Claire Elizabeth Kincaid

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Education

Colorado School of Mines, Golden, CO — *Est. Graduation May 2021*
- •Candidate for Master's of Science in Earth Resources Development Engineering

Adviser: Dr. Nicole Smith, Assistant Professor of Mining Engineering, Colorado School of Mines

Franklin W. Olin College of Engineering, Needham, MA — *2015- 2019*
- •Bachelors of Science in Mechanical Engineering
- •Grand Challenge Scholar
- •Cumulative GPA: 3.71

Adviser: Dr. John B. Geddes, Professor of Applied Mathematics, Olin College of Engineering

University College Dublin, Dublin, Ireland — *Spring 2018*
- •Study Abroad in Earth Sciences and Geotechnical Engineering
- •GPA: TBA June 2018

Program Coordinator: Jamie Wells, Study Abroad Officer, School of Science

Coursework
- •10 Sem Advanced Math: Linear Algebra, Multivariable Calculus, Partial Differential Equations, Statistics, etc.
- •6 Sem Design: Mechanical, Software, User-Oriented, and Affordable Design, BioMimicry, Capstone, etc.
- •5 Sem Japanese: Intermediate/ Advanced Level
- •4 Sem Advanced Physics: Static and Dynamic Physics, Thermodynamics, Fluid Mechanics, Heat Transfer
- •3 Sem Entrepreneurship: Iterative Business Model Exploration, Business Independent Study etc.
- •3 Sem Geoscience: Geomaterials, Precambrian Geology, Geological Field Work
- •3 Sem MakerSpaces: Making and Fabrication, Designing Resources for Empowerment and Making, etc.
- •4 Sem Interdisciplinary Project Course: Mechatronics, Senior & Design Capstones
- •1 Sem each of: Soil Mechanics & Geotechnical Engineering, Materials Science, Biology, Qualitative Methods

Work Experience

Komatsu America Corp: Graduate Mining Applications Engineering Intern — *Present*
- •Act as an assistant to design, applications, and testing engineers on international projects
- •Assist on site studies of various mines and quarries as needed to provide efficiency overviews
- •Travel as needed to multiple company, contractor, and customer locations to assist on projects

Supervisor: J.D. Wientjes, Director, Application Engineering

Resolution Copper Company: Mining Engineering Intern — *Summer 2018*
- •Conduct 2018 Joint Analysis Study and investigate tunnel wedging and factor of safety
- •Review and log data from Magma Mine archives
- •Conduct 2018 Tunnel Boring Machine state of the industry study

Supervisor: Mark Groulx, Mining Engineering Manager

TE Connectivity: Product Engineering Intern — *Summer 2016*
- •Assist in troubleshooting and maintenance of current TE parts
- •Design and execute experiment for statistical analysis of high speed manufacturing techniques
- •Assist in total cost savings of $537,000 and business growth of $250,000, annually

Supervisor: Doug Hoffman, Product Engineering Manager

A Wired Aesthetic: Owner, Operator — *2012-Present*
- •Mine and Cut gemstones for use in handmade jewelry and art
- •Design and fabricate award winning, handmade jewelry and sculpture for sale and display

Teaching Experience– Olin College of Engineering

Machine Shop Assistant — *Fall 2018*
- •Assist in the cleaning and maintenance of the Olin Machine Shop
- •Train students in safe use of the Large Project Building and the Olin Blacksmith's Forge

Supervisor: Dr. Daniela Faas, Director of Fabrication, Professor of Mechanical Engineering

Quantitative Engineering Analysis Teaching Assistant — *Fall 2017*
- •Assist in the application and analysis of advanced mathematical principles to common engineering systems involving circuitry, robotics, computer science, and mechanical design.
- •Assist in curriculum development & iterative improvement of overall course structure

Supervisor: Dr. Paul Ruvolo, Assistant Professor of Computer Science

Multivariable Calculus Teaching Assistant — *Fall 2016*
- •Supplement class lectures by planning and administering 'mini lectures' to assist in understanding
- •Discuss student and class progress, understanding, and problems with instructors to assist in understanding of teaching effectiveness and areas of importance

Supervisor: Dr. Aaron Hoffman, Associate Professor of Mathematics

Linear Algebra Teaching Assistant — *Spring 2016*
- •Discuss student and class progress, understanding, and problems with instructors to assist in understanding of teaching effectiveness and areas of importance

Supervisor: Dr. Aaron Hoffman, Associate Professor of Mathematics

Research Experience

Graduate Thesis in Diversity & Inclusion in the Mining Industry *Present*
- •Build upon undergraduate research project in diversity and inclusion in the mining industry
- •Determine the current state of diversity and inclusion in the mining industry
- •Develop novel measurement tools to accurately evaluate the state of inclusion

Supervisor: Dr. Nicole Smith, Assistant Professor of Mining Engineering, Colorado School of Mines

Undergraduate Research in Diversity & Inclusion in the Mining Industry *2018-2019*
- •Conduct survey of recent academic and corporate literature on diversity & inclusion
- •Conduct survey of current state of diversity & inclusion in the mining industry

Supervisor: Dr. Debbie Chachra, Professor of Engineering, Olin College

Undergraduate Research in Structural Geology and Fault Mapping *Spring 2018*
- •Analyze pictorial dataset of lignite mine near Mavropigi, Greece
- •Generate maps and cross sections to create a three dimensional picture of underlying faults

Supervisor: Dr. Tom Manzocchi, Associate Professor of Earth Sciences, University College Dublin

Undergraduate Research in Systems Engineering, Communication, and Education *2016-2017*
- •Analyze multiple case study using ethnographic methods-- collaboratively develop coding scheme for boundary objects and their effects on communication and decision making
- •Extract engineering education principles to be applied to the classroom
- •Collaboratively develop and write multiple presentations and a conference paper

Supervisor: Dr. Alexandra Strong, Assistant Professor of Systems Design and Engineering, Olin College

Undergraduate Research in Colloidal Crystallization and Annealing *Spring 2017*
- •Explore and develop methods of annealing colloidal crystals for applications in photonics
- •Analyze annealing of colloidal crystals using vibratory, laser, and other methods

Supervisor: Dr. Rebecca Christianson, Associate Professor of Applied Physics, Olin College

Field Work

Contextual Development Fieldwork, Multi-location, South Africa: *Team of Five, Project Manager* *Feb 2019*
- •Engage and design with users of proposed sanitation technology in Johannesburg, South Africa
- •Attend 5th Annual Fecal Sludge Management Conference in Capetown, South Africa
- •Interface with sponsors of capstone project and end users of capstone technology

Supervisor: Dr. Scott Hersey, Assistant Professor of Chemical and Environmental Engineering, Olin College

Contextual Development Fieldwork, Kumasi, Ghana: *Team of Six, Documentation Lead* *Jan 2019*
- •Engage with primary users and manufacturers of food processing technology
- •Make incremental design changes based off of engagements and in-country experiences
- •Assist in prototyping and manufacturing of machines in country, act as chief documentarian of work

Supervisor: Dr. Benjamin Linder, Professor of Mechanical Engineering, Olin College

Geological Fieldwork, Co. Mayo, Ireland: *Team of Three, Collaborative Member* *Apr 2018*
- •Establish field relationships and deduce geological history or Paleoproterozoic to Mesoproterozoic Gneiss
- •Use basic dykes as structural markers to distinguish Grenvillian from Grampian events
- •Link basement to Cover of Neoproterozoic Dalradian Metasediments

Supervisor: Dr. P.F McDermott, Department Head, University College Dublin Earth Sciences

Geological Fieldwork, Co. Antrim, Northern Ireland: *Team of Four, Collaborative Member* *Mar 2018*
- •Introduction to geological fieldwork techniques in examining and mapping mineral and sediment sites
- •Portraine, Protrush, Ballycastle, Giant's Causeway, Chushendall, and Ballintoy Harbour, in Northern Ireland
- •Characterize and map geological characteristics of each site, discuss with classmates and mentors

Supervisor: Dr. Stephen Daly, Professor of Geology, University College Dublin Earth Sciences

Volunteer Service

University of Arizona, Lowell Institute for Mineral Research *2017-2019*
- •Assist Lowell Institute of Mineral Resources in planning & delivering diversity & inclusion programming aimed at mining and minerals resources

Meniño Center *Spring 2017*
- •Design and lead activity for center users age 12-18 training in spot welding safety and technique

Artisan's Asylum *Fall 2016*
- •Assist in training members of the asylum on MIG welding safety and techniques

Professional Affiliations

Society of Women Engineers: Olin College Chapter *Sep 2015 - Present*
- •Participate in discussions regarding women's rights and women in STEM positions
- •Lead main fundraising activities: creation of jewelry from electrical components for sale

Society for Mining, Metallurgy, and Exploration *Sep 2017- Present*
- •At Large Member, Student Chapter, Mining and Exploration Division
- •Speaker, 2018 SME Arizona Conference
- •Presenter, 2019 Annual Conference

Women in Mining *Oct 2017- Present*
- •At Large Member, Student Member

Abstracts, Projects, and Presentations

Engineering Capstone: Gates Foundation Fecal Sludge Conveyance: *Team of Five, Project Manager* *2018-2019*
- •Design conveyance solutions for pit latrine emptying systems in Sub-Saharan Africa and South Asia.
- •Manage team of five, facilitate inter and intra team, advisor, and industry sponsor communication
- •Winter Field Season South Africa Feb 2019; Final Presentation May 2019

Design Capstone: Queentech Gari Processing: *Team of Eight, Project Manager* *Spring 2019*
- •Design and improve upon existing mini graters and presses to aid small scale Ghanaian gari production
- •Interface with operators on the ground to maintain and track machine use and business progress
- •Winter Field Season in Ghana, Jan 2019

Humanities Capstone: Making Makerspaces: *Individual* *Spring 2019*
- •Conduct case study of new educational makerspace collaborative utilizing ethnographic methods.
- •Document the birth and development of the makerspace and suggest organizational changes to director
- •Final Presentation and Report, May 2019

Tunnel Boring Machines, Current State: *Individual* *Sum 2018*
- •Compile report on current state of Tunnel Boring Machine solutions for underground mining operations
- •Make recommendations as to potential TBM manufacturing partners
- •Final Report, August 2018

2018 Joint Analysis Study: *Individual* *Sum 2018*
- •Compile historical and recent jointing data from Magma & Resolution rotary core borehole logs
- •Identify three major joint sets by joint type (i.e. fault, breccia, etc.) and determine risk of wedging
- •Final Report, Aug 2018

ABI Breakouts Study: *Individual* *Aug 2018*
- •Compile historical and recent acoustic borehole imaging data from Resolution rotary core borehole logs
- •Identify breakouts and tensile fractures in each borehole & compile a geographical database

Magma Archive Study: *Individual* *Aug 2018*
- •Examine historical Magma Mine records and extract important temperature and water flow benchmarks
- •Recommend updated or historical benchmarks to Resolution for 2019 Feasibility Study

Site Investigation Study: *Team of Five, Collaborative Member* *Sprg 2018*
- •Conduct desk study and mock site investigation, determine ideal building location
- •Design foundation for 2000 kg standing and 1600 kg variable weight, suitable to soil and bedrock types
- •Presentation and Report, May 2018

Geological Mapping: *Individual* *Apr 2018*
- •Conduct field survey of beach in Co. Antrim; identify and measure major formations and intrusions
- •Construct localized geological map from field data, justify hypothesis to supervising professors

Mineralization Analysis: *Team of Two, Collaborative Member* *Apr 2018*
- •Analyze industrial ore and mineral specimens and thin sections from various localities
- •Determine and report on Mineralization, crystallization, and enrichment properties

The Oil Game: *Team of Two, Collaborative Member* *Feb 2018*
- •Apply principles of exploration and petrology to simulate the activities of an oil company
- •Generate and update contour maps of two separate oil-carrying formations with provided drill data
- •Deduce possible locations of oil reservoirs based off of maps, and 'bid' on well locations

Creation of Synthetic Corundum: *Team of Six, Fabrication and Mineralogy Lead* *Dec 2017*
- •Design and Fabricate Torch Fixturing & create corundum in a Vernieul Flame Fusion Process
- •Final Presentation and Report, Dec 2017

Kinetic Butterfly: *Individual* *Sprg 2017*
- •Design and build an electromechanically integrated kinetic sculpture and accompanying wearable
- •Final Presentation and Poster, Dec 2017

Inclined Shallow Water Equations: *Individual* *Dec 2017*
- •Study and analyze the 2D equations for movement of shallow, gravity driven waves on an inclined field
- •Work through derivation using incompressible stokes equations and linear perturbation
- •Final Report, Dec 2017

"It's a Phase" Metal Alloying and Phase Analysis: *Team of Three, Collaborative Member* *Oct 2017*
- •Choose and cast a copper-silicon alloy, prep sample and analyze to determine phase
- •Final Presentation and Report, Dec 2017

Olin Mobile Forge: *Team of Five, Project Manager, Fabrication Lead* *Sprg 2017*
- •Design and fabricate new permanent Olin forge resource to fit safety standards
- •Develop documentation and safety training to allow students to utilize resource
- •Olin Expo Presentation, Dec 2016

Olin FireBot: *Multinational Team of Four, Project Manager, Robotics Engineering Lead* *Dec 2016*
- •Design small robot to autonomously navigate towards fires and extinguish them with water
- •Final Demo Presentation Dec 2016

Statistical Analysis of High Speed Manufacturing Techniques: *Individual* *Sum 2016*
- •Design Experiment for statistical analysis of high speed manufacturing techniques
- •Take and record control data and perform statistical analysis
- •TE End of Summer Internship Presentation

Publications

"Perspectives on Diversity in Mining" *Nov 2018*
- 1st Author, Published on Linkedin in advance of 2018 IMR short course

"Sending Out the Invitations: Developing Diversity in Mining" *Feb 2018*
- 1st Author, Published in February 2018 issue of SME's Mining Engineering Magazine

"Preparing Students for Engineering Design Work Environment: A Study of Practicing Engineers" *Feb 2017*
- 2nd Author, Presented at American Society of Engineering Education annual conference June 2017

Awards

Resource Capital Fund Fellowship: *Colorado School of Mines* *May 2019*
- Full tuition graduate fellowship totaling $35,000

UCD Exchange: *University College Dublin* *Oct 2017*
- Subsidized Earth Sciences Study Abroad totaling €17,000

Olin Merit Scholarship: *Olin College of Engineering* *May 2015*
- ½ Tuition Undergraduate Scholarship totaling $84,000

Relevant Skills

CAD/CAM
- SOLIDWORKS, SOLIDWORKS PDM, AutoCAD, ONSHAPE, PTC Creo, SpaceClaim, FEA/FEM, Vulcan, PCBC

Professional Software
- Microsoft Professional Suite, Adobe Creative Cloud, Mini Tab, SAP

Programming & Controls
- MATLAB, Mathematica, Python, R, Arduino C, LaTeX, COMSOL

Welding
- MIG, TIG, Oxy/Ace, Spot Welding, Laser Welding, Stick Welding, Brazing, Plasma Cutting, CNC Plasma Cutting

Machining
- Manual Mill, 3-axis CNC Mill, Lathe, Sheet Metal Fabrication, Casting, Forging, Sand Blasting & Abrasives

Woodworking
- Intermediate hand working, Table/Chop Saws, Rotary/Belt Sanders, Planer, Routers, CNC Shopbot, Wood Lathe

Rapid Prototyping
- Breadboard, Soldering, Sewing, 3D Printing, Resin Printing, Vinyl Cutting, Laser Cutting

Digital Analysis
- Instron, Fischer Box, Diamond Saws, Diamond Grinders, Flat Lap, FTIR, Pycnometer

Microscopy
- Metallographic Microscope, Petrological Microscope, SEM, EDS

Field Evaluation
- Geophysical Site Evaluation, Geological Field Investigation & Mapping, 3D Geological Visualization

Language
- Intermediate-Advanced Japanese, Beginner Spanish, Fluent English

Soft Skills
- Presentation & Reporting, Cultural Flexibility, Direct & Indirect Management, Collaborative Teaming

Certifications

Engineer In Training; *National Council of Examiners for Engineering and Surveying, Golden, CO* *Aug 2019*
- Exam scheduled August 2019

MSHA Underground: *Eagle Safety Trainers, Superior, AZ* *May 2018*
- Mine underground safety, emergency rescue chamber, and emergency shaft transfer certification

First Aid and CPR/AED: *American Heart Association, Phoenix, AZ* *May 2018*
- Full

ITAR: *TE Connectivity, Harrisburg, PA* *May 2016*
- Exempt from Expiration with US Citizenship