

Students are encouraged to disseminate their research findings. In particular, students are encouraged to present their research work at regional and national conferences and author or co-author publications. To date, the following publications and presentations have been made from faculty and students in the REU: Back to the Future summer research program (most recent products shown in bold)

Site Presentations and Publications

M. West “Historical Artifact Projects in the Metallurgical Engineering Program at South Dakota Mines,” 80th Annual Plains Anthropological Society Conference, Rapid City, SD, October 18-21, 2023 (Invited).

M. West, “Art in Engineering at South Dakota Mines,” Discovery on Tap Series (invited), South Dakota Discovery Center, Pierre, SD, February 17, 2023.

C. Marshall, I. Nielson, “REU Programs at South Dakota Mines,” South Dakota Mines American Indian Services Pre-Freshman Engineering Summer Program (AIS PREP), July 11-15, 2022.

M. West, C. Marshall, “REU Program Opportunities for Native American Students,” South Dakota Mines American Indian Science and Engineering Society (AISES) Chapter, November 12, 2020.

M. West, W. Cross, J. Kellar, B. Jasthi, G. Crawford, S. Safarzadeh, “Curricular Innovations at the South Dakota School of Mines and Technology: Experiential Learning Outcomes and Assessment,” Materials Science and Technology Conference – Curricular Innovations and Continuous Improvement of Academic Programs, Columbus, OH, October 14-18, 2018.

M. West, “The Science of Swords: Integration of Art and History in the Metallurgical Engineering Program at the South Dakota School of Mines,” STEAM Café (invited), Rapid City, SD, June 19, 2018.

M. West, “The Science of Swords: Art and History Research Focus at SD Mines,” Sanford Underground Research Laboratory – Deep Talks Series (invited), Lead, SD, April 12, 2018.

K. Hadley, M. West, G. Crawford, T. Montoya, S. Kellogg, “Coordination Between Multiple REU Sites,” American Institute of Chemical Engineers Conference, Salt Lake City, UT, November 8, 2015.

M. West, “REU Programs and Opportunities for Native American Students,” Indian University of North America, Crazy Horse, SD, June 25, 2015.

M. West, J. Kellar, D. Medlin, W. Cross, G. Crawford, “Historical Metallurgy as the Foundation for Curricular, Research, and Outreach Activities”, The Minerals, Metals, and Materials Society - Messaging Research to a Broad Audience, Orlando, FL, March 18, 2015.

M. West, “Back to the Future NSF REU Program”, SD EPSCoR All Investigator Meeting – REU Workshop, Chamberlain, SD, June, 2013.

A. Boysen, "Research Experience for Undergraduates in Engineering and Science: Instructional Implications for Teaching and Technical Communications-Lessons Learned", Theory and Research in Technical Communications, Rocky Mountain Modern Language Association Conference, Boulder, CO, October 11, 2012.

W.M. Cross, J. Kellar, G. Crawford, S. Howard, M. West and D. Medlin, "Development of an Integrated Research, Curricular, Historically-Informed and Extracurricular Learning Environment", Published in MRS Online Proceedings, Vol. 1472, Transforming Education in Materials Science and Engineering, eds: E. Kupp, A.R. Mayol, M. Patterson and P. Reinke, 2012.

W.M. Cross, J. Kellar, G. Crawford, S. Howard, M. West and D. Medlin, "Development of an Integrated Research, Curricular, Historically-Informed and Extracurricular Learning Environment", Materials Research Society Spring Meeting, San Francisco, CA, April 9-12, 2012.

M. West, A. Boysen, J. Kellar, S. Kellogg, "Engineering Research in a Historic Context", NSF Engineering Education Awardees Conference, Washington DC, March 6, 2012.

M. West, W. Cross, S. Kellogg, A. Boysen, "A Novel REU Program to Develop the Skills of the Engineer of 2020", 41st ASEE/IEEE Frontiers in Education Conference Proceedings, October 2011.

M. West, A. Boysen, S. Kellogg, "Project Based Learning: Undergraduate Research", State of South Dakota Student Success Conference, Chamberlain, SD May 11, 2011.

Student Presentations and Publications

Beeler, S., Rehwinkel, E., Carlson, B., (2024) "Bioleaching of Manganese from Ferromanganese Nodules Utilizing Acetogenic Bacteria in a Symbiotic Community of Bacteria and Yeast" *Journal of Sustainable Metallurgy*. DOI /10.1007/s40831-024-00945-9

CORROSION BEHAVIOR OF CU-TI-Y2O3 ALLOY PRODUCED WITH HIGH ENERGY BALL MILLING

Sophia Isacco

Frontiers of Materials Science and Engineering Undergraduate Symposium, Raleigh, NC, October 6-7, 2023 (Finalist).

EXPERIMENTAL AND ANALYTICAL METHODS USED TO UNDERSTAND THE ULTRASONIC SPOT WELDING PROCESS FOR THERMOPLASTIC POLYMERS TO GUIDE JOINT DESIGN

Kaytie Barkley, Cassandra Birrenkott, Prasoon Diwakar, Jaden Arner

2023 SEM Annual Conference and Exposition on Experimental and Applied Mechanics, Orlando, FL, June 5-8, 2023.

Barkley, Kaytie M.; Arner, Jaden S.; Pike, Timothy A.; Diwakar, Prasoon; Birrenkott, Cassandra M.; "Correlation of surface and interfacial temperature during differential ultrasonic spot welding." *Journal of Advanced Joining Processes* 7 (2023): 100142.

GEOCHEMICAL CHARACTERIZATION OF MANGANESE NODULES FROM THE PIERRE SHALE IN WESTERN SOUTH DAKOTA

Izabelle Smith, Sarah Keenan, Scott Beeler

American Chemical Society Conference, Indianapolis, IN March 26-30, 2023.

Kessinger, S., Green, K., Petersen, J., & Kellar, J. J. (2023). Characterization, Processing and Performance of Belle Fourche Shale for Ceramics. *Mining, Metallurgy & Exploration*, 40(5), 1631-1638.

CHARACTERIZATION, PROCESSING AND PERFORMANCE OF BELLE FOURCHE SHALE FOR CERAMICS

J. Kellar, S. Kessinger, K. Green and J. Petersen. Society for Mining, Metallurgy, and Exploration Conference 2023, Denver, CO, February 26 - March 1, 2023.

NOISE CORRECTION OF ATOMIC FORCE MICROSCOPE-BASED INTEGRIN FREQUENCY ANALYSIS

Logan Jundt

Biophysical Society Annual Meeting 2023, San Diego, CA, February 18-22, 2023.

CHARACTERIZING COMMERCIAL POTTERY GLAZE COMPOSITION TO CREATE GLAZES FROM RAW MATERIALS

Isabel Nielson

2022 American Indian Science and Engineering Society (AISES) National Conference, Palm Springs, CA, October 6-October 8, 2022.

EFFECTS OF SURFACE TREATMENT AND EDGE PREPARATION ON THE MICROSTRUCTURAL AND MECHANICAL PROPERTIES OF FRICTION STIR WELDED ALUMINUM 2524-T3

Cody Marshall

2022 American Indian Science and Engineering Society (AISES) National Conference, Palm Springs, CA, October 6-October 8, 2022.

MECHANOCHEMISTRY FOR CREATION OF FUNCTIONAL SURFACE TREATMENTS

Jennifer Johnson

The Minerals, Metals, and Materials Society TMS Annual Meeting and Exhibition, Anaheim, CA, February 27-March 3, 2022.

INVESTIGATING THE EFFECT OF CRYSTALLOGRAPHIC ORIENTATION ON THE MECHANICAL AND CORROSION PROPERTIES OF COPPER SINGLE CRYSTALS

Devin Davis

The Minerals, Metals, and Materials Society TMS Annual Meeting and Exhibition, Anaheim, CA, February 27-March 3, 2022 (1st place Light Metals Division).

UPCONVERTING NANOPARTICLES IN A CREATIVE AND ARTISTIC ENVIRONMENT

Hugo Maldonado

The 29th Annual Student Symposium on Research, Scholarship, and Creative Activities
Cal State LA, Los Angeles, CA March 12, 2021.

B. Sansao, J. Kellar, W. Cross, **K. Schottler**, A. Romkes, “Comparison of Surface Energy and Adhesion Energy of Surface-treated Particles”, Powder Technology 384 (2021) 267-275.

Saraswat R, Ratnayake I, **Perez EC, Schutz, WM**, Zhu Z, Ahrenkiel SP, Wood ST. *A micropatterned biphasic nanocomposite platform for maintaining chondrocyte morphology*. ACS Applied Materials and Interfaces 12 (13), 14814-14824.

R. Saraswat, I. Ratnayake, **E. Perez, W. Schutz**, Z. Zhu, S. Ahrenkiel, S. Wood, *CellWell: A micropatterned biphasic nanocomposite platform for culturing chondrocytes*. bioRxiv: **2019**. doi:10.1101/790030.

B. Sansao, J. Kellar, W. Cross, A. Romkes, and **K. Schottler**, “Determination of Particle Adhesion for the Development of a System for Sustainable Mineral Beneficiation”, Society for Mining, Metallurgy, and Exploration Conference 2020, Phoenix, AZ, February 23-16, 2020.

E. Perez, R. Saraswat, I. Ratnayake, S. Ahrenkiel, and S. Wood “Characterization and Optimization of Embedded Nanofibers for the CellWell”, 2020 Conference for Undergraduate Women in Physics (CUWiP), Irvine, CA, January 19, 2020.

J. Newkirk, C. Degen, A. Romkes, **E. Redinger** “Application of Digital Image Correlation for Development of a Computational Framework Representative of Ultrasonically Spot Welded Composite Joints”, Society for Experimental Mechanics Annual Conference 2019, Reno, NV, June 3-7, 2019.

ADHESION TESTING OF SILICA BEADS

Kathryn Bozer

Society for Mining, Metallurgy, and Exploration Conference – Student Poster Presentation
February 24-27, 2019 Denver, CO

ANTIBACTERIAL COATING USING COLD SPRAY SYSTEM ON TITANIUM IMPLANTS

Aamna Jangda

Emerging Researchers National (ERN) Conference in STEM, Washington, DC, February 21-23, 2019.

LATTICE LIGHT SHEET MICROSCOPY IMAGING OF CELL ADHESION PROTEINS ON TRANSPARENT TITANIUM DIOXIDE NANOTUBES

Deanna Diaz

Biomedical Engineering Society, Atlanta, GA, October 17-20, 2018.

M. S. Safarzadeh, V. Argarwal, and **L. Hayes**, “New Insights into the Separation of Nd from Pr in Hydrochloric and Sulfuric Acid Solutions,” *Polyhedron* 153 (2018): 82-87.

FLUORESCENCE OF FUNCTIONALIZED CARBON NANO-ONIONS FOR BIOIMAGING APPLICATIONS

Jenna Severson

The Mineral, Metals, and Materials TMS Annual Meeting and Exhibition, Phoenix, AZ, March 11-15, 2018 (1st place presentation)

INFLUENCE OF TITANIUM SUBSTRATE SURFACE PREPARATION ON THE GROWTH OF TITANIUM DIOXIDE NANOTUBES

Sabrina Curley

The Mineral, Metals, and Materials TMS Annual Meeting and Exhibition, Phoenix, AZ, March 11-15, 2018

HIGH-STRENGTH THERMOPLASTIC POLYMERS AS COMPOSITE MATRIX MATERIALS

Alexandra Lillig

2017 Southern California Conferences for Undergraduate Research (SCCUR), Pomona, CA, November 18, 2017.

C. Casey, R. Dulal, **D. Clouse**, C. Degen, J. Meruga and J. Kellar, “Development of Mechano-Responsive Ink for Security Printing”, IS&T Printing for Fabrication 2017 Conference, Denver, CO November 2017.

M. Jensen, J. Petersen, **C. Schultz**, J. Kellar, and W. Cross, “Ink Formulation and Printing of Superhydrophobic Paper”, IS&T Printing for Fabrication 2017 Conference, Denver, CO November 2017.

J. Petersen, **C. Bogart**, J. Kellar, and W. Cross, “Visible to Infrared Converting CaCuSi₄O₁₀ Security Ink”, IS&T Printing for Fabrication 2017 Conference, Denver, November 2017.

B. Jasthi T. Curtis, C. Widener, M. West, **B. Kellogg**, “Effect of Thermal Aging on the Corrosion and Mechanical Properties of Friction Stir Welded 250 Grade Maraging Steel”, *Friction Stir Welding and Processing IX*, Wiley-TMS, Edited by Hovanski et al. (2017) 3-11.

T. Curtis, **V. Champagne III**, M. West, R. Rokni, C. Widener, “Joining Al 6061 to ZE41A Mg Alloy by Friction Stir Welding Using a Cold Spray Transition Joint”, *Friction Stir Welding and Processing IX*, Wiley-TMS, Edited by Hovanski et al. (2017) 221-235.

V. Champagne III, M. West, R. Rokni, T. Curtis, V. Champagne Jr, B. McNally, “Joining of Cast ZE41A to Wrought 6061 by the Cold Spray Process and Friction Stir Welding,” *Journal of Thermal Spray Technology*, Vol. 25 (1-2) (2016) p. 143-159.

OPTIMIZING PROCESSING PARAMETERS OF DIRECT METAL LASER DEPOSITION FOR POROSITY REDUCTION OF THIN FILM TIB₂+ALMGB14 ON HIGH CARBON STEEL

Mackenzie Ridley

2016 Quadrennial Physics Congress, San Francisco, CA November 3-5, 2016 (1st place presentation)

DEMONSTRATING EFFECTIVE USE OF A BASE PLATE ELECTRODE FOR ELECTROSPINNING OF POLYVINYLPIRROLIDONE NANOFIBERS

Nicholas van Almelo

2016 Quadrennial Physics Congress, San Francisco, CA November 3-5, 2016

CRYSTALLIZATION OF GERMANIUM USING NANOSPHERE LITHOGRAPHY

Marcus Brown

Alpha Chi National Convention, Washington DC, April 7-9, 2016. (1st place physics division)

PROCESSING, MICROSTRUCTURE CHARACTERIZATION AND BIOLOGICAL RESPONSE OF COLD SPRAYED BIOCOSMETIC COATINGS

Eden Bhatta, **Joanna Villanueva**, Grant Crawford

The Mineral, Metals, and Materials TMS Annual Meeting and Exhibition, Nashville, TN, February 2016.

OPTIMIZING LOW-GRADE MANGANESE EXTRACTION

Taylor Graham

Student Poster Presentation: Mineral and Metallurgical Processing Division, Society for Mining, Metallurgy, and Exploration, Phoenix, AZ February 21-24, 2016. (2nd place)

EFFECT OF LASER GLAZING ON THE MICROSTRUCTURE AND MECHANICAL PROPERTIES OF COLD SPRAYED ALLOY 718

Bo Paulsen

Louis Stokes Alliances for Minority Participation Research Symposium, National Harbor, MD, February 22-24, 2016.

EFFECT OF LASER GLAZING ON THE MICROSTRUCTURE AND MECHANICAL PROPERTIES OF COLD SPRAYED ALLOY 718

Bo Paulsen

American Indian Science and Engineering Society National Conference, Phoenix, AZ November 19-21, 2015 (1st place).

JOINING OF DISSIMILAR MATERIALS BY THE COLD SPRAY PROCESS

Victor Kenneth Champagne, III

International Thermal Spray Conference, Long Beach, CA, May 11-14, 2015.

T. Curtis, C. Widener, M. West, B.K. Jasthi, Y. Hovanski, B. Carlson, R. Symanski, and **W. Bane**, "Friction Stir Scribe Welding of Dissimilar Aluminum to Steel Lap Joints" *Friction Stir Welding and Processing-VIII*, Wiley-TMS 2015, pp. 191-198.

SOLVENT EXTRACTION OF EUROPIUM FROM A NITRIC ACID SOLUTION

Annette Hein

Student Poster Presentation: Mineral and Metallurgical Processing Division, Society for Mining, Metallurgy, and Exploration, Denver, CO February 15-18, 2015. (1st place)

A. Wulff, D. Pagnac, A. Logar “The application of micro-computer tomography and 3D printing to the study of fossils,” *Proceedings of the South Dakota Academy of Science*, Vol. 93 (2014) pp. 61.70.

A. Wulff, W. Cross, M. West, T. Logar, E Corwin “Variability in Micro-computed tomography images for non-destructive evaluation of friction-stir weld quality,” *Proceedings of the South Dakota Academy of Science*, Vol. 93 (2014) pp. 194-198.

REDUCING VARIABILITY IN FRICTION STIR WELDS

Alex Wulff

Student Oral Presentation: South Dakota Academy of Sciences Conference, Rapid City, SD March 28, 2014. (1st place in student division)

FRICTION STIR PROCESSING OF GRADE HIGH STRENGTH LOW ALLOY STEEL

Timothy Fountain

Student Poster Presentation: Materials Science and Technology 2013, Montreal, Canada October 27-31, 2013. (3rd place in student poster session)

PROCESSING AND CHARACTERIZATION OF HIERARCHICAL SURFACE COATINGS FOR TITANIUM IMPLANTS

Courtney Gegg

Student Poster Presentation: The Minerals, Metals, and Materials Society, San Diego, CA February 16-20, 2014.

EXTRACTION OF RARE EARTHS FROM A NITRIC ACID SOLUTION

Nathan Madden

Student Poster Presentation: Society for Mining, Metallurgy and Exploration 2014, Salt Lake City, UT February 23-26, 2014.

MECHANICAL AND MICROSTRUCTURAL EVALUATION OF FRICTION STIR PROCESSED HAYNES 282 SUPERALLOY

Ian Markon

Student Oral Presentation: South Dakota Undergraduate Research Symposium, Rapid City, SD, April 2, 2013. (2nd place in oral presentation category)

FRICTION STIR PROCESSING OF HIGH STRENGTH STRUCTURAL STEEL

Timothy Fountain, Madison Kincaid

Student Oral Presentation: South Dakota Undergraduate Research Symposium, Rapid City, SD, April 2, 2013. (1st place in oral presentation category)

FRICION STIR WELDING AND POST-WELD TREATING OF 250-GRADE MARAGING STEEL

Brendan Kellogg

Student Poster Presentation: South Dakota Undergraduate Research Symposium, Rapid City, SD, April 2, 2013. (2nd place in poster presentation category)

SELF REACTING FRICION STIR WELDING OF THIN ALUMINUM 7075-T6

John Urban

Student Poster Presentation: South Dakota Undergraduate Research Symposium, Rapid City, SD, April 2, 2013. (3rd place in poster presentation category)

PROCESSING, MICROSTRUCTURE, CHARACTERIZATION AND BIOLOGICAL PERFORMANCE OF HIERARCHICAL SURFACE COATINGS FOR TITANIUM

E. Sauter, **C. McLinn**, **A. Michael**, G. Crawford, Innovative Thin Films and Coatings for Biological Interactions, The Minerals Metals, and Materials Society Conference, March 6, 2013, San Antonio, TX.

LCS RESEARCH: AN EVALUATION OF FRICION STIR PROCESSED MARINE PANEL STIFFENERS SUBJECTED TO COMPRESSION AND FLEXURAL LOADING

D. Fick, C. Widener, **K. White**, L. Fried, K. Johnson

Presentation to Office of Naval Research, Rapid City, SD, July 27, 2012.

HISTORIC STEELMAKING FOR THE NON-METALLURGIST

B. Carlson, G. Crawford, W. Cross, Artist Blacksmith's Association of North America International Conference, Rapid City, SD, July 20, 2012.

M. West, B. Jasthi, N. Smith, **J. Oduor**, Y. Chen, "Microstructure and Mechanical Properties of Friction Stir Processed Grade 40 Grey Cast Iron", *Friction Stir Welding and Processing VI*, Wiley-TMS, Edited by Mishra et al. (2011) 41-48.

M. West, B. Jasthi, P. Hosemann, V. Sodesetti, **K. Strader**, "Friction Stir Welding of Oxide Dispersion Strengthened Alloy MA956", *Friction Stir Welding and Processing VI*, Wiley-TMS, Edited by Mishra et al. (2011) 33-40.

K. Warsinski, M. West, J. Freeman, T. Curtis, "Investigation of Lazy S Feature in Self-Reacting Tool Friction Stir Welds", *Friction Stir Welding and Processing VI*, Wiley-TMS, Edited by Mishra et al. (2011) 171-176.

D. Blosmo, T. Curtis, **N. Procive**, C. Widener, B. Carlson, R. Symanski, M. West, "FSSW of Mg to Al with a Cold Sprayed Interlayer", *Friction Stir Welding and Processing VI*, Wiley-TMS, Edited by Mishra et al. (2011) 409-416.

A. Well, J. Marshall, **L. Luick**, D. Fick, B. Jasthi, M. West, "A Novel Approach for Fabrication of a Titanium Aerospace Structure by Friction Stir Welding", *Titanium Processing and Applications*, Materials Science and Technology Proceedings, October 2011.

N. Procive, D. Blosmo, T. Johnson, T. Curtis, M. West, B. Jasthi, C. Widener, “Friction Stir Processing of Cold Sprayed Metal Matrix Composites for Enhanced Surface Properties”, *Surface Protection for Enhanced Materials Performance: Science and Technology*, Materials Science and Technology Proceedings, October 2011.

L. Kjerstad, W. Cross, K. Ankireddy, Q. Fan, J. Kellar, “Low-Temperature Printing of Silver Nanoparticle Based Metal Grids for Photovoltaic Device Applications”, Photovoltaic Materials and Manufacturing Issues II, Materials Research Society Proceedings, October 2011.

FRICTION STIR PROCESSING OF COLD SPRAYED METAL MATRIX COMPOSITES FOR ENHANCED SURFACE PROPERTIES

N. Procive, D. Blosmo, T. Johnson, T. Curtis, M. West, B. Jasthi, C. Widener, *Surface Protection for Enhanced Materials Performance: Science and Technology*, Materials Science and Technology Conference, October 2011, Columbus, OH.

THE DIRECT REDUCTION OF IRON FROM ITS ORE USING TRADITIONAL TECHNIQUES

Brett Carlson

Presented at Society for Mining, Metallurgy and Exploration Student Poster Session. Denver, CO. Feb 27, 2011.

MANGANESE RECOVERY: MISSOURI RIVER NODULES

Nicole Tramp and Jon Ramsey

Presented at SME National Conference Student Poster Session. Denver, CO. Feb 27, 2011.

ELIMINATING VOIDS IN FDM PROCESSED POLYPHENYLSULFONE, POLYCARBONATE, AND ULTEM 9085 BY HOT ISOSTATIC PRESSING

Marybeth Parker

Student Poster Presentation: The Minerals, Metals and Materials Society Conference, February 14-18, 2010, Seattle, WA.

COMPARISON OF FRICTION STIR WELDED MA956 SUPERALLOY WITH AND WITHOUT POST WELD HEAT TREATMENT

Kathryn Strader

Student Poster Presentation: The Minerals, Metals and Materials Society Conference, February 14-18, 2010, Seattle, WA.

MICROSTRUCTURAL EVOLUTION IN FRICTION STIR WELDED MA956 AND 14YWT

M. West, B. Jasthi, P. Hosemann, D. Hoelzer, and **K. Strader**. Invited Presentation, Symposium: Nuclear Energy: Processes and Policies. The Minerals, Metals and Materials Society Conference, February 14-18, 2010, Seattle, WA.

GROWTH AND RE-CRYSTALLIZATION OF TITANIUM DIOXIDE AND ITS USES IN DYE-SENSITIZED SOLAR CELLS

Adam Argondizzo

Student Poster Presentation: Society of Physics Students Regional Conference, February 19-20th, 2010, Grove City College, Pennsylvania.

CRYSTALLIZATION OF GERMANIUM FOR USE IN LOW-COST SOLAR CELLS

Christen Racciato

Presented at American Physical Society Regional Meeting. San Antonio, TX Oct 23, 2010.

STUDY OF DISTORTION AND RESIDUAL STRESSES IN FRICTION STIR WELDED 7075 ALUMINUM PLATES

Beau White

Presented at I/UCRC Center for Friction Stir Processing Technical Workshop and Poster Session. Rapid City, SD Nov 5, 2010.

ENTRAPMENT OF AL_2O_3 AND SIC PARTICLES IN 6061 ALUMINUM BY FRICTION STIR WELDING

Nicholas Procive

Presented at I/UCRC Center for Friction Stir Processing Technical Workshop and Poster Session. Rapid City, SD Nov 5, 2010.

REFILL FRICTION STIR SPOT WELD REPAIR OF A FATIGUE CRACK

Sean Longfox

Presented at I/UCRC Center for Friction Stir Processing Technical Workshop and Poster Session. Rapid City, SD Nov 5, 2010.