



Thomas James Barrett

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● WORK EXPERIENCE

05/01/2022 – CURRENT – Houston, Texas, United States

POSTDOCTORAL RESEARCH ASSOCIATE – LUNAR AND PLANETARY INSTITUTE (LPI)

09/2020 – 10/09/2021

FREELANCE SPECIALIST EDITOR – CACTUS COMMUNICATIONS

Editing and scientific review in the Earth, Atmospheric, and Planetary Science Centre of Excellence of academic manuscripts prior to journal submission.

- Required to work to hard deadlines for rapid turnaround of manuscripts.
- Managing workload and schedule.

30/07/2020 – 01/08/2022 – Milton Keynes, United Kingdom

HONORARY ASSOCIATE IN PLANETARY SCIENCES – THE OPEN UNIVERSITY

Honorary associate position held after fixed-term contract ended.

08/2017 – 30/07/2020 – Milton Keynes, United Kingdom

RESEARCH FELLOW IN PLANETARY SCIENCES – THE OPEN UNIVERSITY

- Lead researcher using correlated Electron Backscatter Diffraction (EBSD)-Nano Secondary Ion Mass Spectrometry (NanoSIMS) isotope mapping to assess shock microstructures and their effect on the isotopic composition of apatite in eucrites.
- Lead researcher in understanding the effects of Raman Spectroscopy on organic compounds and meteorites with specific reference to the ESA ExoMars mission.
- Gathered researchers and motivated them to work together as part of a team using EBSD to investigate large-scale deformation in Howardite-Eucrite-Diogenite meteorites.
- Worked as part of a larger research team both within the Open University (OU) and with collaborators at other institutions to collaborate on various projects.
- Responsible for the data collection, processing, interpretation, and writing of academic manuscripts for peer reviewed publication in high-impact publications. This responsibility saw me take charge of lead author papers and manage co-authors of different nationalities and cultures as well as participate in a team as a co-author.
- Mission involvement, attending the 5th ExoMars landing site selection meeting, ExoMars working group meeting in Moscow (2018) and ExoFIT rover trials.
- Responsible for the classification of meteorites and their official submission to the Meteoritical Bulletin.
- Responsible for the search and acquisition of meteorite sample material loans from various museums and research institutions, the paperwork surrounding the loan and updating the loaner of the status of the project.
- Co-author of white papers for NASA Decadal Survey 2023-2032 study highlighting the importance of volatile analysis.
- Peer reviewer of academic manuscripts.
- Independent user of a Cameca NanoSIMS 50L for Cl and H isotope measurements as well as Cl isotope imaging.
- Detailed high precision and resolution analyses of low abundance elements.

- Extensive experience working in a clean room environment, Scanning Electron Microscopy (SEM), optical microscopy.
- Experience of Electron Probe Microanalysis (EPMA), EBSD, Raman Spectroscopy.
- Knowledge of basic rock preparation, Inductively Coupled Plasma Mass Spectrometry (ICP-MS), ICP Optical Emission Spectroscopy (ICP-OES), Cathodoluminescence (CL).
- Protocol development for NanoSIMS and EBSD and modification of existing protocols to best suit the unique challenge of my meteorite samples (e.g. low abundance, volatile mobility under electron beam).
- PhD student supervision.
- Laboratory supervision and teaching of PhD students for SEM, NanoSIMS, and Raman instruments.
- Convening conferences, awards judging, preparation of abstracts.
- Invited talks at Universities, Research Institutes, and amateur groups.
- Writing grant applications to secure additional funding for expansion on projects and new research.
- Successfully applied for small grants.
- Yearly career development training (e.g. Equality, Diversity, and Inclusivity, PREVENT counter terrorism, Liquid Nitrogen and Compressed gases training, and health and safety).

08/2013 – 02/2018 – Milton Keynes, United Kingdom

PHD STUDENT – THE OPEN UNIVERSITY

Thesis title: The History of Water and Other Associated Volatiles in Howardite-Eucrite-Diogenite Meteorites
Supervisors: Prof Mahesh Anand, Prof Ian Franchi, Prof Monica Grady, Dr Richard Greenwood, and Dr Bruce Charlier

- Analysis of mineral apatite using SEM, EPMA, and NanoSIMS to determine the source(s) and evolution of volatiles (specifically H and Cl) in the HEDs and discern differences, if any, between the various geochemical trends within the eucrites.
- Sought out, applied, and was successful in obtaining various research travel grants to attend conferences and workshops e.g. STFC Media and Communications Workshop Bursary and Lunar and Planetary Institute Career Development Award.
- Undertook outreach activities at schools to inspire and inform children of various age groups.
- Responsible for the data collection, processing, interpretation, and writing of academic manuscripts for peer reviewed publication in high-impact publications. This responsibility saw me take charge of lead author papers and manage co-authors of different nationalities and cultures as well as participate in a team as a co-author.
- Responsible for the search and acquisition of meteorite sample material loans from various museums and research institutions, the paperwork surrounding the loan and updating the loaner of the status of the project.
- Preparation of national and international conference abstracts for both poster and oral presentations.
- Yearly career development training (e.g. Equality, Diversity, and Inclusivity, PREVENT counter terrorism, Liquid Nitrogen and Compressed gases training, and health and safety).
- Time management, working to deadlines and general administration.

03/2017 – 05/2017 – Milton Keynes, United Kingdom

RESEARCH ASSISTANT – THE OPEN UNIVERSITY

- Short term teaching contract to aid in the development of planetary science course material. This work saw me set up and test a remote desktop SEM system that students could access online to conduct a short research project. Working with my line manager as a team we created the research question which I then undertook to provide stock data to develop the mark scheme around.
- Time management, working to deadlines, and general administration.

10/2014 – 11/2014 – Houston, Texas, United States

NASA JOHNSON SPACE CENTER INTERNSHIP – THE OPEN UNIVERSITY

Secured a Royal Astronomical Society grant for this internship/research collaboration at NASA Johnson Space Center whilst conducting my PhD.

- Detailed petrological study of HED meteorites and anomalous achondrites under optical microscope.
- The acquisition of mineral major element data using a Jeol 8530 field emission electron microprobe and a Cameca Sx100.

- Working as part of an international team both during my time in US as well as organising and working with researchers in different time zones when back in the UK.

07/2013 – 08/2013 – Liverpool, United Kingdom

GEOMAGNETISM INTERNSHIP – UNIVERSITY OF LIVERPOOL

Internship at the University of Liverpool Earth Sciences department geomagnetism research group supervised by Dr Andy Biggin.

- Independently managed and undertook a complex and multi-faceted mini-research project concerned with testing a hypothesis derived from theory and previous observation.
- Conducted diverse geomagnetic palaeointensity experiments using a unique 14 GHz microwave system with an incorporated 3-axis He-SQUID magnetometer and a Helmholtz coil set.
- Used specialist software to analyse both newly measured and legacy data and compare the results.

Results from this internship have produced one co-author publication and two conference abstracts.

06/2013 – 07/2013 – Leeds, United Kingdom

THERMAL IONIZATION MASS SPECTROMETRY LABORATORY: SUMMER INTERNSHIP – UNIVERSITY OF LEEDS

Internship at the University of Leeds Earth Sciences department supervised by Dr Jason Harvey. Conducted a short-term research project in the identification of melt-rock interaction textures in peridotite xenoliths as well as assisting in the preparation and isotope purification of peridotite from Borée, Massif Central, France and Kilbourn Hole, Texas, United States.

Gained experience in a number of preparatory techniques and analytical methods that are regularly employed in the laboratory.

- Hand-picking and cleaning clinopyroxene and spinel grains from bulk peridotite crushates for isotope analyses.
- Polishing thin sections of rock specimens in preparation for reflected light microscopy.
- Reflected light microscopy for the identification of melt-rock interaction textures in peridotite xenoliths.
- HF-HNO₃-HCl digestion of bulk-rock peridotite in preparation for trace element analysis by Inductively Coupled Plasma Mass Spectrometry (ICP-MS).
- Extraction of Sr and Nd for isotope measurements using ion exchange columns and LN spec columns.
- The acquisition of mineral major element data using a Jeol Superprobe electron microprobe.
- The analysis of Sr and Nd isotopes by thermal ionization mass spectrometry, using a Thermo Finnigan Triton.

07/2011 – 07/2013 – Birmingham, United Kingdom

LAPWORTH MUSEUM OF GEOLOGY ASSISTANT – UNIVERSITY OF BIRMINGHAM

- Opening and closing of the museum.
- Cataloguing, digitising, and curation of museum archives including rare and precious fossils and mineral samples.
- Providing educational tours for schools and other community outreach activities.

2005 – 2006 – Birmingham, United Kingdom

WORK EXPERIENCE INTERNSHIP – BIRMINGHAM CITY COUNCIL

School work experience for ~ one (1) month

- Work experience as part of Birmingham City Council Geotechnical division supervised by Bob Manders. Responsible for on-site water and soil sample collection for further laboratory analysis. Undertook and managed a small independent research project into the local history, geology, hydrology, and building development of my local area which was presented to the larger team at the end of the work experience.
- Work experience with Birmingham City Council IT department including hands on working on Council wide networking infrastructure and general helpdesk enquiries.

● EDUCATION AND TRAINING

07/05/2022 – 14/05/2022

LUNAR EXPLORATION FIELD TRAINING AND RESEARCH PROGRAM – NASA Solar System Exploration Research Virtual Institute/Center for Lunar Science and Exploration

The Field Training and Research Program in the San Francisco Volcanic Field, near Flagstaff, Arizona, is a week-long field class and research project in and around the sites used by the instructor to train astronauts and used by NASA for lunar mission simulations.

Website <https://www.lpi.usra.edu/exploration/sfvfFieldCamp/>

2011 – CURRENT

ENHANCED DISCLOSURE AND BARRING SERVICE CERTIFICATE – Disclosure and Barring Service

Holder of a current and valid enhanced DBS certificate to work with children and vulnerable adults. Used for outreach events and martial arts teaching. Member of the update scheme that allows for a smooth renewal of the certification near expiry.

08/2018

MASS SPECTRAL INTERPRETATION (GC-MS) – Anthias Consulting

06/2018

COMPLETE GC & GC-MS – Anthias Consulting

03/2018

ABSOLUTE BASICS OF GC & GC-MS – Anthias Consulting

08/2013 – 02/2018 – Milton Keynes, United Kingdom

DOCTOR OF PHILOSOPHY (PHD) – The Open University

Supervisors: Prof Mahesh Anand, Prof Ian Franchi, Prof Monica Grady, Dr Richard Greenwood, and Dr Bruce Charlier

Address Walton Hall, Milton Keynes, United Kingdom |

Thesis The History of Water and Other Associated Volatiles in Howardite-Eucrite-Diogenite Meteorites

2014

ROYAL SOCIETY MEDIA AND COMMUNICATIONS RESIDENTIAL COURSE – Royal Society

TV and radio interview training.

2014

FACILITATING ONLINE LEARNING – The Open University

2014

INTRODUCTION TO STATISTICS – The Open University

2013

FUNDAMENTALS OF EPMA SHORT COURSE – European Microbeam Analysis Society

2013

PLANETARY MINERALOGY INTENSIVE COURSE – European Mineralogy Union

2008 – 2013 – Birmingham, United Kingdom

MSCI GEOLOGY/EARTH SCIENCE – University of Birmingham

Masters project – Investigating the subtle fabrics of the Ben Loyal Syenite, Sutherland, Scotland.

- Use of an AGICO KLY-3S Kappabridge to determine the anisotropy of magnetic susceptibility of rock samples and determine subtle magnetic and flow fabrics of the Ben Loyal syenite, Scotland.
- University of Birmingham Ninjutsu - Club Captain 2012-2013.
- Lapworth Geological Society (University of Birmingham Geology Department student society) 2010-2011.
- 2nd Year Representative. Responsible for organising student events and society activities.
- Fieldwork experience in Anglesey, Pembrokeshire, Bude and Dorset, Southern Spain and Scotland from undergraduate and Masters.
- Winner of the Lapworth Scholarship 2011, 2012.
- Winner of the inaugural Rob Holloway award. Provided funding to present my preliminary findings of my Msci project at the Tectonic Studies Group meeting 2013.
- Japanese Levels 1 and 2 (extra credit university modules).

Address Edgbaston, Birmingham, United Kingdom | **Field of study** Geology, Japanese |

Final grade First Class (Hons)

2007 – 2009 – Birmingham, United Kingdom

A LEVEL – Plantsbrook School

Part of School Rugby Team.

School Prefect.

Address Upper Holland Road, Sutton Coldfield, Birmingham, United Kingdom |

Field of study Maths, Physics, Geography, Critical Thinking, General Studies |

Final grade Maths (B), Physics (B), Geography (B), Critical Thinking (C), General Studies (C)

2006 – 2008 – Birmingham, United Kingdom

AS LEVEL – Plantsbrook School

Part of School Rugby Team.

School Prefect.

Address Upper Holland Road, Sutton Coldfield, Birmingham, United Kingdom |

Field of study Business Studies | **Final grade** B

● **HONOURS AND AWARDS**

23/08/2022

Lunar Exploration Analysis Group (LEAG) Travel Award – Lunar Exploration Analysis Group

A travel grant for early career researchers to attend the LEAG Annual meeting in Laurel, Maryland, USA. (\$1500)

02/2019

The Mineralogical Society of Great Britain and Ireland Senior Bursary – The Mineralogical Society of Great Britain and Ireland

Provided funding to attend the Lunar and Planetary Sciences Conference (LPSC) 2019 in the Woodlands, Texas (£500).

07/2018

Meteoritical Society (MetSoc) Travel Grant – Meteoritical Society & Elsevier

A travel grant to assist in attendance of the Meteoritical Society AGM 2018 in Moscow, Russia (\$850).

08/2016

Meteoritical Society (MetSoc) Travel Grant – Barringer Company Fund

A travel grant to assist in attendance of the Meteoritical Society AGM 2016 in Berlin, Germany (\$350).

05/2016

Three Minute Thesis (3MT) Competition - 3rd Place – The Open University

3rd place in the three minute thesis competition for the whole of the science faculties at the University. This competition is designed to test a students ability to explain their thesis to a layman audience under a strict set of criteria.

02/2016

LPI Career Development Award – Lunar and Planetary Institute

Winner of the ninth LPI Career Development Award which provided funding to attend the Lunar and Planetary Sciences Conference (LPSC) 2016 in the Woodlands, Texas (\$1500).

06/2015

STFC media/communications workshop bursary – STFC

An STFC bursary to attend the Royal Society two-day media/communications workshop at the Kavli Centre.

03/2015

I'm a Scientist, Get me out of here! – Wellcome Trust

Runner up in the "I'm a Scientist, Get me out of here!" outreach event aimed at promoting STEM subjects to school children.

2014

European Mineralogical Union Summer School Bursary – European Mineralogical Union

A Bursary obtained to enable me to attend the European Mineralogical Union (EMU) 10 day summer school in Glasgow.

2014

Meteoritical Society (MetSoc) Travel Grant – Barringer Company Fund

A grant covering travel and registration fees for the Meteoritical Society AGM 2014 in Casablanca, Morocco (\$700).

09/2014

Royal Astronomical Society Grant – Royal Astronomical Society

Awarded a grant to conduct collaborative research with colleagues at the Johnson Space Center in America (£907).

2013

Rob Holloway Award – Warwickshire Geological Conservation Group & University of Birmingham

- Winner of the inaugural Rob Holloway award. Provided funding to present my preliminary findings of my Msci project at the Tectonic Studies Group meeting 2013.

31/08/2013

Doctoral Training Grant – Science Technology Facilities Council (STFC), UK

Full STFC Doctoral Training Partnership (DTP) funding for a PhD at The Open University (2013–2018).

2012

Lapworth Scholarship – University of Birmingham

2011

Lapworth Scholarship – University of Birmingham

12/10/2010

Duke of Edinburgh Gold Award – Duke of Edinburgh Award

2009

Queen's Scout Award – The Scout Association

08/2009

Explorer Belt – The Scout Association

A 15 day expedition in three person teams across northern Italy from Parma to Vicenza completing challenges linked to local culture and scouting along the way.

09/09/2008

Duke of Edinburgh Silver Award – Duke of Edinburgh Award

01/05/2006

Duke of Edinburgh Bronze Award – Duke of Edinburgh

● **PUBLICATIONS**

Breccia

https://link.springer.com/referenceworkentry/10.1007/978-3-319-05546-6_136-1 – 2022

Hayden, T. S., Joy, K., **Barrett, T.** (2022) *In* Cudnik, B. (Eds) *Encyclopaedia of Lunar Science*. Springer, Cham.

Exploring relationships between shock-induced microstructures and H₂O and Cl in apatite grains from eucrite meteorites

<https://www.sciencedirect.com/science/article/pii/S0016703721001848> – 2021

Barrett T. J., Černok A., Degli-Alessandrini G., Zhao X., Anand M., Franchi I. A., Darling J. (2021) *Geochimica et Cosmochimica Acta* **302**, 120-140.

A deuterium-poor water reservoir in the asteroid 4 Vesta and the inner Solar System

<https://www.sciencedirect.com/science/article/pii/S0016703721000077> – 2021

Stephant A., Wadhwa M., Hervig R., Bose M., Zhao X., **Barrett T. J.**, Anand M., Franchi I. A. (2021) *Geochimica et Cosmochimica Acta* **297**, 203-219.

Comparison of thermal and microwave paleointensity estimates in specimens displaying non-ideal behaviour in Thellier-style paleointensity experiments.

<https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2020JB019802> – 2020

Grappone J. M., Biggin A. J., **Barrett T. J.**, Hill M. J., Sprain C. J. (2020) *Journal of Geophysical Research: Solid Earth* **125**(8), e2020JB019802

Lunar Volatiles and Solar System Science

<https://baas.aas.org/pub/2021n4i068/release/1> – 2020

Prem P., Kereszturi Á., Deutsh A. N., Hibbitts C. A., Schmidt C. A., Grava C., Honniball C. I., Hardgrove C. J., Pieters C. M., Goldstein D. B., Barker D. C., Needham D. H., Hurley D. M., Mazarico E., Kramer G. Y., Dominguez G., Brisset J., Gillis-Davis J. J., Mitchell J. L., Szalay J. R., Halekas J. S., Keane J. T., Mandt K. E., Robinson K. L., Magaña L. O., Siegler M. A., Landis M. E., Poston M. J., Petro N. E., Lucey P. G., Killen R. M., Li S., Narendranath S., Shukla S., **Barrett T. J.**, Orlando T. M., and Farrell W. M. (2020) Lunar Volatiles and Solar System Science. A White Paper Submitted to The Decadal Survey in Planetary Science and Astrobiology 2023-2032.

The Value of CHONS isotopic measurements of major compounds as probes of planetary origin, evolution, and habitability

<https://baas.aas.org/pub/2021n4i243/release/1> – 2020

Miller K. E., Theiling B., Hofmann A. E., Castillo-Rogez J., Neveu M., Hosseini S. S., Barnes J., de Kleer K., **Barrett T. J.**, Franz H. B., Glein C. R., House C. H., Blase R. C., Libardoni M. J., Spilker L. J., Choukroun M., Drouin B. J., (2020) The Value of CHONS isotopic measurements of major compounds as probes of planetary origin, evolution, and habitability. A White Paper Submitted to The Decadal Survey in Planetary Science and Astrobiology 2023-2032.

Investigating magmatic processes in the early Solar System using the Cl isotopic systematics of eucrites.

<https://www.sciencedirect.com/science/article/pii/S0016703719303631> – 2019

Barrett T. J., Barnes J. J., Anand M., Franchi I. A., Greenwood R. C., Charlier B. L. A., Zhao X. Moynier F., Grady M. M. (2019) *Geochimica et Cosmochimica Acta* **266**, 582-597.

The mineralogy, petrology, and composition of anomalous eucrite Emmaville.

<https://onlinelibrary.wiley.com/doi/full/10.1111/maps.12818> – 2017

Barrett T. J., Mittlefehldt D. W., Greenwood R. C., Charlier B. L. A., Hammond S. J., Ross D. K., Anand M., Franchi I. A., Abernethy F. A. J., Grady M. M. (2017) *Meteoritics & Planetary Sciences* **52**(4), 656-668.

The abundance and isotopic composition of water in eucrites.

<https://onlinelibrary.wiley.com/doi/full/10.1111/maps.12649> – 2016

Barrett T. J., Barnes J. J., Tartèse R., Anand M., Franchi I. A., Greenwood R. C., Charlier B. L. A., Grady M. M. (2016) *Meteoritics & Planetary Science* **51**(6), 1110-1124.

Characterization of mesostasis regions in lunar basalts: Understanding late-stage melt evolution and its influence on apatite formation.

<https://onlinelibrary.wiley.com/doi/full/10.1111/maps.12681> – 2016

Potts N. J., Barnes J. J., Griffiths A. A., Tartèse R., van Westrenen W., Anand M., **Barrett T. J.**, Franchi I. A. (2016) *Meteoritics & Planetary Science* **51**(9), 1555-1575.

● CONFERENCES AND SEMINARS

23/08/2022 – 26/08/2022 – Laurel, Maryland, USA

Lunar Exploration Analysis Group (LEAG) Annual Meeting Session Chair

2015 – 2022

Conference Award Judge

Award judge for various conferences for student talks and posters.

The shock response of apatite and its effect on volatiles in eucrites

Barrett T. J., Černok A., Degli-Alessandrini G., Zhao X., Anand M., Franchi I. A., Darling J. (2022) *Lunar and Planetary Science Conference LIII, Abstract #1675*

A detailed mineralogical and isotopic study of the historic monomict eucrite Padvarninkai

Barrett T. J., King A. J., Degli-Alessandrini G., Humphreys-Williams E., Schmidt B., Greenwood R. C., Abernethy F. A. J., Anand M., Rudnickaite E. (2022) *Lunar and Planetary Science Conference LIII, Abstract #2228*

Volatile inventory of lunar meteorites from the dominion range

Hayden T. S., **Barrett T. J.**, Zhao X., Anand M., Franchi I. A. (2022) *Lunar and Planetary Science Conference LIII, Abstract #1886*

Mineralogy, geochemistry, and geochronology of lunar meteorites from the dominion range, and their pairing relationships

Hayden T. S., **Barrett T. J.**, Whitehouse M. J., Jeon H., Zhao X., Anand M., Franchi I. A. (2022) *Lunar and Planetary Science Conference LIII, Abstract #1894*

18/04/2021 – 29/04/2021

European Geosciences Union vEGU21 Convener

Chlorine and hydrogen in brecciated lunar meteorites: Implications for lunar volatile history

Hayden T. S., **Barrett T. J.**, Zhao X., Anand M., Degli-Alessandrini G., Franchi I. A. (2021) *Lunar and Planetary Science Conference LII, Abstract #1550*

Chlorine in brecciated lunar meteorite NWA 12593: Implications for lunar volatile history

Hayden T. S., **Barrett T. J.**, Zhao X., Anand M., Degli-Alessandrini G., Franchi I. A. (2020) *European Lunar Symposium LIII*

The Hydrogen and Chlorine Isotopic Composition of Highly Shocked Eucrites

Barrett T. J., Černok A., Degli-Alessandrini G., Zhao X., Anand M., Franchi I. A., Darling J., (2020) *Lunar and Planetary Science Conference LI, Abstract #2879*

Co-ordinated UV Reflectance and Raman Spectroscopy of Martian Meteorites and Terrestrial Analogue Samples

Grady M. M., Abernethy F. A. J., **Barrett T. J.**, Batty C., Bedford C., Rowden P. (2019) *MetSoc LXXXII*, Abstract #6465

ExoFIT: ExoMars-Like Field Trials – a Mission Simulation

Hall A., Dobke B., Lisle M., Shilton M., Allouis E., Waugh L., Carroll J., Doignon G., Azkarate M., van Winnendael M., Duvet L., Martin D., Delfa J., Vago J., Schwenzer S. P., Balme M., Fawdon P., Turner S., Bedford C., Sargeant H., Pegg D., Mirino M., **Barrett T.**, Ladegaard A., F. Rull F., Veneranda M., Bontognali T., Josset T., Josset J-L., Josset M., Ciarletti V., Plettemeier D., Le Gall A., Hervé Y., Corbel C., Vieau A-J., Oudart N. R., Trainer V., Ciarletti V., Benedix W-S., Hegler S., Henedix W-S., Plettemeier D., Lopez G., Saiz J., Preston L., Cousins C., Allender E., Banham S., Barnes R., Northwood-Smith G., Sangwan K., Grindrod P., Davis J., Motaghian S., Dickeson Z., Boazman S., Schröder C., Hauber E., Schmitz N., Parkes-Bowen A., Bahir R., Barcenilla R., Leff C., Persaud D., A. Coates A., Griffiths A., Stabbins R., Bohacek E., Kuhn N., Westall F. (2019) *In ASTRA 2019: 15th Symposium on Advanced Space Technologies for Robotics and Automation*.

Apatite Microstructures and its Volatile Composition in Euclrites

Barrett T. J., Černok A., Degli-Alessandrini G., Anand M., Franchi I. A., Darling J. (2019) *Lunar and Planetary Science Conference L*, Abstract #1689

Comparing the crystallographic structures of the Howardite, Euclite and Diogenite (HED) Meteorites

Forman L. V., Daly L., **Barrett T. J.** (2019) *Lunar and Planetary Sciences L*, Abstract #1374

Linking volatiles and microstructures in apatite from euclrites

Barrett T. J., Černok A., Anand M., Franchi I. A., Darling J. (2018) *MetSoc LXXXI*, Abstract #6310

Fine-scale variations in euclitic pyroxene FeO/MnO: Process vs. Provenance

Mittlefehldt D. W., **Barrett T. J.**, Le L., Peng Z. X., Berger E. L., Ross D. K. (2018) *Lunar and Planetary Science Conference XLIX*, Abstract #2700

Comparison of thermal and microwave paleointensity estimates in specimens that violate Thellier's laws

Grappone, J.M., Biggin A. J., **Barrett T. J.**, Hill M. J. (2018) *Magnetic Moments*

Comparison of thermal and microwave paleointensity estimates in specimens that violate Thellier's laws

Grappone, J.M., Biggin A. J., **Barrett T. J.**, Hill M. J. (2017) *American Geophysical Union Fall Meeting*, Abstract GP33B-0972

Chlorine isotope variation in euclrites

Barrett T. J., Barnes J. J., Anand M., Franchi I. A., Grady M. M., Greenwood R. C., Charlier B. L. A. (2016) *MetSoc LXXIX*, Abstract #6517

Chlorine isotopic composition of eucrites

Barrett T. J., Barnes J. J., Anand M., Franchi I. A., Grady M. M., Greenwood R. C., Charlier B. L. A. (2016) *Lunar and Planetary Science Conference XLVII*, Abstract #2746

Petrologic and oxygen-isotopic investigations of eucritic and anomalous mafic achondrites

Mittlefehldt D. W., Greenwood R. C., Peng Z. X., Ross D. K., Berger E. L., **Barrett T. J.** (2016) *Lunar and Planetary Science Conference XLVII*, Abstract #1240

The mineralogy and petrology of anomalous eucrite Emmaville

Barrett T. J., Mittlefehldt D. W., Ross D. K., Greenwood R. C., Anand M., Franchi I., Grady M. M., Charlier B. L. A. (2015) *Lunar and Planetary Science Conference XLVI*, Abstract # 2108.

The origin of water other volatiles in the inner solar system as shown by Howardite-Eucrite-Diogenite (HED) meteorites

Barrett T. J., Tartèse R., Barnes J. J., Anand M., Franchi I. A., Grady M. M., Greenwood R. C., Charlier B. L. A. (2015) *UK Planetary Forum XII*.

The abundance and isotopic composition of water in Howardite-Eucrite-Diogenite Meteorites

Barrett T. J., Tartèse R., Anand M., Franchi I. A., Grady M. M., Greenwood R. C., Charlier B. L. A. (2014) *MetSoc LXXVII*, Abstract #5131.

Melt depletion, cryptic metasomatism and melt-rock interaction in spinel lherzolites from Borèe, Massif Central, France

Barnett C., Harvey, J., **Barrett T.J.**, Morgan D. J., Hammond S. J. (2014) *Geochemistry Group of the Geological Society of London / Mineralogical Society of Great Britain and Ireland Research in Progress meeting*.

The Abundance and Isotopic Composition of Water in Howardite-Eucrite-Diogenite (HED) Meteorites and Implications for the Volatile Inventory of the Earth-Moon System

Barrett T. J., Anand M., Franchi I. A., Grady M. M., Greenwood R. C., Charlier B. L. A. (2014) *UK Planetary Forum XI*.

Alteration of Mantle Sulfides: The Effects of Oxidation and Melt Infiltration in a Kilbourne Hole Harzburgite Xenolith.

Barrett T. J., Harvey J., Warren J. M., Klein F., Walshaw R. (2013) *American Geophysical Union Fall Meeting*.

Investigating the subtle fabrics of the Ben Loyal syenite, Sutherland Scotland

Barrett T. J., Stevenson C., Anderson P. (2013) *Tectonic Studies Group Meeting*.

● **ACADEMIC-RELATED SKILLS**

Grant Panel Review

Panel Reviewer for the following grants:
NASA grants (1; 2022)

Academic Peer Review

Peer review of academic journal manuscripts for the following journals:

Geochimica et Cosmochimica Acta (1)
American Mineralogist (1)
Meteoritics and Planetary Science (2)
Minerals (4)

Meteorite Classification

Classifying meteorite samples and their official submission to the Meteoritical Bulletin.

Meteorites classified:
Northwest Africa 12997
Northwest Africa 13918
Northwest Africa 14257

● MANAGEMENT AND LEADERSHIP SKILLS

Teaching Assistant - NASA Solar System Exploration Research Virtual Institute Meteor Crater Field Camp (2022)

The Field Training and Research Program at Meteor Crater is a week long field class and research project based at [Barringer Meteorite Crater, Arizona](#), more popularly known as Meteor Crater. The goal of the field camp will be to introduce students to impact cratering processes and provide an opportunity to assist with a research project at the crater.

<https://www.lpi.usra.edu/exploration/mcFieldCamp/?view=program>

PhD Student Co-Supervisor: Tara Hayden (2018–Present)

Open University. Thesis title: Assessing the volatile inventory and history of the Moon using lunar meteorites.

Massively Open Online Course (MOOC) - Lead Educator (2018–2020)

Lead Educator for the "*In The Night Sky: Orion*" MOOC presented by the OU. Responsible for managing MOOC facilitators and the course, mentoring students, and encouraging online discussion. This was undertaken as an additional responsibility whilst a research fellow.

Laboratory Skills for Science Residential School Tutor (2019)

Tutor for the introductory course on laboratory skills (SS001 Laboratory Skills for Science Residential School). Responsible for laboratory safety and guidance of adult learners in a week-long practical module.

PhD Student Probation Examiner (2019)

Responsible for reading the students first year probation report and participation in a 'mini viva' examination. The aim was to evaluate the student and their project at an early stage and provide constructive feedback on the project. Paperwork for their probation and a recommendation of the student was then completed.

Massively Open Online Course (MOOC) - Facilitator (2015)

MOOC Facilitator. Facilitator on the OU "*Moons*" MOOC. Responsible for answering questions within the MOOC, raising technical issues with IT specialists, moderating the forums, and encouraging group interaction, problem solving, and debate.

Supervision of a Paneth Trust Intern (2014)

Responsible for the project's creation, training the student to operate the SEM, and general supervision. The work was presented at the end of the project in the form of a written report by the student. Project lasted ~ 2 months.

COMMUNICATION AND INTERPERSONAL SKILLS

Global Education Program in NASA 2022 (August 2022)

Presented a talk to 50+ Japanese university students regarding my career and research as well as presenting skills.

Countesthorpe Academy, Leicester, UK - Mock Interviews and Employability Skills (June 2021)

Lunar and Planetary Institute - Invited Talk (November 2020)

University of Glasgow - Invited Talk (October 2020)

The Cosmic Cast invited guest speaker

The Cosmic Cast S2E28: Where does water come from? and S2:38 What inspired us growing up.

S2E28: <https://youtu.be/3DpTi0hNvg>

S2E38: <https://youtu.be/auS9dwjH0N4>

University of Hertfordshire Centre for Astrophysics Research - Invited Talk (February 2020)

Warwickshire Geological Conservation Group - Invited Talk (January 2020)

Open University Geological Society (OUGS) - Invited Talk (2019)

This also included writing a short review article for the societies proceedings.

Royal Society Summer Exhibition: Living on the Moon - Organiser and presenter (2019)

Responsible for the organisation and presentation of the "*Living on the Moon*" stand at the Royal Society Summer of Science exhibition. Spoke to general public and participated in a large school "meet the presenter" event.

Open University Moon Night - 'Roving reporter' (2018 & 2019)

Responsible for live-cast interviews of the public (both adults and children) and staff at the Open University's Moon Night. Interviews were broadcast live on Facebook and OU Stadium with footage archived as well.

East Point Academy, Lowerstoft, UK - Hands on meteorite practical (2018)

School event using The Open University's meteorite collection.

Pakefield High School, Lowerstoft, UK - Hands on meteorite practical (2018)

School event using The Open University's meteorite collection.

Royal Society Summer Exhibition: Seeking Life on Mars - Presenter (2019)

Acted as a representative of the ExoMars Trace Gas Orbiter Team, presenting in their Royal Society Summer of Science exhibit "*Seeking life on Mars*".

The Buckingham School, Buckingham, UK - Employability Skills Session (2018)

Open University - School activity day and laboratory tours (2015–2017)

I'm a Scientist, Get me out of here! - Contestant (2015)

Runner-up in the 2015 "I'm a Scientist, Get me out of here!" outreach event run by the Wellcome Trust aimed at promoting STEM subjects to school children.

Campion School and Language College, Northamptonshire, UK - Interview and CV preparation workshop (2015)

Royal Society Summer Exhibition: Rosetta - Catch a Comet (2014)

Acted as a representative of the Rosetta Team, presenting in their Royal Society Summer of Science exhibit "*Rosetta - Catch a Comet*". Also responsible for presenting at the evening black-tie soirée.

Open University Ambassador (2014)

Ambassador for the OU during a visit by a delegation from Beihang University, China. Responsible for a short oral presentation, organised campus and laboratory tours, and engaged the delegation.

University of Birmingham, UK, Language and Culture Day - Karate demonstration and teaching (2012–2016)

Conducted a Wado-Ryu Karate demonstration and class for secondary school groups visiting UoB as part of the language departments Language and Culture day. Part of the class focused on the basic Japanese required in the karate dojo e.g. counting. Responsible for teaching children of various ages throughout the day, the health and safety and supervision of my assistant instructor.

● **SOCIAL AND POLITICAL ACTIVITIES**

2018 - CURRENT

UK Planetary Forum (UKPF) Co-Chair

- Responsible for maintenance of the website and discord server, mailing list, and organisation of early careers events and conferences.
- Providing a platform for institutions to advertise job opportunities and research projects.
- Providing a national collaborative platform for networking and safe environment for students and early career researchers to present their ideas.

Website: <https://www.ukpf.org.uk/>

2018 - 2020

HookeSoc Postdoctoral Liason

HookeSoc is The Open University School of Physical Sciences student society. Responsible for raising postdoctoral concerns to the school, jointly maintaining the society budget, and event organisation.

2011 – 2020

Ninjutsu Junior Instructor

Junior instructor for Ninjutsu for university students and adults.

2005 – 2020

Wado-Ryu Karate Instructor

Junior then senior instructor for Wado-Ryu karate classes for both children and adults.

2013 – 2015

Open University Planetary Sciences Discussion Group - Co-Chair

Responsible for organising and chairing a student discussion group regarding topics of relevance and interest within space sciences.

2013 – 2015

Open University Cosmochemistry Research Group – Chair

Responsible for the organisation and chairing of a weekly research group meeting and inviting external speakers.

2012 – 2014

HookeSoc Social Secretary

HookeSoc is The Open University School of Physical Sciences student society. Responsible for organisation of department activities and jointly maintaining the society budget

2011 – 2013

University of Birmingham Ninjustu - Club Captain

Club Captain of the UoB Ninjutsu martial arts club. Responsible for attending the university wide sports meeting and marital arts club meetings, mangement of student registration, health and safety, and organisation of club events (e.g. training holidays).

2009 – 2011

Lapworth Geological Society - 2nd Year Representative

Second year representative of the University of Birmingham Geology Department student society. Responsible for organising student events and society activities.

● **VOLUNTEERING**

01/2014 – 01/2022

South East Physics Network (SEPNET) Ambassador

South East, UK

An ambassador with valid enhanced DBS check. Responsibilities involve:

- volunteering for a range of outreach activities with schools and local groups to promote STEM subjects.
- inspiring children and young adults into STEM subjects through outreach activities and talks.

01/2014 – 01/2022

STEM Ambassador

A STEM ambassador with valid enhanced DBS check. Responsibilities involve:

- volunteering for a range of outreach activities with schools and local groups to promote STEM subjects.
- inspiring children and young adults into STEM subjects through outreach activities and talks.

2005 – 2009

General Administrator and cleaner

Birmingham, UK

General office administration and cleaning for the children's charity Edwards Trust.

<http://www.edwardstrust.org.uk/>

2008 – 2015

British Red Cross First Aid Casualty Actor

West Midlands, UK

Casualty actor for the red cross first aid weekends training scout leaders in first aid. Responsible for providing realistic situations and simulations for first aid training. This required understanding the nature of the injury to be simulated, application of appropriate simulated injury make up, knowledge of typical reactions to the injury in question as well as how it should be effectively treated.

● **NETWORKS AND MEMBERSHIPS**

09/2013 – CURRENT
Meteoritical Society

09/2013 – CURRENT
Mineralogical Society of Great Britain and Ireland

09/2013 – CURRENT
Royal Astronomical Society

09/2013 – CURRENT
The Geological Society

01/2021 – CURRENT
European Geosciences Union

● **LANGUAGE SKILLS**

Mother tongue(s): **ENGLISH**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
JAPANESE	B1	B1	B1	B1	B1
RUSSIAN	A2	A2	A1	A1	A1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user