# Christopher R. Shearer

Professor
Department of Civil and Environmental Engineering
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## EDUCATION

Georgia Institute of Technology, Atlanta, GA

Ph.D. in Civil Engineering, 2014
*Minor:* Sustainable Structural Materials
Doctoral Advisor: Kimberly Kurtis
Dissertation Title: *The productive reuse of coal, biomass and co-fired fly ash*
http://hdl.handle.net/1853/52298

M.S. in Civil Engineering, 2009
*Focus:* Structural Engineering

Ohio Northern University, Ada, OH

B.S. in Civil Engineering with High Distinction, 2008
*Minor:* Business Administration

## PROFESSIONAL EXPERIENCE

*Professor*, South Dakota School of Mines and Technology, Rapid City, SD, 2025–Present

Research interests include the multi-scale study of the chemical, physical, and mechanical properties and durability performance of infrastructure materials, with a focus on sustainable concrete materials technology. I also research improved pedagogical approaches for engineering with a concentration on active and service learning.

*Associate Professor*, South Dakota School of Mines and Technology, Rapid City, SD, 2020–2025

*Assistant Professor*, South Dakota School of Mines and Technology, Rapid City, SD, 2014–2020

*Structural Engineer*, URS Corporation, Cleveland, OH, 2007 and 2008

Designed aspects of the concrete foundations and steel frames for multiple power plants around the U.S. Developed a girt-truss system design guide to support components and cladding for buildings.

*Construction Inspector*, Ohio Department of Transportation, Cleveland, OH, 2006

Inspected a bridge construction and road repavement project, and managed finances for all concrete and asphalt materials.

## PAST RESEARCH EXPERIENCE

*Research Assistant and Department of Energy Office of Science Graduate Research Fellow*, Civil Engineering, Georgia Institute of Technology, 2009-2014

Conducted research on the potential reuses of biomass co-fired fly ash in concrete and geopolymers using analytical techniques including SEM, TGA/DTA, ICP-OES, BET surface area, XRD, XRF, petrography, and calorimetry among others, and a suite of ASTM Standards testing.

*Guest Researcher*, Oak Ridge National Laboratory, Oak Ridge, TN, 2014

Investigated the structural features formed in alkali-silica reaction gel using the extended Q-range small-angle neutron scattering diffractometer (EQ-SANS) at the Spallation Neutron Source (SNS).

*Guest Researcher*, National Institute of Standards and Technology, Gaithersburg, MD, 2013

Assessed the rheological behavior of alkali-activated geopolymer gels and cement pastes by measuring and modeling shear stress-shear rate curves.

*Advanced Light Source User*, Lawrence Berkeley National Laboratory, Berkeley, CA, 2012-2013

Performed X-ray absorption near edge structure (XANES) analyses on biomass co-fired fly ash and geopolymers to generate spatially-resolved elemental images and to determine chemical speciation using three X-ray microscopes: BL 5.3.2.2, 5.3.2.1, and 10.3.2.

*National Science Foundation East Asia & Pacific Summer Institutes Fellow*, University of Melbourne, Australia, 2011

*Research Mentors*: John Provis and Susan Bernal
Developed alkali-activated biomass co-fired fly ash geopolymers and used FTIR, TMA, and XRD to characterize fundamental properties of these lab-produced specimens.

## CONSULTING EXPERIENCE

*Pete Lien and Sons,* Rapid City, SD, 2021
Pozzolanic material testing.

*Gunderson, Palmer, Nelson & Ashmore, LLP,* Rapid City, SD, 2016-2017
Evaluated concrete hazard on human health.

*South Dakota Department of Transportation,* Pierre, SD, 2016
Performed isothermal calorimetry experiments.

*Bailey Associates, Inc.,* Rapid City, SD, 2016
Concrete foundation mix design.

*TEC Services, Inc.*, Atlanta, GA, 2014
Tested the pozzolanicity of a waste material using TGA.

*Metna Co.*, Atlanta, GA, 2013
Analyzed the early-age reaction kinetics of high-performance cementitious mixtures.

*Geosyntec Consultants*, Atlanta, GA, 2012
Performed SEM imaging and XRD analysis to investigate the self-hydrating properties of fly ash.

*Grace Construction Products*, Atlanta, GA, 2010
Conducted a systematic testing series on the sulfate resistance of cement mortars.

## TEACHING EXPERIENCE

Engineering & Construction Materials and Laboratory (CEE 316/316L), Instructor, SD Mines*

Concrete Theory & Design (CEE 456/556), Instructor, SD Mines*

Prestressed Concrete (CEE 652), Instructor, SD Mines*

Advanced Concrete Materials (CEE 792), Instructor, SD Mines*

Mechanics of Materials (EM 321), Instructor, SD Mines*

Structural Analysis I (CEE 3055), Instructor, Georgia Tech, Summer 2014

Civil Engineering Materials (CEE 3020), Teaching Assistant, Georgia Tech, 2008-2009

**Students at South Dakota Mines evaluated me as "excellent teacher" (4.6/5 average) and "excellent course" (4.5/5 average) for the past 5 years*

## REFEREED JOURNAL ARTICLES

1) Yujia, M., Suraneni, P., Shearer C.R., Hooton D., and Burris L.E., (2026) A scalable framework for air-entraining agent adsorption on fly ash: Intrinsic capacity and Ca-driven non-proportional uptake, *Cement and Concrete Research*, 204. https://doi.org/10.1016/j.cemconres.2026.108205.

2) Dymond, B.Z., Murray, C.D., Shearer, C.R., & Okumus, P., (2026) Teaching Strategies and Resources for a Prestressed Concrete Course, *ACI Special Publication-367*, Best Practices and Lessons Learned for Teaching Advanced Concrete Materials and Structural Design , 133-153. https://doi.org/10.14359/51750596.

3) Duong, L. T., Reza, A. N. R., Donnell, K. M., & Shearer, C. R. (2026). Microwave dielectric properties of geopolymer precursor powders. *Materials and Structures*, 59(2), 112, https://doi.org/10.1617/s11527-026-03005-8.

4) Elahi, M.M.A. & Shearer, C. R. (2025). Influence of Portland-limestone cement composition on sulfate attack performance. *Journal of Sustainable Cement-Based Materials*, 14(2), 311-32, https://doi.org/10.1080/21650373.2024.2440734.

5) Shearer, C. R., Burris, L., Hooton, R. D., & Suraneni, P. National Academies of Sciences, Engineering, and Medicine. (2024). Use of Marginal and Unconventional-Source Coal Ashes in Concrete. Washington, DC: *The National Academies Press*. https://doi.org/10.17226/27857.

6) Min, Y., Stewartson, E., Suraneni, P., Shearer, C. R., Hooton, R. D., and Burris, L., (2024) Measuring Concrete Air-Entraining Admixture Adsorption on Fly Ash Using Three-Phase Equilibrium and Fluorescence-Based Methods. *CEMENT*, https://doi.org/10.1016/j.cement.2024.100115.

7) Wang, Y., Burris, L., Shearer, C. R., Hooton, R. D., and Suraneni, P. (2023). Characterization and reactivity of size-fractionated fly ashes. *Materials and Structures*. 56(3), 49. https://doi.org/10.1016/j.cemconres.2010.12.001.

8) Wang, Y., Ramanathan, S., Burris, L., Hooton, R., Shearer, C. R., & Suraneni, P. (2022). Reactivity of Unconventional Fly Ashes, SCMs, and Fillers: Effects of Sulfates, Carbonates, and Temperature. *Advances in civil engineering materials*, 11(2). https://doi.org/10.1520/ACEM20220003.

9) Wang, Y., Ramanathan, S., Burris, L., Shearer, C. R., Douglas Hooton, R., & Suraneni, P. (2022). A rapid furnace-based gravimetry test for assessing reactivity of supplementary cementitious materials. *Materials and Structures*, 55(7), 1-13. https://doi.org/10.1617/s11527-022-02029-0.

10) Wang, Y., Acarturk, B. C., Burris, L., Hooton, R. D., Shearer, C. R., & Suraneni, P. (2022). Physicochemical characterization of unconventional fly ashes. *Fuel*, *316*, 123318. https://doi.org/10.1016/j.fuel.2022.123318

11) Benning, J., Shearer, C., Kellogg, S., & Oakes, W. (2022). Impact of Service Learning on Engineering Student Development. *International Journal of Engineering Education*, *38*(1), 253-263.

12) Wang, Y., Burris, L., Hooton, R. D., Shearer, C. R., & Suraneni, P. (2022). Effects of unconventional fly ashes on cementitious paste properties. *Cement and Concrete Composites*, *125*, 104291. https://doi.org/10.1016/j.cemconcomp.2021.104291

13) Wang, Y., Burris, L., Shearer, C. R., Hooton, D., & Suraneni, P. (2021). Strength activity index

and bulk resistivity index modifications that differentiate inert and reactive materials. Cement and Concrete Composites, 124, 104240. https://doi.org/10.1016/j.cemconcomp.2021.104240

14) Elahi, M. M. A., Shearer, C. R., Reza, A. N. R., Saha, A. K., Khan, M. N. N., Hossain, M. M., and Sarker, P. K. (2021). Improving the sulfate attack resistance of concrete by using supplementary cementitious materials (SCMs): A review. Construction and Building Materials, 281, 122628. https://doi.org/10.1016/j.conbuildmat.2021.122628

15) Suraneni, P., Burris, L., Shearer, C. R., and Hooton, R. D. (2021). ASTM C618 Fly Ash Specification: Comparison with Other Specifications, Shortcomings, and Solutions. ACI Materials Journal, 118(1), 157-167. https://doi.org/10.14359/51725994

16) Elahi, M. M. A., Reza, A. N. R., and Shearer, C. R. (2021). Controlling aluminate phase hydration for sulfate resistance of Portland–limestone cements. Proceedings of the Institution of Civil Engineers-Construction Materials, 174(1), 34-46. https://doi.org/10.1680/jcoma.19.00099

17) Elahi, M. M. A., Hossain, M. M., Karim, M. R., Zain, M. F. M., and Shearer, C. R. (2020). A review on alkali-activated binders: Materials composition and fresh properties of concrete. Construction and Building Materials, 260, 119788. https://doi.org/10.1016/j.conbuildmat.2020.119788

18) Wirth, X., Benkeser, D., Yeboah, N. N., Shearer, C. R., Kurtis, K. E., and Burns, S. E. (2019). Evaluation of Alternative Fly Ashes as Supplementary Cementitious Materials. *ACI Materials Journal*, *116*(4), 69-77. https://doi.org/10.14359/51716712

19) Shearer, C. R., Provis, J. L., Bernal, S. A., and Kurtis, K. E. (2016). Alkali-activation potential of biomass-coal co-fired fly ash. *Cement and Concrete Composites*, *73*, 62-74. https://doi.org/10.1016/j.cemconcomp.2016.06.014

20) Benning, J. L. and Shearer, C. R. (2016). Example of a Vertically Integrated Sustainable Engineering Program, *Journal of Professional Issues in Engineering Education and Practice*, *143*(2), D2516001. https://doi.org/10.1061/(ASCE)EI.1943-5541.0000291

21) Shearer, C. R., and Kurtis, K. E. (2015). Use of Biomass and Co-Fired Fly Ash in Concrete. *ACI Materials Journal*, *112*(2). https://doi.org/10.14359/51686827

22) Yeboah, N. N., Shearer, C. R., Burns, S. E., and Kurtis, K. E. (2014). Characterization of biomass and high carbon content coal ash for productive reuse applications. *Fuel*, *116*, 438-447. https://doi.org/10.1016/j.fuel.2013.08.030

## REFEREED CONFERENCE PUBLICATIONS

1) Swenty, M., Dymond, B., Saviz, C., Saftner, D., Shafer, J., D'Alessandro, K., Kunberger, T., and Shearer, C. (2022), I Think We Should Break Up...Class, That Is, *ASEE Annual Conference and Exposition*, Minneapolis, MN. June 26-June 29, 2022. https://peer.asee.org/40646.

2) Thinley, L.T., Wang, Y., Acarturk, B. C., Burris, L., Hooton, R. D., and Suraneni, P., and Shearer, C. R. (2022). Alkali-Silica Reaction Mitigation Performance of Unconventional and Marginal Source Fly Ash, *Proceedings of the 16th International Conference on Alkali-Aggregate Reaction in Concrete*, Lisbon, Portugal, May 31-June 2, 2022.

3) Swenty, M. K., Shearer, C. R., Dymond, B. Z., and Idewu, W. I. A. (2021). Does a Review Course Increase FE Exam Preparedness?. In *2021 ASEE Virtual Annual Conference Content Access*. https://peer.asee.org/36991.

4) Swenty, M. K., Shearer, C. R., Dymond, B. Z., & Idewu, W. I. A. (2021). Does a Review Course Increase FE Exam Preparedness? In 2021 *ASEE Virtual Annual Conference Content Access*. https://strategy.asee.org/36991

5) Dymond, B. Z., Swenty, M.K., and Shearer C. R. (2020). Implementation of a Laboratory Experience in Reinforced Concrete Courses. *Proceedings of American Society of Engineering Education (ASEE) Annual Conference & Exposition*, Montreal, Quebec. https://doi.org/10.18260/1-2--34770

6) Elahi, M. M. A. and Shearer, C. R. (2019). Improving the sulfate attack resistance of portland-limestone cement through sulfate optimization: A calorimetry-based approach, *Proceedings of the Fifth International Conference on Sustainable Construction Materials and Technologies*, Kingston Upon Thames, United Kingdom, July 14-17, 2019. http://www.claisse.info/2019%20papers/5052.pdf (conference award winner)

7) Benning, J. Surovek, A., Kellogg, S., and Shearer, C. R., (2018). Engagement in Practice: A Case study on improving community sustainability through service learning. *Proceedings of the 2018 American Society of Engineering Education (ASEE) Annual Conference & Exposition*, Salt Lake City, UT, June 24-27, 2018. https://peer.asee.org/30378

8) Edwards, C. A., Donnell, K. M., and Shearer, C. R. (2018). Microwave materials characterization of geopolymer precursor powder, *Proceedings of 2018 Institute of Electrical and Electronics Engineers (IEEE) International Instrumentation and Measurement Technology Conference (I2MTC)*, Houston, TX, May 14-17, 2018. https://doi.org/10.1109/I2MTC.2018.8409709

9) Long, A., Benning, J. Shearer, C. R., Surovek, A., and Kellogg, S. (2017). Promoting sustainability in engineering through EPICS program*, 15th LACCEI International Multi-Conference for Engineering, Education, and Technology Proceedings*, Boca Raton, FL, July 19-21, 2017. http://dx.doi.org/10.18687/LACCEI2017.1.1.465

10) Writh, X., Shearer, C. R., Burns, S. E., and Kurtis K. E., (2017). Evolution of the properties of organic matter and mineral phases of reclaimed coal fly ash, *World of Coal Ash Conference Proceedings*, Lexington, KY, May 9-11, 2017. http://www.flyash.info/2017/066-Wirth-woca2017p.pdf

11) Shearer, C. R., Foudazi, A., Hashemi, A., and Donnell, K. M. (2016). Microwave characterization of fly ash geopolymerization, *Proceedings of 2016 Institute of Electrical and Electronics Engineers (IEEE) International Instrumentation and Measurement Technology Conference (I2MTC)*, Taipei, Taiwan, May 23-26, 2016, https://doi.org/10.1109/I2MTC.2016.7520442

12) Shearer, C. R., Provis, J. L., Bernal, S. A., Kurtis, K. E. (2012). Characterisation of Alkali-activated Co-fired Fly Ash Geopolymers, *Proceedings of the Concrete in the Low Carbon Era International Conference*, Dundee, UK, July 9-11, 2012. https://discovery.dundee.ac.uk/ws/portalfiles/portal/6514437/proceedings.pdf

13) Shearer, C. R., Yeboah, N. N. N., Burns, S. E., Kurtis, K. E. (2012). Evaluation of Biomass Fired and Co-fired Fly Ash for Alkali-Silica Reaction Mitigation in Concrete, *Proceedings of the 14th International Conference on Alkali-Aggregate Reaction*, Austin, TX, May 20-25, 2012.

14) Shearer, C. R., Yeboah, N. N. N., Kurtis, K. E., Burns, S. E. (2011). The Early Age Behavior of Biomass Fired and Co-fired Fly Ash in Concrete, *Proceedings of World of Coal Ash Conference, Denver*, CO, May 9-11, 2011. http://www.flyash.info/2011/017-Shearer-2011.pdf

15) Shearer, C. R., Yeboah, N. N. N., Kurtis, K. E., Burns, S. E. (2010). Investigation of biomass co-fired fly ash properties: Characterization and concrete durability performance, *Proceedings of the Second International Conference on Sustainable Construction Materials and Technologies,* Ancona, Italy, 2010. http://www.claisse.info/2010%20papers/k39.pdf

## TECHNICAL REPORTS

1) Shearer, C.R. and Rotherham, J. (2025). Investigation of Poor Compressive Strength and Performance of A45 Structural Concrete Mixes. *South Dakota Department of Transportation*, Pierre, SD.

2) Simonton, E. and Shearer, C. R., (2020). Low Shrinkage Mix Designs to Reduce Early Cracking of Concrete Bridge Decks*, South Dakota Department of Transportation*, Pierre, SD.

3) Suraneni, P., Burris, L., Shearer, C. R., and Hooton, D. R. (2019). Phase 1 Report on "Recommendations for Revision of AASHTO M 295 Standard Specification to Include Marginal and Unconventional Source Coal Fly Ashes", National Cooperative Highway Research Program, Washington, DC.

4) Simonton, E. and Shearer, C. R., (2019). Technical Memorandum: Literature Review on Low Shrinkage Mix Designs to Reduce Early Cracking of Concrete Bridge Decks*, South Dakota Department of Transportation*, Pierre, SD, August 16, 2019.

5) Elahi, M. M. A. and Shearer, C. R., (2019). Study SD2016-04 Final Report: Development of Specifications for Portland-Limestone Cement, *South Dakota Department of Transportation*, Pierre, SD, March 28, 2019.

6) Elahi, M. M. A. and Shearer, C. R., (2017). Technical Memorandum: Literature Review on the Influence of Portland Limestone Cements on Sulfate Attack in Concrete, South Dakota Department of Transportation, Pierre, SD, July 24, 2017.

7) Shearer, C. R., Shaffner, K., and Claggett N. J.* (2016). Isothermal Calorimetry Measurements on Pavements including Admixtures and SCMs*, South Dakota Department of Transportation*, Pierre, SD, August 22, 2016.

8) Shearer, C. R., and Kurtis, K. E., *The Productive Reuse of Coal, Co-fired and Biomass Fly Ash as a Supplementary Cementitious Material in Concrete*, Southern Company, Atlanta, GA, 2012.

## INVITED PRESENTATIONS

1) Thinley, L.T., Burris, L., Hooton, R. D., and Suraneni, P. and Shearer, C. R., (2024) Updating Coal Ash Specifications, Electric Power Research Institute (EPRI) Environmental Summer Meeting, Salta Lake City, SD, June 25-26, 2024.

2) Simonton, E. and Shearer, C. R., (2024). Strategies to Reduce Shrinkage Cracking in Concrete Bridge Decks, 14th Advances in Cement-Based Materials, South Dakota Engineering Society (SDES), Rapid City, SD, January 30, 2024.

3) Thinley, L.T., Burris, L., Hooton, R. D., and Suraneni, P. and Shearer, C. R., (2022). Update on NCHRP Project 10-104: Recommendations for Revision of AASHTO M 296 Standard Specification to Include Marginal and Unconventional Source Coal Fly Ashes, *National Concrete Consortium Conference*, Nashville, TN, April 5-7, 2022.

4) Shearer, C. R. and Hodges, D., (2022). Bridge Deck Cracking Initiatives, *National Concrete Consortium Conference*, Nashville, TN, April 5-7, 2022.

5) Thinley, L.T., Burris, L., Hooton, R. D., and Suraneni, P. and Shearer, C. R., (2022). Can we use marginal and unconventional fly ashes in concrete?, *Transportation Asset and Infrastructure Management Conference*, (virtual), Oct. 25-27, 2021.

6) Shearer, C. R., Suraneni, P., Burris, L., and Hooton, D. R. Unconventional Fly Ash for Use in Concrete, *FHWA Machine Learning and Pozzolans for Concrete (Fly Ash Research) Workshop*, December 15, 2020.

7) Shearer, C. R., "Development of Sustainable Infrastructure Materials*", South Dakota Engineering Society Fall Conference*, South Dakota School of Mines and Technology, Rapid City, SD, Oct. 9, 2014.

8) Shearer, C. R., *The Productive Reuse of Biomass Ash and Co-fired Fly Ash in Concrete and Alkali-Activated Geopolymers*, National Institute of Standards and Technology, Gaithersburg, MD, March 26, 2013.

9) Shearer, C. R., *An Overview of the European Standard EN 450*, ASTM Committee C-09 on Concrete and Concrete Aggregates Meeting, New Orleans, LA, Dec. 6-8, 2010.

10) Shearer, C. R., George, J., Smith, N., Ross, A., and Reza, F., "Design for a Swinging Bridge on the Buckeye Trail's Miami and Erie Canal Towpath", *ASCE Structures Congress*, Austin, TX, April 30-May 2, 2009.

## CONFERENCE AND TECHNICAL PRESENTATIONS

1) Dymond, B.Z., Swenty, M., and Shearer, C.R., Implementation of a Project-based Laboratory Experience in a Reinforced Concrete Course. *ACI Spring Convention*, Toronto, Canada, March 30-April 2, 2025.

2) Shearer, C.R. and Rotherham, J., Investigation of Poor Compressive Strength and Performance of A45 Structural Concrete Mixes. *South Dakota Department of Transportation Research Review Board*, Pierre, SD, January, 29, 2025.

3) Dixon, D., Arciniega R., Shearer C.R., et al., Increasing the Partnership, Technical Training, and Exchange of Students between UPC-PERU, Lima, Peru, and SDSMT, Rapid City, USA, *Annual Colloquium on International Engineering Education*, Kinston, RI, November 7-8, 2024.

4) Simonton, E. and Shearer, C. R., (2024). Specification Development to Mitigate Shrinkage in Structural Concrete, *14th Advances in Cement-Based Materials*, ACerS Cements Division, Missouri University of Science and Technology, Rolla, MO, June 19-21, 2024.

5) Luckarift H. and Shearer, C. R., Vascular Engineered Integrated Network (VEIN) Update**.** DARPA BRACE Year 1 Meeting, Washington DC, February 12-13, 2024.

6) Thinley, L.T., Burris, L., Hooton, R. D., and Suraneni, P. and Shearer, C. R., (2023) Recommendations on Updating Coal Ash Specifications, *Fall 2023 American Concrete Institute (ACI) Convention*, Boston, MA, October 29 – November 2, 2023.

7) Thinley, L.T., Burris, L., Hooton, R. D., and Suraneni, P. and Shearer, C. R., (2023) Strategies to Update ASTM C618/AASHTO M295, *Spring 2023 American Concrete Institute (ACI) Convention*, San Francisco, CA April 2-5, 2023.

8) Shearer, C. R., (2022). Concrete properties and how they relate to BioWRAP Presentation. Virtual Lecture, Rapid City, SD, November 18, 2022.

9) Thinley, L.T., Burris, L., Hooton, R. D., and Suraneni, P. and Shearer, C. R.#, (2022). Strength and Durability of Emerging Fly Ashes, *12th Advances in Cement-Based Materials*, ACerS Cements Division, UC Irvine, CA, July 10-13, 2022.

10) Swenty, M., & Dymond, B., & Saviz, C., & Saftner, D., & Shafer, J., and D'Alessandro, K., and Kunberger, T., & Shearer, C. (2022), I Think We Should Break Up…Class, That Is, *ASEE Annual Conference & Exposition*, Minneapolis, MN. June 26-June 29, 2022.

11) Wang, Y., Ramanathan, S., Burris, L., Hooton, R., Shearer, C. R., & Suraneni, P. (2022). Reactivity of Unconventional Fly Ashes, SCMs, and Fillers. *ASTM June Week and Reactivity Symposium*, Seattle, WA, June 12, 2022.

12) Thinley, L.T., Wang, Y., Acarturk, B. C., Burris, L., Hooton, R. D., and Suraneni, P., and Shearer, C. R. (2022). Alkali-Silica Reaction Mitigation Performance of Unconventional and Marginal Source Fly Ash, Proceedings of the *16th International Conference on Alkali-Aggregate Reaction in Concrete*, Lisbon, Portugal, May 31-June 2, 2022.

13) Jetsun, J. T. and Shearer, C. R., (2022). Properties and Performance Characteristics of Marginal and Unconventional Source Fly Ashes in Concrete. *12th Annual Student Research Symposium*, South Dakota Mines, April 5, 2022.

14) Shearer, C. R., Burris, L., Hooton, R. D., and Suraneni, P. (2022). Update on NCHRP Project 10-104: Recommendations for Revision of AASHTO M 296 Standard Specification to Include Marginal and Unconventional Source Coal Fly Ashes, *FHWA Concrete Pavements Technical Working Group Meeting*, (virtual), December 13, 2021.

15) Suraneni, P., Wang, Y. Burris, L. , Shearer, C. R. , and Hooton, R. D., (2021). Thoughts on the use of unconventional ashes in concrete. *EPRI Summer Beneficial Use Meeting*, Charlotte, NC, August 18, 2022.

16) Swenty, M. K., Shearer, C. R., Dymond, B. Z., and Idewu, W. I. A. (2021). Does a Review Course Increase FE Exam Preparedness?. *American Society of Engineering Education (ASEE) Annual Conference & Exposition*, Virtual, July 26-29, 2021.

17) Simonton, E. and Shearer, C. R., (2021). Mix design strategies for reduced shrinkage cracking in bridge decks, *11th Advances in Cement-Based Materials*, ACerS Cements Division, Virtual, June 23-25, 2021.

18) Wang, Y., Suraneni, P., Burris, L., Shearer, C. R. , and Hooton, D. R., (2021). Strength activity index and bulk resistivity index variants that differentiate inert and reactive materials. *11th Advances in Cement-Based Materials*, ACerS Cements Division, Virtual, June 23-25, 2021.

19) Simonton, E. and Shearer, C. R., (2021). Low Shrinkage Mix Designs to Reduce Early Cracking of Concrete Bridge Decks, Research Review Board, South Dakota Department of Transportation, Virtual, April 26, 2021.

20) Jetsun, T. T. and Shearer, C. R., (2021). Durability Testing of Marginal and Unconventional Fly Ash. *11th Annual Student Research Symposium*, South Dakota Mines, April 6-7, 2021.

21) Benkeser, D., Kurtis, K., Wirth, X., Burns, S., Shearer, C. R., Innocenti, G., and Sievers, C., (2021). Ponded Coal Ash As a Supplementary Cementitious Material: Productive Reuse Including Chemi-Mechanical Beneficiation. *Spring Convention of the American Concrete Institute (ACI)*, Virtual, March 28-31, 2021.

22) Suraneni, P., Burris, L. , Shearer, C. R. , and Hooton, D. R., (2021). An Improved Strength Activity Index. *Spring Convention of the American Concrete Institute (ACI)*, Virtual, March 28-31, 2021.

23) Jetsun, T. T., Suraneni, P., Burris, L. , Shearer, C. R. #, and Hooton, D. R., (2021). Durability Testing of Marginal and Unconventional Fly Ash. *Spring Convention of the American Concrete Institute (ACI)*, Virtual, March 28-31, 2021.

24) Kirkvold, H. A., Castaneda, D. I., Henschen, J. D., and Shearer, C. R. (2021). Innovative Pedagogical Approaches for Concrete Durability. *Spring Convention of the American Concrete Institute (ACI)*, Virtual, March 28-31, 2021.

25) Dymond, B. Z., Swenty, M.K., and Shearer C. R. (2020). Implementation of a Laboratory Experience in Reinforced Concrete Courses. *American Society of Engineering Education (ASEE) Annual Conference & Exposition*, Montreal, Quebec, June 20-24, 2020 (virtual).

26) Elahi, M. M. A. and Shearer, C. R., "Improving the sulfate attack resistance of portland-limestone cement through sulfate optimization: A calorimetry-based approach", *Fifth International Conference on Sustainable Construction Materials and Technologies*, Kingston Upon Thames, United Kingdom, July 14-17, 2019. (conference award winner)

27) Simonton, E. and Shearer, C. R., "Literature review on low shrinkage mix designs to reduce early cracking of concrete bridge decks", *South Dakota Department of Transportation Technical Panel*, Pierre, SD, June 26, 2019.

28) Benkeser, D., Wirth, X., Yeboah, N.N.N, and Shearer, C. R. (2019). Evaluation of 'Off-Spec' Biomass, Co-fired and Reclaimed Ashes for Use in Concrete. *World of Coal Ash*, St. Louis, MO, May 14-16, 2019.

29) Elahi, M. M. A. and Shearer, C. R., "Development of specifications for portland-limestone cement*", South Dakota Department of Transportation Research Review Board*, Pierre, SD, April 15, 2019.

30) Benning, J., Surovek, A., Kellogg, S., and Shearer, C. R., "Engagement in practice: A case study on improving community sustainability through service learning". *2018 ASEE Annual Conference & Exposition*, Salt Lake City, UT, June 24-27, 2018.

31) Elahi, M. M. A. and Shearer, C. R., "Is portland-limestone cement sulfate resistant?", *The American Ceramic Society 9th Advances in Cement-based Materials Conference*, Pennsylvania State University, State College, PA, June 10-12, 2018.

32) Edwards, C. A., Donnell, K. M., and Shearer, C. R., "Microwave materials characterization of geopolymer precursor powders", *2018 IEEE International Instrumentation and Measurement Technology Conference (I2MTC)*. Houston, TX, May 14-17, 2018.

33) Elahi, M. M. A. and Shearer, C. R., "Performance of portland-limestone cement in sulfate environments", *SD Mines Student Research Symposium*, April 3, 2018.

34) Long, A., Benning, J., Shearer, C. R., Surovek, A., and Kellogg, S., "Promoting sustainability in engineering through EPICS program", *15th LACCEI International Multi-Conference for Engineering, Education, and Technology*, Boca Raton, FL, July 19-21, 2017.

35) Claggett, N. J. and Shearer, C.R., "Mechanical performance of macrosynthetic fiber-reinforced shotcrete mixtures with fibers of varying lengths for use in rock wall stabilization*", The American Ceramic Society 8th Advances in Cement-based Materials Conference*, Georgia Institute of Technology, Atlanta, GA, June 26-28, 2017.

36) Writh, X., Shearer, C. R., Burns, S. E., and Kurtis K. E., "Evolution of the properties of organic matter and mineral phases of peclaimed coal fly ash", *World of Coal Ash Conference*, Lexington, KY, May 9-11, 2017.

37) Mahmoodi, M., Shearer, C. R., and Donnell, K. M., "Microwave materials characterization of geopolymer materials*", 26th American Society for Nondestructive Testing (ASNT) Spring Research Symposium*, Jacksonville, FL, March 13-16, 2017.

38) Shearer, C. R., Shaffner, K., Thompson, N., Mahmoodi, M., Foudazi, A., Hashemi, A., and Donnell, K., "A new tool for analyzing chemically activated binders: Microwave materials characterization", *The American Concrete Institute Convention*, Philadelphia, PA, Oct. 23-27, 2016.

39) Claggett, N. J. and Shearer, C. R., "Behavior of high-volume synthetic fiber-reinforced shotcrete with varying fiber lengths", *The American Concrete Institute Convention*, Philadelphia, PA, Oct. 23-27, 2016.

40) Benning, J., Surovek, A., Shearer, C. R,, and Kellogg, S., "Intellectual diversity and critical thinking skills in service learning"*, Rapid City Sustainability Conference,* Rapid City, SD, Sept. 30, 2016.

41) Benning, J., Surovek, A., Shearer, C. R,, and Kellogg, S., "Building engineering diversity through sustainable design", Seminar series, Universidad Tecnologica de Panama, Panama City, June 9, 2016.

42) Benning, J., Surovek, A., Shearer, C. R., and Kellogg, S., "Intellectual diversity and critical thinking skills in service learning", *University of Colorado Boulder ME Seminar Series,* Boulder, CO, 2016.

43) Benning, J., Surovek, A., Shearer, C. R., Kellogg, S., and Sawyer, F., "Intellectual diversity and critical thinking skills in service learning", *University of New Mexico CEE Seminar Series,* Albuquerque, NM, 2016.

44) Mahmoodi, M., Foudazi, A., Hashemi, A., Shearer, C. R., and Donnell, K. M., "Microwave Assessment of Geopolymer Materials in Plastic and Hardened States", *The American Society for Nondestructive Testing (ASNT) 25th Research Symposium*, New Orleans, LA, April 11-14, 2016.

45) Shearer, C. R., Foudazi, A., Hashemi, A., and Donnell, K. M.*, "Microwave characterization of fly ash geopolymerization", *International Instrumentation and Measurement Technology Conference*, Taipei, Taiwan, May 23-26, 2016.

46) Shearer, C.R., "The Changing Nature of Fly Ash and its Reuse", *Second International Conference on Concrete Sustainability*, Madrid, Spain, June 13-15, 2016.

47) Shearer, C. R.. and Kurtis, K. E., "Scanning transmission X-ray microscopy study on alkali-activated biomass-derived fly ash*", The American Ceramic Society 6th Advances in Cement-based Materials Conference*, Kansas State University, Manhattan, KS, June 20-22, 2015.

48) Shearer, C. R., *Alternative Concrete Materials*, 51st Annual Concrete Conference, South Dakota School of Mines and Technology, Rapid City, SD, March 6, 2015.

49) Shearer, C. R.. and Kurtis, K. E., "The Pozzolanic Reactivity of Biomass and Co-fired Fly Ash", The *American Concrete Institute Convention*, Phoenix, AZ, Oct. 20-24, 2013.

50) Shearer, C. R., Ferraris, C., and Kurtis, K. E., "Rheological Study on Coal Fly Ash Geopolymeric Pastes", *The American Ceramic Society 4th Advances in Cement-based Materials Conference*, University of Illinois at Urbana-Champaign, Urbana, IL, July 8-10, 2013.

51) Shearer, C. R., Provis, J. L., Bernal, S. A., Kurtis, K. E., "Characterisation of Alkali-activated Co-fired Fly Ash Geopolymers", *Concrete in the Low Carbon Era Conference*, University of Dundee, Dundee, UK, Aug. 9-11, 2012.

52) Shearer, C. R., Provis, J. L., Bernal, S. A., Kurtis, K. E., "Co-fired Fly Ash as a Precursor for Geopolymer Production", *The American Ceramic Society 3rd Advances in Cement-based Materials Conference*, University of Texas at Austin, Austin, TX, June 10-12, 2012.

53) Shearer, C. R., Yeboah, N. N. N., Burns, S. E., Kurtis, K. E., "Evaluation of Biomass Fired and Co-fired Fly Ash for Alkali-Silica Reaction Mitigation in Concrete", *14th International Conference on Alkali-Aggregate Reaction*, Austin, TX, May 20-25, 2012.

54) Shearer, C. R., *Synthesis and Analysis of Co-fired Fly Ash Geopolymers*, EAPSI Debriefing Session, Sydney, Australia, July 29, 2011.

55) Shearer, C. R., Yeboah, N. N. N., Kurtis, K. E., Burns, S. E., "The Early Age Behavior of Biomass Fired and Co-fired Fly Ash in Concrete", *World of Coal Ash*, Denver, CO, May 9-12, 2011.

56) Shearer, C. R., Yeboah, N. N. N., Kurtis, K. E., Burns, S. E., "Investigation of biomass co-fired fly ash properties: Characterization and concrete durability performance", *Second International Conference on Sustainable Construction Materials and Technologies*, Ancona, Italy, June 28-30, 2010.

## CONFERENCE POSTERS

1) Rodriques, C., Kaur, J., Hesam, P., Shikder, M.W., Sani, R., Govil, T., Proctor, C., Salem, D., Shearer, C.R., and Sieverding, H., Microbial and Environmental Responses to Varying Doses of BioWRAP, *BioWRAP Annual Meeting*, Lincoln, NE, June 5-7, 2025.

2) Shikder, Md.W., Salem, D., Shearer, C.R., Sani, R., and Govil, T., Engineering PHA-based hybrid mulch system for sustainable agricultural production, *ANTEC-2025*, Philadelphia, PA, March 3-6, 2025

3) Srivastava, S., Luckarift, H., Dhiman, S., and Shearer, C. R., Vascular Engineered Integrated Network (VEIN), Defense Symposium, Rapid City, SD, April 10-11, 2024.

4) Thies, Z., Rotherham, J., Edmunson, J., Rickman, D., and Shearer, C. R., (2023). Evaluation of South Dakota Aggregate as Martian Simulants, *13th Advances in Cement-Based Materials*, ACerS Cements Division, Columbia University, NY, June 14-16, 2023.

5) Reza, A. N., Thinley, L.T., Koski, L., and Shearer, C. R., (2023). Techniques to halt the reaction of alkali-activated materials, *13th Advances in Cement-Based Materials*, ACerS Cements Division, Columbia University, NY, June 14-16, 2023.

6) Reza, A. N., Donnell, K.M., Sinkey, J., and Shearer, C. R., (2022). The influence of curing temperature on early-age properties of metakaolin alkali-activated geopolymers, *12th Advances in Cement-Based Materials*, ACerS Cements Division, UC Irvine, CA, July 10-13, 2022.

7) Pilling, D., Jetsun, J. T. and Shearer, C. R., (2022). Sulfate Attack Resistance Capability of Marginal and Unconventional Source Fly Ash. *12th Annual Student Research Symposium*, South Dakota Mines, April 5, 2022.

8) Reza, A. N. and Shearer, C. R., (2022). Effect of Curing Temperature on Early-Age Properties of Metakaolin Alkali-Activated Geopolymers. *12th Annual Student Research Symposium*, South Dakota Mines, April 5, 2022.

9) Reza, A. N. and Shearer, C. R., (2021). Early-age properties of alkali-activated metakaolin-based geopolymers, *11th Advances in Cement-Based Materials*, ACerS Cements Division, Virtual, June 23-25, 2021.

10) Reza, A. N. and Shearer, C. R., (2021). Reaction Rate of Alkali-Activated Metakaolin-Based Geopolymers. *11th Annual Student Research Symposium*, South Dakota Mines, April 6-7, 2021.

11) Reza, A. N. R., Thinley, T. L., Donnell, K. M. and Shearer, C. R., "Comparative study of microwave and analytical characterization of alkali activated geopolymers and precursor material"*, The American Ceramic Society 10th Advanced in Cement-based Materials Conference*, University of Illinois at Urbana-Champaign, Urbana, Ill., June 16-18, 2019.

12) Reza, A. N. R., Thinley, T. L., and Shearer, C. R., "Microwave materials characterization of geopolymer precursor powders in the X-Band and S-Band frequencies of the electromagnetic spectrum*"*, *SD Mines Student Research Symposium*, April 9, 2019.

13) Elahi, M. M. A. and Shearer, C. R., "Performance studies of portland-limestone cement (PLC) Mortars and Pastes regarding Sulfate Attack", *SD Mines Student Research Symposium*, April 4, 2017.

14) Claggett, N. J., Feist, J. J., and Shearer, C. R., "Development of optimal fiber-reinforced shotcrete mix design for use in Sanford Underground Research Facility", *SD Mines Student Research Symposium*, April 5, 2016.

15) Thompson, N., Foudazi, A., Mahmoodi, M., Donnell, K. M., and Shearer, C. R., "Characterization of Precursor Powders using Microwave Measurements", *SD Mines Student Research Symposium*, April 5, 2016.

16) Claggett, N. J., Shaffner, K. J.*, Feist, J .J., and Shearer, C. R., "Behavior of High Volume Synthetic Fiber-Reinforced Shotcrete with Varying Fiber Lengths", *The American Ceramic Society 7th Advanced in Cement-based Materials Conference*, Northwestern University, Evanston, Ill., July 10-13, 2016.

17) Shearer, C. R.. and Kurtis, K. E., "Look out cement, there's a new concrete in town*"*, *DOE SCFG Annual Research Meeting*, Brookhaven National Laboratory, Upton, NY, July, 2012.

18) Shearer, C. R., Yeboah, N. N. N., Kurtis, K. E., Burns, S. E., "Characterization of Co-fired Fly Ash Geopolymers*"*, *Georgia Tech Research and Innovation Conference*, Atlanta, GA, Feb. 7, 2012.

19) Shearer, C. R., Yeboah, N. N. N., Kurtis, K. E., Burns, S. E., "Characteristics and Potential Uses of Combustion Products Derived from Biomass Co-firing with Coal", *Georgia Tech Research and Innovation Conference*, Atlanta, GA, Feb. 8, 2011.

20) Shearer, C. R., Yeboah, N. N. N., Kurtis, K. E., Burns, S. E., "Characterization and Chemical Admixture Interaction of Biomass Co-fired Fly Ash", *The American Ceramic Society Advances in Cement-based Materials Conference*, Purdue University, West Lafayette, IN, June 11-13, 2010.

21) Shearer, C. R. and Kurtis, K. E., "Characteristics and Potential Uses of Combustion Products Derived from Biomass Firing and Co-firing", *Lafarge International Workshop on Materials for Sustainable Construction*, Atlanta, GA, May 4-8, 2009.

## FUNDED RESEARCH

*External funded research grants at South Dakota Mines total over $17.1 million as the PI, co-PI, or senior personnel*

1) *Department of Defense –Environmental Security Technology Certification Program (DoD ESTCP)*, "Climate Adaptive Infrastructure Repair (CAIR)", 3/1/26-12/31/27 $1.8M (Shearer: $233,199) SD Mines PI: Christopher Shearer, Prime PI: Battelle.

2) *Department of Defense – U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) - Engineer Research and Development Center (ERDC)*, "Operational Transition of Arctic Resilient Materials and Manufacturing Technology– Indigenous Materials and Construction", 10/22/25-10/21/30 $1.84M (Shearer: $460,569) SD Mines PIs: Grant Crawford and Jon Kellar, Co-PIs: Christopher Shearer, Sarah Keenan, and Katrina Walker.

3) *National Science Foundation (NSF) RII Track-2*, "BioWRAP (Bioplastics With Regenerative Agricultural Properties): Spray-on bioplastics with growth synchronous decomposition and water, nutrient, and agrochemical management", 8/01/21-7/31/25, $1.8M (Shearer: $360,000) , SD Mines PI: David Salem, Co-PIs: Christopher Shearer, James Stone, Rajesh Sani, Heidi Sieverding, Kansas State University (KSU) and University of Nebraska-Lincoln (UNL).

4) *Department of Defense – Defense Advanced Research Projects Agency (DARPA)*, "Bio-Inspired Restoration of Aged Concrete Edifices (BRACE)", 4/24/23-5/1/26, $6.3M (Shearer: $711,100) SD Mines PI: Christopher Shearer, co-PI: Saurabh Dhiman, Prime PI: Battelle, and co-PI: Massachusetts Institute of Technology (MIT).

5) *Department of Defense – Small Business Innovation Research (DoD SBIR)*, "Graphene and helix shaped steel fiber dosed concrete for EMP and Blast Protection - Phase 2", 9/1/24-8/31/26 $1.1M (Shearer: $50,000) SD Mines PI: Christopher Shearer, TRI-AUST PI: Doyle Motes, Missouri University of Science and Technology PI: Mohamed ElGawady, co-PIs: Kristen Donnell, K., Catherine Johnson.

6) *National Science Foundation (NSF),* "REU Site: Black Hills Applied Ceramic Engineering", 9/1/24-8/31/27, $457,223 (Shearer: $45,722) PI: Katrina Donovan, co-PI: Sarah Keenan, Senior Personnel: Christoher Shearer and others.

7) *Department of Defense – Small Business Innovation Research (DoD SBIR),* "Novel Advanced Materials Resilient Acid Resistant and Thermal Dissipating Anti-Spalling Nanocoating for Improved Long Lasting Heat and Acid Proof Concrete to Prevent Foreign Object Damage (FOD) and Runway Degradation – Phase I", 5/24/24-8/1/24, $66,698 (Shearer: $25,000) SD Mines PI: Christopher Shearer, Novum Nano PI: Greg Christensen.

8) De*partment of Defense – Small Business Innovation Research (DoD SBIR), "*Graphene and helix shaped steel fiber dosed concrete for EMP and Blast Protection - Phase I', 7/1/23-12/03/23 $167,500 (Shearer: $10,000) SD Mines PI: Christopher Shearer, TRI-AUST PI: Doyle Motes,

Missouri University of Science and Technology PI: Mohamed ElGawady, co-PIs: Kristen Donnell, K., Catherine Johnson.

9) *South Dakota Department of Transportation (SDDOT)*, "Investigation of Poor Compressive Strength and Performance of A45 Structural Concrete Mixes", 8/04/22-12/31/24, $130,000, PI: Christopher Shearer.

10) *National Aeronautics and Space Administration Center Innovation Fund (NASA CIF),* "An Assessment of Potential Martian Simulants from South Dakota Feedstocks", 8/04/22-12/31/24 $25,000 (Shearer: $10,000), SD Mines PI: Christopher Shearer, NASA PI: Jennier Edmunson.

11) *National Aeronautics and Space Administration Cooperative Agreement Notice (NASA CAN)*, "Enhancing Research in Additive Manufacturing Processes for Lunar Application and Planetary Use in Tribal Housing Development". 8/31/21-9/01/25, $529,310 (Shearer: $34,079) SD Mines PI: Christopher Shearer, Sinte Gleska University (SGU) PI: Phil Baird.

12) *National Cooperative Highway Research Program (NCHRP),* "Recommendations for Revision of AASHTO M 295 Standard Specification to Include Marginal and Unconventional Source Coal Fly Ashes", 8/1/19-7/31/23, $600,000 (Shearer: $204,029), PI: Christopher Shearer, Co-PIs: Lisa Burris (Ohio State University), Doug Hooton (University of Toronto), Prannoy Suraneni (University of Miami).

13) *South Dakota Department of Transportation (SDDOT),* "Low Shrinkage Mix Designs to Reduce Early Cracking of Concrete Bridge Decks", 3/8/19-8/31/20, $100,000, PI: Christopher Shearer.

14) *National Science Foundation (NSF CMMI),* "The Role of Multi-Scale Porosity on Termite Mound Behavior", 8/15/18-8/14/22, $475,000 (Shearer: $158,333), PI: Bret Lingwall (SD Mines), Co-PIs: Christopher Shearer, Andrea Surovek (SD Mines).

15) *National Science Foundation (NSF CMMI), "*Collaborative Research: A Multi-Physics Approach to Advance Sustainable Engineering Materials", 7/1/17-6/30/23, $386,739 (Shearer: $208,000). PI: Christopher Shearer. Missouri University of Science and Technology PI: Kristen Donnell.

16) *National Science Foundation (NSF EEC),* "RET Site: Sustainable Development-Research Experience for Teachers", 6/1/17-5/31/20, $543,466 (Shearer: $54,347), PIs: Shaobo Huang and Robb Winter (SD Mines), Senior Personnel: Christopher Shearer and 8 others (SD Mines).

17) *South Dakota Department of Transportation (SDDOT),* "Development of Specifications for Portland-Limestone Cement", 10/14/16-11/30/18, $85,000, PI: Christopher Shearer.

18) *South Dakota Boards of Regents (SDBOR),* "Performance of Fiber-Reinforced Shotcrete in Mining Applications", 9/1/15-8/20/16, $98,056, PI: Christopher Shearer.

19) *National Science Foundation (NSF DUE),* "Collaborative Research: Intellectual Diversity and Critical Thinking Skills in Service Learning", 9/1/15-8/31/19, $556,698 (Shearer: $139,175), PI: Jennifer Benning (SD Mines), Co-PIs: Christopher Shearer (SD Mine), Stu Kellogg (SD Mines), William Oakes (Purdue University), Andrea Surovek (SD Mines).

20) *South Dakota School of Mines (SD Mines),* "Nelson Grant – Preliminary Investigation of Geopolymer Reaction Mechanisms", 7/1/15-6/30-16, $5,000, PI: Christopher Shearer

21) *Southern Company,* "Energy By-Product Research Development", Awarded: 1/12/15, PI: Christopher Shearer.

## GRADUATE STUDENT ADVISING

Md Woashib Shikder, *PhD Graduate Research Assistant*, SD Mines, 2023-Present

Abu Naser Rashid Reza, *PhD Graduate Research Assistant*, SD Mines, 2018-2024

Jetsun Leonhardt Ty Thinley, *PhD Graduate Research Assistant*, SD Mines, 2018-2024

Kumar Veluswamy, *PhD Graduate Research Assistant*, SD Mines, 2019-2022 (discontinued)
Clare Fischer, *MS Graduate Research Assistant*, SD Mines, 2026-Present
Nushrat Mumtarin Nisha, *MS Graduate Research Assistant*, SD Mines, 2024-Present
Jill Rotherham, *MS Graduate Research Assistant*, SD Mines, 2023-2024
Eric Simonton, *MS Graduate Research Assistant*, SD Mines, 2019-2020
Alexis Long, *MS (non-thesis) Graduate Research Assistant*, SD Mines, 2016-2020
Md Manjur a Elahi, *MS Graduate Research Assistant*, SD Mines, 2016-2018
Nicholas Claggett, *MS Graduate Research Assistant*, MS, SD Mines, 2015-2017
Kylie Berger, *MS (non-thesis) Graduate Research Assistant*, SD Mines, 2015

## UNDERGRADUATE STUDENT AND OTHERS ADVISING

Jack Ping, *Undergraduate Research Assistant*, SD Mines, 2025-2026
Noah Armstrong, *NSF Research Experience for Undergraduates*, SD Mines, 2025
Clare Fischer, *Undergraduate Research Assistant*, SD Mines, 2023-2025
Zoey Thies, *Undergraduate Research Assistant*, SD Mines, 2022
Duncan Pilling, *Undergraduate Research Assistant*, SD Mines, 2021-2022
Robert Dahlenburg, *High School Teacher Researcher*, NSF RET, SD Mines, 2021-2022
Jill Rotherham, *Undergraduate Research Assistant*, SD Mines, 2020-2021
Nicholas Sperry, *Undergraduate Research Assistant*, SD Mines, 2019-2021
Luke Koski, *Undergraduate Research Assistant*, SD Mines, 2020
Erica Lafferty, *Undergraduate Research Assistant*, SD Mines, 2019
Jordan Cano, *Undergraduate Research Assistant*, SD Mines, 2019
Bill Swanson, *High School Teacher Researcher*, NSF RET, SD Mines, 2018-2019
Benjamin Love, *Undergraduate Research Assistant*, SD Mines, 2018
Jolene Kayser, *High School Teacher Researcher*, NSF RET, SD Mines, 2017
Nicole Thompson, *Undergraduate Research Assistant*, SD Mines, 2016-2017
Kenneth Shaffner, *Undergraduate Research Assistant*, SD Mines, 2016-2017
Vaughn Vargas, *Undergraduate Assistant*, EPICS, SD Mines, 2016-2017
Jeremy Feist, *Undergraduate Research Assistant*, SD Mines, 2016
Michael Dollarhide, *Undergraduate Research Assistant*, SD Mines, 2014-2015
Ten Undergraduate Research Assistants, Georgia Tech, 2010-2013

## PROFESSIONAL ACTIVITES

*Memberships*

American Society of Civil Engineers, since 2004
- SD Mines Faculty Advisor
- Liaison between local/state chapter and student chapter

American Concrete Institute, since 2008

- President of ACI Dakota Chapter until 2023
- ACI 232 Committee (Fly Ash and Bottom Ash in Concrete) – Chair and Voting Member
- ACI 236 Committee (Material Science of Concrete) – Associate Member
- ACI 242 Committee (Alternative Cements) - Associate Member
- Annual Concrete Conference Organizer at SD Mines

The American Ceramic Society, since 2008

- Cements Division Member Engagement Subcommittee Representative (since 2025)

South Dakota Engineering Society, since 2017-2021

- University Relations Liaison

Tau Beta Pi (Engineering Honor Society), since 2006

Chi Epsilon, since 2016

*Journal Reviewer*

ACI Materials Journal – *Associate Editor*
Journal of the American Ceramic Society
Advances in Civil Engineering Materials
ACI Special Publication
American Society of Engineering Education Conference
Construction and Building Materials
Cement and Concrete Composites
Cement and Concrete Research
Journal of Architectural Engineering
Journal of Materials in Civil Engineering (ASCE)
Materials and Structures
Waste and Biomass Valorization
Resources, Conservation & Recycling
Transportation Geotechnics

## UNIVERSITY SERVICE

Faculty Senate, 2020-present

American Society of Civil Engineers Faculty Advisor, SD Mines, 2015-present

Concrete Canoe Team Faculty Advisor, SD Mines, 2014-present

Strategic Planning Committee, SD Mines, 2018-2019

Student Research Symposium Judge, SD Mines, 2015-2016

Recruitment, SD Mines, 2014-present

Faculty Search Committees, SD Mines

Center for the Enhancement of Teaching and Learning Orientation Panel Member, Georgia Tech, 2012

## AWARDS AND HONORS

- James & Connie Green Camp Faculty Award (2026)
- William V. Coyle Professor of Civil and Environmental Engineering (2022-present)
- Giatec Award for Best Paper (2021)
- Black Hills Young Engineer of the Year, Nominee, South Dakota Engineering Society, 2019
- Chi Epsilon, 2016
- American Society of Civil Engineers ExCEEd Fellow, 2015
- Kiewit Faculty Scholar, 2015
- Department of Energy Office of Science Graduate Fellowship, 2010-2013
- Georgia Tech President's Fellowship, 2008-2013
- American Concrete Institute Presidents' Fellowship, 2010-2011
- National Science Foundation East Asia & Pacific Summer Institutes (EAPSI) Award, University of Melbourne, Australia, 2011
- World of Coal Ash Student Presentation Award, Denver, CO, 2011
- Georgia Tech Research & Innovation Conference Poster Award, Atlanta, GA, 2011
- The American Ceramic Society Student Poster Award, Advances in Cement-based Materials Conference, Purdue University, 2010
- American Concrete Institute Scholarship, 2009-2010
- First Place, American Society of Civil Engineers Structural Engineering Institute, Student Design Award, 2009
- Tau Beta Pi Fellowship – Fife Fellow, 2008-2009
- Ohio Northern University Presidential Merit Scholarship, 2004-2008
- Tau Beta Pi Scholarship, 2007-2008
- Ohio Northern University Recognition Medal – Highest Ranking Graduate in the College of Engineering, 2008
- Washington Group International Scholarship, 2007-2008
- Remsburg Award – Most Innovative Senior Design Project, Ohio Northern University, 2008
- American Society of Civil Engineers Outstanding Project Leader Award, Ohio Northern University, 2008

## CERTIFICATIONS

Engineer in Training (E.I.T.), Ohio Professional Engineers and Surveyors Board, 2008

ACI Certified Concrete Strength Testing Technician, 2015

ACI Certified Concrete Field Testing Technician – Grade I, 2015