

# Paid Masters Research Position for Student in Chemistry/Biochemistry, Biology or Earth & Environmental Sciences

**Faculty member:** Dr. Ruth M. Tinnacher, [Ruth.Tinnacher@csueastbay.edu](mailto:Ruth.Tinnacher@csueastbay.edu)

**Discipline:** Environmental geochemistry

## General description of Dr. Tinnacher's expertise:

I study environmental geochemistry problems that are driven by climate- and energy-related questions. I believe that our most urgent challenge is to find a balance between the growing energy demands and the environmental impacts of energy production. In this context, I have been involved in various projects focusing on the potential impacts of nuclear waste storage, subsurface CO<sub>2</sub> sequestration and hydraulic fracturing on groundwater quality. I have also investigated the effects of climate change-induced fluctuations in sediment redox chemistry on carbon cycling.

## Project description, timeline and pay:

This is a new, joint project between researchers and students at the University of San Francisco (USF), Cal State East Bay and the SLAC National Accelerator Laboratory, a national lab associated with Stanford University. The overall goal of the project is to gain a better understanding of the role of anaerobic microsites for the production of methane, an important greenhouse gas, in sediments associated with river floodplains. Anaerobic microsites are small spots in sediments that are free of oxygen, since the transfer of oxygen into the microsite is slower than its consumption by microbes. Anaerobic microsites are estimated to account for 21% of total, global methane emissions; however, the parameters controlling methane production from these sites are currently not well understood.

As part of this project, a Cal State East Bay student will support the collection of sediment and water samples at the East River field site in Colorado, under the guidance of Dr. Tinnacher and other team members. In addition, the student will perform lab experiments with field sediments in order to test under which conditions methane production can be enhanced or suppressed in anaerobic microsites.

The earliest start date for the student will be in May 2024, the latest at the beginning of fall semester 2024. One-week field sampling campaigns are planned for June and August 2024; lab experiments will start shortly thereafter. The overall project is scheduled to end in August 2026, but student involvement could end earlier if needed.

This is a paid student research position over the whole duration of the project. Student payment can be set up as hourly pay or in the form of a scholarship, depending on student needs. Please contact Dr. Tinnacher ([Ruth.Tinnacher@csueastbay.edu](mailto:Ruth.Tinnacher@csueastbay.edu)) for further details on the financial support available.

## Expectations and key job responsibilities:

The ideal candidate would be a graduating senior or incoming/first-year Master student in the Department of Chemistry & Biochemistry, Biological Sciences or Earth & Environmental Sciences. However, external candidates are also welcome to apply. The student should have a solid background in General Chemistry, an interest in Environmental Chemistry, and enjoy performing lab experiments. Expected (paid) time commitments to the projects are approximately 18 hours/week during the academic year and 36 hours/year during the summers.

## Next steps and contact info:

If you are interested to learn more, then please send an email to [Ruth.Tinnacher@csueastbay.edu](mailto:Ruth.Tinnacher@csueastbay.edu) with:

- (1) a brief statement describing your background, why you are interested and any thoughts on your future career goals;
- (2) the contact info of one professor, lecturer or supervisor, who knows you well and could serve as a reference for you;
- (3) an unofficial transcript to provide an overview of the courses you have taken in the past.

**I am looking forward to hearing from you soon!**

