Curriculum Vitae – Alfred Wilson-Spencer

Contact information

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Education

University College London	Ph.D., Theoretical Mineral physics: *Thermodynamic properties of a terrestrial magma ocean* Advisor: Lars Stixrude	2015-2019
University College London	M.Sci., Geology: *Exploring the structural evolution of Cerberus Fossae, Mars* Advisor: Peter Grindrod	2011-2015

Academic Employment

University of Leeds	Research Fellow	2020-2024
	Senior Research Fellow	2024-Present

Teaching

University College London	Teaching assistant, GEOL0057: Geodynamics & Global Tectonics	2016-2018
University College London	Teaching assistant, GEOL0043: Tectonic Geomorphology	2018-2019
University of Leeds	Mental health first aid training	Planned 2025

Mentoring

University College London	Ph.D. Student Geoffrey Baron (informal, graduated 2022)	2020-2022
University of Leeds	Final year geophysics independent research projects Sulayman Brit (2021/22), Thomas Rehal (2022/23)	2021-Present

Funding

University of Leeds	*Resolving the inner core nucleation paradox* Natural and Environmental Research Council Role: Research fellow £630,307	2020-2023
University of Leeds	*Earth's core as a layered system* Natural and Environmental Research Council Role: Senior Research fellow £1,590,237	2021-2025

University of Leeds / University College London	*Can precipitation of light elements resolve the "New Core Paradox"?* NERC Role: Named post-doctoral research associate	Submitted
University of Leeds / University College London	*Chemical and thermal history of the Earth's core* EPSRC Role: Named post-doctoral research associate	Submitted
University of Leeds	*A pilot scheme for directed mental health first aid training for the Faculty of Environment* Role: Lead £7,423.64	Awarded

Professional Service

Mineralogical Society of GB & NI	Chair of the Mineral Physics Group of the Mineralogical Society of the UK and Ireland	2024-Present
University of Leeds	Equality, Diversity and Inclusivity Committee, School of Earth and Environment Committee member – training development	2023-Present
University of Leeds	Deep Earth Research Group Coordinator –meetings and away day organisation	2020-2022
Reviewer	Nature Geosciences, JGR:SE, GJI (Outstanding Reviewer 2023), Geochimica et Cosmochimica Acta, Scientific Reports National Science Foundation L'Oréal For women in science award	
Recruitment	Interview panelist on three occasions	2022-Present
Doornbos Prize	Winner of the Study of Earth's Deep Interior Doornbos Award	2024

Invited talks

SEDI 2024	*Nucleation and Growth of Earth's inner core*	26th June 2024
European Geophysical Conference	*Precipitation of light elements from Earth's liquid core: Can exsolution power the ancient geodynamo?*	April 2023
IUPAP Conference on Computational Physics	*Probing the nucleation of iron in Earth's core using molecular dynamics simulations of supercooled liquids.*	August 2022
Bayerisches Geoinstitut,	*Properties of the Earth's magma ocean from the two-phase thermodynamic method.*	February 2020

Universität Bayreuth		
University of California, Los Angeles	*Magma ocean thermodynamics from ab initio calculations.*	June 2019

Publications

Wilson, A.J., Davies, C.J., Walker, A.M and Alfè, D. *In review.* Earth's core composition is constrained by inner core nucleation. *Nature Geoscience.*

Wilson, A.J., Walker, A.M., Deuss, A., Alfè, D, Pozzo, M. and Davies, C.J., *In review., Invited,* The formation and evolution of Earth's inner core. *Nature Reviews Earth & Environment.*

Pommier, A., Tauber, M.J., Davies, C.J., **Wilson, A.J.**, Renggli, C., Reitze, M., Bullock. E., *Submitted,* Electrical Properties of Alkaline Earth Sulfides and Implications for the Interior of Mercury. *Journal of Geophysical Research: Planets.*

Davies, C.J., Pommier, A., Greenwood, S. and **Wilson, A.**, 2024. Thermal and magnetic evolution of Mercury with a layered Fe-Si (-S) core. *Earth and Planetary Science Letters*, *641*, p.118812.

Walker, A.M., Davies, C.J., **Wilson, A.J.** and Bergman, M.I., *In review.* A non-equilibrium slurry model for planetary cores with application to Earth's F-layer, *Proceedings of the Royal Society*

Wilson, A.J., Pozzo, M., Davies, C.J., Walker, A.M. and Alfè, D., 2023. Examining the power supplied to Earth's dynamo by magnesium precipitation and radiogenic heat production. *Physics of the Earth and Planetary Interiors*, *343*, p.107073.

Wilson, A.J., Alfè, D., Walker, A.M. and Davies, C.J., 2023. Can homogeneous nucleation resolve the inner core nucleation paradox?. *Earth and Planetary Science Letters*, *614*, p.118176.

Wilson, A.J., Pozzo, M., Alfè, D., Walker, A.M., Greenwood, S., Pommier, A. and Davies, C.J., 2022. Powering Earth's ancient dynamo with silicon precipitation. *Geophysical Research Letters*, *49*(22), p.e2022GL100692.

Wilson, A.J., Walker, A.M., Alfè, D. and Davies, C.J., 2021. Probing the nucleation of iron in Earth's core using molecular dynamics simulations of supercooled liquids. *Physical Review B*, *103*(21), p.214113.

Wilson, A.J. and Stixrude, L., 2021. Entropy, dynamics, and freezing of CaSiO3 liquid. *Geochimica et Cosmochimica Acta*, *302*, pp.1-17.

Citron, R.I., Lourenço, D.L., **Wilson, A.J.**, Grima, A.G., Wipperfurth, S.A., Rudolph, M.L., Cottaar, S. and Montési, L.G., 2020. Effects of heat-producing elements on the stability of deep mantle thermochemical piles. *Geochemistry, Geophysics, Geosystems*, *21*(4), p.e2019GC008895.

References

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