana Arronche, Kenneth J. Loh, Valeria La Saponara, Greg O'Bryan, and Jack L. Skinner, *Journal of Structural Health Monitoring*, Vol. 12, Iss. 3, pp. 225-240, May 2013.
21. "Fabrication of a large, ordered, three-dimensional nanocup array," Joanne C. Lo, Soon Gweon Hong, Richard J. Anderson, Luke P. Lee, David A. Horsley, and Jack L. Skinner, *Applied Physics Letters*, Vol. 101, pp. 081109, August 2012.
22. "Planar-localized surface plasmon resonance device by block-copolymer and nanoimprint lithography nanofabrication methods," C. Y. Peter Yang, Elaine L. Yang, Chip A. Steinhaus, Chi-Chun Liu, Paul F. Nealey, and Jack L. Skinner, *Journal of Vacuum Science and Technology B*, Vol. 30, Iss. 2, pp. 026801-026801-6, March 2012.
23. "Nanomechanical properties of Teflon MWCNT bilayer films," R. L. Schoeppner, A. Qui, D. D. Stauffer, R. C. Major, J. L. Skinner, T. Zifer, G. O'Bryan, A. Vance, W. W. Gerberich, D. F. Bahr, N. R. Moody, *Proceedings of the Fall Materials Research Society Meeting*, Boston, MA, Vol. 1424, mrsf11-1424-ss07-25 doi:10.1557/opl.2012.534, November 2011.
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PRESENTATIONS

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