

Kyle T. Ashley

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Education

Virginia Tech

Ph.D. Candidate, Geosciences, expected May 2015

Dissertation title: “Constraining Metamorphic and Tectonic Evolution in Convergent Terranes: How Trace Elements and Mineral Inclusions Shape Mechanical and Reconstructive Models” and associated projects.

Thesis advisors: Richard D. Law and Robert J. Tracy

University of Vermont

M.S., Geology, May 2011

Thesis title: “TitaniQ thermobarometry of fabric development in the Strafford Dome, Vermont: Linking microstructures to orogenic processes”

Thesis advisor: Laura E. Webb

State University of New York (SUNY) College at Potsdam

B.S., Geology, May 2009, graduated *Summa Cum Laude*

Petrology research title: “Petrology of a multiple meta-igneous intrusive outcrop, Tupper Lake, New York”

Mineralogy research title: “Determination of Schreyerite ($V_2Ti_3O_9$): A new occurrence at the Stella Pyrite Deposit, St. Lawrence County, New York”

Sedimentology/stratigraphy research title: “Depositional environments and alluvial architecture of the Springhill mines Formation (Pennsylvanian), Cumberland Basin, Nova Scotia”

Research Advisers: Robert L. Badger, Christopher R. Kelson and Michael C. Rygel

Professional Appointments

08/2011 – present	Research assistant and doctoral scholar Department of Geosciences, Virginia Tech
Summer – Fall, 2010 and Summer 2011	Research assistant Department of Geology, University of Vermont
Fall 2008	Geological illustration and design assignment Department of Geology, SUNY Potsdam
Summer 2008	Research and field assistant (in Nova Scotia) Department of Geology, SUNY Potsdam

Teaching Experience

Spring 2010 and 2011	Teaching assistant – Earth Materials Department of Geology, University of Vermont
Fall 2009	Teaching assistant – Earth Systems Science Department of Geology, University of Vermont
Spring 2009	Teaching assistant – Optics and Petrology Department of Geology, SUNY Potsdam
Fall 2008 – Spring 2009	Substitute Class Lecturer (Structures, Optics and Petrology, Historical Geology, etc.)

Fall 2008

Department of Geology, SUNY Potsdam
Teaching assistant – Physical Geology
Department of Geology, SUNY Potsdam

Invited Lectures

Spring 2010 – SUNY Potsdam
Spring 2009 – SUNY Plattsburg

Funding History

1. Project Title: “Experimental growth of inclusion-rich garnet to improve pressure estimation by mineral inclusion Raman thermobarometry.”
Source: National Academy of Sciences, administered by Sigma Xi
Program: Grants-In-Aid of Research
Role: **Graduate Investigator**
Amount awarded: **\$1,000.00**
Project duration: 06/2014 – 05/2015
2. Project Title: “Time scales of nappe stack evolution, Moine Supergroup, NW Scotland.”
Source: Department of Geosciences, Virginia Tech
Program: Graduate Research Grant
Role: **Graduate Investigator**
Amount awarded: **\$1,083.50**
Project duration: 06/2014 – 05/2015
3. Project Title: “Decompressional garnet growth during prograde metamorphism In Caledonian thrust sheets, NW Scotland”
Source: Geological Society of America - Southeastern Section
Program: Geological Society of America Student Travel Grant Program
Role: **Oral Presentation**
Amount awarded: **\$100.00**
Conference: GSA, October 2013
4. Project Title: “Improved crustal *PTtD* evolution constraints using TitaniQ thermobarometry”
Source: Geochemical Society member donations, the Geochemical Society, the National Science Foundation
Program: Geochemical Society's Student Travel Grant Program
Role: **Oral Presentation**
Amount awarded: **\$750.00**
Conference: Goldschmidt, August 2013
5. Project Title: “Constraining pressure-temperature-deformation histories on Caledonian metatectonites (NW Scotland).”
Source: Department of Geosciences, Virginia Tech
Program: Graduate Research Grant
Role: **Graduate Investigator**
Amount awarded: **\$1,000.00**
Project duration: 06/2013 – 05/2014
6. Project Title: “Exploiting quartz to constrain pressure-temperature-time-deformation histories in metamorphic rocks through recent innovations in thermobarometry and geospeedometry”
Source: European Geosciences Union
Program: European Geosciences Union Student Travel Grant
Role: **Oral Presentation**

Amount awarded: **Registration and Abstract waiver, 400 EUR**
Conference: European Geosciences Union General Assembly 2013

7. Project Title: “XRD and HR-TEM nanoscale analysis of quartz and implications for the Titanium-in-quartz thermobarometer.”
Source: National Academy of Sciences, administered by Sigma Xi
Program: Grants-In-Aid of Research
Role: **Graduate Investigator**
Amount awarded: **\$1,000.00**
Project duration: 06/2012 – 05/2013
8. Project Title: “XRD and HR-TEM nanoscale analysis of quartz and the implications for the Titanium-in-quartz thermobarometer.”
Source: Department of Geosciences, Virginia Tech
Program: Graduate Research Grant
Role: **Graduate Investigator**
Amount awarded: **\$1,000.00**
Project duration: 06/2012 – 05/2013
9. Project Title: “TitanQ thermobarometry of fabric development in the Stafford Dome, Vermont: Linking microstructures to orogenic processes.”
Source: Vermont Geological Society (VGS)
Program: Graduate Research Assistantship
Role: **Graduate Investigator**
Amount awarded: **\$461.00**
Project duration: 06/2009 – 05/2011

Professional Memberships

Spring 2013 – present	Elected Associate Member of Sigma Xi, the Scientific Research Society
Spring 2013 – present	European Geosciences Union (EGU)
Fall 2011 – present	Geochemical Society (GS)
Spring 2010 – present	National Association of Geoscience Teachers (NAGT)
Spring 2010 – present	American Geophysical Union (AGU)
Spring 2010 – present	Mineralogical Society of America (MSA) Spring 2012 – present: Committee member for the development of outreach resources for graduate student members
Spring 2009 – present	Vermont Geological Society (VGS)
Spring 2007 – present	Geological Society of America (GSA)

Awards and Academic Recognition

Spring 2013	Sigma Gamma Epsilon TARR Award, Virginia Tech Chapter For award, personality, leadership, and contribution to the school.
Fall 2011 – Spring 2015	ICTAS Doctoral Scholar Fellowship, Virginia Tech Four year GRA award for interdisciplinary nano-research
Spring 2011	Vermont Geological Society Best Student Presentation 3 rd Place
Spring 2010	Graduate Teaching Fellow (GTF) of the Year Award, Department of Geology, University of Vermont Awarded to GTA in the field of geology for excellence in the classroom (nominated for University GTF of the year award)
Spring 2009	Alice Williams Geology Award, SUNY Potsdam Awarded for outstanding service to the Department

Spring 2009	Kilmer Research Award, SUNY Potsdam Awarded for excellent presentation of research at SUNY Potsdam's Learners and Research Fair
Spring 2009	Kilmer Undergraduate Research Apprenticeship, SUNY Potsdam Adviser: Michael C. Rygel
Spring 2008	Tony Dunn Geology Award, SUNY Potsdam Awarded to student that possesses scholarship, character and love of geology.

Collaborations

Robert Darling - Distinguished Professor of Geology, SUNY Cortland
 William Carlson - Distinguished Professor of Geosciences, University of Texas at Austin
 Mark Caddick – Assistant Professor of Geosciences, Virginia Tech
 Besim Dragovic – Post-Doc, Geosciences, Virginia Tech
 Robert Bodnar – Distinguished Professor of Geosciences, Virginia Tech
 Nancy Ross – Professor and Chair of Geosciences, Virginia Tech
 Jay Thomas – Senior Research Associate, Rensselaer Polytechnic Institute
 Andreas Kronenberg – Professor of Geology, Texas A&M
 Laura Webb – Assistant Professor of Geology, University of Vermont
 Frank Spear – Professor of Earth and Environmental Sciences, Rensselaer Polytechnic Institute
 Robert Badger – Professor and Chair of Geology, SUNY Potsdam
 John Rakovan – Professor of Geology and Environmental Earth Sciences, Miami University
 Brian Cousens – Associate Professor of Earth Sciences, Carleton University

Synergistic Activities

Fall 2013	Session Chair, North Eastern Geological Society of America Conference "Implementing Recent Innovations in Thermobarometry to Constrain Igneous and Metamorphic Evolution."
Fall 2011 – Fall 2014	Sigma Gamma Epsilon National Geological Honor Society Spring 2012 – Fall 2013: Virginia Tech Circle Vice-President Spring 2013 – Fall 2014: Virginia Tech Circle President
Fall 2009 – Spring 2010	Geology Chair Search Committee Department of Geology, University of Vermont
Spring 2008 – present	Sigma Gamma Epsilon National Geological Honor Society Spring 2008 – 2009: SUNY Potsdam Circle President
Fall 2008 – Spring 2009	Commencement Committee student member SUNY Potsdam
Fall 2007 – Spring 2009	Geology Club Spring 2008 – 2009: President

Publications

In Review

- Ashley, K.T.**, Darling, R.S., and Bodnar, R.J., *in review*. Significance of "stretched" mineral inclusions for reconstructing *P-T* exhumation history, *submitted to Geology*.
- Ashley, K.T.**, Caddick, M.J., Steele-MacInnis, M., and Bodnar, R.J., *in review*. Inclusion geobarometry: Procedures and pitfalls for understanding pressure retention in mineralogical systems with Raman spectroscopy, *submitted to the Journal of Petrology*.
- Ashley, K.T.**, and Law, R.D., *in review*, Modeling prograde TiO₂ activity for metamorphic applications of the Ti-in-quartz thermobarometer, *submitted to Contributions in Mineralogy and Petrology*.

Published

- Ashley, K.T., Carlson, W.D., Law, R.D., and Tracy, R.J., 2014, Ti resetting in quartz during dynamic recrystallization: Mechanisms and significance, *American Mineralogist*, DOI: <http://dx.doi.org/10.2138/am-2014-4943>.
- Rygel, M.C., Sheldon, E.P., Stimson, M.R., Calder, J.H., Ashley, K.T., and Salg, J., *in press*, The Pennsylvania Springhill Mines Formation: Sedimentological framework of a portion of the Joggins Fossil Cliffs UNESCO World Heritage Site. *Atlantic Geology*.
- Ashley, K.T., Caddick, M.J., Steele-MacInnis, M., Bodnar, R.J., and Dragovic, B., 2014, A detailed history of deep burial and exhumation recorded by quartz Inclusions in garnet. *Geochemistry, Geophysics, Geosystems*, **15**, 350-360.
- Ashley, K.T., Steele-MacInnis, M., and Caddick, M.J., 2014. QuIB Calc: A MATLAB[®] script for geobarometry based on Raman spectroscopy and elastic modeling of quartz inclusions in garnet, *Computers and Geosciences*, **66**, 155-157.
- Ashley, K.T., Webb, L.E., Spear, F.S., and Thomas, J.B., 2013, *P-T-D* histories from quartz: A case study of the application of the TitaniQ thermobarometer to progressive fabric development in metapelites. *Geochemistry, Geophysics, Geosystems*, **14** (9), 3821-3843.
- Law, R.D., Stahr, D.W., Francis, M.K., Ashley, K.T., Grasmann, B., and Ahmad, T., 2013, Deformation temperatures and flow vorticities near the base of the Greater Himalayan Series, Sutlej Valley and Shimla Klippe, NW India, *Journal of Structural Geology*, **54**, 21-53.
- Spear, F.S., Ashley, K.T., Webb, L.E., and Thomas, J.B., 2012, Ti diffusion in quartz inclusions: Implications for metamorphic time scales, *Contributions in Mineralogy and Petrology*, **164**, 977-986.
- Badger, R.L., Ashley, K.T., and Cousens, Brian, 2010, Stratigraphy and geochemistry of the Catoctin Volcanics: Implications for mantle evolution during the breakup of Rodinia, *in* Tollo, R.P., Bartholomew, M.J., Hibbard, J.P., Karabinas, P.M., eds, **From Rodinia to Pangea: The Lithotectonic Record of the Appalachian Region**: *Geological Society of America Memoir 206*, Boulder, Colorado, p. 397-416.

Meeting and Conference Abstracts

- Waters-Tormey, C., Ashley, K.T., and Tracy, R.J., 2014, Two-stage deformation, and two styles of localization, In a deep crustal normal sense shear zone: Mount Hay Block, Central Australia, *GSA Abstract*.
- Ashley, K.T., Law, R.D., and Thigpen, J.R., 2014, Caledonian evolution of the Moine Supergroup: Prograde garnet growth and context for quartz fabric-based deformation thermometry, *EGU Poster*.
- Ashley, K.T., Thigpen, J.R., Law, R.D., and Caddick, M.J., 2014, Decompressional garnet growth during prograde metamorphism: Implications for Caledonian tectonic reconstruction in NW Scotland, *Penrose Talk*.
- Ashley, K.T., Caddick, Mark J., Steele-MacInnis, M., and Bodnar, R.J., 2014, Inclusion thermobarometry: Beyond quartz, *NE GSA Talk*.
- Webb, L.E., Dyess, P.G., Ashley, K.T., Spear, F.S., and Thomas, J.B., 2013, TitaniQ records of P-T-D paths from metapelites during burial metamorphism and orogenesis: Evidence for the role of pressure solution creep, *AGU Poster*.
- Ashley, K.T., Thigpen, J.R., Law, R.D., and Caddick, M.J., 2013, Decompressional garnet growth during prograde metamorphism in Caledonian thrust sheets, NW Scotland, *GSA Talk*.
- Ashley, K.T., Law, R.D., Stahr, D.W., Thomas, J.B., Caddick, M.J., Spear, F.S., and Webb, L.E., 2013, Improved crustal *PTiD* evolution constraints using TitaniQ thermobarometry, *Goldschmidt Talk*.
- Webb, L.E., Dyess, P.G., Ashley, K.T., Spear, F.S., and Thomas, J.B., 2013, Probing quartz for *P-T-D* paths, *Goldschmidt Poster*.
- Ashley, K.T., Law, R.D., Tracy, R.J., Thomas, J.B., Caddick, M.J., Bodnar, R.J., and Stahr, D.W., 2013, Exploiting quartz for metamorphic evolution: Applications in Greece, Scotland and the Himalayas, *ICTAS Poster*.
- Ashley, K.T., Law, R.D., Thomas, J.B., Caddick, M.J., and Stahr, D.W. III, 2013, Exploiting quartz to constrain *pressure-temperature-time-deformation* histories in metamorphic rocks through recent innovations in thermobarometry and geospeedometry, *EGU Talk*.
- Law, R.D., Waters, D., Morgan, S., Stahr, D.W. III, Francis, M., Ashley, K.T., Kronenberg, A.K., Thomas, J.B., Mazza, S., and Heavenlo, N., 2013, Quartz fabric-based deformation thermometry: Examples of its application, relationships to petrology-based *PT* paths, and potential problems, *EGU Poster*.
- Law, R.D., Waters, D., Morgan, S., Stahr, D.W. III, Francis, M., Ashley, K.T., Kronenberg, A.K., Thomas, J.B., Mazza, S., and Heavenlo, N., 2013, Quartz fabric-based deformation thermometry: Examples of its application, relationships to petrology-based *PT* paths, and potential problems, *UK Tectonics Studies Group Talk*.

- Ashley, K.T.**, Caddick, M.J., and Bodnar, R.J., 2012, Improving pressure estimation in high pressure terranes with Raman spectroscopy: New calibration and implementation on blueschists from Sifnos, Greece, *GSA Talk*.
- Ashley, K.T.**, Webb, L.E., Spear, F.S., and Thomas, J.B., 2012, *P-T-D* histories and reequilibration of Ti in quartz: Using the TitaniQ thermobarometer in poly-deformed tectonic terranes, *Goldschmidt Poster*.
- Spear, F.S., **Ashley, K.T.**, Webb, L.E., and Thomas, J.B., 2012, Tectonic implications of short metamorphic episodes, *Goldschmidt Talk*.
- Ashley, K.T.**, 2012, Titanium-in-quartz thermobarometry: Implications from nanometer- to orogeny-scale with assessment of water weakening on quartz fabric opening angle thermometry, and associated monazite EMPA geochronology investigations, *ICTAS Poster*.
- Ashley, K.T.**, Webb, L.E., Spear, F.S., and Thomas, J.B., 2010, Constraining *P-T-D* histories with the TitaniQ thermobarometer: Preliminary findings from the Strafford Dome, Vermont, *AGU Poster V31C-2334*.
- Ashley, K.T.**, 2009, Petrology of a multiple meta-igneous intrusive outcrop, Tupper Lake, New York, *The Green Mountain Geologist*, **36**, no. 3, 3.
- Ashley, K.T.** and Badger, R.L., 2009, Petrology of a multiple meta-igneous intrusive outcrop, Tupper Lake, New York, *GSA Abstracts with programs*, **41**, no. 3, 108.
- Ashley, K.T.**, Stephan, Emily L., Salg, J., and Rygel, M.C., 2009, Depositional environments and alluvial architecture of the Springhill Mines Formation (Pennsylvanian), Cumberland Basin, Nova Scotia, *GSA Abstracts with programs*, **41**, no. 3, 27.
- Sheldon, E.P., **Ashley, K.T.**, and Rygel, M.C., 2009, The Springhill Mines Formation, Cumberland Basin, Nova Scotia: Evolution of channel body architecture within a Pennsylvanian fluvial system, *GSA Abstracts with programs*, **41**, no. 3, 27.
- Stephan, E.L., **Ashley, K.T.**, and Rygel, M.C., 2009, Sedimentology of the Pennsylvanian Ragged Reef Formation, Cumberland Basin, Nova Scotia, *GSA Abstracts with programs*, **41**, no. 3, 27.