**CHRISTOPHER A. BERG**

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**RESEARCH INTERESTS**

My research centers on the evaluation of fabric development in metamorphic rocks, the progress of mineral reactions, and the effects of fluid chemistry on progressive deformation and metamorphism in regional metamorphic terranes, with special focus on the Swiss Alps and the Southern Appalachians. Approaches I use to address these problems include geochemical, microstructural, and analytical techniques such as application of mineral equilibria and thermodynamic models to reconstruct *PTt* paths, accessory mineral geochronology and thermobarometry, stable isotopic analysis, and mapping of field relationships. I am also active in developing and applying new pedagogical approaches to produce more engaging and effective learning experiences for both geoscience majors and non-science majors.

**EDUCATION**

**Ph.D., Geological Sciences, University of Texas at Austin. Awarded: May 2007.**

Dissertation: Strain rates and constraints on chemical homogeneity and length scales of equilibration during Alpine metamorphism at Passo del Sole, Central Swiss Alps.

Supervisor: Dr. William Carlson

**M.S., Geological Sciences, University of Kentucky. Awarded: December 2001.**

Thesis: Oxygen isotope and major element systematics in multiply-deformed metamorphic rocks: assessment of oxygen isotope and major element equilibrium.

Supervisor: Dr. David Moecher

**B.S., Geology, University of Cincinnati. Awarded: June 1999.**

**ACADEMIC POSITIONS HELD**

**Tenured Assistant Professor University of West Georgia**

August 2013 – Present

**Assistant Professor University of West Georgia**

August 2007 – July 2013

**Director, West Georgia Microscopy Center University of West Georgia**

July 2009 – Present

**Adjunct Faculty**  **Alamo Community College District**

August 2006 – May 2007 San Antonio, TX

**PUBLICATIONS**

**Berg, C. A.** “Diverse chemical zoning patterns in garnet as evidence for channelized fluid flow at Passo del Sole, Central Swiss Alps”: *Swiss Journal of Geosciences*, resubmitted for review.

**Berg, C. A.,** and Hunt, L.E., 2013. “Evaluation of metamorphic conditions during growth of centimeter-scale garnet porphyroblasts at Garnet Hill, west-central Georgia”: *Southeastern Geology*, v.49, p. 179-190.

**Berg, C. A.**, Carlson, W.D., and Connelly, J.N., 2013. “Strain rates at high temporal resolution from curved inclusion trails in garnet, Passo del Sole, Central Swiss Alps”: *Journal of Metamorphic Geology*, v.31, p.243-262, DOI: 10.1111/jmg.12017.

**Berg, C. A.**, and Moecher, D.P., 2005. “Apparent oxygen isotope equilibrium during progressive foliation development and porphyroblast growth in metapelites: implications for stable isotope and conventional thermometry”: *Journal of Metamorphic Geology*, v.23, p.471-487.

**MANUSCRIPTS IN PREPARATION:**

**Berg, C.A.**, *in prep*. “Incorporation of small-group active-learning modules in introductory geology course: impacts on learning outcomes”, *Journal of Geoscience Education*.

**ABSTRACTS**

(\* indicates invited presentation)

**Berg, C.A.**, 2014. “Linking the evolution of mineral assemblages, mineral chemistry, and microstructures to regional metamorphism”: *in* Thingpen, J. R., Merschat, A. J., and Brown, S. J., eds., “Linkages and feedbacks in orogenic systems: a Geological Society of America Penrose conference honoring the career of Robert D. Hatcher, Jr.: *Geological Society of America Penrose Conference Field Guide and Technical Program.*

**Berg, C.A.**, 2014. “Incorporating small-group active-learning module activities to enhance student achievement in a general education geology course”: *3rd Annual Georgia Scholarship of STEM Teaching and Learning Conference*.

**Berg, C.A.**, and Massey, R., 2013. “Correlating deformation and metamorphism in mylonitic gneiss from the Kinnard Creek fault, central Georgia”: *Geological Society of America Abstracts with Programs*, v.45(7), p.598.

Bollen, E.M., Hollabaugh, C.L., and **Berg, C.A.**, 2013. “Interpretation of F-based alteration in micas from Colorado Springs, Colorado”: *Geological Society of America Abstracts with Programs*, v.45(7), p.767

Massey, R. and **Berg, C.A.**, 2013. “Mineralogic and textural comparison of two samples of amphibolite from Carroll County, western Georgia”: *Geological Society of America Abstracts with Programs*, v.45(7), p.593.

\* **Berg, C.A.**, 2012. “Using learning modules to enhance student achievement in general education geology courses”: *Geological Society of America Abstracts with Programs*, v. 44(7), p.573.

**Berg, C.A.**, and Massey, R., 2012. “Evaluation of microstructures, mineral chemistry, and preliminary thermobarometry for the Kinnard Creek fault, central Georgia”: *Geological Society of America Abstracts with Programs*, v. 44(7), p.243.

Bollen, E.M., Hollabaugh, C.L., and **Berg, C.A.**, 2012. “Comparative petrology and mineralogy of pegmatites from the Pikes Peak batholith, Colorado”: *Geological Society of America Abstracts with Programs*, v. 44(7), p.243.

Bollen, E.M., Hollabaugh, C.L., and **Berg, C.A.**, 2012. “Mica comparison of three amazonite bearing pegmatites: evidence for zoning versus alteration in mica”: *Geological Society of America Abstracts with Programs*, v. 44(7), p.545.

**Berg, C.A.**, 2012. “Detailed petrographic and microstructural analysis of sheared biotite gneiss within the Kinnard Creek fault, Jasper County, Georgia”: *Geological Society of America Abstracts with Programs*, v. 44(4), p. 29.

Smith, G.B., and **Berg, C.A.**, 2012. “A comparative analysis of the mineralogy and geochemistry of two amphibolites, Carroll County, west-central Georgia”: *Geological Society of America Abstracts with Programs*, v. 44(4), p. 29.

Lunsford, J.D., **Berg, C.A.**, and Hollabaugh, C.L., 2012. “Quantitative mineralogy of tourmalines from the Spruce Pine Pegmatite in Mitchell County, North Carolina”: *Geological Society of America Abstracts with Programs*, v. 44(4), p. 7.

Bollen, E.M., Hollabaugh, C.L., and **Berg, C.A.**, 2012. “Correlation of mica growth and zoning, along with the presence of accessory minerals, to the evolution of a pegmatite from Sentinel Rock in the Pikes Peak Batholith”: *Geological Society of America Abstracts with Programs*, v. 44(4), p. 6.

**Berg, C.A.**, 2011. “Engaging a mixed audience of Geoscience majors and non-science majors in an Environmental Geology course: Examples of interactive approaches and activities”: *Geological Society of America Abstracts with Programs*, v. 43(5), p. 136.

Hunt, L.E., **Berg, C.A.**, and Skinner, T.M., 2011. “Variations in garnet chemistry, inclusion assemblage, and microstructural development at Garnet Hill, west-central Georgia”: *Geological Society of America Abstracts with Programs*, v. 43(2), p. 22.

Smith, B., **Berg, C.A.**, and Hunt, L.E., 2011. “Correlation of garnet growth and fabric development at Tyus, Carroll County, west-central Georgia”: *Geological Society of America Abstracts with Programs*, v. 43(2), p. 9.

**Berg, C.A.**, and Hunt, L.E., 2011. “Thermobarometry and metamorphic mineral growth sequences in banded amphibolites from Carroll County, Georgia, Southern Appalachians”: *Geological Society of America Abstracts with Programs*, v. 43(2), p. 15.

**Berg, C.A.**, 2010. “Guided inquiry-based collaborative learning in an upper-division petrology course: achievements and challenges”: *Geological Society of America Abstracts with Programs*, v. 42(5), p. 444.

Hunt, L.E., **Berg, C.A.**, and Skinner, T.M., 2010. “Compositional zoning, inclusion distribution patterns, and textural clues in garnet porphyroblasts from Garnet Hill, northwestern Georgia”: *Geological Society of America Abstracts with Programs*, v. 42(5), p. 628.

Skinner, T.M., **Berg, C.A.**, and Hunt, L.E., 2010. “Correlation of microstructural fabrics and regional metamorphism: an example from Garnet Hill, northwestern Georgia”: *Geological Society of America Abstracts with Programs*, v. 42(5), p. 290.

Hunt, L. E., and **Berg, C. A.**, 2010. “A comparison of major- and trace-element thermometry techniques applied to a banded amphibolite, west-central Georgia”: *Geological Society of America Abstracts with Programs*, v. 42(1), p. 53.

**Berg, C. A.**, 2010. “Guided inquiry-based learning using a collaborative approach in an upper-division petrology course”: Regional STEM Institute, University System of Georgia, Carrollton, GA.

**Berg, C. A.**, 2009. “Assessment of equilibrium assemblages, mineral chemistries, and deformational fabrics associated with the growth of centimeter-scale garnet porphyroblasts at Garnet Hill, Paulding County, west-central Georgia”: *Geological Society of America* *Abstracts with Programs*, v. 41(7), p. 635.

Hunt, L. E., and **Berg, C. A.**, 2009. “Analysis of spatial and textural relationships among accessory phases in a layered amphibolite: implications for trace-element thermobarometry and geochronology”: *Geological Society of America Abstracts with Programs*, v. 41(7), p. 637.

Spratt, N., and **Berg, C. A.**, 2009. “Investigation of metamorphic conditions associated with the growth of centimeter-scale garnet porphyroblasts at the Garnet Hill locality, west-central Georgia”: *Georgia Journal of Science*, v. 67(1), p. 47-48.

**Berg, C. A.**, and Spratt, N., 2008. “Extracting metamorphic conditions from mineral compositions: quantitative assessment of peak metamorphic conditions in the Southern Appalachians of western Georgia”: *Geological Society of America Abstracts with Programs*, v. 40(6), p. 255.

**Berg, C. A.**, and Carlson, W. D., 2007. “Outcrop-scale variation in garnet growth zoning: controls on length scales of chemical homogeneity and equilibration at Passo del Sole, Central Swiss Alps”: *Geological Society of America Abstracts with Programs*, v. 39(6), p. 394.

**Berg, C. A.**, and Carlson, W. D., 2005. “Refined calculations of strain rates from spiral inclusion trails in garnet: Passo del Sole, Central Swiss Alps”: *Geological Society of America Abstracts with Programs*, v.37(7), p. 52.

**Berg, C. A.**, and Moecher, D. P., 2002. “Decoupled oxygen isotope and AFM equilibria in metamorphic rocks”: *Geological Society of America Abstracts with Programs*, v.34(6), p. 501.

**OTHER PRESENTATIONS**

**Berg, C.A.**, 2014. “What do you want to know about collaborative learning?” UWG Innovations in Pedagogy conference, April 2014.

**Berg, C.A.**, 2012. “Small-group experiential learning modules in an introductory geology course”: College of Science & Math Dean’s Teaching and Learning Seminar Series, Nov. 2012.

\* **Berg, C.A.**, 2012. “Poster Presentations: Do’s and Don’t’s”: College of Education graduate instruction, Corey Rumann, instructor, April 2012.

**Berg, C.A.**, and Srogi, L.A., 2011. “What you want to know about collaborative learning”: “Teaching Mineralogy, Petrology, & Geochemistry in the 21st Century” workshop, Minneapolis, MN, Aug. 2011. (http://serc.carleton.edu/NAGTWorkshops/mpg/workshop2011/program.html)

**GRANTS/FUNDING PROPOSALS**

Funded:

**2014:**

* UWG Student Research Assistant Program: “Student assistants in the West Georgia Microscopy Center: development, application, teaching, and training opportunities for STEM majors”, $2000.
* Georgia Board of Regents STEM Type II Grant – Office of UWise (UWG Institutional STEM Excellence): “Small-group active-learning modules in an introductory geoscience course: impacts on scientific literacy and student performance”, $5800.

**2013:**

* UWG COSM Faculty Resource Grant: “Constraining rates of metamorphic processes in the Southern Appalachians using Sm-Nd garnet geochronology”, $1250.
* UWG Student Research Assistant Program: “Using small measures to think big: Scanning Electron Microscopy in the geosciences”: $2100.
* Georgia Board of Regents STEM Type II Grant – Office of UWise (UWG Institutional STEM Excellence): “Incorporation of small-group active-learning modules in an introductory geoscience course: impacts on scientific literacy and student performance”, $5600.

**2012:**

* UWG Faculty Resource Grant: “Linking micron-scale compositional and textural variations to kilometer-scale processes: an example relating deformation and metamorphism at the Kinnard Creek fault, central Georgia”, $1500.
* UWG Student Research Assistant Program: “Investigation of chemistry and conditions associated with vapor-phase growth of garnet in rhyolite at Garnet Hill, Nevada”, $2000.

**2011:**

* UWG Faculty Resource Grant: “Garnet Sm-Nd geochronology: connecting metamorphism, mineral growth, and microstructural fabric development at Garnet Hill, Georgia”, $1870.

**2010:**

* UWG Faculty Resource Grant: Trace-element and accessory phase thermobarometry: Towards the construction of detailed pressure-temperature-time paths in the Southern Appalachians, $1500.
* UWG SRAP: Mineralogy and microstructures in the Southern Appalachians: Testing tectonic models, $2100.
* Geological Society of America Southeastern Section Undergraduate Research Grant: Application of trace-element thermobarometry and geochronology to samples of a banded amphibolite, Carroll County, Georgia: Comparison to conventional thermobarometric techniques and implications for metamorphic evolution of the Southern Appalachians, $550.

**2009:**

* UWG Faculty Research Grant: Combined petrographic, chemical, and textural investigation of garnet porphyroblasts at Garnet Hill, Georgia: Relating microstructures and mineral chemistries to mountain building, $1500.
* UWG SRAP: Application of ICP and SEM-EDS analytical techniques to petrologic problems, $2100.

**2008:**

* UWG Faculty Research Grant: Extracting metamorphic conditions from mineral compositions: Development of SEM-EDS analytical techniques at West Georgia, and quantitative assessment of peak pressure-temperature conditions during Appalachian metamorphism in the Southern Appalachians, $1500.
* UWG SRAP: Assessment of Variability of Mineralogy, Bulk Chemistry, and Textural Development in Amphibolites from the Southern Appalachian Piedmont near Carrollton, GA, $2100.

Unfunded:

2013:

* UWG Internal Development Grant: From Microns to Mountains: Using Microstructures, Mineral Compositions and Sm-Nd Garnet Geochronology to Constrain Rates of Processes and Models of Formation of the Southern Appalachians, $8888.

2011:

* UWG Student Research Assistant Program: Mineralogy and Microstructures in the Southern Appalachians, $2000.

2009:

* National Science Foundation (OIA) – Major Research Instrumentation: Acquisition of a Hybrid Confocal Raman/ Atomic Force Microscope to Enhance Faculty and Undergraduate Research, Education, and Museum Curation at the University of West Georgia, Co-PI, $415, 717.

2008:

* National Science Foundation EAR – Instrumentation & Facilities: Acquisition of Laser Ablation ICP-MS Capability at the University of West Georgia, $303,801.
* GSA Student Research Grant (Spratt): Extracting Metamorphic Conditions from Mineral Compositions: Development of SEM-EDS Analytical Techniques, $1400

**SUPERVISED STUDENT RESEARCH**

* Brandy Bennett (May 2014 – present): Interpretation of microstructures and mineral chemistry of schists is southern Carroll County, GA
* Marie Ojeda (May 2014 – present): Interpretation of microstructures and mineral chemistry of schists in southern Carroll County, GA
* Alan Ashworth (January 2014 – present): Geochemistry and thermobarometry of Garnet Hill phyllite and schist, Paulding County, GA
* Danielle Mozley (January 2014 – present): Interpretation of microstructures and mineral growth in coarse staurolite schist near Marble, NC
* Michael Bucari-Tovo (December 2013 – May 2014): Identification of Ti-bearing accessory minerals in layered amphibolites
* Luke O’Quin (April 2012 – April 2013): Effects of bulk composition on mineral chemistry, thermobarometry: an example from the Wahoo Creek formation
* Rachel Massey (April 2012 – December 2013): Thermobarometry of Kinnard Creek sheared gneiss
* Kirsten Gallagher (November 2011 – April 2012): Vapor-phase garnet in Garnet Hill rhyolite deposit, eastern Nevada
* Joel Lunsford (September 2011 – May 2012) (co-supervisor; primary – Curtis Hollabaugh): Petrography and geochemistry of tourmaline, comparative study of tourmaline-bearing pegmatites from the Southern Appalachians
* Elizabeth Bollen (September 2011 – present) (co-supervisor; primary – Curtis Hollabaugh): Petrography and geochemistry of zoned mica in pegmatite, central Colorado
* Brianne Smith (August 2010 – May 2012):
	+ Petrography, geochemistry, and garnet growth at Tyus locality, west-central Georgia
	+ Petrology of epidote symplectities in amphibolite, Carroll County
* Tina Skinner (January 2010 – December 2010): Garnet Hill phyllite fabric analysis
* Eric Polly (August 2009 – June 2010): Inclusion assemblages and metamorphic evolution of Garnet Hill phyllite
* Lindsey Hunt (August 2008 – July 2011):
	+ Geochronology and trace-element thermobarometry of the Carrollton amphibolites
	+ Geochemistry and spatial mineralogy within garnet porphyroblasts at Garnet Hill
* Nelson Spratt (August 2007 – May 2009): Extracting metamorphic conditions from mineral compositions: thermobarometry of Carrollton amphibolites

**RESEARCH EXPERIENCE**

University of West Georgia:

* Director, West Georgia Microscopy Center
	+ Development of analytical techniques using FEI Quanta 200 SEM instrument with BrukerAXS EDS detector, including semi-quantitative cation mapping of mineral phases and imaging techniques, refinement of protocols for quantitative spot and line analyses on geologic materials
	+ Prepared written rationale for upgrade to the SEM-EDS instrument: acquisition of a solid-state EDS detector and QUANTAX analytical package ($73,881 from EOY Geosciences/College funds)
	+ Supervision/consultation of use of instrument by other users (faculty, students, visitors)
	+ Incorporation of analytical techniques into geosciences curriculum
	+ Training new users, including student managers
	+ Outreach (K-12 – IMPACT; small classroom groups)
* Field measurement and assessment of textures and structures in metamorphosed terranes
* Preparation of polished thin-sections
* Maintains laboratory equipment, including SEM-EDS instrument, sample coating and polishing lab
* Application of mineral-based thermobarometers to metamorphic terranes
* Supervision of undergraduate research including aspects of petrology, tectonics, regional geology, and microstructures

**TEACHING EXPERIENCE**

University of West Georgia

* Assistant Professor, Department of Geosciences (Aug. 2007 – present)

Courses taught:

GEOL 1121: Introduction to Geosciences I - Physical Geology lecture

GEOL 1121L: Physical Geology laboratory

GEOL 1122: Introduction to Geosciences II - Historical Geology lecture

GEOL 2553: Geology of the National Parks

GEOL 3024: Igneous & Metamorphic Petrology

GEOL 3603: Environmental Geology

GEOL 4063W: Plate Tectonics (senior B.S. Geology capstone)

Other teaching duties:

supervision of undergraduate independent research (GEOL 4082)

informal, individualized instruction in West Georgia Microscopy Center

implementation of UTeach curriculum

K-12 outreach (e.g. IMPACT, UWise)

Reconstructing PT paths using pseudosections: a THERMOCALC tutorial

 Short course – August 2014, Lexington KY (graduate students, post-docs, faculty participants)

 Short course – August 2011, UWG (undergraduate students, UK graduate students participants)

Alamo Community College District:

* Adjunct Faculty: Earth Science (Aug. 2006 – May 2007)

Responsibilities: sole instructor of general education course introductory geology course; designed lectures, exams, in-class exercises, and other course materials; developed online resource for students (PALS webpage); evaluated student work.

**FIELD EXPERIENCE & EDUCATION**

* April 2014: GSA Penrose Conference and Field Forum – “Linkages and Feedbacks in Orogenic Systems”, Asheville, North Carolina.
* April 2012: Industrial minerals of the Spruce Pine mining district – Southeastern GSA field trip, Spruce Pine, North Carolina
* October, 2011: Precambrian geology of the Lake Superior region – informal field trip for UWG undergraduates attending Geological Society of America meeting, northern Minnesota
* October, 2011: Georgia Geological Society annual field trip – McDonough, GA
* August, 2011: SERC “Teaching Mineralogy, Petrology, Geochemistry in the 21st Century” field excursion – northern Minnesota
* October, 2009: Georgia Geological Society annual field trip – Milledgeville, GA
* February, 2009: Field Relationships in the Palmetto Granite, South Fulton County, GA – Igneous & Metamorphic Geology course field trip
* October, 2008: Georgia Geological Society annual field trip – Cartersville, GA
* April 2008, 2010 – present: Geotraverse across the Blue Ridge of North Carolina, Virginia, and NE Georgia – Plate Tectonics course field trip
* April 2008 - 2012: Central and Western Blue Ridge, NC – Igneous & Metamorphic Geology course field trip
* February, 2008: Tyrone Granite Quarry (Florida Rock), Tyrone, GA – joint Structural Geology / Petrology field trip
* October, 2007: Georgia Geological Society annual field trip – Blue Ridge and Piedmont, Southern Appalachians
* Summer, 2002 and 2003: Central Swiss Alps, including 2002 Goldschmidt Conference field trip (“Central Alps and Southern Steep Belt”)
* 2001-2004: various field trips in central Texas, Llano Uplift (UT-Austin)
* Feb. 2001 – May 2001: various field trips in NE Australia during semester abroad at James Cook University, QLD
* Fall 2000: Southern Appalachians: Great Smoky Mtns., Brevard zone (UK)
* Spring 2000: Adirondacks, Catskills, New England Appalachians (UK)
* 1999-2000: various field trips throughout Kentucky (UK)
* Spring 1999: Southern Appalachians: Ducktown, TN, Spruce Pine District (UC)
* Summer 1998: Beartooth Mountains, YBRA; field camp (SIU-Carbondale)
* Spring 1998: Penokean orogen & Mid-continent rifting, UP of Michigan (UC)
* Spring 1997: Catskill clastic wedge, New England Appalachians (UC)

**SERVICE**

* Director, West Georgia Microscopy Center, July 2009 – present.
* Organizing committee, UWG Innovations in Pedagogy conference, Fall 2013 – Spring 2014.
* Member, Undergraduate Programming Committee, Fall 2012 – Spring 2014.
* Volunteer, NAGT booth, 2013 GSA annual meeting.
* Member, COSM Advisory Committee, Fall 2012 – Spring 2013.
* Member, UTeach implementation committee, Fall 2011 – Spring 2012.
* SERC - Teaching Petrology in the 21st Century editorial / review board
* Student travel / chaperone – research trip to University of Alabama Central Analytical Facility (use of electron microprobe), January 2012.
* Instructor, IMPACT, March 2010.
* Member, Faculty Search Committee, Dept. of Geosciences, Spring 2009-2011.
* Editor - departmental alumni newsletter, 2008 – 2011, 2014.
* Preview Day, 2008 - present: staffed Geosciences booth, promoting department to prospective students and their parents
* Opportunities Committee, Dept. of Geosciences, 2008: aided in preparation of Program Review documentation

**PROFESSIONAL AFFILIATIONS**

* Geological Society of America
* Mineralogical Society of America
* Georgia Geological Society
* National Association of Geoscience Teachers

**SELECTED MEETINGS / SHORT COURSES**

2013: “Resources to Transform Undergraduate Geoscience Education” (RTUGEOED) – proposal writing workshop (Tampa, FL)

2012: “Industrial Minerals of the Spruce Pine Mining District” – Southeastern Section of the Geological Society of America pre-meeting field trip (concurrent with annual GEOL 3024 course field trip)

2011: “Teaching Mineralogy, Petrology, and Geochemistry in the 21st Century” – ‘Science on the Cutting Edge’ workshop (Minneapolis, MN)

2010: Regional STEM Institute (University of West Georgia), February 2010.

2008: “Early Career Geoscience Faculty: Teaching, Research, and Managing Your Career”, ‘Science on the Cutting Edge’ workshop (Williamsburg, VA)

2007: “Laser Ablation ICP-MS: Fundamentals and Applications” short course, Geological Society of America annual meeting (Denver, CO)