

Neil Williams '10 received his BA and MS in Chemistry and BS in Biology

Most people talk about love at first sight, well this was not the case for me when it came to chemistry during high school, chemistry and I had a lukewarm relationship at best. It was not until I took my first chemistry course (general chemistry) at UNCW with Dr. John Tyrell, that I found out how interesting and exciting chemistry can be. Dr. Tyrell's course showed me that chemistry was not as boring as it's portrayed in movies, it can be exciting and even enabling. Chemistry can show you a world that most people can go their whole lives without seeing. The first time I thought I might want to make a career out of doing research in chemistry was when Dr. Jeffery Wright gave me the wonderful opportunity to work in his natural products laboratory over my sophomore-junior summer. To this day I can still close my eyes and smile remembering how much I enjoyed working in his lab. I fell in love with chemistry the spring of my junior year when I started research in Dr Hancock's Inorganic Chemistry Lab. Which I'm not afraid to admit was an area that I knew absolutely nothing about, but I was real lucky and ended up working for a really great mentor and an even better person, Dr. Robert Hancock. He took a chance and allowed me to work under his supervision on projects studying the selective binding of ligands to specific metals in solution. Under Dr. Hancock's guidance I was able to learn many things a student is unable to learn by only taking lectures and laboratory courses. I learned, that in many cases, your experiments are not going to work the first time out. You must use the scientific method to find and identify necessary adjustments so as to correct the issues in the experiment, and it's through this process that allows a scientist to achieve meaningful results. As a result of working for Dr. Hancock I decided that pursuing a MS in chemistry at UNCW was right for me.

It wasn't until I was a graduate student that my interest in chemistry, specifically inorganic chemistry, grew. One of the main reasons I stayed at UNCW was due in part to the ability to conduct research as an undergraduate student along side a UNCW professor. At many large universities undergraduates and new graduate students do not have the privilege to work directly with the professor in their laboratory. In many cases they never really meet the professor whose lab they work in and whose research they are working on, this was never the case at UNCW. Having professors who are willing to take the time out of their busy schedules to ensure that you have an understanding of what you are doing in the lab and why, played a major factor in my decision to stay at UNCW for my masters. One of the most bittersweet moments during my years at UNCW was graduating and knowing that it was my time to move on into the real world and use what I have learned in my time at UNCW.

Upon completion of getting my masters I got a position at Oak Ridge National Laboratory (ORNL) in Oak Ridge, TN. This laboratory is a Department of Energy (DOE) government laboratory operated and managed by UT-Battelle. I am a Post-Masters Research Associate working for Dr. Bruce Moyer who is the group leader of the Chemical Separations Group here at ORNL. My job currently revolves around the Next Generation Caustic-Side Solvent Extraction (NG-CSSX) process being used at the Savannah River Site (SRS) to separate Cesium-137 (Cs^{137}) from legacy nuclear waste through the use of Calixarenes in solvent extraction. Cesium-137 is the main culprit of the radioactivity observed in liquid legacy nuclear waste, as all of the other radioactive elements have been turned into sludge at the bottom of the tanks. The NG-CSSX project has the goal of effectively removing 99.9975% of Cs^{137} from the waste. To give some prospective in regards to this percentage, the waste once processed will have less radioactivity

then the average adult human does. The NG-CSSX process allows the DOE to save large amount of money by removing the Cs^{137} from solution and placing it in borosilicate glass logs by a process called vitrification. The Cs^{137} is placed in the glass logs along with the other radioactive elements contained in the sludge at the bottom of the tanks. Placing the waste in these glass logs allows the DOE to safely store radioactive waste without have to worry about the environmental impact that might result if one of the current liquid waste storage tank at the SRS were to leak the radioactive solution. The ability to continue doing research in inorganic chemistry and the chance to work with radionuclides played a major part in me taking this position at ORNL. This job at Oak Ridge gives me a great opportunity to work at a world-renowned laboratory and for future advancement including my eventual goal of obtaining a PhD in chemistry.

Being able to call myself a chemist is a great honor, especially when you think about all the men and women from the past who have dedicated their lives to discoveries in science, chemistry in particular and then I think about how much is yet to be discovered. And I can't be thankful enough that I became a chemist and that UNCW Chemistry Department's faculty and staff helped to mold me into the scientist I am today. My position at ORNL is a direct result of the Chemistry Department faculty and staff taking an interest in enabling and encouraging the students at UNCW to make more of themselves and going further then they through possible!