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Having an interest in chemistry since I was in middle school, I was automatically hooked into the video about chemical engineering and found it very helpful for myself when looking ahead into what my future has to offer. It is incredible that the Navy has benefitted so many people for their advanced programs, job offers, research programs, internships, and much more. I am grateful that I am able to partake in writing this and also for learning about the various fields and programs that are out there.

Out of many other STEM fields, chemical engineering is a subject of endless possibilities as many talented engineers create, test, and experiment with many different materials to develop a product that will benefit the world around us. Combining math, physics, biology, engineering, chemistry, and more, chemical engineers take raw ingredients and develop new ways of using them that will be energy efficient, convenient, and profitable. They also assist in developing the chemical manufacturing equipment and processes that will be used to create the desired product. A lot of the products produced are chemical-based, yet they are safe for use and help lead advancements in other fields, such as health care with the production of new technology and medicine. Moreover, producing sustainable products is very important, especially in the world today along with the hazards of global warming, for when experimenting with these new substances, chemical engineers have a goal of creating processes that require less energy and dispose of any waste from byproducts. This field also offers many job opportunities, such as manufacturing, food processing, microelectronics, polymers, biotechnology, etc, making it a very versatile and beneficial career choice.

Chemical engineering inspires me to work with others to help create and develop ideas to advance current technology and products to solve a common problem. For example, I read an article about the concept of polymer film farming, which is an innovation where people use a film made up of polymer, which is a chemical compound built with macromolecules, to absorb water and nutrients to grow any vegetable or fruit anywhere at any time. In particular, these plants can live without much care, making them very useful especially for those who do not have access to a lot of food sources. Though there are still some flaws in this innovation as it has not completely solved world hunger, it is very inspirational to me to work as a chemical engineer in the future to take steps towards solving these immense issues. Regarding the Navy and Marine Corps, chemical engineers can create new defense mechanisms and manufacture advanced weapons, such as blasting explosives, potentially lethal chemicals, and more. Also, regarding the pharmaceutical field, they can create new medications or different versions of already existing medications to help aid those in the Navy and Marine Corps.

Furthermore, another video that inspired me was the interview with Mr. Watkins about plasma physics. On top of loving chemistry, I find physics to be very fascinating because it goes into depth about the simplest events that we experience every day and explains how the world around us works. In particular, the study of plasma is very significant since plasma is the most abundant state of matter in the universe and has the most energy being that it is mainly composed of ions. Regarding this career, Mr. Watkins worked with NRL (Naval Research Laboratory) within the pulse power physics branch under the plasma physics division. On top of so much other research, he mainly focused on learning about the function of ion beams and the rail gun, which is a weapon that uses magnetic fields from high electrical currents to send projectiles. He also does other lab work such as learning about cross-sections with molecular nitrogen and quantum mechanics concepts. All of this is a big inspiration to me because I never realized how many opportunities were out there and how many different career paths there are in the physics field. It also reassures me that he had experimented with different topics too in school besides having one plan from the start and sticking to it because in my own life, I have been trying out

different subjects as well and seeing what I liked to be sure that I choose a career in the future that I truly love. I find this work very inspiring too because plasma physics is such a difficult topic yet it is something that the future could benefit from if it is explored and experimented with. For my own career goals, I aim to try to make a difference in the world and find something new, for physics is a field that will always be open-ended with various possibilities of discovery.

Lastly, along with so many advancements over the years regarding technology and communication, I believe that electrical engineering is a field that will definitely advance in the next 15 to 20 years. Today, electrical engineers design and test electrical equipment, electronics, microchips, and more, but as technology advances along with other branches of STEM, there will certainly be new innovations yet to come in the future. One big part of technology is the future improvements of drones, specifically generation 7, where drones will be built with better equipment such as advanced sensors, self-monitoring systems, and more. Complex, faster, and safer drones will also benefit the Navy by providing faster transportation from one ship to another when in need of essential spare parts or other materials. Furthermore, drones could deliver vital medical equipment to the Navy and the Marine Corps being that they are quicker and their technology eliminates human error that could occur with manned pilots. For example, if a drone was to fly into dangerous territory carrying essential equipment, there would be less loss of human life. Moreover, electrical engineers can work in all areas of the solar industry, allowing electrical energy to advance over the years. Specifically, solar cells, which are small structures capable of turning solar energy into electrical energy, have been steadily decreasing in cost and becoming more efficient. Along with most of them being made of silicon to absorb light, about 32% of light energy is converted into electrical energy with one solar cell, yet though this may not seem like a lot of energy, it is much more efficient in comparison to different materials. In the future, these solar cells will become even more improved as more hardware will be added in order for them to capture more light and more layers of light-capturing material could be added. Eventually, electronics could also be installed in the solar cell that allows it to track the sun and therefore absorb more light during the whole day. Though they currently do not store as much energy in comparison to a solar panel, electrical engineers and other scientists are currently developing them so that in the future, they could provide enough clean energy for naval ships while still being small and efficient.

Overall, I enjoyed watching all of the videos for this project and learning about the many career opportunities that the Navy provides for so many people. It is an amazing opportunity to learn from professionals and get so much career advice, for this will definitely help me as I search for my own future as well.