

Funded Ph.D. Position in CO₂ Utilization

The Renewable Energy and Chemical Technologies (REACT) Lab at UCLA's Civil and Environmental Engineering Department is seeking two Ph.D. students to join in either Spring 2024 or Fall 2024.

Project Descriptions

Carbon Dioxide Utilization Project: The sequestration of carbon dioxide in commodity products offers many advantages over geologic sequestration. One of these advantages is the potential to generate a revenue stream; however, achieving economical utilization of biogenic carbon resources and carbon dioxide presents challenges. In our lab, we are dedicated to developing highly efficient thermochemical and electrochemical pathways for converting biogenic resources, such as atmospheric carbon dioxide, into valuable products. As a Ph.D. student, your role will involve exploring the techno-economic feasibility of new utilization pathways, along with investigating regeneration pathways for carbon dioxide capture media. This includes conducting small-scale experimental proof-of-concept demonstrations. Candidates should feel comfortable conducting experiments, designing experimental methodologies, and collecting and analyzing data.

Qualifications

Preferred candidates possess a majority of the listed qualifications. It is not expected that a candidate possesses all the listed qualifications; rather, this list serves as a guide for applicants to prepare their application materials and emphasize relevant skills.

Required Qualifications

- Passionate about scientific research, sustainability, and environmental challenges.
- Degree in Chemical Engineering, Mechanical Engineering, Energy Engineering, Environmental Engineering or related field.
- Strong foundation in thermodynamics, heat transfer, and mass transfer.
- Prior research experience.
- Excellent spoken and written English skills, good communicator, fostering teamwork.
- Ability to quickly learn new equipment operating procedures and/or software.
- Excellent problem-solving skills and capacity to work independently.

Preferred Qualifications

- Fundamental knowledge/experience in experimental laboratory work, gained through course work or prior research.
- Previous research experience in numerical simulations/modeling/coding and/or experiments
- Experience with process simulation software such as ASPEN Plus, ProSim, etc.
- A fundamental understanding of electrochemical principles is a plus.
- A fundamental understanding of techno-economic and/or life-cycle analyses is a plus.

How to apply

It is encouraged to send your two-page cover letter and CV (not resume) to Prof. Fabian Rosner (fabianrosner@ucla.edu), before applying formally via the UCLA Ph.D. application portal. Please use the subject line "PhD Position UCLA" and note that for admission all UCLA Ph.D. admission requirements need to be met (please check on the UCLA website regarding test requirements).

For question, please contact Prof. Fabian Rosner
FabianRosner@ucla.edu

UCLA Samueli School Of Engineering
Civil and Environmental Engineering Department

About UCLA

UCLA is a world renowned R1 research university located in Los Angeles, California, USA. The Engineering Department consistently ranks among the top. UCLA was ranked 16th in Engineering & Technology globally in 2023 by Times Higher Education.

About the PI

Prof. Rosner's research focuses on innovative research in renewable energy and chemical technologies, including direct air capture and carbon dioxide utilization. His expertise includes computational methods, process design and techno-economic analyses to identify environmental and economic opportunities for green technologies. These modeling techniques are applied to a wide range of research questions to support experimental R&D efforts, technology development as well as to guide policy decisions. Over the years, he worked on an array of advanced electricity generation technologies, electro-chemical energy conversion processes, carbon capture and utilization systems, and the water energy nexus.

Prior to his current position at UCLA, he was a Postdoctoral Fellow at Lawrence Berkeley National Laboratory. He received his Ph.D. and M.S. in Mechanical and Aerospace Engineering from the University of California, Irvine, with specialization in the thermal sciences and he received a M.S and B.S. in Chemical Engineering from the Technical University of Munich in Germany, with a specialization in chemical process engineering.