

# Susan H. Little

Department of Earth Science and Engineering  
Imperial College London  
London SW7 2AZ

Office: +44 (0)20 759 47358  
s.little@imperial.ac.uk

## PROFILE

---

I am one of few people globally, and currently the only person in the UK, who is investigating the modern oceanic cycling of a myriad of bioessential metals from an isotopic perspective. My research develops tools that improve our understanding of key biogeochemical processes in the modern ocean, and which harbour potential as proxies for the reconstruction of the past. As a teacher, I aim to inspire and guide the Earth Scientists of tomorrow, sharing my enthusiasm for science and leading by example. I am a passionate advocate for diversity and hope to be a role model for future young scientists.

## EDUCATION

---

- 2009–2013     **Ph.D Geology**  
Bristol Isotope Group, University of Bristol  
“The Oceanic Biogeochemical Cycling of Cu and Zn and their Isotopes”
- 2006–2009     **MSci Natural Sciences – Geological Science, Class I**  
University of Cambridge

## EMPLOYMENT

---

- 2018–present     **NERC Independent Research Fellow**  
MAGIC group, Department of Earth Sciences, Imperial College London
- 2015–2018     **Leverhulme Early Career Research Fellow**  
MAGIC group, Department of Earth Sciences, Imperial College London
- 2013–2015     **Postdoctoral Researcher**  
Institut für Geochemie und Petrologie, Department of Earth Sciences  
ETH Zürich

## GRANTS, FELLOWSHIPS & AWARDS

---

- 2017             NERC Independent Research Fellowship (total value: £701,542 at 80% FEC)
- 2017             Imperial College Arthur Holmes Centenary Research Fellowship
- 2014             Leverhulme Foundation 3-year Early Career Fellowship (value: ~£70,000)
- 2010, 2008     European Science Foundation 3-month exchange grant
- 2009             Girton College Sir Francis Goldschmidt Scholarship and Ida Freund Prize
- 2006, 2007     Girton College John Bowyer Buckley Scholarship and Marion Bidder Prize

## INVITED TALKS & SELECTED CONFERENCE ACTIVITY

---

- |                      |   |             |
|----------------------|---|-------------|
| Invited Talk         | Goldschmidt Conference, Barcelona       | August 2019 |
| Invited Talk         | Chemical Oceanography Gordon Conference | July 2019   |
| Department Seminar   | University College London               | 8 Feb 2019  |
| Department Seminar   | University of Durham                    | 29 Jan 2019 |
| Department Seminar   | University of Liverpool                 | 28 Jan 2019 |
| Organising Committee | GEOTRACES-PAGES Synthesis Workshop      | Dec 2018    |
| Department Seminar   | University of Cambridge                 | 27 Nov 2018 |
| Invited Talk         | Goldschmidt Conference, Boston          | August 2018 |

Keynote	AMBIO VIII, Challenger Society	September 2017
Keynote	Redox-Active Minerals in Natural Systems, Min. Soc.	May 2017
Session convenor	PAGES Open Science Meeting	May 2017
Invited Talk	University of Oxford	13 Feb 2017
Session convenor	UK Challenger Society conference	September 2016
Session convenor	Goldschmidt Conference, Yokohama	June 2016
Invited Talk	National Oceanography Centre, Southampton	9 Feb 2016
Invited Talk	Royal Society satellite meeting, Chicheley Hall	9-10 Dec 2015
Invited Talk	Earth Sciences PhD retreat, ETH Zürich	30 May 2015
Invited Talk	AGU Fall meeting, San Francisco	December 2014
Invited Talk	Univ. Leeds Earth Surface Science Institute	23 Jan 2014

## TEACHING EXPERIENCE

---

### Imperial College London, 2015–present

2017–present	Independent Earth Science Project, co-lead with M. Rehkämper
2015–present	Undergraduate personal tutor
2015–present	Undergraduate field-trip staff, including: Sardinia 3 <sup>rd</sup> yr (2016), Dorset 1 <sup>st</sup> yr (2017, 18), Scotland 2 <sup>nd</sup> yr (2018)

#### PhD Supervision

- Hollie Packman (primary supervisor, 2017–): ‘Biogeochemical cycling of key trace metal micronutrients and their isotopes in the ocean’
- Naomi Pratt (co-supervisor, 2015–): ‘Investigating Indian Ocean ventilation and water-mass changes through time using deep sea coral geochemistry’

#### MSci Supervision

- Sophie Munson, Bethany Mitchell-Bunce (graduated 2017)
- Lena Chen, Rhian O’Callaghan (graduating 2019)

### ETH Zürich, 2013–2014

2 MSc lectures: Isotopic and organic tracers in biogeochemistry, Transition metal isotopes  
 2 MSc MatLab seminars: Quantitative Concepts in Geochemistry

### University of Bristol, 2009–2012

Designed and delivered ‘Basic Chemistry’ 3hr tutorial  
 Demonstrator: Scotland and Lake District fieldtrips  
 Oceanography, Aqueous Geochemistry, Structural Geology  
 Teaching and Learning in Higher Education Course

### University of Johannesburg, 2008

Field Teaching Assistant, Barberton Greenstone Belt

## RESEARCH EXPERIENCE

---

### Courses & Workshops

GEOTRACES-PAGES Synthesis Workshop	Aix-Marseille, France	3-5 Dec 2018
Awesome OCIM Ocean modeling toolbox	Boston, MA	12 Aug 2018
Novel isotope studies in glaciated environments	Bristol	23 Mar 2018
Cycling of trace elements within the ocean	Lamont Doherty Earth Obs.	1–4 Aug 2016
Introduction to Ocean Data View	Yokohama, Japan	June 2016
Trace-metal cycling at ocean boundaries	The Royal Society	7–10 Dec 2015
Geochemical Ocean Modeling	ETH Zürich	Sep 2013
Nuts & Bolts of Mass Spectrometry	Bristol	Jan 2012

GMT, MatLab & R	Bristol	Sep–Oct 2012
Advanced Aqueous Geochemistry	Bristol	Feb–Mar 2011
Archaemat Field Workshop	Barberton Greenstone Belt	Aug 2010
Analysing the Archean	Utrecht, The Netherlands	Jul 2010
Peering Into The Cradle of Life	Finland	Aug 2009
Processes & Habitats on the Archaean Earth	Vienna, Austria	Apr 2008

### Laboratory exchanges

University of Southern Denmark	Odense, Denmark	Feb–May 2010
Université Joseph Fourier	Grenoble, France	Sep–Oct 2008

### SERVICE TO PROFESSION

---

2018–present	Guest Editor, Frontiers Research Topic 'From Mantle to Oceans and Back Again'
2017–present	Review Editor in Geochemistry, Frontiers in Chemistry and Earth Science
2016–present	Committee member: Fellows Forum, Imperial College
2015–present	Committee member: UK Geochemistry Group, Special Interest Group of the Mineralogical Society and Geological Society
2011–2012	Postgraduate Representative, School of Earth Science, Univ. Bristol

### MEMBERSHIPS

---

European Association of Geochemistry  
Affiliate, Grantham Institute for Climate Change and the Environment

### PUBLICATIONS

---

#### In preparation:

**Little S.H.**, van de Flierdt T., Rehkämper M., Wilson D., Adkins J., Robinson L.F. Deep sea corals as archives of seawater Zn and Cu isotopes. (In prep. for *Paleoceanography*, anticipated submission May 2019)

Prytulak J., **Little S.H.**, Mitchell-Bunce B., Hammond J. and Exp. 352 Scientists. Immediate slab fluid involvement during subduction initiation. (In prep. Target: Nature, anticipated submission August 2019)

#### In review:

Pratt N., Chen T., Wilson D.J., van de Flierdt T. **Little S.H.**, Taylor M.L., Robinson L.F., Rogers A., Santodomingo N. Temporal distribution and diversity of cold-water corals in the southwest Indian Ocean over the past 25,000 years. *Deep Sea Research I*.

**Little S.H.**, Munson S., Prytulak J., Hammond S., Widdowson M. Fractionation of Cu and Zn isotopes during extreme weathering. *Geochimica et Cosmochimica Acta*

#### Peer-reviewed publications:

Hayes C., Anderson R.F., Cheng H., Conway T.M., Edwards R., Fleisher M.Q., Huang K-F., John S.G., Landing W.M., **Little S.H.**, Lu Y., Morton P.L., Moran S.B., Robinson L.F., Shelley R.U., Shiller A.M., Zheng X-Y. Oceanic residence times of a spectrum of elements based on thorium supply (2018) *Global Biogeochem. Cycles*, DOI: 10.1029/2017GB005839.

**Little S.H.**, Archer C., Milne A., Schlosser C., Achterberg E., Vance D. Paired dissolved and particulate phase Cu isotope distributions in the South Atlantic (2018) *Chemical Geology*, DOI: 10.1016/j.chemgeo.2018.07.022.

de Souza G.F., Khatiwala S.P., Hain M.P., **Little S.H.**, Vance D. On the origin of the marine zinc-silicon correlation (2018) *Earth and Planetary Science Letters* 492, 22-34.

Howarth, S, Prytulak, J., **Little S. H.**, Hammond, S., Widdowson, M Thallium stable isotope composition of lateritic terrains (2018) *Geochimica et Cosmochimica Acta* 239, 446-462.

Schlitzer, R., Anderson, R.F., Dodas, E.M., Lohan, M., Geibert, W., Tagliabue, A., Bowie, A., Jeandel, C., Maldonado, M.T., Landing, W.M. *et al.* 2018. The GEOTRACES Intermediate Data Product 2017. *Chemical Geology* 493, 210-223.

Vance D., Archer C., **Little S.H.**, Köbberich M., de Souza G.F. (2017) The oceanic cycles of the transition metals and their isotopes. *Acta Geochimica*, DOI: 10.1007/s11631-017-0162-6

**Little S.H.**, Vance. D., McManus J., Severmann S., Lyons T.W. (2017) Copper isotopes in modern organic rich sediments. *Geochimica et Cosmochimica Acta* 212, 253-273.

Vance D., **Little S.H.**, de Souza G.F., Khatiwala, S., Lohan M.C., Middag, R. (2017). Silicon and zinc biogeochemical cycles coupled through the Southern Ocean. *Nature Geoscience* 10(3), 202-206.

van de Flierdt T., Griffiths A.M. Lambelet M., **Little S.H.**, Stichel T., Wilson D.J. (2016). Neodymium in the Oceans: A global database, a regional comparison, and implications for palaeoceanographic research. *Phil. Trans. Roy. Soc. A* 374: 20150293.

Vance D. **Little S.H.**, Archer, C., Cameron, V., Andersen, M.B., Rijkenberg, M.J.A., Lyons, T.W. (2016). The oceanic budgets of nickel and zinc isotopes: the importance of sulphidic environments as illustrated by the Black Sea. *Phil. Trans. Roy. Soc. A* 374: 20150294.

**Little S.H.**, Vance D., McManus, J., Severmann, S. (2016). Key role of continental margin sediments in the oceanic mass balance of Zn and Zn isotopes. *Geology* 44 (3), 207-210.

**Little S.H.**, Vance D., Lyons T.W., McManus, J. (2015). Controls on trace metal authigenic enrichment in reducing sediments, investigated via analysis of their co-variation in a range of modern hydrographic settings. *American Journal of Science* 315, 77-119

**Little S.H.**, Sherman D.M., Vance D., Hein J.R., (2014). Molecular controls on copper and zinc isotope fractionation in ferromanganese crusts, *Earth and Planetary Science Letters* 396, 213-222.

And Sherman, D. M., **Little, S. H.**, & Vance, D. (2015). Reply to comment. *Earth and Planetary Science Letters* 411, 313-315.

Andersen M.B, Ramaniello S., Vance D., **Little S.H.**, Herdman R., Lyons T.W. (2014). A modern framework for the interpretation of <sup>238</sup>U/<sup>235</sup>U in studies of ancient ocean redox. *Earth and Planetary Science Letters* 400, 184-194.

**Little S.H.**, Vance D., Walker-Brown C., Landing W.M. (2014). The oceanic mass balance of copper and zinc isotopes, investigated by analysis of their inputs, and outputs to ferromanganese oxide sediments. *Geochimica et Cosmochimica Acta* 125, 673-693.

**Little S.H.**, Vance D., Siddall M., Gasson E. (2013). A modelling assessment of the role of reversible scavenging in controlling oceanic dissolved Cu and Zn distributions. *Global Biogeochemical Cycles* 27 (3) 780-791.

## REFERENCES

---

Available on request.