MORGAN GOODNOW – End of Summer FURSCA Report

This summer has been anything but ordinary, and my research experience was certainly no exception to that. While plans for this summer’s research were adjusted in order to accommodate the pandemic, I was still able to learn so much and make plans for the future. Originally, my plan for this summer was to build an electrode from copper-nickel bimetallic nanoparticle-carbon microsphere composites, using previous methods developed in the lab. I would then begin testing the effectiveness of the electrode in the reduction of bromate. The reduction of bromate is a model system for other oxyanions of concern, such as perchlorate. The attempt to build this electrode to reduce bromate is something we hope can work for perchlorate, in order to remove contaminants from our environment, specifically, water sources.

With the pandemic changing our ability to be in the lab, research plans had to change a bit. The focus changed to incorporate learning electrochemistry and reading many papers that were able to outline previous research and methods that we will use to continue our future work within the lab at Albion College. Throughout this summer, I focused on previous methods that were used to build carbon microspheres and metal nanoparticles. I focused on what methodology worked, what did not work, and how each method built upon the last. Additionally, I was able to focus lots of attention and detail into how different techniques and how to appropriately utilize the chemistry equipment to analyze and interpret our data.

After this summer learning about the previous research and learning electrochemistry basics, we plan to return to the lab in the coming semester in order to build electrodes from bimetallic nanoparticles using carbon microspheres. These electrodes will be used in order to reduce bromate into bromide. By using electrochemical methods, we plan to improve upon the previous methods we researched.

I want to extend my gratitude to Bruce A., ‘53 and Peggy Kresge ‘53 Endowed Science Fellows Fund for supporting my research. Being able to participate in FURSCA research was an incredibly important part of the planning for my future, after Albion College. As a senior, I was still on the fence with where I wanted to go after graduation. I was unsure whether I wanted to go to medical school or graduate school, but participating in research has allowed me to explore my own interests and how I am able to, and should, incorporate my interests into my future, post-graduation. I am currently planning on taking the MCAT and further exploring my future in the medical field. I am confident that my experience within FURSCA has given me a unique opportunity to further my education and curiosity within an environment that strongly encourages development of not only my professional life, but also my personal interests. I look forward to presenting my research at Elkin Isaac in 2021, and hope to have the opportunity to continue my research over my final year at Albion College.