

Andrew J. Smye

Department of Geosciences
The Pennsylvania State University
Deike Building
University Park, PA 16802

Office: Deike 332
Phone: 814-865-5530
E-mail: aus702@psu.edu

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Primary Research Interests

Thermal and chemical evolution of continental lithosphere.

Academic Appointments

April 2016 – present	Assistant Professor Department of Geosciences, The Pennsylvania State University
March 2015 – April 2016	NERC Independent Research Fellow Department of Earth Sciences, University of Oxford
Sept. 2012 – March 2015	Jackson Distinguished Postdoctoral Fellow Department of Geological Sciences, Jackson School of Geosciences University of Texas at Austin
August 2011 – Sept. 2012	Post-Doctoral Research Associate NERC Isotope Geoscience Laboratories, British Geological Survey

Educational Background

February 2012	Ph.D. , Metamorphic Petrology, Geochronology and Structural Geology University of Cambridge Supervisors: Tim Holland, Mike Bickle; Committee: Chris Hawkesworth, Marian Holness
June 2007	M.Sci. , Earth Sciences (<i>First-class honors</i>) University of Oxford Research advisors: Dave Waters and Marc St-Onge (Geological Survey of Canada)

Awards and Honors

2016	President's Award, Geological Society of London
2015	Junior Research Fellowship (<i>non-stipendiary</i>), St Edmund Hall, Oxford
2014	NERC Independent Research Fellowship
2012	Jackson School Distinguished Postdoctoral Fellowship
2010	BP Scholarship
2010	Tony Carswell Award , Metamorphic Studies Group
2009	Magdalene College Travel Award
2007	St Edmund Hall Academic Scholarship, University of Oxford
2006	Keith Cox Prize , University of Oxford
2006	Geological Survey of Canada Research Placement
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2005	St Edmund Hall Travel Award
2007	St Edmund Hall Academic Exhibition

Funding Obtained

2016	Penn State Gladys Snyder Award \$5,000 in support of teaching petrology
2016 – 2021	NSF-PIRE: ExTerra Field Institute and Research Endeavor (Co-I, EAR-1545903, \$4,022,940 split between 9 institutions)
2015 – 2020 (<i>terminated 2016</i>)	NERC Independent Research Fellowship Noble gas systematics of subduction, University of Oxford, U.K.: £514,272
2012 – 2015	Jackson Postdoctoral Fellowship University of Texas, U.S.A.: \$140,000
2009	NERC Facilities grant IP/1068/1108 (Co-I, £21,100), U-Pb geochronology

Invited Seminars

2017	Goldschmidt conference, Paris. Session: Innovations in Thermochronology.
2017	Carnegie Institute, Washington D.C.
2017	Johns Hopkins, Baltimore
2017	GeoPRISMS Rifting Initiation & Evolution Workshop, Albuquerque, New Mexico
2016	GeoPRISMS Subduction Zone Observatory (<i>pop-up talk</i>)
2016	University of Rochester, NY
2016	Baylor University, TX
2016	Penn State Geocheminar, PA
2016	Michigan State University, MI
2016	Yale University, CT
2016	University of Cambridge, UK
2015	AGU Fall Meeting. Session: Resolving Process through Geochronology
2015	University of St Andrew's, UK
2015	Goldschmidt Geochemistry Conference, Prague, CZ. Session: Accessory Mineral Petrology, Geochemistry, Geochronology, Diffusion, and Kinetics. Keynote
2015	University of Oxford, UK
2014	Jackson School of Geosciences, Austin, TX
2014	Goldschmidt Geochemistry Conference, Sacramento, CA. Session: Putting the little t in P-T-H ₂ O-t: Novel integrations of geochronology and thermodynamics in diverse tectonic regimes
2014	Goldschmidt Geochemistry Conference, Sacramento, CA. Session: Geologic and geochemical processes at the plate interface
2014	The Pennsylvania State University, State College, PA

Workshops and Courses

- 2017 **E-FIRE Alps Workshop, Italy**
- 2017 **Rifting Initiation and Evolution Workshop, Albuquerque, New Mexico**
- 2016 **E-FIRE pre-AGU Workshop, San Francisco, CA**
- 2016 **Subduction Zone Observatory, Boise, ID**
- 2016 **Early Career Geoscience Faculty Workshop, U. Maryland, MD**
- 2013 **International Lithosphere Program**
Nature of the Plate Interface in Subduction Zones Workshop, California
- 2012 **NERC Grantsmanship short course**
British Geological Survey, Keyworth (2 days)
- 2012 **Nuts and Bolts of sector-field isotope ratio mass spectrometry**
Geochemical Society funded; University of Bristol (3 days).
- 2011 **GTSnext ^{40}Ar - ^{39}Ar and U-Pb geochronology workshop**
Marie Curie FP7; NIGL, U.K. (2 days)
- 2010 **GTSnext radiogenic isotopic geochronology workshop**
Marie Curie FP7; Verbania, Italy (5 days)
- 2009 **EURISPET HP metamorphism and subduction zones workshop**
Places competitively awarded; Marie Curie FP6; Granada, Spain

Teaching and Mentoring Experience

- **GEOSC 497 Principles of Igneous and Metamorphic Petrology** *Fall 2017*
- **GEOSC 201 Earth Materials** *Spring 2017*
- **GEOSC 597 Advanced Isotope Geochemistry** *Spring 2017*
- **Undergraduate Tutorials** *March 2015 – 2016*
Series of tutorials in igneous and metamorphic petrology to Oxford 1st and 2nd-year students.
- **Undergraduate Research Advisor** *Dec 2013–current*
Senior student (K. Umbarger) project on tectono-thermal evolution of the California Coastal Range.
- **Guest Lecturer** *Nov 2012–current*
Continental Tectonics and Thermochronology, UT graduate classes
- **Field Supervisor:** (U/Th)-He sample collection in Canadian Rockies. *Oct 2011*
- **Field Lecturer:** Final-year Betic field trip; series of talks on regional P - T - t data *April 2009 and 2010*
- **Postgraduate Demonstrator.** *Oct 2007–Aug 2010*
Introduction to Geology, Metamorphic Petrology, Evolution of the lithosphere, Geological mapping.
- **Co-supervisor of MSc thesis** *Jul 2008–Jun 2009*
Study of the metamorphic evolution of an eclogite zone, Tauern Window (L. Greenwood, Cambridge, 2008).
- **Undergraduate Supervisor** *2007–2010*
Introductory Geology, Geological Maps, Metamorphic Petrology and Himalayan Geology. *2007–2010*
- **Teacher:** Community outreach program - Geology for Schools day. *Feb 2009*

List of Publications

In Review

Smye, A.J., Lavier, L., Stockli, D. and Zack, T. Crustal reheating and mantle upwelling during continental break-up triggered by lithospheric deformation; *submitted*.

McKenzie, R, **Smye, A.J.**, Hegde, G.V. and Stockli, D.F., Detrital zircon trace elemental compositions from India as a proxy for crustal evolution; *submitted*.

Fisher, D., **Smye, A.J.**, Marone, C., van Keken, P., Yamaguchi, A., and Oakley, D., Spectrum of Megathrust Slip Behavior Recorded within Ancient Accretionary Complexes: the Role of Silica Redistribution; *submitted*.

Wade, J., Dyck, B., Palin, R., Moore, J. and **Smye, A.J.**, Divergent fates of primitive water on Earth and Mars; *in revision*.

Foley, B. and **Smye, A.J.**, Carbon cycling and habitability of stagnant lid planets; *in revision*.

Published

- 14 Marsh, J., and **Smye, A.J.** U-Pb systematics and trace element characteristics in titanite from a HP mafic granulite; *Chemical Geology*, 2017–466, 403–416.
- 13 **Smye, A.J.**, Seman, S., Hudak, M. and Crispin, K. 2017. Rates of mantle cooling and exhumation during rifting constrained by REE-in-orthopyroxene speedometry; *Geochemistry, Geophysics, Geosystems*, 2017–18, 2510–2525.
- 12 **Smye, A.J.**, Jackson, C.R.M., Konrad-Schmolke, M., Hesse, M.A., Parman, S.W., Shuster, D.L. and Balentine, C.J. Noble gases recycled into the mantle through cold subduction zones; *Earth and Planetary Science Letters*, 2017–471, 65–73.
- 11 Seymour, N., Stockli, D., Beltrando, M. and **Smye, A.J.** Tracing the thermal evolution of lower continental crust through continental extension; *Tectonics*, 2016–35; doi: 10.1002/2016TC004178.
- 10 Bracciali, L., Parrish, R., Najman, Y., Carter, A., Wijbrans, J. and **Smye, A.J.** Plio-Pleistocene exhumation of the eastern Himalayan syntaxis and its domal ‘pop-up’; *Earth Science Reviews*, 2016–160, 350–385.
- 9 Sathaye, K., **Smye, A.J.**, Jordan, J. and Hesse, M. Noble gases preserve history of retentive continental crust; *Earth and Planetary Science Letters*, 2016–443, 32–40; doi: 10.1016/j.epsl.2016.03.014.
- 8 Jackson, C.R.M., Shuster, D., Parman, S.W. and **Smye, A.J.** Noble gas diffusivity hindered by low energy sites in amphibole; *Geochimica et Cosmochimica Acta*, 2015; doi:10.1016/j.gca.2015.09.024.
- 7 **Smye, A.J.** and Stockli, D. Rutile U-Pb age depth profiling: a continuous record of lithospheric thermal evolution; *Earth and Planetary Science Letters*, 2014–408, 171–182; doi: 10.1016/j.epsl.2014.10.013.
- 6 **Smye, A.J.**, Roberts, N., Condon, D.J., Horstwood, M.S.A., Parrish, R.R. and Noble, S.R. Characterizing the U-Th-Pb systematics of allanite by ID and LA-ICPMS: implications for geochronology; *Geochimica et Cosmochimica Acta*, 2014–135, 1–28; doi:10.1016/j.gca.2014.03.021.
- 5 **Smye, A.J.**, Warren, C. and Bickle, M.J. The signature of devolatilisation: extraneous ⁴⁰Ar systematics in high-pressure metamorphic rocks; *Geochimica et Cosmochimica Acta*, 2013–113, 94–112; doi:10.1016/j.gca.2013.03.018.
- 4 Warren, C., **Smye, A.J.**, Kelley, S. and Sherlock, S. Using white mica ⁴⁰Ar/³⁹Ar data as a tracer for fluid flow and permeability under high-P conditions: Tauern Window, Eastern Alps; *Journal of Metamorphic Geology*, 2011–30, 63–80; doi:10.1111/j.1525-1314.2011.00956.x.
- 3 **Smye, A.J.**, Bickle, M.J., Holland, T.J.B., Parrish, R.R. and Condon, D.J. 2011. Rapid formation and exhumation of the youngest Alpine eclogites: A thermal conundrum to Barrovian metamorphism; *Earth and Planetary Science Letters*, 2011–306, 193–204; doi:10.1016/j.epsl.2011.03.037.
- 2 **Smye, A.J.**, Greenwood, L., and Holland, T.J.B., 2010. Garnet–chloritoid–kyanite assemblages: Eclogite facies indicators of subduction constraints in orogenic belts; *Journal of Metamorphic Geology*, 2010–28, 753–768; doi: 10.1111/j.1525-1314.2010.00889.x.
- 1 **Smye, A.J.**, St-Onge, M.R., and Waters, D.J., 2009. Contrasting metamorphic pressure–temperature histories within the Trans-Hudson Orogen’s hinterland, southwest Baffin Island, Nunavut; *Geological Survey of Canada, Current Research 2009–6*, 18 p.

Professional Activities

- **Referee:** *EPSL* (5), *Geology* (3), *Journal of Metamorphic Geology* (3), *Lithos* (3), *Terra Nova* (2), *JAES* (1), *Contributions to Mineralogy and Petrology* (3), *Tectonics* (5), *Nature* (1), *RiMG* (1), *Journal of Geological Society* (1)
- **Member:** *American Geophysical Union, Geochemical Society and Metamorphic Studies Group*