

STEPHANIE WALKER

Postdoctoral Fellow
Department of Earth and Environmental Sciences

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EMPLOYMENT

July 2017-Present: Postdoctoral Fellow. Boston College, Chestnut Hill, MA.

Advisor: Prof. Ethan Baxter.

EDUCATION

2013-2017: PhD Geology. Royal Holloway, University of London

Thesis title: Geochronological and geochemical constraints on the tectonothermal history of Shetland.

Supervisors: Prof. Matthew Thirlwall (RHUL), Prof. Rob Strachan (Portsmouth), and Dr. Anna Bird (Hull).

Funding: NERC.

2009-2013: MSci Geoscience, Royal Holloway, University of London (2.1)

RESEARCH INTERESTS

- **Geochemistry & Geochronology:** High-precision Lu-Hf and Sm-Nd garnet dating to understand peak metamorphism within orogenic systems. Rb-Sr dating of micas to understand deformation-induced recrystallization and post-peak processes.
- **Orogenesis:** Application of isotope geochemistry and geochronology to understanding tectonic processes. Particularly, complex poly-orogenic systems using integration of geochronological, structural, and petrological techniques.
- **Metamorphic geology:** Utilising macro- and micro-scale studies of metamorphic assemblages of dated samples, in order to relate ages to phases of metamorphism and tectonic processes.

AWARDS AND FUNDING

- RHUL Dept. of Earth Sciences Travel Grant for Goldschmidt 2016 (Yokohama) **£950**
- Metamorphic Studies Group Travel Grant for Goldschmidt 2016 (Yokohama) **£380**
- Geochemistry Group Travel Grant for Goldschmidt 2015 (Prague) **£180**
- RHUL Dept. of Earth Sciences Travel Grant for Goldschmidt 2015 (Prague) **£450**
- Geochemistry Group Research in Progress Meeting 2014 Poster Presentation Prize
- NERC PhD Studentship, approx. **£65,000**
- Best Geochemistry Project 2013, departmental prize for MSci dissertation.

- Frank Barker Prize 2013, departmental prize for most improved grade between two years of undergraduate study.
- Geochemistry Group Research in Progress Meeting 2013 Poster Presentation Prize
- Kirsty Brown Memorial Award 2012, to fund sample collection in Shetland for MSci dissertation **£750**
- Lyell Scholarship 2012, to undertake fieldwork and geochemical analysis on the Windermere Supergroup, Lake District **£1000**

RESEARCH EXPERIENCE

Geochronology

Sm-Nd and **Lu-Hf garnet dating** using (IsoProbe, Neptune, IsotopX Phoenix) **MC-ICPMS & TIMS**, including dating multiply-metamorphosed samples by core-rim dating of zoned porphyroblasts.

Rb-Sr dating of white micas, biotites and feldspars using a combination of MC-ICPMS and TIMS to date deformation fabrics.

Clean lab work including **dissolution** and **column chemistry**.

Geochemistry

Preparation and analysis of whole-rock powders for major and trace element composition by **XRF**.

REE isotope dilution analyses on Archaean granitoids. Including ID analyses of REE by MC-ICPMS and Nd isotope measurements by TIMS.

Major and trace element profiling of mineral porphyroblasts using **LA-ICPMS** and **EPMA** (Cameca SX100).

Petrology

Detailed petrographic analysis of both metamorphic and igneous lithologies.

Geological field mapping

Total of two months sampling for PhD material in Shetland and northern Scotland.

Five-week undergraduate mapping project in the Loch Eriboll area of the Moine Thrust Zone, Scotland.

JOURNAL ARTICLES

Walker, S., Thirlwall, M.F., Strachan, R.A. & Bird, A.F. 2015. Evidence from Rb-Sr mineral ages for multiple orogenic events in the Caledonides of Shetland, Scotland. *Journal of the Geological Society* (DOI 10.1144/0016-76492015-034)

Walker, S., Bird, A.F., Thirlwall, M.F., & Strachan, R.A. *in prep*. Constraining the timing of orogenesis in Shetland using garnet geochronology.

PRESENTATION ABSTRACTS

Invited

1. **Walker, S.**, Thirlwall, M.F., Bird, A.F., Strachan, R.A. 'Geochronological constraints on the tectonothermal history of the Shetland Caledonides, Scotland' *Goldschmidt 2016, Yokohama, Japan.*

Contributed

1. **Walker, S.**, Thirlwall, M.F., Bird, A.F., Strachan, R.A. 'Constraining the timing of orogenesis in Shetland using garnet geochronology' *Trans-Iapetus workshop, University of Hull, 2017*
2. **Walker, S.**, Thirlwall, M.F., Bird, A.F., Strachan, R.A. 'Constraining the timing of orogenesis in Shetland using garnet and mica geochronology' *EGU, Vienna, 2017*
3. **Walker, S.**, Thirlwall, M.F., Fowler, M., Strachan, R.A., Bird, A.F. 'Petrogenesis of Archaean basement gneisses in northwest Shetland' *North Atlantic Craton+ conference, Edinburgh, 2016*
4. **Walker, S.**, Thirlwall, M.F., Bird, A.F., Strachan, R.A. 'The Caledonides of Shetland: constraining the timing of metamorphism using garnet and mica geochronology' *Metamorphic Studies Group RiP, BGS Keyworth. 2016*
5. **Walker, S.**, Thirlwall, M.F., Bird, A.F., Strachan, R.A. 'c. 479 Ma Lu-Hf garnet age from the footwall of the Shetland Ophiolite: rapid crustal heat propagation during the onset of orogenesis or diffusional artefact?' *Goldschmidt, Prague, 2015*
6. **Walker, S.**, Thirlwall, M.F., Bird, A.F. & Strachan, R.A. 'Geochronological constraints on Caledonian ophiolite obduction: insights from the Unst ophiolite, Shetland' *Geochemistry Group RiP, Southampton, 2015.*
7. **Walker, S.**, Thirlwall, M.F., Bird, A.F. & Strachan, R.A. 'Petrogenesis and deformation on the margin of Laurentia: the Caledonides of Shetland' *Metamorphic Studies Group RiP, Open University, 2014*
8. **Walker, S.**, Thirlwall, M.F., Bird, A.F. & Strachan, R.A. 'Petrogenesis and deformation on the margin of Precambrian Laurentia: a TTG terrane in Northwest Shetland' *Geochemistry Group RiP, Open University, 2014*
9. **Walker, S.**, Thirlwall, M.F. & Strachan, R.A. 'Rb-Sr mineral age constraints on Caledonian cooling in Shetland' *Geochemistry Group RiP, Open University, 2013*

STUDENT RESEARCH SUPERVISION

Rosie Hughes – RHUL MSci research project 2014-2015

Project title: Rb-Sr geochronology of the Sgurr Beag Thrust, Scottish Caledonides

Supervised by Matthew Thirlwall and Stephanie Walker

TEACHING EXPERIENCE

Lecturing: *Regional Geology*, 50 students, 2015, redesigned an existing lecture on the Caledonian geology of Scotland including appropriate practical material.

Tutoring: 1st year undergraduate tutor. This includes teaching geological and academic skills as well as pastoral support.

Teaching assistant: Regional Geology, Geochronology, Igneous and Metamorphic Petrology.

Fieldwork teaching:

- Royal Holloway, c.60 students 2013-2015: Southern Scottish Highlands (mapping, structural geology, sedimentology, igneous & metamorphic geology), Pembrokeshire (sedimentology, palaeontology, volcanology, and structural geology)
- University of Hull, c. 25 students, 2015: Isle of Skye (mapping, structural geology, volcanology, igneous and metamorphic geology)

PROFESSIONAL ACTIVITIES

- Reviewer of funding proposals for the NSF
- Reviewer of articles for: *The International Journal of Earth Sciences; Geochemistry, Geophysics, and Geosystems*
- Co-organizer of the Trans-Iapetus workshop at the University of Hull, 2017
- Metamorphic Studies Group committee member and social media coordinator
- Co-organizer of the 2015 Metamorphic Studies Group field workshop

PROFESSIONAL MEMBERSHIPS

- Member of the Mineralogical Society of Great Britain (2013-present)
- Member of the European Association of Geochemists (2015-present)
- Metamorphic Studies Group committee member (2015-2016)

OTHER SKILLS AND QUALIFICATIONS

- RiMG Petrochronology short course, Vienna 2017
- NERC Analytical SEM and Probe workshop, 2015, Natural History Museum, London.
- ITC Level 2 certificate in outdoor First Aid and Field Safety
- Clean UK driving license