

# Erik Lloyd Haroldson

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## Education

University of Wisconsin-Madison 2017

**PhD** in Geoscience

Dissertation: Protracted development of the Reef Deposit: an anomalous Au-Cu occurrence in northern Wisconsin

University of Wisconsin-Madison 2014

**MS** in Geoscience

Thesis: Fluid inclusion and stable isotope study of Magino; a magmatic related Archean gold deposit

University of Minnesota-Duluth 2006

**BS** in Geological Sciences, Minor: Geography

URO research project: Determination of Ni concentration in Pyrrhotite/Olivine using reflective light microscopy and Electron Microprobe

## Professional Positions

**Assistant Professor**, Austin Peay State University, Clarksville, TN 2018-present

GEOL 1040 – Physical Geology

GEOL 3500 – Mineralogy w/lab

GEOL 3600 – Petrology w/lab

GEOL 3680 – Principles of Geochemistry

GEOL 4500 – Laboratory Research Project

**Associate Lecturer**, University of Wisconsin-Baraboo/Sauk County, Baraboo, WI 2017-2018

GLG 101 – Physical Geology (w/ lab);

GLG 135 – Introduction to Environmental Geology;

GLG 102 – Historical Geology (w/lab);

GLG/GEO 170 – Disasters-Living on the Edge;

GEO 106 – Introduction to Geographic Information Science (w/lab)

**Teaching/Research Assistant**, University of Wisconsin-Madison, Madison, WI

Geosci 360; Mineralogy

Fall 2014, 2015, 2017

Geosci 370; Elementary Petrology

Spring 2015, 2016, 2017

Geosci 459; Wasatch-Uinta Field Camp

Summer 2015, 2016, 2017

Geosci 457; White Lake – 1 Week Field Mapping Course

Spring 2014, 2015, 2016

Geosci 350; Global Geophysics

Spring 2013

**Acquisition Manager**, Argonaut Gold Inc., Ontario, Canada

Summer 2013

Evaluate exploration acquisition opportunities

Develop team oriented evaluation system

Geological consultant on company exploration projects

**Project Manager/Senior Geologist**, Prodigy Gold Inc., Ontario, Canada

2008 – 2013

Promoted from Project Geologist through to Project Manager  
Manager of two company flagship projects  
Mapping, 3D modeling, core logging, budgeting, hiring, mentoring

**Geologist**, US Gold Corp., Elko, NV, USA and Guamuchil, Sinaloa, Mexico 2006 - 2008  
Promoted from Junior Geologist to Geologist  
Developed regional resource projects in Nevada and Mexico  
Drill rig management, mapping, core and chip logging, database management

**Geologist**, Polymet Mining Inc., Hoyt Lakes, MN, USA Summer 2005  
RQD and geotechnical core logging  
Drill core sampling  
Outcrop mapping, drill site location

**Field Technician**, STS Consultants, Minneapolis, MN, USA Summer 2004  
ASTM tests on concrete, soil and bitumen  
Soil boring rig assistant

## Publications

### PEER-REVIEWED PUBLICATIONS IN PRESS

1. Liu, J.C., Johnson, E.A., **Haroldson, E.L.**, in press, *Blending Geoscience Laboratory Learning and Undergraduate Research with Interactive Open Educational Resources*, in Picciano, A.G., Dziuban, C.D., Graham, C.R., and Moskal, P.D., (Eds.), *Blended Learning: Research Perspectives*, volume 3, chapter 19, 18 p. [\[Link to book\]](#)
2. **Haroldson, E.L.**, in press, *Improv games in geoscience courses*, *Journal of Geoscience Education*, [\[Link to article\]](#)

### PEER-REVIEWED PUBLICATIONS

3. Klyukin, Y.I., **Haroldson, E.L.**, and Steele-MacInnis, M., 2020, *A comprehensive numerical model for the thermodynamic and transport properties of H<sub>2</sub>O-NaCl fluids*, *Chemical Geology*, vol. 557, p. 1-10, article 119840, [\[Link to article\]](#)
4. **Haroldson, E.L.**, Brown, P.E., Ishida, A., and Valley, J.W., *SIMS oxygen isotopes indicate Phanerozoic fluids permeated a Precambrian gold deposit*, *Chemical Geology*, vol. 533, p. 1-17, article 119429, [\[Link to article\]](#)
5. **Haroldson, E.L.**, Brown, P.E., and Bodnar, R.J., 2018, *Involvement of variably-sourced fluids during the formation and later overprinting of Paleoproterozoic Au-Cu mineralization: Insights gained from a fluid inclusion assemblage approach*, *Chemical Geology*, vol. 497, p. 115-127, [\[Link to article\]](#)
6. **Haroldson, E.L.**, Beard, B.L., Satkoski, A.M., Brown, P.E., and Johnson, C.M., 2018, *Gold remobilization associated with Mississippi Valley-type fluids: a Pb isotope perspective*, *Geological Society of America Bulletin*, vol. 130, no. 9–10, p. 1583–1595, [\[Link to article\]](#)

### POPULAR ARTICLES

**Haroldson, E.**, Wolak, J., Van Boening, A., and Pattat, A., 2020, 40 years of building networks, knowledge, and skills through friendly competition: the Tennessee Geoconclave, *In The Trenches*, vol. 10, no. 1, p. 2-5, [\[Link to article\]](#)

## **OPEN EDUCATIONAL RESOURCES**

Haroldson, E., 2021, Physical Geology Lecture Tutorials (2<sup>nd</sup> Edition), [\[Link to resource\]](#)

Haroldson, E., 2020, Physical Geology Lecture Tutorials (1<sup>st</sup> Edition), [\[Link to resource\]](#)

## **PROFESSIONAL REPORTS**

Haroldson, E., 2012, Report on the Magino property 2011 diamond drilling program, Timmins Mining Division, Ontario, 26 p.

Haroldson, E., 2010, Diamond drill program on the Hercules Project, Ontario Thunder Bay Mining Division NTS 42E13SE, 37 p.

## **Meeting Abstracts** (\* indicates student co-author)

Haroldson, E.L., 2021, *Improv games in geoscience courses*, Geological Society of America Abstracts with Programs, vol. 53, no. 6, <https://doi.org/10.1130/abs/2021AM-363963>

\*Vogelpohl, A., \*Benoit, J., Kohl, M., Haroldson, E., 2020, *Fluid and solid inclusions in the Mosheim Anticline occurrence of East Tennessee Field Diamonds (quartz crystals)*, Geological Society of America Abstracts with Programs, vol. 52, no. 2, <https://doi.org/10.1130/abs/2020SE-344560> accepted but not presented due to covid-19

\*Wells, J., Haroldson, E., 2020, *Sources for mineralization in Kentucky Dam: implications for dam stability*, Geological Society of America Abstracts with Programs, vol. 52, no. 2, <https://doi.org/10.1130/abs/2020SE-345009> accepted but not presented due to covid-19

Casey, M., Haroldson, E., Pattat, A., Van Boening, A., Wolak, J., Gibson, M.A., 2020, *Celebrating 40 years of Tennessee Geoconclave: building skills for the future*, Geological Society of America Abstracts with Programs, vol. 52, no. 2, <https://doi.org/10.1130/abs/2020SE-344427> accepted but not presented due to covid-19

Haroldson, E., Kohl, M., 2020, *Fluid and solid inclusions in East Tennessee Field Diamonds (doubly terminated quartz crystals)*, Geological Society of America Abstracts with Programs, vol. 52, no. 2, <https://doi.org/10.1130/abs/2020SE-345076> accepted but not presented due to covid-19

Haroldson, E., 2018, *Our time around the lake: a hiking tour historical geology group project*, Geological Society of America Abstracts with Programs, vol. 50, no. 6, paper no. 178-1, <https://doi.org/10.1130/abs/2018AM-323397>

Haroldson, E.L., Brown, P.E., Bodnar, R.J., 2018, *Assorted roles of diverse variably-sourced fluids during the protracted formation history fo a Au-Cu deposit: a fluid inclusion assemblage perspective*, Geological Society of America Abstracts with Programs, vol. 50, no. 6, paper no. 243-5, <https://doi.org/10.1130/abs/2018AM-324304>

Haroldson, E., Brown, P., Ishida, A., Valley, J., 2017, *Phanerozoic fluids permeating a Precambrian gold deposit examined by SIMS: Implications for remobilization of gold*, Geological Society of America Abstracts with Programs, vol. 49, no. 6, paper no. 2-4, <https://doi.org/10.1130/abs/2017AM-305949>

Haroldson, E., Valley, J., Bodnar, R., Ishida, A., Brown, P., 2017, *Fluid history of the Reef Deposit using fluid inclusions and oxygen isotopes*, Proceedings and Abstracts - Institute on Lake Superior Geology Meeting 63, p. 40-41

Haroldson, E., Beard, B., Satkoski, A., Johnson, C., Brown, P., 2016, *Phanerozoic Au in a Paleoproterozoic Cu Vein deposit of Central Wisconsin; Evidence from Pb Isotopes Using LA-ICP-MS*, Geological Society of America Abstracts with Programs, vol. 48, no. 7, paper no. 212-13, <https://doi.org/10.1130/abs/2016AM-281534>

- Haroldson, E., Brown, P., 2016, *Cathodoluminescence imaging and fluid inclusions of the Reef deposit, a Paleoproterozoic Au-Cu occurrence in central Wisconsin, USA*, PACROFI XIII, The Edwin W. Roedder, Pan-American Current Research On Fluid Inclusions Conference, p. 57-58
- Haroldson, E., Beard, B., Satkoski, A., Johnson, C., Brown, P., 2016, *U-Th-Pb isotopes of the Reef Deposit; a Au-Cu occurrence in central Wisconsin*, Proceedings and Abstracts - Institute on Lake Superior Geology Meeting 62, p. 60-61
- Haroldson, E., Brown, P., 2015, *Magmatic Fluids are a Primary Source of Archean Gold at Magino; Fluid Inclusion and Stable Isotope Evidence*, Geological Society of America Abstracts with Programs, vol. 47, no. 7, p. 519, paper no. 206-14
- Haroldson, E., Brown, P., 2014, *Magmatic Fluids are a Primary Source of Archean Gold at Magino; Fluid Inclusion and Stable Isotope Evidence*, Programs and Abstracts - PACROFI XII, 12<sup>th</sup> Biennial Conference, Pan-American Current Research On Fluid Inclusions, p. 63-64
- Haroldson, E., Brown, P., 2013, *Fluid Inclusion study of the Magino Archean Gold Deposit; Implications for Regional Mineralizing Systems*, Proceedings and Abstracts - Institute on Lake Superior Geology Meeting 59, p. 31-32

## Invited Presentations

- Lead Isotopes: Teaching an old dog new tricks* 2021  
James Madison University, Seminar Series
- Protracted development of a gold (Au) deposit* 2019  
Murray State University, Seminar Series
- Geology of the Baraboo Region* 2018  
UW-Baraboo/Sauk County, Adam's-Friendship township student campus visit
- Geological Resources and Mining* 2017  
UW-Baraboo/Sauk County, BIO 190: Introduction to Environmental Science Guest Lecture
- Exploring the Exploration Career Track* 2017  
UW-Madison undergraduate geoclub monthly meeting
- Evolution of Western Continental United States and Exploration in Nevada by US Gold Corporation*, 2007  
Geological Society of Nevada; Elko Chapter Monthly Meeting
- Exploring for Gold in the 21st Century*, 2007  
Public Seminar Series: University of the Pacific Geosciences Department

## Short Courses/Workshops/Trainings

### INSTRUCTOR

- Improv to Improve the Geoscience Community* scheduled 2021  
GSA annual meeting – Erik Haroldson
- SafeZone training* 2021  
CoSTEM Virtual Training – Cathy Gatewood-Keim, Erik Haroldson, Kallina Dunkle

## **ATTENDEE**

<i>Teaching your upper-level course online: A Community Collaboration to build robust online Geoscience courses</i>	2020
Earth Educator's Rendezvous - Karen Viskupic, Anne Egger, Jennifer Wenner	
<i>Early Career Geoscience Faculty Workshop</i>	2019
Science Education Resource Center (SERC) - Tessa Hill, Sarah Penniston-Dorland, Josh Galster, Anantha Aiyyer, Jennifer Anderson, Andrew Goodliffe, Cynthia Hall, Kaatje Kraft, Benjamin Laabs, Martin Wong, Carol Ormand	
<i>Broadening Participation of Underrepresented Minorities in Geosciences</i>	2019
Earth Educator's Rendezvous – Jessica Oster, De'Etra Young, Lily Claiborne	
<i>Advancing Diversity, Equity, and Inclusion to Strengthen the Geoscience Community</i>	2018
AGU Annual Meeting – Kuheli Dutt, Ben Keisling, Gari Mayberry, Wesley Henson, Sharon Cooper, Deb Morrison, Heidi Steltzer	
<i>Best Practices for Modern Open-Source Research Codes</i>	2018
AGU Annual Meeting – Leonardo Uieda, Lion Krischer, Lindsey Heagy, Florian Wagner	
<i>Pangeo: Scalable Geoscience Tools in Python</i>	2018
AGU Annual Meeting – Ryan Abernathy, Joe Hamman, Scott Henderson	
<i>Establishing and Sustaining an Undergraduate Research Program</i>	2018
AGU Annual Meeting – Lydia Fox, Pat Manley, Meagen Pollock, Jeff Ryan	
<i>Bringing Geoscience Practices into the Classroom: Developing Students Skills</i>	2018
AGU Annual Meeting – Anne Egger, Laura Rademacher	
<i>Engaging Environmental Justice in Geoscience Courses</i>	2018
AGU Annual Meeting – Sarah Fortner, Richard Gragg, Rob Rohbaugh, Cathy Manduca	
<i>Storyboarding Your Science: Creating Engaging, Effective Communication</i>	2018
AGU Annual Meeting – David Rogers, Francesca Samsel, Matteo Farinella, Celia Gurney	
<i>Analytical Methods in Geoscience (AMiGEO): Open Education Resources Modules for Lab Instr.</i>	2018
AGU Annual Meeting – Elizabeth Johnson, Juhong Christie Liu	
<i>NSF Funding Opportunities and Merit Review</i>	2018
GSA Annual Meeting – Margaret Frasier	
<i>Social Media for Scientists 101</i>	2018
GSA Annual Meeting – Wendy Bohon, Beth Bartel, Justin Samuel	
<i>RISE: Harassment Resistance and Active Bystander Intervention</i>	2018
GSA Annual Meeting – Sherry Marts	
<i>Helping Students Thrive in Geosciences at Two-Year Colleges: Selected Strategies</i>	2017
GSA Annual Meeting – Norlene Emerson, Eric Baer	

<i>BIAS training workshop</i>	2017
UW-Madison Graduate School – Patricia Devine, William Cox	
<i>Ethics on the Edge: Scientific Integrity and Geoethics for a Changing World</i>	2016
GSA Annual Meeting – Linda Gunderson, David Mogk	
<i>Exploration Targeting in a Business Context</i>	2011
Mineral Exploration Roundup – Steve Bussey, Jon Hronsky, Brad Margeson	
<i>Gemcom GEMS (mining software) training</i>	2009
Modules: Foundations, Geologic Modeling, Resource Modeling In-House company sponsored	
<i>Carbonate Sequence Stratigraphy</i>	2006
In-House company sponsored – Harry Cook	

## **Awards**

### **EXTERNAL**

National Science Foundation: IRES Track I: RUI: Involving US undergraduates in interdisciplinary research at specialized EU nanotechnology and glass science sites on development of novel amorphous materials (Senior Personnel, \$299,979)	2021
American Chemical Society Petroleum Research Fund Undergraduate New Investigator (\$55,000)	2020
Geological Society of America – Graduates Student Research Grant (\$2,000)	2015
Society of Economic Geologists – Canada Foundation – Graduates Student Research Grant (\$3,000)	2015
Society of Economic Geologists – Canada Foundation – Graduates Student Research Grant (\$2,000)	2013
Prodigy Gold Inc. - Graduate Tuition and Research Grant (\$52,000)	2012

### **INTERNAL**

APSU CoSTEM short course funding – 2021 GSA annual meeting (\$1,000)	2021
Increasing Student Engagement and Performance in the Geosciences – Student Access and Success Initiative (\$1,500)	2021
TAF Faculty Technology Innovation Grant – Microscope Heating/Freezing stage (\$25,000)	2019
APSU Access and Diversity Funding (Co-PI, \$1,500)	2019
Geoconclave: A Geoscience competition and networking opportunity – APSU Student Access and Success Initiative (\$2,580)	2019
APSU Distance Education Travel Stipend (\$2,500)	2018
UW-Baraboo/Sauk County Professional Development grant (\$333)	2017
UW-Madison Graduate School Student Research Grant (\$600) - Conference Presentation Funds	2017
Mark and Carol Ann Solien Research Assistantship	2015
UW-Madison Graduate School Student Research Grant (\$1,200) - Conference Presentation Funds	2015
Robert L. Heller Scholarship	2006
Robert C. Bright Scholarship	2006

## **Service**

### **CAMPUS**

APSU CoSTEM Diversity Committee	2020-present
APSU Diversity Committee (Chair 2021-2022)	2019-present

GeoClub Faculty Advisor	2018-present
Hiring Committee – APSU EEO/ADA Resource Officer	2020
Appointments Committee – UW-Baraboo/Sauk County	2017-2018
Hiring Committee - UW-Baraboo/Sauk County	2018
Faculty Liaison - Geoscience Graduate Student Association (GGSA)	2016-2017
Booth Presenter - UW Geology Museum, Madison Gem and Mineral Show	2013
Booth Presenter - UW Geology Museum, A Night at the Museum	2013
Field Trip Committee - Geoscience Graduate Student Association (GGSA)	2013

### **DISCIPLINE**

American Mineralogist (Mineralogical Society of America), solicited manuscript reviewer	2020-present
Economic Geology (Society of Economic Geologists), solicited manuscript reviewer	2020-present
Geological Magazine (Cambridge University Press), solicited manuscript reviewer	2020-present
Ore Geology Reviews (Elsevier), solicited manuscript reviewer	2018-present
Outstanding Student Paper Awards (OSPA) Judge – AGU Annual Meeting	2018
Seismology/Geodesy Early Career Luncheon Mentor – AGU Annual Meeting	2018
GeoCareers Day Roundtable Mentor – GSA Annual Meeting	2018
Resume Clinic Mentor – GSA Annual Meeting	2018
Rock ID Event Coordinator – Annual Tenn. State Parks Geology Conclave	2019
Rock ID Event Coordinator – Annual Tenn. State Parks Geology Conclave	2018
Society of Economic Geologist Special Session Chairperson – North American Miners Asst. Meeting	2007

### **COMMUNITY**

Mineral Bingo - Kenwood Middle School 8 <sup>th</sup> Graders on-campus visit	2020
Science of Geology and Hotspots - Kenwood Middle School 8 <sup>th</sup> Graders on-campus visit	2019
Instructor – APSU STEM Education Professional Development workshop	2019
Instructor - APSU Middle School Lead Teacher Professional Development Workshop	2019
Geology and Volcanoes – invited visit to Carmel Elementary 4 <sup>th</sup> graders	2018
President – Rocky Bluff Neighborhood Association	2014-2018
National Alliance on Mental Illness (NAMI) Walks - Dane County	2012-2016
Project Homeless Connect - Saint Paul, MN	2010

### **Certification/Licensure**

Professional Geoscientist (P.Geo)	2013-2016
Association of Professional Geoscientists of Ontario, License 2297	

### **Memberships**

Society of Economic Geologists – Fellow (SEG), Geological Society of America (GSA), Society for Geology Applied to Mineral Deposits (SGA), Mineralogical Society of America (MSA), National Association of Geoscience Teachers (NAGT)