Emily H. G. Cooperdock

(Emily Hernandez Goldstein)
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Research Interests:

Fluid-rock interaction; age and development of oceanic crust; trace element cycling; timing of serpentinization in tectonic processes; alteration mineral formation; U and Th partitioning during metamorphism, method development for (U-Th)/He analysis; Fe-oxide (U-Th)/He dating; X-Ray Computed Tomography application to geologic samples

Education:

2012-2017 **Ph.D.** The University of Texas at Austin, Department of Geological Sciences
Novel (U-Th)/He thermochronometric constraints on serpentinized ultramafic rocks
(Dr. Daniel Stockli, advisor)

2007-2011 **B.A.** Columbia University, Department of Earth and Environmental Sciences
Depositional environment and detrital zircon dating of the Jardine Metasedimentary Sequence from the South Snowy Mountains in Yellowstone National Park
(Drs. David Mogk, Darrell Henry, Nicholas Christie-Blick, co-advisors)

Professional Experience:

2017 (*start Sept. 1*) Postdoctoral Scholar, Woods Hole Oceanographic Institute

Academic Awards and Fellowships:

2014 National Science Foundation: Graduate Research Fellowship ($32,000/year for three years)
2014 The University of Texas at Austin: F. Earl Ingerson Graduate Research Assistance Fellowship in Geochemistry ($4000/year for three years)
2014 The University of Texas at Austin: Graduate Dean's Prestigious Fellowship Supplement ($1000/year for three years)
2014 The University of Texas at Austin: Chevron Minority Summer Fellowship ($9000)
2013 Geological Society of America: Diversity Award
2013 Geological Society of America Mineralogy, Geochemistry, Petrology and Volcanology Division: Student Research Award ($1000)
2012 The University of Texas at Austin: Jackson School Graduate Fellowship ($36,000)
2010 University of Kansas (Field Camp): Golden Hammer Award
2007 Columbia University: Dean's List

Grants Awarded:

2015 Jackson School of Geosciences Grant Matching Program: "Trace Element Systematics of Serpentinites" ($1,000)
2015 Mineralogical Society of America's Mineralogy/Petrology Student Research Grant ($5000)
2014 Jackson School of Geosciences Summer Analytical Fees Grant ($1000)

2013 Geologic Society of America Students-in-Aid Research Grant: "Magnetite (U-Th)/He and (U-Th)/Ne geochronology: constraining serpentinization along magma-poor continental margins" ($2,300)
2013 Jackson School of Geosciences Grant Matching Program: "Magnetite (U-Th)/He and (U-Th)/Ne geochronology: constraining serpentinization along magma-poor continental margins" ($1,000)

Peer-Reviewed Publications:

1. **Cooperdock, E. H. G.**, and Stockli, D. F. (2016) "Unraveling alteration histories in serpentinites and associated ultramafic rocks with magnetite (U-Th)/He geochronology." Geology 44(11): 967-970. doi: 10.1130/G38587.1
2. **Cooperdock, E. H. G**., *Raia, N. H., Barnes, J. D., Stockli, D. F. and Schwarzenbach, E. M. "Tectonic origin of serpentinites on Syros, Greece: Geochemical signatures of seafloor serpentinization preserved in a HP/LT subduction complex" *in review at Lithos*
**Undergraduate student mentee*

Publications in Preparation:

1. Cooperdock, E. H. G., and Stockli D. F. "Dating exhumed peridotite with spinel (U-Th)/He chronometry"
2. Cooperdock, E. H. G., et al. "Timing and duration of magnetite growth associated with carbonate veining in the SE Semail Ophiolite, Wadi Fins, Oman serpentinite"
3. Cooperdock, E. H. G., et al. "Magnetite (U-Th)/He cooling history constraints on the metamorphosed Malenco Ultramafic Unit, Italy"

Published Abstracts:

1. **Cooperdock, E. H. G.,** and Stockli, D. F. (2016) "Unraveling the alteration history of serpentinites and associated ultramafic rocks from the Kampos HPLT subduction complex, Syros, Greece" AGU Fall Meeting
2. *Raia, N., **Cooperdock, E. H. G.,** Barnes, J. D., Stockli, D. F., and Schwarzenbach, E. (2016) "Tectonic origin of serpentinites on Syros, Greece: Geochemical signatures of seafloor serpentinization preserved in the HP/LT subduction complex" AGU Fall Meeting
**Undergraduate student mentee*
3. Cai, Y., Kelemen, P. B., Goldstein, S. L., Yogodzinski, G. M., Hemming, S. R., Rioux, M. E., and **Cooperdock, E. H. G.** (2016) "Ages and geochemical comparison of coeval plutons and volcanics from the central and eastern Aleutian arc" AGU Fall Meeting
4. **Cooperdock, E. H. G.,** and Stockli, D. F., (2016) "Unraveling the alteration history of serpentinites and associated ultramafic rocks from the Kampos HPLT subduction complex, Syros, Greece" 4th International Serpentine Days Conference
5. **Cooperdock, E.,** Carter, M., and Lehnert, K. (2015) "The Internet of Samples in the Earth Sciences: Graduate students invested in the future of physical samples" Geological Society of America, Abstracts with Programs, Vol. 47, No. 7, p.819
6. **Hernandez Goldstein, E.,** Stockli, D., Ketcham, R. & Seman, S., (2014) "Improved Methodology for Magnetite (U-Th)/He Dating of Serpentinites" International Conference on Thermochronology
7. **Hernandez Goldstein, E.,** Stockli. D, Ketcham, R., & Seman, S., (2014) "U-Th/He Dating of Magnetites in Serpentinites" Goldschmidt Abstracts, 2014 974

8. **Hernandez Goldstein, E.,** Stockli. D. and Ketcham, R., (2013) "Vetting Unconventional Minerals for Thermochronology" Geological Society of America, Abstracts with Programs, Vol. 45, No. 7.
9. **Hernandez Goldstein, E.,** Stockli. D. and Ketcham, R., (2013) "Magnetite (U-Th)/He Geochronology: Advancements in Sample Preparation and Application to Date Serpentinites" Geological Society of America, Abstracts with Programs, Vol. 45, No. 3.
10. **Goldstein, E. H.,** Sauer, K., Harwood, J., Mogk, D, Henry, D., Mueller, P., and Foster, D., (2011) "Evolution of the Precambrian rocks of Yellowstone National Park: Metasedimentary Rocks" Geological Society of America, Abstracts with Programs, Vol. 43, No. 4, p. 61.
11. Corbin, N., Walden, J., Bigoldi T., Thompson, J., Stockli, D., **Hernandez Goldstein, E.,** Biel, S., Fry, T., Wiese, S., and Weiland, C., (2010) "Late Miocene to Pliocene left-lateral reactivation of Middle Miocene right-lateral faults in the Mina deflection- a detailed stratigraphic, structural, fault-kinematic, and geochronological investigation in the Coaldale Junction area, Walker Lane, NV" Geological Society of America, Abstracts with Programs, Vol. 42, No. 5, p. 133.

Oral Presentations:

2017 The University of Texas at Austin, Department of Geological Sciences, Petrology, Geochemistry, Structure and Tectonics Seminar
2017 University of Houston, Geochemistry Seminar
2017 Rice University, Geochemistry Seminar
2017 University of Texas at Dallas, GeoClub Meeting and UTD Friday Seminar
2017 *Invited*: Columbia University, Lamont Doherty Earth Observatory, Geochemistry Seminar
2017 *Invited*: Woods Hole Oceanographic Institute, MC&G Seminar
2016 4th International Serpentine Days Conference, Sete, France
2015 Exxon-Mobil, R&D
2014 The University of Texas at Austin, Department of Geological Sciences, Petrology, Geochemistry, Structure and Tectonics Seminar
2014 Goldschmidt Conference, Sacramento, CA
2014 Columbia University, Lamont Doherty Earth Observatory, Hot Topics Seminar
2014 The University of Texas at Austin, Department of Geological Sciences, Petrology, Geochemistry, Structure and Tectonics Seminar
2013 Exxon-Mobil, R&D
2011 Columbia University, Department of Earth and Environmental Sciences, Noon Balloon Seminar

Teaching & Geoscience Education Experience:

2016 Teaching Assistant, Earth Materials, The University of Texas at Austin
- Prepared and led hands-on laboratories every week for twelve undergraduate students, guest lectured for class of 70 students, created demonstration videos to accompany lectures (*Instructor rating by students: 4.7/5.0*)

2016 Mentor to Undergraduate Honors Student, The University of Texas at Austin
- Mentor to female undergraduate honors student for her senior thesis project, conceptualized the project, advised research activities, writing, and presentations. The final product included a poster at AGU 2016 and a publication submitted to *Lithos*.

2015 Students Raising Students Mentor, The University of Texas at Austin
- Mentor to female undergraduate geophysics major, provided career advice

2014 GK-12 Associate, The University of Texas at Austin
- Presented to high school classrooms, lead department tours for K-12 students

2014 Co-coordinator for UTChron Undergraduate Summer Minority Intern Program
- Organized and mentored three undergraduates in (U-Th)/He related research projects at University of Texas at Austin, including students from University of Puerto Rico Mayaguez.

2014 Teaching Assistant, Honors Undergraduate Field Trip to the Colorado Plateau, The University of Texas at Austin

2013 Participant, On the Cutting-Edge Workshop: Preparing for an Academic Career in Geosciences

2012 UTChron Laboratory Research Assistant, The University of Texas at Austin
- Analyzed (U-Th)/He ages, ran ICP-MS analyses, performed clean lab duties

2010 NSF Research Experience for Undergraduates: Precambrian Rocks of Yellowstone National Park

2010 Undergraduate Research Assistant, Columbia University (2 semesters)
- Carried out mineral separation of samples for graduate student

2010 Teaching Assistant, Solid Earth Systems, Columbia University (2 semesters)
- Assisted during lab activities and field trips, graded all labs, tutored students

Professional Service/Activities:

2018 Co-convener for the 16th International Conference on Thermochronology

2017 Co-convener for Goldschmidt Session "Innovations and Advances in Thermochronology"

2016 Co-convener for AGU Session "4 Billion Years of Serpentinization on Earth and Beyond"

2016 Co-founder and Editor for *Science, Y'all*!, the official student science blog of the Jackson School of Geosciences at The University of Texas at Austin

2016 Coordinator, Petrology, Geochemistry, Structure and Tectonics Seminar, The University of Texas at Austin

2016 Panel Member, Jackson School of Geosciences 10th Anniversary Celebration and Research Symposium, The University of Texas at Austin

2015 Member, Jackson School Dean's Evaluation Committee, The University of Texas at Austin

2015 Planning Committee, iSamples EarthCube Research Coordination Workshop, Austin, Texas

2014 Poster Presenter, 4th International Conference on Thermochronology

2014 Secretary, Graduate Student Executive Committee, The University of Texas at Austin

2014 Lead Coordinator, Jackson School Poster Symposium, The University of Texas at Austin

2013 Vice President, Graduate Student Executive Committee, The University of Texas at Austin

2013 Participant, Tectonic Sedimentary and Magmatic Evolution of Hyper-Extended Rift Margins, Graubünden, Switzerland, Exxon Mobil Field School

2013 Participant, Franciscan Subduction Complex, CA, USA, International Lithosphere Program Field Trip

2013 Poster Presenter, Annual Meeting, Geological Society of America

2013 Student Volunteer, South-Central Annual Meeting, Geological Society of America

2013 Poster Presenter, South-Central Annual Meeting, Geological Society of America

2013 Poster Presenter, Jackson School Research Symposium, The University of Texas at Austin

2012 Student-Faculty Liaison, Graduate Student Executive Committee, The University of Texas at Austin

2012 Participant, Pyrenees Workshop 2012, St. Martin d'Arrossa, France

2011 Research Assistant, International Drilling Program Dead Sea Project, Dead Sea, Israel
2010 Student Volunteer, Annual Meeting, Geological Society of America
2009 Participant, Geoinformatics Workshop, Geological Society of America
2009 Research Assistant, MEDCOR Research Cruise, Messina, Sicily

Field Experience:

2016 Etang de Lers, France, Participant in 2-day field trip for Serpentine Days conference led by Yves Lagabrielle
2016 Newfoundland Bay of Islands Ophiolite; Participant in week-long field trip for UT graduate seminar led by John Dewey and Jack Casey
2015 Aleutian Islands, Alaska; Field assistant for GeoPRISMS funded sampling of volcanic rocks on the islands Atka and Unalaska with Columbia University collaborators
2015 Western Alps, Switzerland; Ph.D. field work to collect serpentinite samples for geochronology
2015 Oman Ophiolite; Ph.D. field work to collect serpentinite samples for geochronology
2013 Graubünden, Switzerland; Participant in Exxon Mobile Field School, 'Tectonic Sedimentary and Magmatic Evolution of Hyper-extended Rift Margins" led by Gianreto Manatschal
2014 Colorado Plateau, USA; Teaching Assistant for week-long UT honors undergraduate field trip
2013 Malenco, Italy and Davos, Switzerland; Ph.D. field work to collect serpentinite samples for geochronology and geochemistry
2013 Franciscan Subduction Complex, CA, USA; Participant and driver in the International Lithosphere Program Field Trip led by Mark Cloos
2013 Cycladic Islands, Greece; Participant in week-long field trip for UT graduate seminar led by Daniel Stockli, followed by week-long field work with UT Ph.D. student (Spencer Seman) to collect samples for U-Pb and (U-Th)/He analyses
2012 Western Pyrenees; Participant in 3-day field trip of the Pyrenees Workshop led by Emmanuel Masini followed by week-long field work with UT M.S. student Nicole Hart to collect samples for U-Pb and (U-Th)/He analyses
2012 Dead Sea, Israel; Field assistant – documented stratigraphy, soft sediment collection
2011 Dead Sea, Israel; Field assistant for International Continental Drilling Program: Dead Sea Drilling – prepared and described drill cores
2010 Yellowstone National Park, WY; Senior thesis field work to collect Archean metasedimentary rocks for geochronology and pseudo-stratigraphic sections
2010 Colorado, Nevada and Utah; Participant in the University of Kansas field camp for 6-weeks

Research Skills:

- Noble Gas Mass Spectrometry (quadrupole and magnetic sector split-flight tube)
- Inductively Coupled Plasma Mass Spectrometry (ICP-MS – solution and laser modes)
- Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES)
- Scanning Electron Microscopy (SEM)
- Energy Dispersive Spectroscopy (EDS)
- Clean laboratory sample dissolution (flux fusion, parr-bomb, hot plate, sinter)
- Sample preparation (whole rock crushing, mineral separation for magnetite, spinel, apatite, zircon)
- X-Ray Computed Tomography (CT) data manipulation

Professional Societies: Geological Society of America, Mineralogical Society of America, American Geophysical Union, National Association of Geoscience Teachers