Department of Earth & Atmospheric Sciences
Indiana University
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Elizabeth Kenderes

Education

2018 **Ph.D. in Geological Sciences; Minor in College Education**, University of Missouri, Columbia, MO
Advisor: Dr. Peter I. Nabelek
Dissertation: Source variation for Mesozoic granitoid plutons in the White-Inyo Range, California, and implications for determining lithospheric structure

2014 **M.S. in Geological Sciences**, University of Missouri, Columbia, Missouri, Columbia, MO
Advisor: Dr. Peter I. Nabelek
Thesis: Role of Li and B bearing fluids in crystallization and alteration of granitic pegmatites, San Diego, California

2012 Geology Summer Field Camp, Southern Illinois University (6-week course)

2012 **B.S. in Earth Science** *Summa Cum Laude*; minor in Environmental Studies, Northeastern Illinois University, Chicago, IL
Advisor: Dr. Genet I. Duke
Senior Thesis: Petrology and geochemistry of the Judith Mountains alkali igneous center, Montana, USA

Relevant Employment History

2021– present **Lecturer,** Indiana University, Bloomington, IN

2020–2021 **Instructional Assistant Professor,** Texas A&M University, College Station, TX

2019–2020 **Visiting Assistant Professor**, University of Missouri, Columbia, MO

2019 **Visiting Assistant Professor**, Northern Illinois University, Dekalb, IL (spring semester)

2015 **Visiting Lecturer**, University of North Carolina, Chapel Hill, NC (spring semester)
**Concurrent with PhD studies*

Teaching Experience

Instructor

Fall 2022 ***Indiana University***
EAS-E418 Igneous & Metamorphic Petrology (3 credit hours)
EAS-E105 Earth: Our Habitable Planet (3 credit hours)

Summer 2022 EAS-X429 Field Camp (6 credit hours)

Spring 2022 EAS-E190 ASURE Earth & Atmospheric Science Lab (3 credit hours)
EAS-E333 Sedimentation & Tectonics (4 credit hours)
EAS-E105 Earth: Our Habitable Planet (3 credit hours)

Fall 2021 EAS-E144 Earthquakes & Volcanoes (3 credit hours)
EAS-E105 Earth: Our Habitable Planet (3 credit hours)

Spring 2021 ***Texas A&M University***
Principles of Geology–asynchronous online (3 credit hours)
Disasters & Society (3 credit hours)
Principles of Geology Laboratory–TA facilitator (10 sections; 1 credit hour)

Fall 2020 Principles of Geology–asynchronous online (3 credit hours)
Principles of Geology–synchronous (3 credit hours)
Principles of Geology Laboratory–TA facilitator (9 sections; 1 credit hour)

Summer 2020 & 2021 Principles of Geology–asynchronous online (3 credit hours)
Principles of Geology Laboratory–TA facilitator (2 sections; 1 credit hour)

Spring 2020 ***University of Missouri–Columbia***
Igneous and Metamorphic Petrology (4 credit hours)
Planet Earth (3 credit hours)
Volcanoes and the Human Environment–Honors (3 credit hours)

Fall 2019 Mineralogy (5 credit hours)
Principles of Geology for Scientists and Engineers (4 credit hours)
Volcanology (1 credit hour)
- 5-week thematic course

Spring 2019 ***Northern Illinois University***
Graduate Level:
- Subduction Zone Processes (3 credit hours)

Cross listed Graduate–Undergraduate:
- Igneous and Metamorphic Petrology with lab (4 credit hours)
  Plate Tectonics (3 credit hours)

Spring 2017 ***University of Missouri – Columbia***
Geology Field Camp, Petrology Instructor (6 credit hours)
- 6-week summer course at Branson Field Laboratory

Igneous and Metamorphic Petrology with lab (4 credit hours)
- Project-based course

Spring 2016 ***University of North Carolina – Chapel Hill***
Graduate Level:
- Igneous Petrology Seminar: Tectonic controls on petrogenesis of Sierra Nevada batholith (1 credit hour)

Undergraduate Level:
- Petrology and Plate Tectonics with lab (4 credit hours)

*All following teaching experience at ***University of Missouri – Columbia***

Teaching Assistant

2016–2018 Mineralogy Lab (2 credit hours)

2018/2015 Igneous and Metamorphic Petrology Lab (1 credit hour)

2013–2015 Lead Teaching Assistant for Introductory Labs (4-6 contact hours)
- Oversee all introductory-level geology courses, field trips, course evaluations, etc.
- Teach two labs sections of Principles of Geology or Environmental Geology
- Substitute for professors in 300+ student lectures

2012–2013 Principles of Geology (6 contact hours)

T.A. Field Experience

2016 Regional Geology: Spain (6 credit hours)
Aid in 18-day field trip to northern Spain
Geology Field Camp (6 credit hours)
- 6-week summer course at Branson Field Laboratory

2015 Sedimentology and Stratigraphy (4 credit hours)
- Aid in weekly lab exercises
  Aid in week-long stratigraphy and mapping field trip to West Texas; Guadalupe Mountains

2014 Introductory Field Geology (4 credit hours)
- Aid in weekly lab exercises
- Aid in week-long field trip to metamorphic core complexes in Arizona
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Other

2014 Online Principles of Geology (4 credit)
- Co-developed course materials
- Wrote seven modules: Metamorphic Rocks, Earthquakes, Earth's Interior, Rock Deformation, Dating Methods, Mineral Resources, Groundwater, Glaciers and Ice Ages

Journal Publications

Khajeloo, M., Birt, J.A., **Kenderes, E.M.,** Sielgel, M.A., Nguyen, H., Ngo, L.T., Mordhorst, B.R., and Cummings, K., 2021, Challenges and accomplishments of practice formative assessment: A case study of college biology instructors' Classrooms, *International Journal of Science and Mathematics Education*, doi: 10.1007/s10763-020-10149-8.

Gammel, E.M., and Nabelek, P.I., 2016, Fluid inclusion examination of the transition from magmatic to hydrothermal conditions in pegmatites from San Diego, California, *American Mineralogist*, v. 101, i. 8, pp. 1906–1915.

Conference Papers/Abstracts

Gammel, E.M., Nabelek, P.I., 2018, Evidence for an underplated island arc as the source of a continental arc monzonite, American Geophysical Union National Conference, V34C-06.

Gammel, E.M., Nabelek, P.I., 2018, Amphibole, clinopyroxene and titanite as petrogenetic traces in the EJB pluton, White-Inyo Range, east-central California, USA, Geological Society of America, Abstracts with Programs 66-3.

Khajeloo, M., Birt, J.A., Siegel, M., Ngo, L., Nguyen, H.T., **Gammel, E.M.**, Cummings, K., Mordhorst, B., 2018, College biology instructors' personal practice assessment theories' influence on formative assessment practices, National Association for Research in Science Teaching Annual Meeting.

Birt, J.A., Khajeloo, M., Siegel, L.T., Ngo, L., Nguyen, H.T., **Gammel, E.M**., Cummings, K., and Mordhorst, B.R., 2017, Instructors' formative assessment in undergraduate biology: influences, context, and practices, National Association of Biology Teachers: 2017 Professional Development Conference.

Gammel, E.M., and Nabelek, P.I., 2017, Lithospheric structure control on changes in magma source over two magmatic pulses in the White-Inyo Range, CA, Geological Society of America, Abstracts with Programs 140-7.

Gammel, E.M., and Nabelek, P.I., 2016, Spatial and temporal changes in sources of Mesozoic arc plutons in the White-Inyo Range, California, USA, Geological Society of America, Abstracts with Programs 47-12.

Gammel, E.M., Nabelek, P.I., Phillips, E., Scott, R., and Sims, K., 2015, Source variation for Mesozoic granitoid plutons in the White-Inyo Range, California, and implications for changes in the lithospheric structure, American Geophysical Union National Conference, T31F-2908.

Gammel, E.M., and Nabelek, P.I., 2014, The role of Li, B, F, and Cl bearing fluids in the crystallization and mineralogy of granitic pegmatites, Geological Society of America, Abstracts with Programs 286-9.

Gammel, E.M., and Nabelek, P.I., 2013, Evolution of Li- and B-bearing fluids in granitic pegmatites systems, Geological Society of America, Abstracts with Programs 331-7.

Gammel, E.M., and Duke G.I. 2011, Petrology and geochemistry of the Judith Mountains alkalic igneous center, Montana, USA, Geological Society of America Abstracts with Programs 43 (5).

Research Interests

Igneous petrology; Radiogenic isotopes; Mineral chemistry

- Geochemical links to tectonic development of western North America during the Mesozoic
- Radiogenic isotope geochemistry of whole rock and mineral separates
- Magma mixing and homogenization processes
- Mineral crystallization controls on magma petrogenesis
- Mineral exploration and petrologic and elemental analysis of gem-bearing pegmatites
- Analysis of pegmatite forming fluids by fluid inclusion study

Lab Experience

Ion chromatograph	Scanning electron microscope
Laser ablation ICP-MS	Transmission electron microscope
Fluid inclusion stage	Electron microprobe
Thermal Ionization Mass Spectrometer	Clean lab
Cathodoluminescence	Zircon chronology

Field Experience

2022	Southern Appalachian Mountains; Weekend trip for Sedimentation & Tectonics 2022 Field trip co-leader with Kaj Johnson and Andrea Stevens-Goddard to Pine Mountain and Appalachian foreland fold-thrust belt
2022–2014	St. François Mountains, Missouri; Total of four weekend trips; 2014 for a graduate petrology course; 2015 and 2018 as a Teaching Assistant for an igneous and metamorphic petrology course; 2017, 2019, and 2022 as instructor of igneous and metamorphic petrology courses
2018	Arbuckle Mountains, Oklahoma; Weekend trip sponsored by the American Association of Petroleum Geologists; Focuses: economic geology, sedimentary and petroleum geology, structure
2017	Northern Spain; Cantabrian Mountains, Pyrenees Mountains; Lead by: Dr. Miriam Barquero-Molina
2016–2017	Geology Field Camp (6-week summer): Based in Brandon Field Laboratory, Winder River Range, Lander, Wyoming through University of Missouri-Columbia Instructor and teaching assistant; field techniques; geologic mapping; stratigraphy; regional Paleozoic, Mesozoic, Tertiary, and glacial geology; sedimentary facies analysis; structural analysis; Grand Teton and Yellowstone National Parks; Absaroka Range volcanics; advanced projects (groundwater; surface hydrogeology; shallow seismic reflection and refraction; advanced structural analysis; well logging)
2013/14/16/18	White-Inyo Range, central California; Ph.D. dissertation research; Mesozoic arc plutons and contact aureoles; 2–3 weeks/year for field research and sample collection with Dr. Peter I. Nabelek
2015	Guadalupe Mountains, Texas/New Mexico; Teaching Assistant for a sedimentology and stratigraphy course; basic sedimentary analyses and carbonate stratigraphic column measurement; day trips to White Sands and Carlsbad Caverns
2014	Buckskin Mountains, Arizona; Teaching Assistant for an introductory field methods course; mapping metamorphic core complexes associated with Basin and Range tectonics; basic structural analysis
2013	Anorthosite Complex, Laramie, Wyoming; Geological Society of America field trip lead by Ron Frost and Robert Bauer
2013	San Diego County, California pegmatite district; M.S. thesis research; pegmatites hosted in Mesozoic arc plutons; shallow emplacement, Li-Cs-Ta type, gem-bearing pegmatites; 2 weeks of field research and sample collection with Dr. Peter I. Nabelek and Dr. Mona Sirbescu

2012 Geology Field Camp (6-week summer): Based in Yellowstone Bighorn Research Association, Red Lodge, Montana though Southern Illinois University
Geologic mapping in: Elk Basin, WY/MT; Block Mountain, WY; Bitterroot Mountains, ID; Bighorn Mountains, MT. Focuses on Paleozoic, Mesozoic, Tertiary, and glacial geology; Yellowstone and Grand Teton National Parks; Craters of the Moon National Monument; Laramide and Sevier tectonics

2012 Baraboo, Wisconsin; Metamorphic terrane; 2 long weekend trips for a structural geology course and a weekend trip lead by instructors as the University of Wisconsin-Madison

Grants and Fellowships

2018 Gamma Alpha Gamma Dissertation Year Fellowship (Amount awarded: $9000)

2013 Graduate Research Grant: Geological Society of America
- Gammel, E.M., 2013, Li and B controls on water solubility and crystal alteration of pegmatite systems, Southern California, USA. (Amount awarded: $2500)

Awards

2019 Northern Illinois University, Outstanding Graduate Studies Professor

2017 University of Missouri, Sandra K. Abell Science Education Award

2015 Department of Geological Sciences Outstanding Graduate Student Award

2014 James H. Stitt Outstanding Teaching Assistant Award

Professional Memberships

2011–present Geological Society of America

2013–present Society for the Advancement of Chicanos/Chicana and Native Americans in Science (SACNAS)

2013–present Mineralogical Society of America

2013–present American Association of Petroleum Geologists
- University of Missouri Student Chapter Vice President (2014–2017)

2014–present American Geophysical Union

2021-present Association for Women Geoscientists

2021-present National Association of Geoscience Teachers

Academic Service

2021-present Undergraduate Studies Committee, Department of Earth & Atmospheric Sciences, Indiana University

2021-present Diversity & Inclusion Committee, Department of Earth & Atmospheric Science, Indiana University

2020-2021 Curriculum Committee, Department of Geology & Geophysics, Texas A&M University

2020-2021 Undergraduate Program Committee, Department of Geology & Geophysics, Texas A&M University

2020-2021 Undergraduate Recruitment and Awards Committee, Department of Geology & Geophysics, Texas A&M University

2017–2018 Graduate Student Representative of the Environmental Affairs and Sustainability University Committee, University of Missouri

2017–2018 Graduate Student Professional Council; Geological Sciences Department Representative, University of Missouri

2017–2018 Graduate Student Professional Council Financial Affairs Committee, University of Missouri

2017–2018 University of Missouri Geological Society Vice President

2014–2017 American Association of Petroleum Geologists, University of Missouri Student Chapter Vice President

Certifications

2021 Certificate in Effective College Instruction from the National Association of System Head-Association of College and University Educators (NASH-ACUE)

2021 Inclusive Teaching: Supporting all Students in the College Classroom from EdX

2015 Certified undergraduate mentor by the University of Missouri's Howard Hughes Medical Institute C^3 program (collaboration, computation, communication)

Relevant Volunteer Contributions

2018 Organized a 4-H event where students ages 5–13 learn about basic geology, mineral identification, and fossils

2012–2018 Scout Night; annual event for boy and girl scouts to earn their geology badge

2012–2018 Bi-annual event targeted for elementary and middle school aged students to interacts with scientists from the University of Missouri