

# Brett Allen Williams

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## EDUCATION

Ph.D., Physical Chemistry, Indiana University (Bloomington, IN) anticipated May 2020  
GPA: 3.493  
B.S., Chemistry (ACS certified), University of Southern Indiana (Evansville, IN) May 2013  
With Honors  
GPA: 3.586  
Minor in History

## RESEARCH EXPERIENCE

### Research Assistant

Advisor: Dr. Caroline C. Jarrold, Indiana University October 2015 – Present

I performed a mass spectrometric study on the products generated from laser ablation of graphite fluoride. The mass spectra were analyzed to identify the major products. Next, we hope to use anion photoelectron spectroscopy (PES) to probe the structure and measure the electron binding energy of some of the more prominent or interesting clusters.

### Undergraduate Research Assistant

Advisor: Dr. Jeannie Collins, University of Southern Indiana May 2010 – May 2013

Assisted professor in the Department of Chemistry with research on the slime mold *Stemonitis flavogenita*, specifically determining the nucleotide sequence for the actin gene

*S. flavogenita* was grown from spores on 3% agar plates, and RNA and DNA were extracted from both the aphanoplasmodial and coralloid plasmodial stages of the organism. I designed primers for the actin gene for RT-PCR, performed RT-PCR on the RNA samples, and analyzed cDNA through gel electrophoresis. The DNA sequence for this organism is unknown at this time.

## TEACHING EXPERIENCE

### Associate Instructor

Chemistry Department, Indiana University, Bloomington, IN

August 2015 – Present

Introduction to Chemical Principles Laboratory Fall 2015  
Principles of Chemistry and Biochemistry I Laboratory Spring 2016  
Introduction to Chemical Principles Lecture/Discussion Fall 2016-Spring 2017  
Physical Chemistry of Bulk Matter Lecture/Discussion Fall 2017

## WORK EXPERIENCE

### Laboratory Analytical Chemist

Reclaimed Energy, Connersville, IN

September 2013 – May 2015

Reclaimed Energy is a company that receives chemical waste from various companies and then recycles it by either turning it into fuel for other companies or cleaning it and sending it back to the customer. My responsibilities included performing analysis on all incoming chemical waste to ensure that it met the minimum specifications for a number of factors in order to be recycled. These factors included the pH, water content, and a lack of PCBs, or polychlorinated biphenyls. An analysis on all outgoing recycled material was also performed. The analyses included running a GC, doing a Karl Fischer titration, testing pH, and checking the specific gravity.

## Lab Supervisor's Assistant

August 2011 – May 2013

Chemical Distribution Center, University of Southern Indiana

I helped students check supplies in and out, prepared solutions and other samples for chemistry labs, and set up equipment for lab experiments. I also performed standardizations on the solutions that were prepared.

### KEY SKILLS

Instrumentation Experience: Time-of-Flight Mass Spectrometry (TOF-MS), Anion Photoelectron Spectroscopy (PES), laser systems, ultra-high vacuum systems, NMR Spectroscopy, IR spectroscopy, Flame AA spectroscopy, GC-MS, Gas Chromatography (ECD and FID), Graphite Furnace, Differential Scanning Calorimetry

Computer Skills: Proficient in Microsoft Office Suite, Origin, National Instruments LabVIEW, Gaussian, Gauss View, and ChemDraw

Laboratory Techniques: Performing UV/Vis concentration analysis, Gel Electrophoresis, Dot Quantitation, Titration, Karl Fischer Titration, Bomb Calorimetry, and Solution Prep, as well as Standard Organic Laboratory techniques and other basic laboratory techniques

### PRESENTATIONS

Brett Williams and Dr. Caroline C. Jarrold. "Comparison of Graphite and Graphite Fluoride through Laser Ablation and Time-of-Flight Mass Spectrometry." 5<sup>th</sup> Semester Candidacy Seminar, Indiana University, Bloomington, IN, December 2017. Oral.

Brett Williams, Josey Topolski, Dr. Allen Siedle, and Dr. Caroline C. Jarrold. "Mass Spectrometric Analysis of Graphite and Fluorographene Using Pulsed Laser Ablation." PINDU Annual Inorganic Chemistry Conference, Indiana University, Bloomington, IN, October 2017. Poster.

Brett A. Williams and Dr. Jeannie T. B. Collins. "Isolation and determination of the DNA gene sequence of actin for the slime mold *Stemonitis flavogenita*." 245th National Meeting of the American Chemical Society, New Orleans, LA, April 2013. Poster.

Brett A. Williams and Dr. Jeannie T. B. Collins. "The Isolation and Amplification of the Actin Gene Sequence for the slime mold *Stemonitis flavogenita*." 12th Annual Endeavor Symposium, April 2013. Poster.

Brett A. Williams and Dr. Jeannie T. B. Collins. "The Actin Gene Sequence for the slime mold *Stemonitis flavogenita*." Annual Meeting of the Indiana Academy of Science, Indianapolis, IN, March 2013. Poster.

Brett A. Williams and Dr. Jeannie T. B. Collins. "Determining the Actin Gene Sequence for the slime mold *Stemonitis flavogenita*." 11th Annual Endeavor Symposium, April 2012. Poster.

### HONORS AND AWARDS

Chemistry Department Service Award	April 2013
Outstanding Achievement Award in Physical Chemistry	April 2012

### EXTRACURRICULAR ACTIVITIES

Member of American Chemical Society, USI Student Chapter	Fall 2010 – May 2013
USI Honors Program	Fall 2009 – May 2013
Phi Alpha Theta History Honor Society, USI Chapter	Fall 2012 – May 2013
National Society for Collegiate Scholars	Fall 2011 – May 2013
Indiana Academy of Science, student member	Fall 2012 – Fall 2013