

## PAMELA C. BURNLEY

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### EDUCATION

Ph.D., Geology, University of California, Davis. March 1990. Dissertation: *The effect of nonhydrostatic stress on the olivine-spinel transformation in Mg<sub>2</sub>GeO<sub>4</sub>*. Advisor: Dr. H. W. Green II.

Master of Science, Geology, University of California, Davis. March 1986. Thesis: *Metamorphic petrology, structure and stratigraphy of the Chloride Cliff area, Funeral Mountains, Death Valley, California*. Advisor: Dr. H. W. Day.

Bachelor of Science, Brown University, Providence, Rhode Island. June 1982. Senior thesis: *Tremolite deformation: an experimental study*. Advisor: Dr. J. Tullis

### ACADEMIC APPOINTMENTS

École Normale Supérieure, Paris, Département de Géosciences, Professeur Invites	11/18-12/18
Department of Geoscience University of Nevada, Las Vegas	
Professor	7/20 - present
Associate Professor	7/17 – 7/20
Associate Research Professor	8/07 – 7/17
Associate Director, High Pressure Science and Engineering Center	7/14 – 12/18
Department of Geosciences, Georgia State University	
Adjunct Professor	7/07 -7/09
Associate Professor	8/06 – 7/07
Assistant Professor	1/98 – 8/06
CIRES, University of Colorado at Boulder	
Research Scientist III	5/97-12/97
Research Associate	11/93- 5/97
Department of Geological Sciences, University of Colorado	
Lecturer	9/95-12/95
Department of Geological and Geophysical Sciences, Princeton University	
Research Associate	11/91 - 10/93
Department of Geological Sciences, Cornell University	
Visiting Scientist	4/90 - 3/93
Chemistry Department, Cornell University	
Teaching Associate	9/90-6/91
Tompkins and Tioga Counties, New York	
Substitute Teacher	3/90-6/90

### INSTRUCTIONAL ACTIVITIES

**Courses Taught at University of Nevada Las Vegas**  
Geology 101  
Introductory Geology: Exploring Planet Earth

Geology 220  
Mineralogy  
Geology 704X (on-line course: <https://pburnley.faculty.unlv.edu/COMPRESMP101.html>)  
Introduction to Mineral Physics  
Geology 796  
Advanced Topics in Geoscience: Deformation of Crystalline Materials  
Geology 452/652  
Geophysics

### **Courses Taught at Georgia State University**

Geology 1121H  
Honors Introductory Geosciences I: Earth's Internal Processes  
Geology 1122H  
Honors Introductory Geosciences II: Earth's External Processes  
Geology 3002  
Introduction to Earth Materials  
Geology 4097  
Readings in Geophysics  
Geoscience Learning Community  
Geology in the Field  
Geology 4500/6500 & 8500  
Introduction to Geophysics  
Geology 3001/7001  
Concepts of Earth Science  
Geology 1121K  
Introductory Geosciences I: Earth's Internal Processes  
Geology 7021  
Introductory Geosciences I for Teachers: Earth's Internal Processes  
Geology 7022  
Introductory Geosciences I for Teachers: Earth's External Processes  
Natural Science Sequence 3001 (team taught with Dr. R. Nave)  
Integrated Science I: Physics and Astronomy  
Natural Science Sequence 3002 (lead instructor)  
Integrated Science II: Earth Science  
Natural Science Sequence 3003 (team taught with Dr. B. Baumstark)  
Integrated Science III: Geology and Biology

### **Student Research Supervision**

Undergraduate senior thesis and independent study:  
Katie Davis (2000), Charmel Dozier (2000), Barabara Brocks (2001, 2002), Buffy Chournos (2002), Jamarcus Terrel (2003), Verra Kustori (2003), Beth Lavoie (2006), Amy Cooper (2011), Chris Cline (2011), Katie Peterson (2013), Richard Rowland (2013), Adela Fernandez (2015), Nolan Regis (2015), Jeremiah Smith (2015), Danielle Ottaviano (2015), Alex Goya (2016), Linsdsey Hanes (2018), Andrew Reid (2018)  
Atlanta Consortium for Research in the Earth Sciences REU (summer program):  
17 students (1999 - 2004)  
Undergraduate researchers supervised (University of Nevada Las Vegas):  
58 students (2007 - 2019)  
Master's non-thesis (Georgia State University):  
Deblina Datta (2008)

Andrea Sikora (2000)  
Master's thesis (University of Nevada Las Vegas)  
Alex Drue (MS, Fall 2011)  
Chris Cline (MS, Spring 2014)  
Kara Marsac (MS, Spring 2015)  
Daniel Haber (MS, Fall 2015)  
Richard Rowland (MS, Fall 2017)  
Nolan Regis (MS, Spring 2018)  
Genevieve Kidman (Fall 2017 – present)  
Taryn Traylor (January 2018 – present)  
PhD dissertation  
Daniel Haber (January 2019 – present)

### **Significant Outreach Activities**

#### **Inclusion Rocks!**

Seven half-day workshops and two outreach events for middle and high school students and teachers – PI, Curriculum materials development and workshop presenter July 2018 – April 2019

High Pressure Science and Engineering Center “*Extreme Crystals Weekend - Undergraduate Workshop on the Physics of Solids at High Pressure*” - Workshop Leader April 2016, October 2016, October 2017

Montessori Visions Academy, Las Vegas

Science curriculum development and weekly classroom instruction 4-6<sup>th</sup> grade (spring 2010)

Partnership for Reform in Science and Mathematics (PRISM)

American Association for Future Teachers – Workshop Leader 2004

Atlanta Public Schools/PRISM Summer Institute – Workshop Leader 2004

Natural South Episode #207: “*Tale of Two Canyons*”, Salt Run Productions  
Consultant and on-camera expert – aired April 2003

Eisenhower Project: “*Enhancing Web Based Teaching*” (PI, Dr. J. Hassard)  
Cedar Grove Middle School – Workshop leader 2001, 2002

Grady High School, Atlanta Public Schools

Exploratory course: *Geology of Georgia* – Spring 2001

American Geological Institute & Georgia State University

Earth Comm workshop – Instructor 1998

SciTrek Workshop for in-service teachers

*Model Rivers* – Workshop Leader 1998

### **GRANTS AND CONTRACTS**

*Total funding (not including HiPSEC):\$4,374,377; Total as PI:\$3,549,764*

DOE SSAA - DE-NA0003896 *Deformation of Polycrystalline Materials under Extreme Conditions: Stress Percolation, Shear Localization and Grain Boundary Rheology* PI: Pamela C. Burnley, Co-I: Ashkan Salamat, 01/15/19 – 12/31/21, \$525,000

DOE SDRD (Mission Support and Test Services, LLC) *Improved Topographic Corrections for AMS Data*, UNLV PI: Pamela C. Burnley, RSL PI: Daniel Haber, 1/1/2019 – 9/30/2019, \$36,035

NASA Space Grant NNX15AI02H *Inclusion Rocks! Introducing Underrepresented Students to the World Around Them Through Geoscience and Remote Sensing*, PI: Pamela C. Burnley, Co-I: Meryn Cole, Joanna Piotrowska-Jeziarska, and Joshua Bonde, 7/1/18 -4/9/2019, \$24,888

NSF EAR - 1830981 *REU supplement to Testing Stress Percolation as a Model for Stress Transmission in Rocks* PI: Pamela C. Burnley, 05/17/18 – 07/31/19, \$14,688

Army Research Office, W911NF-15-1-0573 *Understanding the Geologic Causes of Variations in Natural Radiological Background* PI: Pamela C. Burnley, CoI: Elisabeth Hausrath, 9/1/15 – 8/31/18, \$355,768

NSF EAR - 1417218 *Testing Stress Percolation as a Model for Stress Transmission in Rocks* PI: Pamela C. Burnley, 08/01/14 – 07/31/19, \$327,979

NSF EAR - 1361339 *CSEDI Collaborative Research: Grand Challenge for Experimental Study of Plastic Deformation Under Deep Earth Conditions*, PI: Pamela C. Burnley, 08/01/14 – 07/31/19, \$263,998

DOE SDRD (with National Security Technologies LLC) *Predictive Radiological Background Distributions from Geologic Data*, UNLV PI: Pamela C. Burnley, Co-I: Elisabeth Hausrath, RSL PI: Russell L. Malchow Jr. 10/1/13- 09/31/15, \$210,444

DOE SSAA *High Pressure Science and Engineering Center*, PI: Yusheng Zhao, Co-I: Andrew Cornelius, Pamela Burnley, Changfeng Chen, Paul Forster, Michael Pravica, Oliver Tschauner, Barbara Lavina, Ravhi Kumar, Liping Wang, and Valentin Iota, 1/1/13 – 12/31/18, \$13,000,000

NSF EAR -1220548 *Quantifying Rare Earth (REE) and High Field Strength (HFSE) Element Mobility in Fluids at Conditions Appropriate for Forearc to Subarc Cold and Hot Subduction Zones*, PI: Adam C. Simon, Co-I: Oliver Tschauner and Pamela C. Burnley, 8/15/12 – 7/31/15, \$379,393

COMPRES/University of Illinois (sub contract to NSF award) *Mineral Physics on the World Wide Web – a Comprehensive Approach*, PI: Pamela C. Burnley, Co-I: Sylvia-Monique Thomas 06/1/12-5/31/14, \$86,548

COMPRES/University of Illinois (sub contract to NSF award) *Mineral Physics Educational Modules for Advanced Undergraduates and Graduate Students*, PI: Pamela C. Burnley, 01/17/11-05/21/12, \$86,346

NSF EAR-0838579 *In-situ Synchrotron X-ray Diffraction Study of Quartz Deformation*, PI: Pamela C. Burnley, 09/01/09-08/31/12, \$305,314

University of Nevada, Las Vegas FY2008 Research Infrastructure Award Program, *Acquisition of an Electron Backscatter Detector (EBSD)*, PI: Adam Simon, CoI: Pamela Burnley, Jean Cline, Andrew Cornelius, Ken Czerwinski, John Farley, Clemens Heske, Ganqing Jiang, Rod Metcalf, Malcolm Nicol, Michael Pravica, Gene Smith, Wanda Taylor, Oliver Tschauner, Michael Wells. 1/08-6/08, \$97,232

NSF EAR-0652894 *CSEDI Collaborative Research: Grand Challenge for Experimental Study of Plastic Deformation Under Deep Earth Conditions*, PI: Pamela C. Burnley, 05/01/07-04/31/10, \$168,142

Georgia State University FY2007-2008 *Improving Retention and Timely Graduation Rates for Geosciences Majors (Geography & Geology)*, \$92,200

Georgia State University, FY 2005 Student Technology Fee, Proposal #2.1.15 *Computational Facilities for Geology Students*, \$40,872

NSF EAR-0405796 *REU Supplement COMPRES Grand Challenges for Experimental Study of Plastic Deformation*, PI: Pamela C. Burnley \$10,581

NSF EAR-0136107 *Collaborative Research: COMPRES Grand Challenges for Experimental Study of Plastic Deformation*, PI: Pamela C. Burnley, 02/01/02-01/31/06, \$196,109

NSF EAR-0139539 *Collaborative REU Site Proposal: Atlanta Consortium for Research in the Earth Sciences ACRES: Research Experiences for Undergraduates and Science Teachers*, PI: Pamela C. Burnley, Co-I: Beth A. Christensen, Crawford W. Elliott, Zhi-Yong Yin, 03/01/02-02/28/05, \$326,680

NSF EAR-0079721 *Acquisition of a Laser Ablation Single Collector High Resolution Inductively Coupled Plasma Mass Spectrometer*, PI: A. Mohamad Ghazi, Co-I: Pamela Burnley, Seth Rose, W. Crawford Elliott, David Vanko, 08/21/00-07/31/02, \$287,099

- NSF EAR-9706289 *REU Supplement: Collaborative Investigation of Internal Stresses and Strains Induced by the Olivine-Spinel Transformation: Mechanical Models and Microstructural Observations*, PI: Pamela C. Burnley, 8/23/99-9/30/00, \$10,200
- NSF EAR-9820666 *Collaborative Proposal: Atlanta Consortium for Research in the Earth Sciences (ACRES): Research Experiences for Undergraduates and Science Teachers*, PI: Pamela C. Burnley, CoI: John Yin, 3/1/99-2/28/01, \$189,554
- NSF EAR-9706289 *Collaborative Investigation of Internal Stresses and Strains Induced by the Olivine-Spinel Transformation: Mechanical Models and Microstructural Observations*, PI: Pamela C. Burnley, CoI: Martin L. Dunn, 8/1/97-7/21/99, \$113,000
- NSF EAR-9506710 *Investigation of Martensitic-like Transformation Kinetics for the Olivine to Spinel Transformation at High Pressure*, PI: Pamela C. Burnley, 8/1/95-7/31/97 \$68,096
- NSF EAR-9418685 *Absolute Pressure and Temperature Calibration to 6 GPa and 1700 K*, PI: Ivan C. Getting, CoI: Pamela C. Burnley, 2/1/95-1/31/97, \$158,121

### **ADMINISTRATIVE EXPERIENCE AND COMMITTEE SERVICE**

#### **University of Nevada, Las Vegas**

Department of Geoscience

Rock Preparation Laboratory, Manager 1/2011 - present

Curriculum Reform, Learning Outcomes Subcommittee, Chair 2010

Scholarship Committee, Member 2008 – 2010

Education and Outreach Committee, Member 2010 - present

High Pressure Science and Engineering Center

Graduate Education Coordinator, 2010 - 2014

#### **Georgia State University**

Atlanta Consortium for Research in the Earth Sciences (ACRES)

Summer Research Experiences for Undergraduates and Teachers

Director 1999-2005

Department of Geosciences

Educational Technology Committee, Chair 1998-2007

Undergraduate Learning Outcomes Assessment, Chair 2005-2007

Department Chair Search Committee, Chair 2007

New Faculty Search Committee, Sedimentology and Stratigraphy Subcommittee Chair 2006

Standards Based Teacher Education Project (STEP)

STEP Science Subcommittee, Member 1998-2007

STEP Taskforce, Member 1999-2000

Professional Education Faculty

Member 1998-2007

Professional Education Council 2005-2007

Diversity Subcommittee, Member 2003-2005

Department of Early Childhood Education

Science Education Faculty Search Committee, Member 2003

Department of Middle Secondary and Instructional Technology

TEEMS Program Admissions Interview Committee, Member 2000-2001

### **PROFESSIONAL SERVICE**

Consortium for Materials Properties Research in Earth Sciences (COMPRES)

Workshop Chair “Envisioning the Next Generation of In-situ Synchrotron X-ray Techniques in

Large-Volume High Pressure Apparatus for Mineral and Rock Physics” September 23-30,

2018 Advanced Photon Source Argonne National Laboratory

Executive Committee, Chair 2013-2015

Ad hoc Education and Outreach Committee, Member 2012-2013  
 Infrastructure and Development Committee, Chair 2010-2012  
 Long Range planning group, Education subcommittee, Chair 2010  
 Infrastructure and Development Committee, Member 2002-2008, 2013  
 Executive Committee, Member 2001-2002  
 Central Office Standing Committee, Chair 2001-2002  
 Mineralogical Society of America  
 Committee on Committees, Member 2019-2020  
 Distinguished Public Service Medal Committee, Member 2019-2020  
 Roebling Medal Committee, Member 2015-2017  
 Councilor, 2010-2013  
 Mineralogical Society of America Award Committee, Chair 2013  
 Dana Medal Committee, Chair 2012  
 Crystallography Research Grant Committee, Chair 2011  
 Ad Hoc Committee on Meetings, Member 1998-2000  
 Representative to AGU Spring Meeting Program Committee, Member 1997-2000  
 NSLS-II 4DE/HEX/APS 6BMB Beamline Proposal Writing and Advisory Team  
 Member 2010 - present  
 In-situ Studies of Rock Deformation NSF Research Coordination Network  
 Advisory Committee, Chair 8/2019 - present  
 Geological Society of America  
 Young Scientist Award Committee, Member 2016-2018  
 Physics and Chemistry of Minerals, Springer  
 North American Editor 2007 - 2010  
 National Science Foundation  
 Division of Earth Sciences, Panel member 2/96, 2/97, 4/98, 1/00, 11/00, 5/07 – 11/09, 10/20  
 University System of Georgia Consortia for Science Teacher Professional Development  
 Earth and Space Sciences Subcommittee, Member 2003-2007  
 American Geophysical Union  
 Bucher Medal Committee, Member 2013-2014  
 Paul Silver Award Nomination Committee, Member 2012  
 Public Information Committee, Member 1998-2000  
 Representative of the Mineral and Rock Physics Committee to the Spring Meeting  
 Program Committee 1999-2000  
 Volcanology, Petrology and Geochemistry Section,  
 Meetings Committee, Member 1998-2000  
 Representative of the Mineral and Rock Physics Committee to the Meetings Program  
 Committee 1997-1999  
 National Association for the Advancement of Colored People  
 NAACP ACT-SO National Annual Awards, Earth and Space Science Judge 2014  
 St. Vrain Valley School District  
 Science Proficiency Writing Committee, Member 1995-1997  
 International Association of Seismology and Physics of the Earth's Interior  
 Commission on Physical Properties of Materials of the Earth's Interior, Secretary 1995-1999  
 Association for Women Geoscientists  
 Denver Chapter, Treasurer 1994-1997  
 Reviewer for American Mineralogist, Physics and Chemistry of Minerals, Earth and Planetary  
 Science Letters, Journal of Geophysical Research, Geophysical Research Letters, Physics of  
 Earth and Planetary Interiors, Chemical Physics Letters, Science, Nature, Journal of  
 Environmental Radioactivity, Environmental Earth Sciences, Minerals, W. H. Freeman and

Company, Wiley and Sons, Prentice Hall, Brooks Cole, Pearson, Columbia University Press, Addison Wesley, McGraw-Hill, and the National Science Foundation.

### **INVITED LECTURES AND COLLOQUIA**

#### **Invited speaker**

Bayerisches Geoinstitut PhD short course: Texture and Interface Analyses using EBSD, July 2018  
Rock Deformation Gordon Conference, Summer 1997, 2016  
EGU General Assembly Spring 2014 in session: *Mechanical effects during mineral reactions: A departure from lithostatic pressure – a myth or fact?*  
National Science Teachers Association, Annual meeting, Spring 2004 *AGU Lecture*  
CSEDI Deep Earthquake workshop, Winter 1994  
AGU Spring 1993 meeting in session: *Kinetics and Transport Properties of Minerals*

#### **Invited colloquia**

University of Wyoming, Cornell University, Princeton University, State University of New York at Stony Brook, University of Colorado at Boulder, Arizona State University, Los Alamos National Laboratory (IGPP), University of Northern Colorado, University of Notre Dame, Northwestern University, Georgia Tech, Georgia Southern University, University of Georgia, Florida International University, University of New Mexico, Columbus State University, University of Nevada Las Vegas, Los Alamos National Lab (Geomaterials), University of California, Davis, University of Illinois, Stony Brook University, ETH Zurich, South Dakota School of Mines and Technology, Ecole Normale Supérieure, Paris, Sandia National Lab (Livermore Office)

### **ACADEMIC HONORS AND AWARDS**

Fellow Mineralogical Society of America, 2012  
Editor's Citation for Excellence in Refereeing, American Geophysical Union, 1996  
Penrose Grant: Awarded with Outstanding Mention, Geological Society of America, 1983  
Graduate Fellowship, National Science Foundation, 1982

### **PUBLICATIONS**

#### **Peer reviewed**

Rowland II, R.L., Lavina, B., Vander Kaaden, K.E., Danielson, L.R. and Burnley, P.C. (2020), Thermal analysis, compressibility, and decomposition of synthetic bastnäsite-(La) to lanthanum oxyfluoride, *MINERALS*, 10(3), 212; <https://doi.org/10.3390/min10030212>  
Adcock, C.T. Haber, D.A. Burnley P.C., Malchow, R.L. and Hausrath E.M., 2019, Modeling Gamma Radiation Exposure Rates Using Geologic and Remote Sensing Data to Locate Radiogenic Anomalies, *Journal of Environmental Radioactivity* 208-209:106038. <https://doi.org/10.1016/j.jenvrad.2019.106038>  
Kaboli, S. and Burnley P.C., 2019, In-situ X-ray Diffraction Deformation and EPSC Modeling of AZ31 Mg Alloy. *Materials Science & Engineering A*, 739, p. 99-104 <https://doi.org/10.1016/j.msea.2018.10.008>  
Burnley P. C. and Kaboli S. 2019 Elastic Plastic Self Consistent (EPSC) Modeling of San Carlos Olivine Deformed in a D-DIA Apparatus. *American Mineralogist*. 104 (2): 276-281. <https://doi.org/10.2138/am-2019-6666>  
Kaboli, S. and Burnley P.C. 2018, Direct Observations of Crystal Defects in Polycrystalline Diamond. *Materials Characterization* v. 142, p. 154-161 <https://doi.org/10.1016/j.matchar.2018.05.036>

- Mazzucchelli, M. L., Burnley, P., Angel, R J., Morganti, S. Domeneghetti, C. M., Nestola F. and Alvaro, M. 2018, Elastic geobarometry: errors arising from the geometry of the host-inclusion system. *Geology*, 46 (3): p.231–234, <https://doi.org/10.1130/G39807.1>
- Kaboli, S., Burnley, P.C., Xia, G. and Green H.W. II 2017, Pressure dependence of creep in forsterite olivine: comparison of measurements from the D-DIA and Griggs apparatus. *Geophysical Research Letters*, 44, 10,939–10,947. <https://doi.org/10.1002/2017GL075177>
- Kaboli, S. and Burnley P.C., 2017, ECCI, EBSD and EPSC Characterization of Rhombohedral Twinning in Polycrystalline  $\alpha$ -Alumina Deformed in the D-DIA Apparatus. *Journal of Applied Crystallography*, 50, 14p. <https://doi.org/10.1107/S1600576717013991>.
- Haber, D.A., Burnley, P.C., Adcock, C.T., Malchow, R.L., Marsac, K.E., and Hausrath, E.M., 2017, Modeling Background Radiation in Southern Nevada. *Journal of Environmental Radioactivity*, v. 171, p 41–64, <https://doi.org/10.1016/j.jenvrad.2017.01.020>
- Haber, D.A. Malchow, R.L., Burnley, P.C., 2017 Monte Carlo Simulations of the Gamma-Ray Exposure Rates of Common Rocks. *Journal of Environmental Radioactivity*, v. 167 p 20–25, <https://doi.org/10.1016/j.jenvrad.2016.11.013>
- Marsac, K.E., Burnley, P.C., Adcock, C.T., Haber, D.A., Malchow, R.L., Hausrath, E.M., 2016, Modeling background radiation using geochemical data: A case study in and around Cameron, Arizona. *Journal of Environmental Radioactivity*, v.165 p. 68- 85, OSTI ID 1325309, <https://doi.org/10.1016/j.jenvrad.2016.07.012>
- Burnley, P. C., 2015, Elastic Plastic Self Consistent (EPSC) Modeling of Plastic Deformation in Fayalite Olivine. *American Mineralogist*. V. 100, p.1424 – 1433, OSTI ID 1332345, doi: 10.2138/am-2015-5234CCBYNCND
- Tanis, E.A., Simon A., Tschauner O., Chow P., Xiao Y., Burnley P., Cline, C., Hanchar, J., Pettke, T., Shen, G., Zhao, Y., 2015, Experimental constraints on the mobility of Nb-rutile in NaCl- and NaF-bearing aqueous fluids during the blueschist to eclogite transition in subduction zones, *American Mineralogist*, V. 100, p.1600 – 1609, doi: 10.2138/am-2015-5031
- Burnley, P. C., 2013, The Importance of Stress Percolation Patterns in Rocks and other Polycrystalline Materials. *Nature Communications*. 4:2117, doi:10.1038/ncomms3117
- Burnley, P.C, Cline, C. and Drue, A., 2013, Kinking in Mg<sub>2</sub>GeO<sub>4</sub> olivine: an EBSD study. *American Mineralogist*. V. 98, p. 927–931 <https://doi.org/10.2138/am.2013.4224>
- Burnley, P.C. and Getting I.C. 2012 Creating a High Temperature Environment at High Pressure in a Gas Piston Cylinder Apparatus. *Review of Scientific Instruments*, v. 83:1, doi: 10.1063/1.3677844
- Jarrett, O. S. and Burnley, P. C. 2010 Lessons on the role of fun/playfulness from a geology undergraduate summer research program. *Journal of Geoscience Education*, v. 58, n. 2, p. 110-120. <https://doi.org/10.5408/1.3534844>
- Burnley, P.C. and Zhang, D. 2008 Interpreting in-situ x-ray diffraction data from high pressure deformation experiments using elastic plastic self consistent models: an example using quartz, *Journal of Physics: Condensed Matter*, v 20, doi:10.1088/0953-8984/20/28/285201, 10pp
- Jarrett, O. S. and Burnley, P.C., 2007, The role of fun, playfulness, and creativity in science: Lessons from geoscientists, in *Play and Culture Studies Volume 7*, D. Sluss and O. Jarrett Eds., University Press of America, New York, 188-202.
- Burnley, P.C. and Schmidt, C., 2006 Finite element modeling of elastic volume changes in fluid inclusions: Comparison with experiment, *American Mineralogist*. v91, no. 11-12, pp. 1807-1814.
- Burnley, P. C., 2005, Investigation of martensitic-like transformation from Mg<sub>2</sub>GeO<sub>4</sub> olivine to its spinel structure polymorph. *Am. Min.*, v 90, no. 8-9, pp. 1315-1324.
- Burnley, Pamela C., Davis, Mary K., 2004, Volume Changes in Fluid Inclusions Produced by Heating and Pressurization: A Finite Element Modeling Study. *The Canadian Mineralogist*, v 42, pp. 1369-1382.



- Burnley, P.C., 2004, An Earth Science Scrapbook Project as an Alternative Assessment Tool. *Journal of Geoscience Education*, v 52, n 3, pp. 245-249.
- Jarrett, O. S. and Burnley, P. C. 2003 Engagement in authentic geoscience research: Effects on undergraduates and secondary teachers. *Journal of Geoscience Education*, v 51, n 1, pp. 85-90.
- Burnley, P. C., Jarrett, O. S., and Evans W., 2002, A Comparison of Approaches and Instruments for Evaluating a Geological Sciences Research Experiences Program, *Journal of Geoscience Education*, v. 50, n. 1, pp.15-24.
- Hofmeister, A. Cynn, H., Burnley, P. C. and Meade, C., 1999, Vibrational Spectra of Dense, Hydrous Magnesium Silicates at Pressure: Importance of the Hydrogen Bond Angle. *Am. Min.* v 84, pp. 454-464.
- Getting, I. C., Dutton, S. J., Burnley, P. C., Karato, S.-i., Spetzler, H. A., 1997, Shear attenuation and dispersion in MgO. *Phys.Earth Planet. Lett.* 99, pp. 249-257.
- Phillips, B. L., Burnley, P. C., Worminghaus, K. and Navrotsky A., 1997,  $^{29}\text{Si}$  and  $^1\text{H}$  NMR Spectroscopy of High-Pressure Hydrous Magnesium Silicates. *Phys. Chem. Minerals.* v 24, pp. 179-190.
- Cynn, H., Hofmeister, A. M., Burnley, P. C., Navrotsky, A., 1996, Thermodynamic properties and hydrogen speciation from vibrational spectra of dense hydrous magnesium silicates. *Phys. Chem. Min.*, v 23, pp. 361-376.
- Burnley, P. C. and Navrotsky, A., 1996, Synthesis of high-pressure hydrous magnesium silicates: observations and analysis. *Am. Min.* v 81, pp. 317-326.
- Burnley, P.C., 1995, The fate of olivine in subducting slabs: a reconnaissance study. *Am. Min.* v 80, pp. 1293-1301.
- Burnley, P.C., Bassett, W.A. and Wu, T. -c., 1995, Diamond anvil study of the transformation mechanism from the olivine to spinel phase in  $\text{Co}_2\text{SiO}_4$ ,  $\text{Ni}_2\text{SiO}_4$  and  $\text{Mg}_2\text{GeO}_4$ . *Jour. Geophys. Res.* v 100, pp. 17,715-17,724.
- Navrotsky, A., Rapp, R. P., Smelik, E., Burnley, P., Circone, S., Chai, L., Bose, K., and Westrich, H. R., 1994, The behavior of  $\text{H}_2\text{O}$  and  $\text{CO}_2$  in high-temperature lead borate solution calorimetry of volatile-bearing phases. *Am. Min.*, v 79, pp. 1099-1109.
- Wu, T. -c., Bassett, W.A., Burnley, P.C. and Weathers, M.S., 1993, Shear-promoted phase transformation in  $\text{Fe}_2\text{SiO}_4$  and  $\text{Mg}_2\text{SiO}_4$  and the mechanism of deep earthquakes. *Jour. Geophys. Res.* v 98, pp. 19,767-19,776.
- Burnley, P.C., Green, H.W. and Prior, D., 1991, Faulting Associated with the olivine to spinel transformation in  $\text{Mg}_2\text{GeO}_4$  and its implications for deep-focus earthquakes. *Jour. Geophys. Res.* v. 96, pp. 425-443.
- Green, H.W. and Burnley, P.C., 1990, The failure mechanism for deep-focus earthquakes. In *Deformation Mechanisms, Rheology and Tectonics*, R.J. Knipe and E.H. Rutter eds., Geological Society Special Publication no. 54, Geological Society London. pp. 133-141.
- Burnley, P.C. and Green, H.W., 1989, Stress dependence of the mechanism of the olivine-spinel transformation. *Nature*, v 338, pp. 753-756.
- Green, H.W. and Burnley, P.C., 1989, A new, self-organizing, mechanism for deep-focus earthquakes. *Nature*, v 341, pp. 733-737.

#### **Field Guide Chapters and Other Short Publications (\*reviewed)**

- \*Kaboli, S., & Burnley, P. 2019, Quantitative Analysis Of Dislocations In Bulk Earth Materials, *Microscopy and Microanalysis*, (in press)
- \*Kaboli, S., & Burnley, P. 2018, Quantitative Characterization of Crystal Defects in Planetary Materials in a Scanning Electron Microscope (SEM). *Microscopy and Microanalysis*, 24(S1), 2094-2095. [doi:10.1017/S1431927618010954](https://doi.org/10.1017/S1431927618010954)

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### **Presentation Abstracts**

Kidman, G. and Burnley, P.C. 2019 Measuring Stress States In Polycrystalline Quartz Using Raman Spectroscopy. Abstract MR51B-0050, Fall Meeting, AGU, San Francisco

Gasc, J., Fauconnier, J., Daigre, C., Moarefvand, A., Deldicque, D., Gardonio, B., Schubnel, A. and Burnley, P.C., 2019 Laboratory Constraints on the Mechanics and Moment Distribution of Deep-Focus Earthquakes Abstract S11A-08, Fall Meeting, AGU, San Francisco

Traylor, T., Burnley, P.C., and Whitaker, M.L., 2019 Steady State Deformation and Ultrasonics: A Study on the Elasticity of Polycrystalline Olivine. Abstract MR31B-0081, Fall Meeting, AGU, San Francisco

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- Rowland, Richard and Burnley, Pamela 2015 Phase Equilibria and Compressibility of bastnaesite-(La) Abstract MR13B-2702, Fall Meeting, AGU, San Francisco, Calif.
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