# Job Description – PDRA (Lunar Volatiles), School of Physical Sciences

**About the Role**

Applications are invited for an STFC-funded PDRA position in the School of Physical Sciences at The Open University. Our research covers a wide range of Solar System science and exploration. We investigate the origin and evolution of the Solar System, through the physical, geological, chemical and biological processes that drive it. We use laboratory and space mission experiments, remote observation, environmental simulation and modelling to investigate the surfaces and atmospheres of the terrestrial planets, the Moon, asteroids, comets and extra-terrestrial materials.

The post-holder will be expected to work independently but will be part of an active Cosmochemistry Research Group (CRG). The research will involve carrying out a novel study that will explore the volatile inventory of the Moon through in situ measurements of the abundance and isotopic composition of volatiles in lunar samples. To be effective in this role, the successful candidate will have a demonstrable prior experience in petrology/geochemistry using standard petrological tools, good competency with microanalytical instruments such as SEM/EPMA/LA-ICP-MS/SIMS, and a proven track-record of handling large and complex geochemical datasets for understanding geochemical processes as evidenced by relevant published work.

A successful outcome from this work will be a better understanding of the distribution and source(s) for these volatiles in the lunar interior and the processes influencing their evolution over the geological history of the Moon. This work is analytically challenging, requiring significant skills and patience in manipulating rare and small samples, developing new SIMS standards and protocols as required and the ability to work independently as well as part of a team in a modern laboratory environment.

**Key Responsibilities**

* To perform detailed chemical, mineral and isotopic measurements of volatiles in lunar samples, in particular, using NanoSIMS and/or other standard petrological tools.
* To prepare samples and standards for the chemical, mineral and isotopic measurements.
* To process data and synthesize results from chemical, mineral and isotopic measurements.
* To write papers on the research in a timely manner with the aim of publishing them in high-impact peer-reviewed journals, and to present findings at international conferences and workshops.
* To undertake any other duties, where required, as directed by the PI on the project.

While experience in the above areas is welcome, opportunities will be provided to the successful applicant to further develop their skills through formal and informal training.

**Skills and Experience**

#### Essential:

* PhD (already awarded or submitted by the start date, if successful) in analytical geochemistry or in a closely related field
* Demonstrable expertise in geochemistry, mineralogy and petrology
* The ability to carry out micron-to-sub-micron scale sample analyses and standard preparation
* Experience in using *in-situ* Mass Spectrometry methods to acquire isotopic and/or elemental compositions in geological materials at high-spatial resolution
* Demonstrated ability to work both as part of a team and on own initiative
* Ability to plan own work, prioritise workload and deliver results on schedule
* Strong verbal and written communication and presentation skills
* A strong record of research and/or knowledge exchange that is commensurate to the position.

#### Desirable:

* A record of publishing in leading scientific journals
* Research experience relevant to the proposed research (e.g., volatiles measurements using SIMS/NanoSIMS)
* Experience in developing new analytical protocols (especially for SIMS) and/or sample preparation methodologies
* Experience of decision-making, problem-solving, planning and organising
* The ability to be proactive and self-motivated, and to work successfully without supervision
* Embracing change: The ability to work adaptively and responsively as the research develops

**About the Unit**

*“We aspire to be world leaders in inclusive, innovative and high impact STEM teaching and research, equipping learners, employers and society with the capabilities to meet tomorrow’s challenges”*

The Faculty of STEM consists of 2500 staff including 1,800 Associate Lecturers. The Faculty delivers over 185 modules across undergraduate and postgraduate curriculum, supporting nearly 19,000 students (full time equivalents) which is 29% of the OU total.

The Faculty generates more research income (circa £17M) than any other Faculty in the University, supported by a comprehensive laboratory infrastructure.

We are proud of our distinctive values and capabilities underpinning our aspiration:

*We are inclusive:*

* We transform people’s lives, ensuring STEM education is openly accessible to many thousands of students from diverse backgrounds – our students express high satisfaction with their study experience.
* We engage the public in exciting citizen science and engineering, including through free open educational resources, multi-platform broadcasting, outreach to inspire the next generation and with programmes to encourage more women into STEM.

*We are highly innovative:*

* We are at the forefront of innovative developments in teaching practical science and engineering at a distance, through simulated and remote access laboratories and practical experimentation.
* Our high-quality teaching and curriculum are informed by world-leading research, strong links with professional bodies and communities of practitioners, as well as by scholarship focused on continuously improving our STEM pedagogy.

*We deliver significant social and economic impact:*

* We provide STEM higher education at a scale and reach unsurpassed in the UK, with a sizeable international reach and further growth potential.
* We inject transferable STEM skills and knowledge direct into the workplace for immediate employee and employer benefit, as students combine study while working.
* The employability value of our courses is underpinned by accreditation from leading STEM Professional Bodies and Learned Societies, as well as partnerships and sponsorship with leading employers.
* Our high quality, applied and academically relevant teaching and research addresses real-world issues, delivering impact for industry and society, including addressing pressing STEM skill-shortages across the UK.

**School of Physical Sciences**

The School of Physical Sciences is a lively and innovative community of approximately 90 academic and research staff and 65 PhD students, mostly based in Milton Keynes. Our curriculum is supported by associate lecturer staff based all over the UK and Ireland; physics, astronomy and planetary sciences undergraduate modules are currently being studied by hundreds of students all over the world and we also contribute to introductory and interdisciplinary science modules which are studied by several thousand students each year.

School members contribute to the Open University’s teaching on a large range of modules and we have been at the forefront of many innovations in distance education, including the award winning OpenSTEM Labs that feature the OpenScience Laboratory and the OpenScience Observatories. Our commitment to equality and diversity has been recognised by the award of “Juno Champion” status by the Institute of Physics and an Athena SWAN Silver Award.

We currently offer undergraduate qualifications in Physics, Mathematics and Physics, and Natural Sciences, with a named specialism astronomy and planetary science. We are in the process of refreshing the curriculum at Stage 3 and are in the process of obtaining University approval for an integrated MPhys. At postgraduate level we offer an MSc in Space Science and Technology.

Research in the School of Physical Sciences is broadly aligned with the disciplines of Astronomy, Physics, Planetary and Space Sciences, Space Instrumentation and Physics Education.

We are at the forefront of Physics Education Research in the UK. We use a range of quantitative and qualitative techniques to investigate the effectiveness of the teaching and learning of physics and astronomy, with a particular focus on higher and distance education. Our research interests encompass the full range of educational technologies, pedagogical methodologies and evaluative techniques that are required to support, sustain and improve the evidence-based teaching of physics. We have particular interests in:

* remote and online experimentation
* e-assessment and its links to learning
* development of concept inventories
* physics education in an open and distance learning environment
* public engagement and physics outreach through a range of media
* aspects of equality, diversity and inclusion in physics education.

In addition to formal education research, members of our School also undertake Scholarship of Teaching and Learning (SoTL) to investigate the impact of teaching on students. We work in association with eSTEeM (the OU Centre for STEM Pedagogy) and the OpenSTEM Labs.

*The School of Physical Sciences is an enthusiastic and friendly group of Open University students and staff who carry out world-leading research and teaching in Astronomy, Physics, Physics Education, Planetary and Space Sciences, and Space Instrumentation.*

*We offer undergraduate modules and qualifications in Physics and in Astronomy and Planetary Science, as well as a taught Masters programme in Space Science and introductory and interdisciplinary science modules. We have been at the forefront of many innovations in distance education, including the award winning OpenSTEM Labs that feature the OpenScience Laboratory and the OpenScience Observatories. We undertake Scholarship for teaching and learning to underpin our teaching practice.*

*We offer opportunities to get involved in Outreach and Public Engagement. We also develop commercial and social enterprises as a means of maximising the impact of our academic and research activities.*

*We are committed to the principles of equality, diversity and inclusion and have been recognised by the award of “Juno Champion” status by the Institute of Physics and an Athena SWAN Silver Award. We want to attract, develop, and retain individuals with different experiences, backgrounds and perspectives to maintain a diverse and supportive environment for us all to work and study in.  We welcome applications from those who may not see themselves typically represented within STEM communities.*

*The Open University is committed to equality, diversity and inclusion which is reflected in our mission to be open to people, places, methods and ideas. We aim to foster a diverse and inclusive environment so that all in our OU community can reach their potential.  We recognise that different people bring different perspectives, ideas, knowledge, and culture, and that this difference brings great strength.  We strive to recruit, retain and develop the careers of a diverse pool of students and staff, and particularly encourage applications from all underrepresented groups. We also aspire to make The Open University a supportive workplace for all through our policies, services and staff networks.*

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