MATHEMATICAL, PHYSICAL AND LIFE SCIENCES DIVISION
The University of Oxford Department of Earth Sciences

Job Description and Selection Criteria

Job title	**Postdoctoral Research Assistant (PDRA) in Quantum Diamond Microscopy and Chondrule Magnetism**
Division	**MPLS**
Department	**Earth Sciences**
Location	**South Parks Road, Oxford**
Grade and salary	**Grade 7 (£39,749 - £41,997)**
Hours	**Full time**
Contract type	**Fixed-term for 2 years and 3 months**
Reporting to	**Dr James Bryson**
Vacancy reference	**165527**
Additional information	**The post is able to start from 01 July 2025 or as soon as possible thereafter and interviews will be on 06 June 2025.**

Research topic	Using and developing quantum diamond microscopy to recover the paleointensities experienced by individual chondrules
Principal Investigator / supervisor	Associate Professor James Bryson
Project team	Planetary Magnetism
Funding partner	The funds supporting this research project are provided by UKRI as part of the Frontier Research Guarantee scheme.
Recent publications	DOI: 10.1029/2019JE006260

Job description

Overview of the role

Reporting to Associate Professor James Bryson. The post holder will be a member of the Planetary Magnetism research group with the responsibility of carrying out research as part of the UKRI Frontier Research Guarantee grant entitled MMESSH (Utilising Meteorite Magnetism to Elucidate Early Solar System History). The post holder will provide guidance to less experienced members of the research group, including postdocs, research assistants, technicians, and PhD and Masters project students as required.

The post holder will work to develop quantum diamond microscopy (QDM) as a new paleomagnetic tool, and apply this promising technique to individual chondrules to access unique insight into the paleointensity of the magnetic field that threaded the protoplanetary disk. QDM promises to revolutionise paleomagnetism by opening a new length-scale of sample (sub-mm) to reliable analysis. As such, it will unlock the magnetism carried by individual chondrules to recover their paleointensities with unprecedented accuracy. The paleointensities recovered in this project from a suite of chondrules extracted from several meteorites will be fed into cutting-edge models of disk dynamics to provide the pivotal observations that are required for these models to decipher the processes that led to planet building in our solar system.

The post holder will oversee the development and operation of the geo-QDM in the Paleomagnetism Laboratory, University of Oxford. The first few months of the project will involve familiarisation of the Oxford geo-QDM. The remaining time will involve using the geo-QDM to measure and explore the magnetism and paleointensities carried by individual chondrules extracted from several meteorite groups.

Hazard-specific/ Safety-critical duties

This job includes the following hazards or safety-critical activities which will require successful pre-employment health screening through our Occupational Health Service before the successful candidate will be allowed to start work:

- Working with category 3b or 4 lasers (laser safety class)

Responsibilities/duties

- Manage and conduct research and administrative duties regarding the QDM and magnetism of chondrules as part of the MMESSH project.
- Assist with training and data collection involving the geo-QDM in non-MMESSH related projects.
- Optimise and adopt any scientific techniques required to access the necessary data.

- Act as a source of information and advice to other group members on scientific protocols and experimental techniques as required.
- Use specialist scientific equipment in a laboratory environment.
- Write and publish any relevant scientific research papers on the geo-QDM and the magnetism of individual chondrules.
- Communicate research findings to the research group and at external meetings/seminars, and possibly represent the group and the MMESSH project at these conferences.

Selection criteria

Essential

- At the time an offer is made, the candidate must either hold a relevant PhD/DPhil, together with having relevant experience, or have submitted a thesis on a relevant PhD/DPhil, together with having relevant experience. This experience must include paleomagnetism and/or rock magnetism.
- Ability and desire to learn and understand new experimental techniques, and to conduct technique development and optimisation.
- Possess sufficient specialist knowledge in the discipline to work within established research programmes.
- Ability to manage own academic research and associated activities in a productive and independent manner.
- Previous experience of contributing to publications and presentations.
- Excellent communication skills, including the ability to write for publication, present research proposals and results, and represent the research group at meetings.

Desirable

- Experience in high-resolution magnetic microscopy.
- Experience in paleointensity measurements.
- Experience in laboratory-based extra-terrestrial magnetism.
- Experience of independently explicit management of a discrete area of a research project.
- Experience of actively collaborating in the development of research articles for publication.

About the University of Oxford

Welcome to the University of Oxford. We aim to lead the world in research and education for the benefit of society both in the UK and globally. Oxford's researchers engage with academic, commercial and cultural partners across the world to stimulate high-quality research and enable innovation through a broad range of social, policy and economic impacts.

We believe our strengths lie both in empowering individuals and teams to address fundamental questions of global significance, while providing all our staff with a welcoming and inclusive workplace that enables everyone to develop and do their best work. Recognising that diversity is our strength, vital for innovation and creativity, we aspire to build a truly diverse community which values and respects every individual's unique contribution.

While we have long traditions of scholarship, we are also forward-looking, creative and cutting-edge. Oxford is one of Europe's most entrepreneurial universities. Income from external research contracts in 2016/17 exceeded £564m and we rank first in the UK for university spin-outs, with more than 130 companies created to date. We are also recognised as leaders in support for social enterprise.

Join us and you will find a unique, democratic and international community, a great range of staff benefits and access to a vibrant array of cultural activities in the beautiful city of Oxford.

For more information please visit www.ox.ac.uk/about/organisation

Department of Earth Sciences

The Department of Earth Science conducts research across a broad range of disciplines. This work can loosely divided into the following themes:

- Geophysics and geodynamics
- Planetary evolution and materials
- Oceanography, climate and palaeoenvironment
- Palaeobiology and evolution
- Geodesy, tectonics, volcanology and related hazards
- Earth resources

The department has a nation and international reputation for research excellence. It ranked highly in the UK for Earth and Environmental Sciences during the 2021 REF exercise (based both on overall grade, or on the fraction of research judged to be 4*).

The department presently consists of 28 academics (i.e Associate Professors and Professors) 47 research staff, and 32 support staff.

Thirty-five undergraduate students are admitted each year to read for a BA (3 years) or M. Earth Sci. (4 years) in Earth Sciences. The course provides a broad overview of the earth sciences and requires A levels (or equivalent) in maths and either physics or chemistry to enter. It attracts students of a very high calibre with A level grades of AAA* or higher.

The final year of the M. Earth Sci. course includes a substantial research project during which students are embedded in department research groups.

Between 15 and 20 graduate students join the department every year to study for a D. Phil. They can be admitted directly to the department, or through the cross-University NERC Doctoral Training Programme in Environmental Research (http://www.environmental-research.ox.ac.uk/).

The department is housed in specialist new Earth Sciences building completed in late 2010. The building features a wing with 4 floors of dedicated services laboratories. These contain a wide range of analytical equipment enabling cutting-edge research in a broad range of earth science disciplines. Of these laboratories, 6 are designated as Small Research Facilities (SRFs):

- Cleansuite SRF
- Electron Microanalysis SRF
- Geofacilities SRF
- Multi-collector Mass Spectrometers SRF
- Stable Isotope SRF
- Trace Metal Analysis SRF
- Workshop SRF

Each of these SRFs are run by at least one full time permanent member of staff

For more information about the department please visit: www.earth.ox.ac.uk

The Department of Earth Sciences holds a Bronze Athena Swan award to recognise advancement of gender equality: representation, progression and success for all.

For further information about working at Oxford, please see:
www.ox.ac.uk/about_the_university/jobs/research/

http://www.careers.ox.ac.uk

MPLS Division

The Mathematical, Physical and Life Sciences (MPLS) Division is one of the four academic divisions of the University. Oxford is widely recognised as one of the world's leading science universities and the MPLS Division is home to our non-medical sciences, with 10 academic departments that span the full spectrum of the mathematical, computational, physical, engineering and life sciences, and undertake both fundamental research and cutting-edge applied work. Our research tackles major societal and technological challenges – whether developing new energy solutions or improved cancer treatments, understanding climate change processes, or helping to preserve biodiversity, and is increasingly focused on key interdisciplinary issues. We collaborate closely with colleagues in Oxford across the medical sciences, social sciences and humanities, and with other universities, research organisations and industrial partners across the globe in pursuit of innovative research geared to address critical and fundamental scientific questions.

We have around 7,300 full and part-time students (including approximately 3,400 graduate students) and play a major role in training the next generation of leading scientists. Oxford's international reputation for excellence in teaching is reflected in its position at the top of the major league tables and subject assessments. MPLS academics educate students of high academic merit and potential from all over the world. Through a mixture of lectures, practical

work and the distinctive college tutorial system, students develop their ability to solve diverse mathematical, scientific and engineering problems.

The disciplines within the MPLS Division regularly appear at the highest levels in rankings, including the Times Higher Education and QS world rankings. Nationally, the quality of the Division's research outputs and environment, and the resulting impact, was recognised through strong performances in the UK Research Excellence Framework in both 2014 and 2021.

For more information please visit: www.mpls.ox.ac.uk

How to apply

Before submitting an application, you may find it helpful to read the 'Tips on applying for a job at the University of Oxford' document, at www.ox.ac.uk/about/jobs/supportandtechnical/.

If you would like to apply, click on the **Apply Now** button on the 'Job Details' page and follow the on-screen instructions to register as a new user or log-in if you have applied previously. Please provide details of two referees and indicate whether we can contact them now.

You will also be asked to upload a CV and a supporting statement. The supporting statement must explain how you meet each of the selection criteria for the post using examples of your skills and experience. This may include experience gained in employment, education, or during career breaks (such as time out to care for dependants).

Your application will be judged solely on the basis of how you demonstrate that you meet the selection criteria stated in the job description.

Please upload all documents **as PDF files** with your name and the document type in the filename. **Please do not attach any manuscripts, papers, transcripts, mark sheets or certificates as these will not be considered as part of your application.**

All applications must be received by **midday** on the closing date stated in the online advertisement.

Information for priority candidates

A priority candidate is a University employee who is seeking redeployment because they have been advised that they are at risk of redundancy, or on grounds of ill-health/disability. Priority candidates are issued with a redeployment letter by their employing departments.

If you are a priority candidate, please ensure that you attach your redeployment letter to your application (or email it to the contact address on the advert if the application form used for the vacancy does not allow attachments)

Should you experience any difficulties using the online application system, please email recruitment.support@admin.ox.ac.uk. Further help and support is available from www.ox.ac.uk/about_the_university/jobs/support/. To return to the online application at any stage, please go to: www.recruit.ox.ac.uk.

Please note that you will be notified of the progress of your application by automatic emails from our e-recruitment system. **Please check your spam/junk mail** regularly to ensure that you receive all emails.

Important information for candidates

Pre-employment screening

Please note that the appointment of the successful candidate will be subject to standard pre-employment screening, as applicable to the post. This will include right-to-work, proof of identity and references. We advise all applicants to read the candidate notes on the University's pre-employment screening procedures, found at: www.ox.ac.uk/about/jobs/preemploymentscreening/.

Data Privacy

Please note that any personal data submitted to the University as part of the job application process will be processed in accordance with the GDPR and related UK data protection legislation. For further information, please see the University's Privacy Notice for Job Applicants at: www.admin.ox.ac.uk/councilsec/compliance/gdpr/privacynotices/job/. The University's Policy on Data Protection is available at: www.admin.ox.ac.uk/councilsec/compliance/gdpr/universitypolicyondataprotection/.

The University's policy on retirement

There is no normal or fixed age at which staff in posts at **Grades 1-10** have to retire. Staff at these grades may elect to retire in accordance with the rules of the applicable pension scheme, as may be amended from time to time. The University may not request staff at these grades to take retirement at a particular age, nor suggest that they consider doing so. It is for individual members of staff to decide when they wish to retire.

Equality of Opportunity

Entry into employment with the University and progression within employment will be determined only by personal merit and the application of criteria which are related to the duties of each particular post and the relevant salary structure. In all cases, ability to perform the job will be the primary consideration. No applicant or member of staff shall be discriminated against because of age, disability, gender reassignment, marriage or civil partnership, pregnancy or maternity, race, religion or belief, sex, or sexual orientation.

Benefits of working at the University

University Club and sports facilities

Membership of the University Club is free for all University staff. The University Club provides social, sporting and hospitality facilities. Staff can also use the University Sports Centre on Iffley Road at discounted rates, including a fitness centre, powerlifting room, and swimming pool. See www.club.ox.ac.uk and www.sport.ox.ac.uk/oxford-university-sports-facilities.

Information for international staff

The University offers support and advice to international staff, including a visa loan scheme to cover the costs of UK visa applications for staff and their dependents.
See www.admin.ox.ac.uk/personnel/permits/reimburse&loanscheme/.

Information for staff new to Oxford

If you are relocating to Oxfordshire from overseas or elsewhere in the UK, the University's Welcome Service website includes practical information about settling in the area, including advice on relocation, accommodation and local schools. See www.welcome.ox.ac.uk.

The University of Oxford Newcomers' Club

The University of Oxford Newcomers' Club is an organisation run by volunteers that aims to assist the partners of new staff to settle into Oxford and to provide them with an opportunity to meet people in the area. See www.newcomers.ox.ac.uk.

Childcare

The University has excellent childcare services with five University nurseries, as well as University-supported places at many other private nurseries.
For full details including how to apply and the costs, see www.admin.ox.ac.uk/childcare.

Family-friendly benefits

The University subscribes to My Family Care service through which staff are eligible to register for emergency back-up childcare and adultcare services, a 'speak to an expert' advice service and a wide range of guides and webinars through a website called the Work+Family space.
See: www.admin.ox.ac.uk/personnel/staffinfo/benefits/family/mfc/.

Disabled staff

We are committed to supporting members of staff with disabilities or long-term health conditions. For further details, including information about how to make contact, in confidence, with the University's Staff Disability Advisor, see www.admin.ox.ac.uk/eop/disab/staff.

Staff networks

The University has a number of staff networks including the Oxford Research Staff Society, BME staff network, LGBT+ staff network and a disabled staff network. You can find more information at www.admin.ox.ac.uk/eop/inpractice/networks/.

Additional benefits

Staff can enjoy a range of other benefits and discounts, including free entry to the Botanic Gardens and University colleges, and discounts at University museums.
See www.admin.ox.ac.uk/personnel/staffinfo/benefits.