

# JULIA EVE HAMMER

## CURRICULUM VITAE

Updated 2020-07-20

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**BIOGRAPHICAL** Position: Professor  
Citizenship: United States of America

### EDUCATION

UNIVERSITY OF OREGON  
Eugene, OR — PhD, 1998; Advisor: Katherine V. Cashman

DARTMOUTH COLLEGE  
Hanover, NH — BA, 1993; Advisor: C. Page Chamberlain

### LABORATORIES

PI, Experimental Petrology Laboratory, University of Hawaii, POST732  
PI, Electron Microprobe Laboratory, University of Hawaii, POST621

### INSTRUCTIONAL PORTFOLIO (courses taught within the last year or within the upcoming year)

#### ERTH 101L Dynamic Earth Laboratory (F19, S20, F20, S21, F21)

In this online section of the course, students practice what they learn with hands-on activities. We develop and practice skills in reading topographic and geologic maps; identifying mineral, fossil, and rock samples; measuring stream flow and beach profiles; building geologic structures with analog materials. This course features field trips to Oahu and off-island localities.

#### ERTH301 Mineralogy (F19, F20, F21)

In this course, we tackle crystallography, crystal chemistry, phase equilibria, and crystal structures. Students learn and practice the principles of chemistry and optical microscopy as they develop skills in mineral identification in hand sample and thin section. Students are introduced to modern analytical methods of mineralogy and crystallography utilizing the electron microprobe and x-ray diffraction facilities within SOEST. Geologic context is emphasized, as the course culminates in a systematic examination of major rock-forming minerals.

#### ERTH 402 Hawaiian Geology (S20)

We examine the scientific methods (geophysical, geochemical, etc.) and geologic processes influencing the Hawaiian islands: plate tectonics, mantle melting, effusive and explosive eruptions, landsliding and other forms of mass wasting, groundwater flow, sea level change, earthquakes, and tsunamis. The course features guest lectures from EARTH faculty on topics of their research specialization and numerous field trips.

#### ERTH602 Theoretical Petrology (S21)

This course prepares students to understand and critically evaluate the theoretical basis for leading quantitative petrologic models involving phase equilibria. Topics covered include Gibbs free energy and its temperature, pressure, and composition derivatives; phase equilibria and liquid immiscibility; fugacity, activity, and chemical potential; ideal and nonideal solutions; volatile solubilities; kinetic theory; diffusion; and phase transformations.

### RESEARCH INTERESTS

Experimental petrology; volcanology; crystal nucleation, growth, dissolution, and reaction; igneous petrology of the Earth, moon, and Mars.

## EMPLOYMENT HISTORY

PROFESSOR	University of Hawaii, Honolulu, HI	2013-present
VISITING PROFESSOR	University of Clermont-Ferrand	2015
ASSOCIATE PROFESSOR	University of Hawaii, Honolulu, HI,	2006-13
ASSISTANT PROFESSOR	University of Hawaii, Honolulu, HI,	2002-06
SENIOR RESEARCH ASSOCIATE	Brown University, Providence, RI	2001-02
NSF POSTDOCTORAL FELLOW	Brown University, Providence, RI	1999-2000

## HONORS AND AWARDS

Fellow of the Geological Society of America	2018
University of Hawaii Regents' Medal for Excellence in Teaching	2015
White House invitee, NSF Career-Life Balance Initiative, Obama Admin.	2011
Presidential Early Career Award for Scientists and Engineers (PECASE), Bush Admin.	2006
National Science Foundation CAREER Award	2005

## LECTURES AND INVITED TALKS SINCE 2015 (EXCLUDING CONFERENCES)

Colloquium, University of Chicago Department of Geophysical Sciences	2017
Colloquium, Lamont-Doherty Earth Observatory	2016
Workshop, National Academy of Sciences, Understanding Volcanic Eruptions	2016
Seminar, ClerVolc, University of Blaise Pascal, Clermont-Ferrand	2015
Seminar, Centre de Recherches Péetrographiques et Géo-chimiques (CRPG), Nancy	2015
Short Course, Laboratoire Magmas et Volcans, University of Clermont-Ferrand	2015
Keynote, MemoVolc Santorini Summer School	2015

## PUBLICATIONS (peer-reviewed, 5 most recent) **Supported student**, *supported postdoc*.

- First, EC, TC Leonhardi**, and JE Hammer (2020), Effects of superheating magnitude on olivine growth, *Contrib. to Mineral. Petrol.*, 175(2), 1–14, doi:10.1007/s00410-019-1638-7.
- Shea, T, JE Hammer, E Hellebrand, A. J. Mourey, F. Costa, **E. C. First**, K. J. Lynn, and O. Melnik (2019), Phosphorus and aluminum zoning in olivine: contrasting behavior of two nominally incompatible trace elements, *Contrib. to Mineral. Petrol.*, 174(10), doi:10.1007/s00410-019-1618-y.
- Zhang, D, Hu, Y, Xu, J, Downs, RT, Hammer, JE, Dera, PK. (2019) High-pressure behavior of liebenbergite: The most incompressible olivine-structured silicate. *Am Mineral.* 104, 580-587.
- Mollo, S. and Hammer, J.E., (2017) Dynamic Crystallization in Magmas, in: Mineral reaction kinetics: microstructures, textures, and chemical compositions, EMU Notes in Mineralogy, v. 16, Abart, R., and Heinrich, W., Eds. 373-418.
- Welsch, B.*, Hammer, J., Baronnet, A., **Jacob, S.**, Hellebrand, E., and Sinton, J. (2016) Clinopyroxene in postshield Haleakala ankaramite: 2. Texture, compositional zoning and supersaturation in the magma. *Contrib. Mineral. Petrol.* 171:6, DOI 10.1007/s00410-015-1213-9

## STUDENTS SUPPORTED AND ADVISED

Lisa Tatsumi BS (2008); Patrick Shamberger, MSc (2004); Owen Neill, MSc (2010), Lisa Tatsumi-Petrochilos, MSc (2010), Carrie Brugger, PhD (2011), Gabriele Lanzafame, PhD (2012 visitor), Samantha Jacob BS (2013), Tanis Leonhardi, BS (2015), Diamond Tachera, BS (2016), Emily First, PhD (2017), Manlio Calentti (REU intern 2018), Alexandra Kirsch (PGGURP intern 2018), William Nelson (current PhD), Rebecca deGraffenried (current PhD), Kelly McCartney (current PhD)

## STUDENTS SERVED AS EXAM OR DISSERTATION COMMITTEE MEMBER SINCE 2015

Xiaojing Lai (2019), Tommy Yong (2019), Yi Hu (2018), David Frank (2019), Adrien Mourey (2019), Sasithorn Chornkrathok (2020), Chao Keng-Hsein (2020)

## POSTDOCTORAL FELLOWS SUPPORTED/ MENTORED

Julie Bowles (supported 2006-2007), Thomas Shea (supported 2010-2013), Hidemi Ishibashi (mentored 2011), Benoit Welsch (supported 2011, 2012-2014).

## EXTRAMURAL SUPPORT SINCE 2015

- HI DOT 2019-1R 10-030, 2020-2023 Forensic Investigation of the North-South Road Concrete Pavement Distress (Co-PI Hammer, ~10%), \$475,659.
- NSF/GEO-NERC 1929119, 2019-2022 Collaborative Research: Multi-scale investigation of rheology and emplacement of multi-phase lava (Institutional PI Hammer, 100%), \$106,702.
- NSF EAR 1839230, 2019-2021 Collaborative Research: Elucidating the role of titanomagnetite in vesiculation of silicic magmas (PI Hammer, ~70%), \$373,112.
- NSF EAR 1838502, 2018-2020 RAPID: Tracking magmatic and volcanic changes in the May 2018 Kilauea Eruption (Co-PI Hammer, ~20%), \$119,821.
- NSF EAR 1650416, 2017-2020 Advances in Crystal Growth: Experimental and Microscopic Study of Olivine Phosphorus Zoning (Co-PI Hammer, ~15%), \$395,566.
- NASA SSW 13-47887, 2016-2019 Exploring the time-temperature history of the lunar interior with advanced materials characterization of troctolite 76535 (PI Hammer, 50%) \$426,388.
- NSF EAR 1347887, 2014-2016 Collaborative Research: Experimental Investigation of Magmatic Processes at Volcán Quizapu (Institutional PI Hammer, 100%) \$274,823.
- NASA PGG, 2013-2016, Pyroxene & olivine synthesis: A strategy to improve spectral remote sensing derived data (Co-PI Hammer ~15%), \$321,000.
- NSF EAR 1321890, 2013-2016 Pursuing the Nucleus: Experimental, Theoretical, and Analytical Investigations of Bubble and Crystal Formation in Magma (Co-PI Hammer, ~15%), \$270,928.

## PROFESSIONAL SOCIETY MEMBERSHIPS

- American Geophysical Union
- Geological Society of America
- Mineralogical Society of America
- Sigma Xi
- International Association of Volcanology and Chemistry of the Earth's Interior

## SERVICE since 2015

### DEPARTMENT

- Division Chair, VGP 2018-20
- Faculty Search Committees (2) 2016-17, 20-21
- Curriculum Committee, Chair 2016-21

### SCHOOL

- SOEST Research Council 2013-15, 18-19

### UNIVERSITY

- Professional Ethics Committee 2019-20
- Environmental Health and Safety Hiring Committee 2017
- Chemical and Physical Hazards Committee 2016-17
- Tenure Promotion and Contract Renewal Committee (Chair in 2014) 2014, 17, 20

### NATIONAL/ INTERNATIONAL

- Special Issue Editor, *Frontiers in Earth Science* 2019-20
- Associate Editor, *American Mineralogist* 2013-17

## OUTREACH since 2015

- Geoscience Educator Workshop, Hawaii Nature Center 2016
- Expanding Your Horizons “motivating young women in science” workshop leader 2015
- Demonstrator at SOEST Open House: *Explosive Volcanism* 2015, 17, 19