



## Job Description

<b>College/Management Unit</b>	UCD College of Science
<b>School/Unit</b>	UCD School of Earth Sciences/iCRAG
<b>Post Title</b>	<b>UCD Post-doctoral Research Fellow Level 1</b>
<b>Project</b>	<b>Processed Returned Concrete (PRC) as a Soil Amendment for Carbon Capture</b>
<b>Post Duration</b>	Temporary 12 month post
<b>Reports to</b>	Prof. Frank McDermott, Principal Investigator
<b>HR Reference No.</b>	014478
<b>HR Administrator</b>	Alicja Straczek

### Position Summary

Globally, the construction industry produces large volumes of undelivered/unused (returned) concrete; an alkaline material with significant potential for CO<sub>2</sub> capture after processing. This iCRAG/SFI-funded post-doctoral researcher, working in collaboration with industry co-funder Silicate Carbon (<https://www.silicatecarbon.com/>), will investigate the novel use of PRC as a soil amendment for the sequestration of atmospheric CO<sub>2</sub> via accelerated weathering. Our pilot studies indicate that biogeochemical reactions in soils result in rapid weathering of some components of crushed concrete, resulting in conversion of soil-gas CO<sub>2</sub> to stable, cation-balanced dissolved bicarbonate in soil solutions. The main objectives of the research to be carried out by the post-doctoral researcher will be to: (i) optimise weathering kinetics and therefore CO<sub>2</sub> sequestration rates, (ii) understand the ultimate fate and storage lifetime of the captured CO<sub>2</sub> in the surface water/groundwater continuum, and (iii) develop geochemical models that permit reliable calculation of CO<sub>2</sub> sequestration rates, calibrated by field measurements of soil-water chemistry and soil-to-atmosphere CO<sub>2</sub> gas fluxes. The project will involve systematic field- and laboratory-based studies in Ireland to investigate the effect of several variables related to both the material itself and the target soils, as well as the construction of geochemical models informed by the field and laboratory data.

This is a research focused role, where you will conduct a specified programme of research supported by research training and development under the supervision and direction of a Principal Investigator.

The primary purpose of the role is to further develop your research skills and competences, including the processes of publication in peer-reviewed academic publications, the development of funding proposals, the mentorship of graduate students along with the opportunity to develop your skills in research led teaching.

**Salary: €39,522 - €45,610 per annum**

Appointment on the above range will be dependent on qualifications and experience

### Principal Duties and Responsibilities

- Conduct a specified programme of research and scholarship under the supervision and direction of your Principal Investigator.
- Engage in appropriate training and professional development opportunities as required by your Principal Investigator, your School or Institute, or the University.
- Engage in the dissemination of the results of the research in which you are engaged as directed by and with the support of and under the supervision of your Principal Investigator.
- Engage in the wider research and scholarly activities of your research group, School and Institute.
- Mentor and assist, as appropriate and as directed, the research graduate students in your group, School and Institute.
- Carry out administrative work associated with your programme of research.

## Selection Criteria

Selection criteria outline the qualifications, skills, knowledge and/or experience that the successful candidate would need to demonstrate for successful discharge of the responsibilities of the post. Applications will be assessed on the basis of how well candidates satisfy these criteria.

### Mandatory

- PhD in geology, low-temperature geochemistry or biogeochemistry
- A demonstrated commitment to research and publications
- An understanding of the operational requirements for a successful research project
- Evidence of research activity (publications, conference presentations, awards) and future scholarly output (working papers, research proposals, and ability to outline a research project).
- Excellent Communication Skills (Oral, Written, Presentation etc).
- Excellent Organisational and Administrative skills including a proven ability to work to deadlines.
- Candidates must demonstrate an awareness of equality, diversity and inclusion agenda.

The PD1 position is intended for early stage researchers, either just after completion of a PhD or for someone entering a new area for the first time. If you have already completed your PD1 stage in UCD or will soon complete a PD1, or you are an external applicant whose total Postdoctoral experience, inclusive of the duration of the advertised post, would exceed 4 years, you should not apply and should refer to PD2 posts instead.

### Desirable

- Experience in one or more of the following: chemical weathering, biogeochemistry, geochemical modelling, soil-gas flux measurements
- Knowledge of concrete mineralogy and its characterisation
- Experience in use of isotopic methods (e.g.  $\delta^{13}\text{C}$  and radiocarbon) for carbon source tracing
- Experience in multivariate statistical analysis and/or data visualisation
- Experience in Matlab and/or Python and/or R programming
- Experience in machine learning methods
- Experience in setting own research agenda

## Further Information for Candidates:

### Equality, Diversity and Inclusion:

#### Equality, Diversity, and Inclusion (EDI) at UCD

UCD is committed to creating an inclusive environment where diversity is celebrated, and everyone is afforded equality of opportunity. Diversity is highlighted in the university's strategic plan as one of the core values of UCD, and its EDI commitment is further demonstrated through the strategic objective relating to the attraction, retention, and development of an excellent and diverse cohort of students, faculty and staff. We welcome applications from everyone, including those who identify with any of the protected characteristics that are set out in our Equality, Diversity and Inclusion policy. The university adheres to a range of equality, diversity and inclusion policies. We encourage applicants to consult UCD's equality, diversity and inclusion policies here <https://www.ucd.ie/equality/>.

**UCD's Equality, Diversity and Inclusion Strategy 2018-2020-2025 sets out the University's objectives aligned to UCD's ten equality grounds. [Link](#)**

**UCD's Vice President for Equality, Diversity and Inclusion chairs the University EDI Group which works across UCD's ten equality grounds in collaboration with College Vice Principals for EDI and EDI School Representatives. UCD's Equality, Diversity and Inclusion Unit supports the mainstreaming of EDI through the EDI Group and these roles and leads on the delivery of the EDI Strategy through a**



range of initiatives including policy development, awareness raising and training, internal and external relationship building, collation and analysing of data, establishing peer support groups and networks, attainment of accreditations such as Athena SWAN and supporting and promoting an environment of mental health and wellbeing and dignity and respect.

**UCD has EDI staff networks which are a great opportunity to meet colleagues, network and engage with equality, diversity, and inclusion initiatives in UCD.**

**UCD's EDI Staff Networks include:**

- **UCD staff disability network**
- **UCD LGBTI staff network**
- **UCD Women@STEM**
- **Multicultural Employee Network UCD (MENU)**

You can join UCD's EDI Staff Networks here: <https://www.ucd.ie/equality/groups/edinetworks/>

**UCD is also engaged with the following initiatives:**



#### **Athena SWAN at UCD**

University College Dublin has received its second Athena SWAN Bronze institutional award in recognition of the university's work towards gender equality. To achieve this accreditation, an institution must demonstrate that it has undertaken a thorough self-assessment of gender equality challenges and has developed a detailed action plan to tackle them. The [UCD Gender Equality Action Plan 2020-2024](#) was prepared by the [Gender Equality Action Group](#) and its Working Groups, in a process that involved external benchmarking, an EDI employee survey, focus groups and consultation across the university. It includes actions relating to recruitment, promotions, leadership, work practices, organisation and culture. The implementation of the Plan is already underway and includes mechanisms to track progress on each of the actions. This action plan includes the actions that arose from the review of the university's policy and procedures on Dignity and Respect.

#### **Age-Friendly University**

University College Dublin is proud of its designation as an **Age-Friendly University** as part of the AFU Global Network. The principles of an Age-Friendly University are: To encourage the participation of older adults in all the core activities of the university, including educational and research programmes.

#### **University of Sanctuary**

UCD was awarded **University of Sanctuary** status in 2018, (UoSI) is an Irish initiative to encourage and celebrate the good practice of universities, colleges and other education institutes welcoming refugees, asylum seekers and other migrants into their university communities and fostering a culture of welcome and inclusion for all those seeking sanctuary.

### Open Doors Initiative

UCD has joined a group of over 95 companies and NGOs, who work with government to create pathways to employment for marginalised people. These can be internships, scholarships, training courses, aiding entrepreneurs or full/part time employment, from a range of backgrounds and abilities.

These can be developed out on a bespoke basis with organisations to include specific projects. This group work with refugees, asylum seekers and migrants, people with disabilities and disadvantaged youth (including those from a traveller background, LGBTIQ+ etc).

They offer online training, mentorships, assisted learning, seminars, inhouse training for existing employees on a range of subjects and can assist with funding for training courses you run. They have ongoing meet ups with other companies and supporting partners who are working to create diversity and inclusion within their organisations.

More details are available on our website here: [www.opendoorsinitiative.ie](http://www.opendoorsinitiative.ie)

### Supplementary information

The University:	<a href="https://www.ucd.ie/">https://www.ucd.ie/</a>
The College/Management Unit:	<a href="https://www.ucd.ie/science/">https://www.ucd.ie/science/</a>
The School/Programme Office/Unit:	<a href="https://www.ucd.ie/earthsciences/">https://www.ucd.ie/earthsciences/</a>
Other (Please specify):	<a href="https://www.icrag-centre.org/">https://www.icrag-centre.org/</a>

UCD offers a comprehensive **Research Careers Framework** in line with the Advisory Science Council Report 'Towards a Framework for Researcher Careers'. This model provides a structured and supportive **Career and Skills Development** system designed to ensure that Post-docs in UCD are able to plan their careers and prepare for future opportunities in academia, industry or the public sector. For more information, please [click here](#)

### Relocation Expenses:

- Will not apply  
 Will be applied in accordance with the [UCD Relocation Policy](#)

### Garda Vetting required:

- NO**  
 **YES** – Garda Vetting will be conducted for the recommended candidate(s) as part of the selection process for the post in accordance with the [UCD Garda Vetting Policy](#)

### Informal Enquiries ONLY to:

Name:	Professor Frank McDermott
Title:	UCD School of Earth Sciences
Email address:	<a href="mailto:frank.mcdermott@ucd.ie">frank.mcdermott@ucd.ie</a>
Telephone:	+0035317162063

### *Eligibility to compete and certain restrictions on eligibility*

#### **Incentivised Scheme for Early Retirement (ISER):**

It is a condition of the Incentivised Scheme for Early Retirement (ISER) as set out in Department of Finance Circular 12/09 that retirees, under that Scheme, are debarred from applying for another position in the same employment or the same sector. Therefore, such retirees may not apply for this position

<p><b>Department of Health and Children Circular (7/2010):</b></p>	<p>The Department of Health Circular 7/2010 dated 1 November 2010 introduced a Targeted Voluntary Early Retirement (VER) Scheme and Voluntary Redundancy Schemes (VRS). It is a condition of the VER scheme that persons availing of the scheme will not be eligible for re-employment in the public health sector or in the wider public service or in a body wholly or mainly funded from public moneys. The same prohibition on re-employment applies under the VRS, except that the prohibition is for a period of 7 years, after which time any re-employment will require the approval of the Minister for Public Expenditure and Reform. People who availed of either of these schemes are not eligible to complete in this competition.</p>
<p><b>Collective Agreement - Redundancy Payments to Public Servants:</b></p>	<p>The Department of Public Expenditure and Reform letter dated 28th June 2012 to Personnel Officers introduced, with effect from 1st June 2012, a Collective Agreement which had been reached between the Department of Public Expenditure and Reform and the Public Services Committee of the ICTU in relation to ex-gratia Redundancy Payments to Public Servants. It is a condition of the Collective Agreement that persons availing of the agreement will not be eligible for re-employment in the public service by any public service body (as defined by the Financial Emergency Measures in the Public Interest Acts 2009 – 2011) for a period of 2 years from termination of the employment. Thereafter the consent of the Minister for Public Expenditure and Reform will be required prior to re-employment. People who availed of this scheme and who may be successful in this competition will have to prove their eligibility (expiry of period of non-eligibility) and the Minister’s consent will have to be secured prior to employment by any public service body.</p>
<p><b>Declaration:</b></p>	<p>Applicants will be required to sign a Pre-Employment Declaration to confirm whether they have previously availed of a public service scheme of incentivised early retirement and/or the collective agreement outlined above. The above represents the main schemes and agreements restricting a candidate’s right to be re-employed in the public service. However it is not intended to be an exhaustive list and candidates should declare details of any other exit mechanism they have availed of which restricts their right to be re-employed in the public service. Applicants will also be required to declare any entitlements to a Public Service pension benefit (in payment or preserved) from any other Public Service employment and/or where they have received a payment-in-lieu in respect of service in any Public Service employment.</p>
<p><b>Superannuation and Retirement:</b></p>	<p>The successful candidate will be offered the appropriate superannuation terms and conditions as prevailing in the University, at the time of being offered an appointment. In general, and except for candidates who have worked in a pensionable (non-single scheme terms) public service job in the 26 weeks prior to appointment (see paragraph d below), this means being offered an appointment based on membership of the Single Public Service Pension Scheme (“Single Scheme”).</p> <p>Key provisions attaching to membership of the Single Scheme are as follows:</p>

**a. Pensionable Age** - The minimum age at which pension is payable is 66 in line with State Pension age changes.

**b. Retirement Age** - Scheme members must retire at the age of 70.

**c. Pension Abatement:**

- If the appointee was previously employed in the Civil Service or in the Public Service please note that the Public Service Pensions (Single Scheme and Other Provisions) Act 2012 includes a provision which extends abatement of pension for all Civil and Public Servants who are re-employed where a Public Service pension is in payment. This provision to apply abatement across the wider public service came into effect on 1 November 2012. This may have pension implications for any person appointed to this position who is currently in receipt of a Civil or Public Service pension or has a preserved Civil or Public Service pension which will come into payment during his/her employment in this position.

- Department of Education and Skills Early Retirement Scheme for Teachers Circular 102/2007

The Department of Education and Skills introduced an Early Retirement Scheme for Teachers. It is a condition of the Early Retirement Scheme that with the exception of the situations set out in paragraphs 10.2 and 10.3 of the relevant circular documentation, and with those exceptions only, if a teacher accepts early retirement under Strands 1, 2 or 3 of this scheme and is subsequently employed in any capacity in any area of the public sector, payment of pension to that person under the scheme will immediately cease. Pension payments will, however, be resumed on the ceasing of such employment or on the person's 60th birthday, whichever is the later, but on resumption, the pension will be based on the person's actual reckonable service as a teacher (i.e. the added years previously granted will not be taken into account in the calculation of the pension payment).

- Ill-Health-Retirement

Please note that where an individual has retired from a Civil/Public Service body on the grounds of ill-health his/her pension from that employment may be subject to review in accordance with the rules of ill-health retirement within the pension scheme of that employment.

**d. Prior Public Servant** - While the default pension terms, as set out in the preceding paragraphs, consist of Single Scheme membership, this may not apply to certain appointees. Full details of the conditions governing whether or not a public servant is a Single Scheme member are given in the Public Service Pensions (Single Scheme and other Provisions) Act 2012. However the key exception case (in the context of this competition and generally) is that a successful candidate who has worked in a pensionable (non-single scheme terms) capacity in the public service within 26 weeks of taking up appointment, would in general not become a member of the Single Scheme. In this case such a candidate would instead be offered membership of the UCD Pension Scheme. This would mean that the abatement provisions at (c) above would apply, and in addition there are implications in respect of pension accrual as outlined below:

**e. Pension Accrual** - A 40-year limit on total service that can be counted towards pension where a person has been a member of more than one existing public service pension scheme would apply. This 40-year limit, which is provided for in the Public Service Pensions (Single Scheme and other Provisions) Act 2012 came into effect on 28 July 2012. This may have implications for any appointee who has acquired pension rights in a previous public service employment.

**f. Pension-Related Deduction** - This appointment is subject to the pension-related deduction in accordance with the Financial Emergency Measure in the Public Interest Act 2009.

For further information in relation to the Single Public Service Pension Scheme for Public Servants please see the following website: <http://www.per.gov.ie/pensions>.