New Projects in 2019-2020

**SD-FIRST: A program aimed to increase recruitment, retention, and success of first-generation students**

- Faculty: PIs: Cassandra Birrenkott, Lisa Carlson, Jon Kellar, Michael West
- Funding Source: NSF DUE S-STEM Track 2: Design and Development (Single Institution)
- Project Period: January 2021 – December 2025
- Budget: $998,819

**Collaborative Research: Using Complex Problem Based Learning in Undergraduate Engineering Classrooms to Prepare Creative Engineers with the Skills to Solve Global Problems**

- Faculty: Dr. Bret Lingwall (PI), Dr. Andrea Surovek (Co-PI), Collaborative with Dr. Roni Reiter-Palmon (University of Nebraska Omaha Dept. of O/I Psychology)
- Funding Source: National Science Foundation
- Budget: $300,000

**Advanced Robotics for Manufacturing (ARM)**

- Faculty: Dr. J. Tomblin of Wichita State University (PI), Dr. Pierre Larochelle (Co-PI)
- Funding Source: Education and Workforce Development Regional Robotics Collaborative
- Project Period: February 20, 2020 – September 30, 2020
- Budget: $250,000

**EAGER:MAKER: Student Learning Trajectories from Making Activities**

- Faculty: Dr. Micah Lande
- Funding Source: National Science Foundation (Division of Engineering Education and Centers)
- Project Period: December 1, 2019 – June 30, 2020 (transfer)
- Budget: $179,000

**Development of Strain-Annealable Processes and Alloy Composition for Iron-Based Amorphous Magnetically Soft Inductor Cores**

- Faculty: Dr. Nickolaus Bruno (PI)
- Funding Source: SD Board of Regents
- Project Period: August 22, 2019 – December 31, 2020
- Budget: $90,000

**Next-Generation Energy Storage Research and Development**

- Faculty: Dr. Weibing Xing
- Funding Source:
- Project Period: October 6, 2020 – December 31, 2022
- Budget: $70,000

**Plasma Jet Coating for Biofilm Applications**

- Faculty: Dr. Prasoon Diwakar (PI), Dr. Gadhamsheetty (Co-PI)
• Funding Source: NSF SD EPSCoR
• Project Period: October 2020 – October 2021
• Budget: $50,000
Faculty Research Publications in 2019-2020

Dr. Cassandra Birrenkott

- Peer-Reviewed Publications

Dr. Nickolaus Bruno

- Peer-Reviewed Publications
  - N.M. Bruno, S. Yuce “On the instability of the giant direct magnetocaloric effect in CoMn0.915Ge0.085Ge at. % metamagnetic compounds", Sci. Rep. 10 (2020) 14211.

Dr. Prasoon Diwakar

- Conference Papers
  - Multiplexed detection of lanthanide-based labels by LIBS – the constraints and limits of spectral unmixing; Bartek Rajwa, Carmen Gondhalekar, Euiwon Bae, Valery Patsekin, Jennifer Sturgi, Iyll-Joon Doh, Prasoon K. Diwakar, Xianglei

Effects of Electroporation and Cold Atmospheric Plasma on Human Lung Cancer Cells; Kristen I. Haller, Nicole L. Miller, Jordan A. Hoops, Prasoon K. Diwakar, Timothy M. Brenza, SCIX 2019, Palm Springs CA, Oct 13-18, 2019

Informal STEM Education Using LIBS in HighSchool; Prasoon K. Diwakar, Melissa Fernandez, Emily M. Orme, Neha Choudhary, Theodore Caplow, Nathalie Manzano, Claudia Ochatt, SCIX 2019, Palm Springs CA, Oct 13-18, 2019

Comparative study of the effects of cold atmospheric plasma and electroporation on bacterial cells to enhance the substrate utilization; Payal Thakur, Tanvi Govil, Kristen I. Haller, Nicole L. Miller, Prasoon K. Diwakar, Sudhir Syal, David Salem, Rajesh Sani, SCIX 2019, Palm Springs CA, Oct 13-18, 2019

Peer-Reviewed Publications


Dr. Micah Lande

Peer-Reviewed Publications


Dr. Pierre Larochelle

- Conference Papers

Dr. Karim Muci

- Conference Papers

Dr. Andrea Surovek

- Presentations
  o Surovek, A. University of California Riverside, Kisailus Biomimetics and Nanostructured Materials Lab, “Termite Mound Topology”, October 19, 2019

- Publications
Faculty & Student Awards and Honors in 2019-2020

- **Dr. Jason Ash** received the ASME Outstanding Student Section Advisor Award for his continued service as the SD Mines ASME student section advisor and leadership within ASME international committees. Additionally, Dr. Ash has won the 2020 Outstanding Student Organization Advisor Award, which would normally be received at the Leadership Awards Reception on campus; due to the impact of COVID-19, this reception was cancelled for 2020.

- **Dr. Cassandra Birrenkott** advises the South Dakota Mines section of Tau Beta Pi, which has received the BOR Organizational Leadership Award.

- **Dr. Pierre Larochelle** was elected to serve as a founding Associate Technical Editor for the new ASME Journal of Autonomous Vehicles and Systems.

- **Dr. Karim Muci**, along with co-authors **Drs. Cassandra Birrenkott**, Mark Bedillion, Marsha Lovett, and Clifford Whitecomb wrote “Incorporating Systems Thinking and Systems Engineering Concepts in a Freshman-Level Mechanical Engineering Course,” which was selected as Best Paper for the ASEE Systems Engineering Division (SED) for the 2020 ASEE Conference.

- **Dr. Karim Muci** was elected as Fellow of the American Society of Mechanical Engineers (ASME).

- **Dr. Karim Muci** was elected as associate editor of the American Society of Mechanical Engineers (ASME) Journal of Engineering and Science in Medical Diagnostics and Therapy.

- **Student Awards**
  - Carter Barkley, MS student advised by Dr. Cassandra Birrenkott, was awarded the G.L. Cloud Scholarship from the Society of Experimental Mechanics. The prize for this award was reimbursement of all student-rate SEM Annual conference fees and travel expenses incurred by the recipient in attending the SEM Annual conference where the award will be granted and recognition of the recipient through presentation of a framed certificate and a check in the amount of $3,000 at the Conference Luncheon and Awards Ceremonies conducted in conjunction with the SEM Annual Conference.
  - Nicole Miller, ME undergraduate student advised by Dr. Prasoon Diwakar, won the 2020 Society for Applied Spectroscopy Undergraduate Award.
  - Nicholas Pugh and Christian Leckband, advisees of Dr. Prasoon Diwakar, were finalists for the 2020 RESPEC Undergraduate Scholarship.
  - Kaycee Johnson (Society of Women Engineers), Paige Ling (Professional Development Institute, American Society of Mechanical Engineers), Seth Pippenger (Clean Snowmobile Team), and Daniel Rohde (Moonrockers), ME students, received Outstanding Student Organization Member Awards for their notable contributions to their respective organizations.
  - Samuel Ryckman, ME student, received the NSPE-SD Jody Page Leadership Scholarship.
  - Morgan Tatge, ME student, received the NASA South Dakota Space Grant Consortium.