

DEPT. OF EARTH & ENVIRONMENTAL SCIENCES  
VANDERBILT UNIVERSITY  
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OCTOBER 21, 2016

## CURRICULUM VITAE: DR. JOHN C. AYERS

H-INDEX: 20

TOTAL CITATIONS IN GOOGLE SCHOLAR: 3,160

### SUMMARY OF QUALIFICATIONS

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2006-present Professor (Departments of Earth & Environmental Sciences and Environmental Engineering)  
2011-2014 Chair, Department of Earth and Environmental Sciences, Vanderbilt University, Nashville, TN  
1998-2006 Associate professor  
1991-1998 Assistant professor

- **Research:** *Geochemistry and Petrology; Sustainability*
- **Teaching:** *Geochemistry, Environmental Geochemistry, Aqueous Geochemistry, Environmental Applications of Geochemical Modeling, Environmental Geology, Sustainability Science, Environmental Sustainability, Freshman Seminar (Controversies in the Geosciences: Science and our Environment), Petrology, Computer Methods in Geology, Physical Geology.*
- **Professional:** *Registered Professional Geologist, State of Tennessee, 1999-2014; GIS consultant 2006-2011*
- **Personal:** *Born 5/12/63. Married, two children.*

### EDUCATION

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**Ph.D. Geology:** 1987–1991, *Rensselaer Polytechnic Institute, Troy, NY*

- Bruce Watson advisor, "Experimental studies of the chemistry of aqueous fluid-accessory mineral systems at high P-T conditions with implications for fluid-rock interactions," 1991, 212 pp.

**M.S. Geochemistry and Mineralogy:** 1985–1987, *The Pennsylvania State Univ., University Park, PA*

- David Egger advisor, "Partitioning of elements between silicate melt and salt water at mantle conditions," 1988, 132 pp.

**B.S. Geochemistry, B.S. Geology:** 1981–1985, *State University of New York College at Fredonia*

### PROFESSIONAL EXPERIENCE

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**GIS Consultant:** 2006–2010, *ERS Group*; 2010-2011, *Competition Economics, LLC*

**Research Assistant:** 1989 – 1991, *Rensselaer Polytechnic Institute, Troy, NY*

**Student Aid:** 1989–1990, *NY Dept. of Law, Environmental Protection Bureau*

- Performed geochemical and statistical tests on groundwater analyses for use in a legal case involving groundwater contamination. Collected groundwater samples in field. Submitted report.

**Teaching Assistant:** 1987–1988, *Rensselaer Polytechnic Institute, Troy, NY*

- Taught laboratory sections of Geology I, Geology II, and Optical Mineralogy.

**Teaching Asst., Research Asst.:** 1985–1987, *The Pennsylvania State Univ., University Park, PA*

- Taught lab sections of Crystallography, Optical Mineralogy, and Petrology; developed homeworks and graded papers for graduate courses Mineral Equilibria and Crystal Chemistry. Thesis research.

**Tutor:** 1983–1984, *Educational Development Program, Fredonia, NY*

- Tutored minority students in Geology, Chemistry, and Math.

**Undergraduate Teaching Assistant:** 1983–1984, *State University New York College at Fredonia*

- Assisted in laboratory sections of Igneous Petrology, Physical Geology, and General Chemistry.

### AWARDS RECEIVED

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- Fellow, Mineralogical Society of America (2014)
- Mineralogical Society of America Biennial Research Grant (1990)

- MacDiarmid Award (Outstanding Student) (1984)
- Fahnestock Scholarship (Field School) (1984)
- New York State Regents Scholarship (1981)

#### SPECIAL SKILLS

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- *Language*: basic German.
- *Computer*: Image analysis, ArcGIS, Geochemical modeling (Geochemists Workbench, Phreeqc), MATLAB.
- *Analytical*: SIMS (trace element, stable isotopes and isotopic dating), LA-ICPMS, TGA-MS, AA spectroscopy, PIXE, RBS, gamma ray spectroscopy, EMPA, SEM, XRD.
- *Experimental petrology*: piston cylinder apparatus, cold seal pressure vessels, 1 atm. furnace, and hydrothermal diamond anvil cell.

#### GRADUATE STUDENT ADVISING

##### *Advisor: PhD Students*

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- Moyo Ajayi, 2016-
- Tim Peters, 2006-2012. [\*Experimental and Field Based Investigations into the Behavior of Zircon in Hydrothermal and Deep-Tectonic Environments during Mountain-Building and Crustal-Evolution Events.\*](#)

##### *Advisor: Masters Students*

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- Patton, Brooke (exp. 2017) *The Effects of Surface versus Groundwater Irrigation on the Arsenic Content and Salinity of Bangladesh Soils.*
- Ajayi, Moyo (2016) *Geochemical and Isotopic Analysis of Escaped Natural Gases in Hydraulically Fractured and non-Fractured sites in UT Cumberland Forest, Tennessee:* <http://etd.library.vanderbilt.edu/available/etd-07202016-133728/>
- Fry, David (2015) “*Characterizing temporal and spatial trends in soil geochemistry on Polder 32, Southwest Bangladesh*” (2015): <http://etd.library.vanderbilt.edu/available/etd-07162015-214524/>
- Katsiavas, Nathan (2014) *Using accessory mineral geochronology to identify soil provenance in middle Tennessee.* 82 pp. Environmental consultant at Tetra-Tech, Maine: <http://etd.library.vanderbilt.edu/available/etd-11192014-145347/>
- George, Greg (2013) *Characterization of salinity sources in southwestern Bangladesh evaluated through surface water and groundwater geochemical analyses.* Senior Engineering Geologist at Wallace-Kuhl. <http://etd.library.vanderbilt.edu/available/etd-11272013-113249/>
- Crombie, Scott (2006) [\*Monazite alteration in the Searchlight Contact Metamorphic Aureole, Southern Nevada.\*](#) Physical Science teacher, Ravenwood High School, Brentwood, TN.
- Zhang, Lichun (2005) *Zircon solubility in alkaline aqueous solutions and trace element partitioning between zircon and fluids.* Currently a technician in a geochemistry lab at Caltech.
- Lehner, Stephen (2004) *Synthesis and experimental study of oxidation rate of arsenian pyrite.* Co-advised with Kaye Savage. Postdoctoral Research Associate, School of Earth & Space Exploration, Arizona State University.
- Bryant, Derek (2002) *Geochemical, age, and isotopic constraints on the location of the Sino-Korean/Yangtze suture and Evolution of the northern Dabie Shan, China.* Senior Consultant at Visual Risk Technologies.
- Loflin, Miranda (2002) *Monazite as a tracer of fluid infiltration associated with contact metamorphism.* Solutions Specialist at W Squared.
- Gorisch, Betsy (1999) *Paragenetic and geochronological characteristics of monazite, based on experimental investigations with applications to naturally occurring metamorphic rocks.* Co-advised with Calvin Miller.
- Robinson, Delores (1997) *Investigating magma chamber dynamics through the examination of accessory minerals: The Aztec Wash pluton, Southern Nevada.* Associate Professor, Department of Geology, Univ. of Alabama. Co-advised with Calvin Miller.
- Davis, Carol J. (1996) *Geologic controls on contaminant movement in a carbonate aquifer system: Arnold Air Force Base, South-Central Tennessee.* M.Sc., Vanderbilt University, May 1996, 75 pp. Works for an environmental consulting firm in Louisiana.

- Dittmer, Sondra K. (1995) *Element partitioning between peridotite assemblage minerals and H<sub>2</sub>O at 2.0-3.0 Gpa and 900-1100 °C*. Worked with environmental consulting firm, then was Assistant Professor at Olivet Nazarene University.
- Larrieu, Theodore L. (1995) *Experimental determination of the pressure-volume-temperature properties of water to 20 kbars and 1000 °C*. Works for Thomas Jefferson National Accelerator facility in Virginia.

*Thesis Advisor: Senior Honor's Thesis & Scholarship Students*

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- Anica Sunshine (2016) *Water quality impacts of a sustainable development at Sterling Ranch, CO*.
- Sarah Walker (2012) *Assessing the life cycle impacts of conventional and organic beef in the United States*.
- Kelsey Biting (2004) *Drinking water and reservoir water quality in the area of Coffee and Franklin Counties, TN (VUSR)*.
- Katy Huntze (2001) *Fluid-assisted monazite recrystallization: effects on internal zoning and implications for Th-Pb age dating*. Works for the Navy.
- Stacie Dunkle (2000) *Imaging and Age Dating of Zircons from the Ultra-High Pressure Terrane of Dabie Shan, China*.
- Kevin Giles (2000) *The Effect of Fluid Interconnectivity on Monazite Growth in Fluid-bearing Quartzite*.
- John Milleman (1998) *Hydrothermal growth kinetics of monazite; with application to age determination*.
- Also advised Hyen Sung, Daric Georgiades and Katie DeLaCruz on projects.

*Ph.D. Committees*

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- Moyo Ajayi, 2016-
- Nathan Barnes, Environmental Engineering, 2016-
- Chelsea Peters, Environmental Engineering, 2014-
- Tenley Banik, Environmental Science, 2013-2015
- Katherine Martin, Chemistry, 2013-
- Laura Benneyworth, VCEMS, 2011-
- Danny Flanagan, Environmental Science, 2010-
- Susanne McDowell, Environmental Science, 2010-2014
- Josh Arnold, Environmental Engineering, 2008-2014
- Tim Peters (Advisor), Environmental Science, 2006-2012
- Lily Claiborne, Environmental Science, 2008-2011
- Sonali Shukla, Physics, 2006-2009
- Stephen Lehner, Environmental Science, 2005-2007
- Satynna Lopez, Environmental Engineering, 2004-6

*Research Advisor: Local High School Students*

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- Jeong Hyun (Jenna Nam), Research Experience for High School Students, 2014
- Camille Lasley, Research Experience for High School Students, 2013
- Brittainy Tidwell, Vanderbilt School for Science and Math, 2010
- Culley Sharp, VCSO Research Internship Program, 2009
- Annalyse Moncrief, Hume Fogg, VCSO Research Internship Program, 2007
- Jason Cox, Hunters Lane, VCSO Research Internship Program, 2006
- Kathleen Goetz, Harpeth Hall, 2004-5 (Won 1<sup>st</sup> prize in Middle Tenn. Science Fair)
- Oran Switzer, Martin Luther King Science Magnet, 1994-5

POST-GRADUATE COLLABORATIONS

*Post-doctoral students*

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- Yan Luo, May 2006 – July 2007, Research Scientist, University of New Brunswick

*Visiting Professors*

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- Xiaomei Wang, China University of Geosciences, Wuhan, China (5/1/14-4/30/15): Isotope studies of loess and soil.

- Xiaoming Liu, Northwest University, Xi'an, China (4/07-10/07, 7/13-8/13): synthesis of zircon standards, measurement of zircon/melt partition coefficients.
- Osvaldo Rabbia, Universidad de Concepcion, Chile (3/00-4/00, 9/00-10/00): Collaborative research on rutile-fluid trace element partitioning and application to geochemical exploration of ore deposits.

## TEACHING

### *Courses Taught*

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- AMER 300 (co-taught): The Commons: History, Sustainability, Activism (S 2012)
- GEOL 100: Environmental Geology (Summer 1999, S 2000-6)
- GEOL 101: Physical Geology (S 1992-1994)
- GEOL 115: Fr. Sem., Controversies in the Geosciences: Science and our Environment (F 1994-8)
- EES 115: Fr. Writing Sem., Sustainability: An Environmental Science Perspective (S, F 2009, S 2012)
- GEOL 226: Petrology (S 2006-8)
- GEOL 258: Environmental Geochemistry (F 2003)
- EES 260: Geochemistry (F 1998, 2000-2, 2004, 2006-9, 2011-13, 2015)
- EES 262: Geochemistry Lab (F 2006-8)
- GEOL 265: Computer Methods in Geology (F 1992-1997)
- EES 275: Sustainable Systems Science (S2010, 2013, 2015)
- EES 320: Aqueous Geochemistry (F 1991, S 1994-2002, F 2005, S 2009)
- EES 322: Environmental Applications of Geochemical Modeling (S 2003-4, 2007)
- GEOL 390: Advanced Geochemistry (S 2005)
- GEOL 390: Geochemistry of the Early Earth (S 2008)
- EES 6891: Special Topics and Advanced Techniques in Geology: Mineralogy and Geochemistry (S 2016)

## UNIVERSITY AND DEPARTMENTAL DUTIES

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- Department chair, 8/11-8/2014
- Discovery Grant Program internal-review committee, spring 2014, spring 2016
- Faculty Marshall, 5/09-5/10
- Director of Graduate Studies (8/94-8/98, 6/05-8/09)
- Senior Advisory Review Committee (Promotion and tenure), College of A&S (9/08-5/09, 9/12-5/13)
- Task Force on Graduate Education (9/08-8/09)
- Environmental Science Option Program Advisory Committee (9/05-present)
- Department server and web administrator (8/08-8/09)
- Faculty Fellow, Sigma Phi Epsilon fraternity (2008-2009)
- Speakers Chair (9/98-9/07)
- Graduate Faculty Assembly Delegate (1993-4, 9/99-8/01, 9/04-9/09)
- CPC Subcommittee on Natural Science (1997-2006)
- Environmental Science Ph.D. Curriculum Committee (9/03-9/05)
- Chair, search for solid earth dynamics faculty position (9/04-4/05)
- Search committee member for external chair (9/02-4/03)
- Leadership Committee, Vanderbilt Institute for Environmental Risk and Resources Management (2002-3)
- Strategic Planning Committee, College of Arts and Science, Caucuses 4 and 5, Sp 2001
- Department Computer Coordinator (8/91-8/99)

## PROFESSIONAL MEMBERSHIPS

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Mineralogical Society of America, Geochemical Society, American Geophysical Union, Geological Society of America.

OUTREACH

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- Go Green North Nashville Advisory Council, 2012-2014
- Vanderbilt Center for Science Outreach Research Internship Program 2006-7
- Venture Scholars Program, 2006
- Geological Society of America Partners in Education Program 1997-1998

PROFESSIONAL SERVICE

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- NSF Panel Reviewer (spring 2016)
- MSA Award committee for the Mineralogical Society of America (2015-present).
- Early Career Award committee for the Division of Mineralogy, Geochemistry, Petrology and Volcanology of the Geological Society of America (2015-present)
- Associate Editor, Geochemical Transactions of the American Chemical Society (2006-present)
- NSF Panel Reviewer, spring 2012
- American Geophysical Union, Union Medals Committee (2004-2006)
- Mineralogical Society of America, Lecture Program Committee (2002-2006)
- Associate Editor, American Mineralogist (2001-2006)
- Chair, Sigma Xi admissions committee (2001)

RECENT INVITED TALKS AND CHAIRED SESSIONS

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- Department of Geology, The University of Memphis, 9/16
- Vanderbilt Center for Teaching Panelist, "Students as Producers: Incorporating research and design into STEM classes," 9/13
- Univ. of Georgia Dept. of Geology, 2/13
- Convened session "Advances in Mineralogy and Petrology" at the Geological Society of America meeting, 11/12
- Invited talk at the Sustainable Tennessee Summit, 11/12
- Gave two panel presentations for Vanderbilt Office of Active Citizenship and Service ECO Rolling Seminar, 10/10
- Gave presentation on "Integrating sustainability into the curriculum" at the Summit for Campus Sustainability, Belmont University, 10/10
- Co-convened two sessions at the Goldschmidt Conference (International meeting of the Geochemical Society), 6/10
- Gave presentation in NSF-sponsored workshop "Teaching Geochemistry" at the Goldschmidt Conference in Knoxville, TN, 6/10
- Led a Center for Teaching Workshop on Teaching Sustainability, May 2010
- Northwest University, Xi'an, China (11/08)
- Chinese Academy of Geological Sciences, Beijing, China (8/07)
- China University of Geosciences, Wuhan, China (8/07)
- Keynote speaker, Goldschmidt Conference (8/06 in Melbourne, Australia)
- Australian National University (8/06)
- Invited speaker, Goldschmidt Conference (5/05)
- Adventure Science Museum, at invitation of Vanderbilt's Center for Science Outreach (2/05)
- Invited to speak to Vanderbilt Mayfield #3 (11/04)
- Dept. of Civil and Environmental Engineering, Vanderbilt Univ. (3/03)
- Chemical Science Division, Oak Ridge National Laboratory (11/02)
- Univ. of South Carolina (3/02)
- University of Tennessee at Martin (9/01)
- Keynote speaker, Trace element partitioning symposium; Invited speaker, accessory minerals session, Goldschmidt Conference (May 2001)
- 31st International Geological Congress in Rio de Janeiro, Brazil (August 2000): chaired general symposium "Trace element mineralogy", presented poster, coauthor on talk.

- Keynote speaker, International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI) workshop on Magmatic Arcs, New Zealand (January 2000)

## GRANT FUNDING

*Externally-funded grants*

- National Science Foundation, co-PI, \$810,211, 2016-2020, Coastal SEES Collaborative Research: Multi-scale modeling and observations of landscape dynamics, mass balance, and network connectivity for a sustainable Ganges-Brahmaputra delta.
- Department of Defense, Multidisciplinary University Research Initiative, Office of Naval Research, co-PI (Steve Goodbred PI), Total: \$7,496,577, Vanderbilt \$5,722,451, 2011-2016, Environmental stress and human migration in a low-lying developing nation: A comparison of co-evolving natural and human landscapes in the physically and culturally diverse context of Bangladesh.
- HUD grant participant, \$789,000, 5/11-5/14, Go Green North Nashville, Tennessee State University.
- National Science Foundation, co-PI (Calvin Miller PI), EAR-0911726, \$347,475, 6/09-6/13, Supereruptions, Magma Chambers, & Plutonic Residue: Insights from Peach Spring Tuff, Significance of Sphene.
- National Science Foundation, PI, EAR-0838391, \$261,031, 6/09-6/12, Trace element partitioning between zircon, aqueous fluids and silicate melt at high and ultrahigh pressures.
- National Science Foundation, PI (Calvin Miller co-PI), EAR-0510092, \$285,000, 6/1/05-6/1/09, Zr mineral aqueous solubilities and zircon/(fluid-melt) partitioning.
- National Science Foundation, PI (Calvin Miller co-PI), EAR-0126020, \$195,459, 1/02-1/06, Monazite as a sensitive indicator of the timing and type of fluid activity during metamorphism.
- Government of Chile, Lineas Complementarias, Project # 80000006, ~U.S. \$470,000, 10/00-10/03, P.I. Leopoldo Lopez Escobar, Co-P.I.'s Robert King and Osvaldo Rabbia, Co-researcher Laura Hernandez, Collaborator **John Ayers**, A Petro-geochemical and mineralogical investigation of the "El Teniente belt", central Chile: Implications of lower crustal melting processes and the links to giant Andean porphyry Cu-Mo mineralization.
- National Science Foundation, PI (Calvin Miller co-PI), EAR-9873626, \$170,929, 1/99-1/02, Laboratory and field investigations of monazite petrogenesis, growth kinetics, textural development, and U-Th-Pb chronometry in igneous and high-grade metamorphic rocks.
- National Science Foundation, co-PI (Calvin Miller PI), EAR-9506551, \$145,551, 7/95-7/99, Evaluating the potential of zircon and monazite in thermochronometry of high temperature crustal processes.
- National Science Foundation, EAR-931705, \$88,000, 4/94-10/96, Experimental investigation of the stability and aqueous solubility of Ti- and Zr-rich minerals: Implications for HFSE mobilities in subduction zones.

*Internally-funded grants (most recent)*

- Vanderbilt Discovery Grant, "Purchase of a Picarro G2201-I Cavity Ring-Down Spectroscopy Analyzer and Concentrations and Carbon Isotope Compositions of CO<sub>2</sub> and CH<sub>4</sub> Gases" 6/2015-6/2017, \$145,714.
- Vanderbilt TIPS, "Sterling Ranch – A Unique Vanderbilt Sustainability and Education Research Center," co-PI (David Kosson PI), 09/2015-08/2018, \$1,044,261.
- Vanderbilt Discovery Grant, "Cathodoluminescence (CL) detector and spectrometer for Earth, environmental, and materials research," co-PI (Guil Gualda PI), 06/2011-05/2013, \$ 171,399.
- Natural Science Committee, F 1999, \$8,305, Acquisition of a cold-seal pressure vessel system for measurements of rutile/fluid trace element distribution coefficients.
- University Research Council, S 1999, \$3930, Direct Research Support, Collaborative Research on the Ultra-High Pressure Rocks of Dabie Shan, China.

## PUBLICATIONS

*Books*

- **Ayers J.C.** (expected 2017) Sustainability: An Environmental Science Perspective. Taylor & Francis Group, CRC Press.

## Blog

Sustainability: <http://sustainability-ayersj.blogspot.com/>

## Encyclopedia Entries

Hornberger G.M., **Ayers J.C.** (2014) Hydraulic Fracturing in the Development of Unconventional Hydrocarbon Resources. In *Oxford Bibliography Online, Environmental Science*. New York: Oxford University Press. <http://www.oxfordbibliographies.com/view/document/obo-9780199363445/obo-9780199363445-0006.xml?rskey=4b8XQf&result=4>

**Ayers, J. C.** (2012) Sands and Silica. In: Vasey, D. E., Fredericks, S. E., Lei, S., and Thompson, S. Eds.), *Berkshire Encyclopedia of Sustainability*. Berkshire, Great Barrington, MA.

## Peer-Reviewed Journal Articles

Peters T., **Ayers J.C.** (in prep.) Zircon/fluid trace element partition coefficients measured by recrystallization of Mud Tank zircon at 1.5 GPa and 800-1000°C. *Geochim. Cosmochim. Acta*.

Xiaomei Wang, Nathan Katsiaficas, Jeong Hyun Nam, Camille Lasley, Xiaoming Liu and **John C. Ayers** (in prep.) Characterization of Loess, Alluvium and Limestone Inputs into Modern Soils Using Zircon U-Pb Geochronology. *Geology*.

**Ayers J.C.**, George G., Fry D., Benneyworth L., Wilson C., Wallace Auerbach L., Roy K., Karim M.R., Akhter F., Goodbred S.L. (in prep.) Sources of Salinity and Arsenic in SW Bangladesh 2: Surface Water. *Geochemical Transactions*.

Pickering J.L., Beam J.C., Covey A.K., **Ayers J.C.**, Goodbred S.L. (accepted) Landform evolution of Late Pleistocene to recent terraces of the Brahmaputra-Jamuna River in the upper Bengal Basin. *Basin Research*.

**Ayers J.C.**, Goodbred S.L., George G., Fry D., Benneyworth L., Roy K., Karim M.R., Akhter F. (2016) Sources of Salinity and Arsenic in groundwater in Southwest Bangladesh. *Geochemical Transactions*, doi:10.1186/s12932-016-0036-6, <http://www.geochemicaltransactions.com/content/17/1/4>

Benneyworth L., Gilligan J., **Ayers J.C.**, Carrico A., George G., Karim M.D., Akhter F., Fry D., Goodbred S., Donato D., Piya B. (2016), Drinking water insecurity: water quality and access in coastal Southwestern Bangladesh. *International Journal of Environmental Health Research*, DOI: [10.1080/09603123.2016.1194383](https://doi.org/10.1080/09603123.2016.1194383)

**Ayers J.C.**, Bryant D.L., Giles K. (2015) Effect of fluid composition on monazite solubility and growth rate at 1.0 GPa and 1000°C. *American Mineralogist*, v. 100, no. 11-12, pp. 2579-2589. <http://dx.doi.org/10.2138/am-2015-5345>

Nam J., Katsiaficas N., Wang X., Morgan D., Ayers J.C. (2015) Evaluation of Bigby Cannon Limestone's Contributions to Pedogenesis Using Element Mass Flux Calculations. *Young Scientist* v. x, pp. xx-xx.

Goudie D.J., Fisher C.M., Hanchar J.M., Davis W.J., Crowley J.L., **Ayers J.C.** (2014) Simultaneous in situ determination of U-Th-Pb and Sm-Nd isotopes in monazite by laser ablation ICP-MS. *Geochemistry, Geophysics, Geosystems (G-cubed)*, 26 pp., DOI 10.1002/2014GC005431, <http://onlinelibrary.wiley.com/doi/10.1002/2014GC005431/abstract>

Lasley, Camille, Katsiaficas N., **Ayers J.C.** (2014) Provenance of a soil atop a terrace along the Harpeth River in Tennessee using immobile trace element concentration ratios. *Young Scientist* v. 4, pp. 21-22.

**Ayers J.C.**, Crombie S., Loflin M., Miller C.F., Luo Y. (2013) Country rock monazite response to intrusion of the Searchlight pluton, southern Nevada. *Amer. Jour. Science*, v. 313, pp. 345-394. DOI 10.2475/04.2013.04, <http://www.ajsonline.org/cgi/content/abstract/313/4/345?etoc>

Peters T., **Ayers J.C.**, Gao S., Liu X. (2013) The response of zircon in eclogite to metamorphism during the multi-stage evolution of the Huwan Shear Zone, China: Insights from Lu-Hf-U-Pb isotopic and trace-element geochemistry. *Gondwana Research*, v. 23, Issue 2, March 2013, pp. 726-747 <http://dx.doi.org/10.1016/j.gr.2012.05.008>.

**Ayers J.C.**, Zhang L., Luo Y., Peters T. (2012) Solubility of zircon in neutral to alkaline aqueous fluids at upper crustal conditions. *Geochim. Cosmochim. Acta*. v. 96, 18-28. <http://dx.doi.org/10.1016/j.gca.2012.08.027>.

Tidwell, Brittainy S., **Ayers J.C.** (2011) Phytoremediation of Arsenic and Lead Using *Brassica rapa*. *Young Scientist*, v. 1, pp. 19-21. <http://www.youngscientistjournal.org/2011/article/phytoremediation-arsenic-and-lead-using-brassica-rapa>.

Rabbia O.M., Hernández L.B., French D.H., King R.W. and **Ayers J.C.** (2009) The El Teniente porphyry Cu-Mo deposit from a hydrothermal rutile perspective. *Mineralium Deposita*, v. 44, pp. 849-866. <http://dx.doi.org/10.1007/s00126-009-0252-4>



- Luo Y., **Ayers J.C.** (2009) Experimental measurements of zircon/melt trace element partition coefficients. *Geochim. Cosmochim. Acta* v. 73, 3656-3679. <http://dx.doi.org/10.1016/j.gca.2009.03.027>
- Luo Y., Sun M., Zhao G., Li S., **Ayers J.C.**, Xia X., Zhang J. (2008) A comparison of U-Pb and Hf isotopic compositions of detrital zircons from the North and South Liaohe Groups: Constraints on the evolution of the Jiao-Liao-Ji Belt, North China Craton. *Precambrian Research* v. 163, 279-306.
- Ayers J.C.**, Loflin M., Miller C.F., Barton M.D., Coath C. (2006) In situ oxygen isotope analysis of monazite as a monitor of fluid infiltration during contact metamorphism: Birch Creek Pluton aureole, White Mountains, eastern California. *Geology* v. 34(8), 653-656. doi: [10.1130/g22185.1](https://doi.org/10.1130/g22185.1)
- Lehner S.W., Savage K., **Ayers J.C.** (2006) Vapor growth and characterization of pyrite (FeS<sub>2</sub>) doped with Co, Ni, and As: Variations in semiconducting properties. *Journal of Crystal Growth*, v. 286, 306-317. doi: [10.1016/j.jcrysgro.2005.09.062](https://doi.org/10.1016/j.jcrysgro.2005.09.062)
- Gao S., Rudnick R.L., Yuan H.-L., Liu X.-M., Liu Y.-S., Ling W.-L., **Ayers J.C.**, Wang X.-C. (2004) Recycling lower continental crust. *Nature* **432**, 892-897. doi: [10.1038/nature03162](https://doi.org/10.1038/nature03162)
- Ayers, J.C.**, Loflin, M., Miller, C.F., Barton, M.D., and Coath, C. (2004) Dating fluid infiltration using monazite. In R.B. Wanty, and R.R. Seal II, Eds. *Proceedings of the Eleventh International Symposium on Water-Rock Interaction, Vol. 1*, p. 247-251. A.A. Balkema Publishers.
- Bryant D.L., **Ayers J.C.**, Gao S., Zhang H., Miller C. (2004) Geochemical, age, and isotopic constraints on the location of the Sino-Korean/Yangtze suture and Evolution of the northern Dabie Shan, China. *GSA Bulletin* **116 (5/6)**, 698-717. doi: [2610.1130/B25302.2](https://doi.org/2610.1130/B25302.2)
- Ayers J.C.**, DeLaCruz K., Miller C.F., Switzer O. (2003) Experimental study of the growth kinetics of zircon in quartzite ± H<sub>2</sub>O at 1.0 GPa and 1000°C, with implications for geochronological studies of high-grade metamorphism. *American Mineralogist* **88**, 365-376.
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