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Reflective Essay
Library Award for Undergraduate Research

For two summers, I interned at XiGo Nanotools, a small start-up company that created an instrument used to measure the surface area of nanoparticles. My time spent at XiGo really sparked my interest in the topic of nanotechnology, especially in the creation and usage of micron or nano-sized particles themselves. Therefore, it was a natural progression to begin a research project with Dr. Sheryl Ehrman and Kai Zhang (graduate student) and help with their goals to refine the spray pyrolysis technique in creating micron-sized metal particles. During the fall semester of my junior year (2011), I worked for Dr. Ehrman and Kai in their lab at the University of Maryland and gained credit towards a technical elective (ENCH468). My project was to find a new cosolvent for the generation of metal powders, one that would allow for high production rates and a safe laboratory environment.

In conjunction with my laboratory work, I also helped Dr. Ehrman find literature sources for her upcoming funding proposal. I used electronic databases through the UMD Research Port along with Google Scholar. Google Scholar was helpful when an article was in a UMD database, but not in a database that I had searched because it would recognize which articles could be retrieved from UMD databases and which would need to be found elsewhere. For search techniques, I often looked to Dr. Ehrman for advice. She suggested alternate terminology that I may not have been familiar with, which would lead me to find articles that were more helpful for her proposal. For many of my searches, I tried to find articles pertaining to specific metals and found different articles depending on if I spelled out the name of the metal or just used the scientific symbol (i.e. Nickel vs. Ni). To select literature sources, I usually read the abstract and conclusions of the paper to see if it was similar enough to Dr. Ehrman's work to be applicable to her proposal. She was interested in the generation of specific pure metal particles and particularly did not want any information in regards to the generation of metal oxides. Therefore, I often performed advanced searches, including terms like "pure metal" and excluding terms like "oxide".

Fortunately, several of the articles I found for Dr. Ehrman were ultimately helpful for my final report at the end of the semester as well. Whether I read the articles to more fully understand the science behind the spray pyrolysis process or to actually cite in my paper, all proved to give me further technical insight to the research being done in the lab.

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After performing what felt like endless literature searches for Dr. Ehrman, I definitely feel more experienced and knowledgeable in the art of doing research. Now I search for articles with more precision and often find what I am looking for in a more efficient manner. As my engineering academic career progresses, I know I will find myself using the skills I have acquired throughout the last semester in performing more effective searches, saving time and energy in the research process, allowing me to finish assignments more quickly with more applicable sources supporting my main claims. I also understand that when I join the work force as a chemical engineer in industry, I will be writing my own proposals and other research filled assignments and I will continue to use the skills I have gained in using the University of Maryland Library system.