

# Christopher Schuler

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## Education

Ph.D. University of Minnesota – Twin Cities, August 2018 - Present  
(in progress) Department of Earth Sciences  
*Advisors: Cara Santelli, Brandy Toner*  
*Microbe-Mineral Interactions in the Deep Continental Biosphere.*

B.S. Carnegie Mellon University, May 2016  
Department of Chemistry  
*Research Advisor: Terrence Collins*

## Professional Experience

### University of Minnesota, Minneapolis, MN

*PhD. Student, August 2018 – Present*

**Geomicrobiology Laboratory**, Dr. Cara Santelli

**Low-Temperature Geochemistry Laboratory**, Dr. Brandy Toner

As a researcher on a collaborative grant, I study microbial communities living in abiotic aquifers within the Earth's crust. Specifically, my research is centered around understanding how the mineralogy of the site supports or impacts microbes' ability to survive in the subsurface. Currently, I am primarily focused on studying archived cores collected during the drilling of four boreholes which access the aquifer of interest. Using petrographic thin sections, I have gathered data on the cores via optical microscopy and X-ray microprobe analyses, e.g. X-ray fluorescence mapping and X-ray diffraction. This spring, the analyses will expand to include electron microprobe-based analyses.

### Wolfe Laboratories, LLC, Woburn, MA

*Research Associate, November 2016 – June 2018*

At Wolfe Laboratories, a contractual research organization specializing in method development for the characterization of pharmaceuticals, I worked on projects ranging from several weeks to six months in length. Several selected projects that I completed include measuring the concentration of and isolating drug impurities via HPLC, screening for polymorphs and alternate salt forms of novel drug products, and evaluating the thermal decomposition of various novel drugs using differential-scanning calorimetry (DSC) and thermogravimetric analysis (TGA).

### Carnegie Mellon University, Pittsburgh, PA

*Undergraduate Researcher, August 2014 – May 2016*

**Institute for Green Science**, Dr. Terrence Collins

As an undergraduate research assistant, I focused on the design and reaction kinetics of organometallic catalysts used to oxidize and remove organic pollutants in drinking water. For my first project, I measured the kinetics of sertraline degradation via one of the group's

catalysts. A second project focused on the synthesis of a catalyst for characterization by other members of the group.

#### **Smithsonian Environmental Research Center, Edgewater, MD**

*Summer Intern, May 2015 – August 2015*

##### **Microbial Ecology/Trace Metals Laboratory, Dr. Cynthia Gilmour**

As an intern at SERC, I participated in research focused on the biogeochemical cycling of mercury. My flagship project was concerned with the fate of anthropogenic mercury in marshes dominated by invasive *phragmites australis* reeds – I helped design and implement a marsh-organ based experiment to test several remediation strategies.

## **Presentations**

**C. J. Schuler**, P. K. Kang, J. M. McDermott, D. M. Peterson, C. Sheik, W. Dowd, W. Lee, C. M. Santelli, B. M. Toner. "Mineralogical Influences on the Habitability of a Banded Iron Formation." *Midwest Geobiology Symposium*, St. Louis, MO, 9/20/2019 - 9/22/2019. (Poster)

## **Publications**

Tang, L. L., Denardo, M. A., **Schuler, C. J.**, Mills, M. R., Gayathri, C., Gil, R. R., Kanda, R. Collins, T. J. (2017). Homogeneous catalysis under ultradilute conditions: TAML/NaClO oxidation of persistent metaldehyde. *Journal of the American Chemical Society*, 139(2), 879–887.

<https://doi.org/10.1021/jacs.6b11145>

## **Honors and Awards**

University of Minnesota:

**Warren Fisher Memorial Fellowship**, Spring 2019

Carnegie Mellon University:

**University Honors**, May 2016

**Mellon College of Science Research Honors**, May 2016

**Dean's List, High Honors**, Spring 2015, Fall 2015, Spring 2016

**Dean's List**, Fall 2014

## **Teaching Experience**

University of Minnesota:

**ESCI 1006: Oceanography**, Fall 2018, Fall 2019

## **Academic Service**

**University of Minnesota**, Department of Earth & Environmental Science:

*Co-organizer*, Graduate Student Research Symposium, Spring 2019 & Spring 2020

## **Outreach**

Science Under the Stars, University of Minnesota College of Science & Engineering, *October 2019*

Saturday with a Scientist, Bell Museum, *April 2019*