

**Department of Geology
COLLEGE OF ARTS & SCIENCES**

**SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN**

APPLICATION DEADLINE: March 1, 2010

The Department of Geology is pleased to offer the following research project for the summer of 2010. Interested students are urged to contact the faculty member(s) directing the project that most interests them. By contacting the faculty member, you can discover more about the project, learn what your responsibilities will be and, if possible, develop a timetable for the twelve-week research period.

**PROJECT TITLE: Paleooceanographic Changes during the Permian Triassic Boundary
Mass Extinction**

Project Supervisors: Professors Thomas Algeo and Barry Maynard

Contact Supervisor:

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Project Description

The largest mass extinction event in Earth history occurred at the Permian-Triassic boundary ~251 million years ago, when ~90% of all species on land and in the seas disappeared. The causes of this biotic catastrophe remain poorly understood but are an area of active research internationally. Recent studies have shown that major changes were occurring in both shallow- and deep-sea environments during this event. The main goal of an NSF-funded project at the University of Cincinnati is to better understand spatial and temporal patterns of change in the global ocean at that time through analysis of geochemical variation in rock successions spanning the Permian-Triassic boundary. The student participating in this project will undertake analysis of samples from a section in southern China. The project will involve (1) processing and analyzing about 100 samples, (2) interpreting the resulting geochemical datasets, and (3) preparing a report and/or presentation of the findings. The student will learn a variety of useful laboratory techniques, including how to prepare samples and how to perform XRF (x-ray fluorescence), LOI (loss-on-ignition), and TOC (total organic carbon) analyses. We will assist the student in the interpretation of the resulting datasets and in preparation of materials for publication and/or for presentation at a professional meeting. Our goal is to provide the student with first-hand experience in some of the essential components of scientific research, i.e., laboratory techniques, data analysis, and professional communication.

Previous WISE-REWU projects supervised:

2008: Jessa Moser, Geochemical events at the Permian/Triassic boundary in the Itadori and Ubara sections of central Japan

2007: Christina Smith, Geochemical events at the Permian/Triassic boundary in the Blind Fiord section of the Canadian Arctic

2006: Meghan Welch, Using sulfur isotopes to investigate the depositional cycles of the Kope Formation

2005: Jill Conway, High-grade metamorphic effects on massive sulfide deposits: the Elizabeth mine of Vermont and its host rocks

2004: Ashley McKendree, Improving the performance of constructed wetlands for treatment of acid mine drainage: Understanding the clogging of anoxic limestone drains