

Education

- University of Texas at Arlington, Arlington, TX
Civil Engineering: Water Resources
Ph.D. May 2022
- Colorado School of Mines, Golden, CO
Major: Civil and Environmental Engineering
M.S. May 2018
GPA 3.930
- Colorado School of Mines, Golden, CO
Major: Environmental Engineering
B.S. May 2017
GPA 3.983
Summa Cum Laude

Honors & Activities

- Member of Sigma Xi, December 2018-present
- Member of Society of Women Engineers, 2013-present
- Outstanding Ph.D. Student Award, 2018-2019, 2019-2020
- Outstanding Graduating Senior Award, 2017
- Edna Bailey Sussman Fellowship recipient with Exceptional Merit Award, Spring 2017
- Colorado School of Mines Dean's List, 2013-2017
- Member of Tau Beta Pi, November 2015-2017
- Member of Civil and Environmental Engineering Honor Society, Fall 2016-Spring 2017

Skills

Communication Skills

- Public speaking, typing, middle school education outreach, technical writing, team & client communications

Laboratory Skills

- Water quality analysis, metal content analysis, DNA extraction and analysis, soil water retention tests, tracer tests

Computer Skills

- Basics of GIS, SolidWorks, MATLAB, HEC-HMS, StreamStats, TR-55, eRAMS, Microsoft Office Suite

Projects

Environmental Engineering Field Session:

Soil and Water Sample Analysis from the Minnesota Mine

- Analyzed soil samples and water samples from the Lyon's Creek area near the Minnesota Mine in Empire, CO
- Designed a potential passive remediation system to treating seeps from Minnesota Mine

Undergraduate Research Project

Analysis of Thermal Effects on Volumetric Water Content Sensors

- Verified volumetric water content results obtained from Decagon sensors for field-scale tests
- Designed experimental apparatus using AutoCAD, and built system to test sensors under controlled conditions
- Tested under varying degrees of saturation and temperatures to correct for thermal effects on sensor readings

Senior Design

Evaluation and Pre-Design of a Peracetic Acid Disinfection Challenge

- Technical Director
- Worked with the Metro Wastewater Reclamation District to determine whether peracetic acid was a feasible disinfectant to replace the current chloramine disinfection system
- Designed a tracer test protocol for determining if adequate CT was obtained in chlorine contact basin, and interpreted results

M.S. Research Projects

Methane Leak Detection Technologies Literature Review

- Compiled information regarding different technologies for detecting underground pipeline leaks
- Compared technology sensitivities, detection ranges, relative cost, and accuracy
- Contacted experts in the pipeline industry to identify latest technology trends and future technologies that will be applied in the field.

Middle School Students' Perspectives towards STEM

- Compiled several years' worth of data to track students' perspectives towards STEM and how it varied over time
- Attempted to pinpoint time period in which middle school students' attitudes for STEM vary and determine the causes for this change of opinion.

Ph.D. Research Projects

Conducting Knowledge-Based Site Assessments in Artisanal and Small-Scale Gold Mining Communities

- Developed framework for comprehensive, behavior-centered environmental remediation in ASGM communities

- Identified and developed network for community-led environmental initiatives in artisanal mining communities to enhance their performance and encourage miner-to-miner and miner-to-expert communication
- Supervised undergraduate researchers and organized “reach back” engineering projects to work on from the United States
- Designed stakeholder knowledge-based site assessments protocol to be deployed in Andes, Colombia in 2020.

Work Experience

Research Assistant, CE Department, Arlington, TX

August 2018-present

- Research assistant for Professor Kathleen Smits at the University of Texas at Arlington
- Developed course materials for Site Remediation course
- Conducted research on environmental perceptions of artisanal and small-scale gold mining in Colombia and Peru
- Supervised undergraduate researchers at the University of Texas at Arlington, Colorado School of Mines, and the U.S. Air Force Academy

Research Assistant, CEEN Department, Golden, CO

June 2016-July 2018

- Research Assistant for Professor Kathleen Smits at Colorado School of Mines
- Developed and constructed experimental apparatus for soil moisture sensor probe comparison
- Assisted with research in projects ranging in topics from natural gas to soil water content
- Worked in educational outreach for 6th-7th graders interested in entering the STEM field

Colorado School of Mines Statics Teaching Assistant, Golden, CO

August 2017- May 2018

- Tutored Statics students, proctored assessments, entered grades
- Led “hands-on” activities that provided concrete examples of Statics in the real world

Teaching Fellow, Generation Teach, Denver, CO

June 2015-August 2015

- Mentored 7th and 8th grade students to encourage them to pursue a degree in engineering by teaching biomedical engineering

Publications and Presentations

Schwartz, M., K. Smits, N. Smith, and T. Phelan. 2019. “Redefining roles: How a changing engineering approach for water and sanitation can improve artisanal and small-scale mining site remediation.” SME Annual Conference & Expo. (poster)

Schwartz, M., K. Smits, N. Smith, and T. Phelan. 2019. “How Lessons from an Evolving Comprehensive Approach for Water and Sanitation Initiatives Can Improve Artisanal and Small-Scale Mining Environmental Initiatives.” AGU Fall Meeting.(poster)

Schwartz, M., Z. Li, T. Sakaki, A. Moradi, and K. Smits. 2019. “Accounting for Temperature Effects on the Performance of Soil Moisture Sensors in Sandy Soils.” *Soil Science Society of America Journal* 83: 1319-1323. doi: 10.2136/sssaj2019.05.0161.