

Researchers are explorers. They hold a curiosity inside of them that can never be satisfied. Every day, they try to understand the world better by studying new ideas and re-examining old ones.

As far back as I can remember, I have always been trying to explore the world around me. I loved vacations, because they meant trips to some of the best science museums in the country. In school, I built a reputation as a problem solver. When a teacher needed to fix a screw on the projector screen, but had no screwdriver, I offered her a dime which was the perfect size for the slot on the screw head.

I grew up knowing that I would have a career in science, but did not have a direction until high school. During my sophomore year, I went to Space Camp in Huntsville, AL, for my spring break. There, I realized that space exploration was my calling. However, there are many roads to becoming an astronaut, so I set out on the task of discovering the one for me. I majored in Engineering Physics as an undergraduate because of the wide range of coursework required. As part of my major, I had to choose a concentration. When none of the offered concentrations suited me, I designed my own, creating an aerospace propulsion systems concentration composed of a combination of mechanical and chemical engineering. Part of my coursework relied heavily on the study of fluids, which I enjoyed immensely.

I have spent my years of undergraduate study in a constant state of exploration. Starting with my freshman year all the way through the end of the competition, I participated in ChallengeX. The goal of the competition was to take a Chevy Equinox and turn it into a hybrid vehicle. I spent my time on the team learning how cars work and about different kinds of alternative fuel sources. My second year on the team, I became the Emissions and Energy Storage Systems Team Leader. I spent my time ensuring that our CO<sub>2</sub> emissions met EPA requirements and our hydrogen fuel system was operational and safe, working primarily on the sensor calibration and the hydrogen skid creation.

Another valuable organization of which I have been a part is the Society of Women Engineers. As a member, secretary, and vice-president, I enjoyed helping other young women and high school girls find their way in the world of engineering. All of the information that I was able to absorb in my time as an underclassman has allowed me to be a great mentor to new female engineering students. I was a part of the mentor program with SWE for three years and was in charge of organizing it during my senior year. I have also helped with TU's biannual Brownie Day. Spending a morning teaching young girls about diesel fuel or statistics is a great way to start a weekend. It is amazing to see how much the girls are in tune with the technical and mathematical world even at a young age. The hardest part about the whole experience is making sure the mothers of the girls are letting their daughters figure out the answers to our questions and not feeding them what they assume is the right answer.

In my senior year, I removed myself from heavy involvement in SWE in order to start a new organization on my college campus, founding the Engineering and Natural Sciences Entrepreneurs group. Our school has many good programs, but they fail to teach engineers how to understand the overall picture. The goal of this new organization was to teach engineers what they need to know about succeeding in business. Our group sponsored talks to teach engineers about need-finding, patenting, marketing, brainstorming, and other business related topics. As part of the organization, I competed in three design projects. The first one was to create a product of value from pizza boxes. The outcome of our group's hard work was a full-scale working cardboard grandfather clock. I also led a team in the Juicy Ideas competition sponsored by Google. We used plastic bags to build a chair. A third competition which I especially

enjoyed is called NASA Means Business. The goal was to create a branding strategy and 30 second public service announcement to raise awareness about NASA's Constellation program. It was exciting to step away from the purely technical work I was doing in my classes and participate in activities that require me to think both technically and creatively.

A large portion of my senior year was spent applying to and visiting graduate schools. Through my visits to different institutions, I began to see that while I wanted a PhD in mechanical engineering, I was drawn to research that involved the bio-application of mechanical engineering, especially in the field of fluids. After a several visits and numerous emails to students and professors, I decided to join the University of Notre Dame's Aerospace and Mechanical Engineering (AME) department under Dr. Phillippe Sucusky. Dr. Sucusky is a part of the biomedical engineering group in the AME department and is conducting research in the field of blood flow through the aortic valve and how the stresses affect the cells in the wall lining the aorta. I felt Dr. Sucusky and his research were such an excellent match that I chose to study with him even though he is a new professor at Notre Dame with very little funding. Receiving the NSF GRFP funds would allow him concentrate his initial funds on setting up the lab rather than supporting his new graduate students. It would also allow me more time for my research by removing the teaching requirement I have to fulfill as part of my university funding.

I have also taken an interest in activities beyond my normal research and coursework. I am currently a member of the graduate SWE chapter as well as the secretary for the Graduate Student Department Organization for the AME department. I joined both of these organizations so that I could learn more about Notre Dame and the opportunities here, as well as share my experiences with students here.

After graduate school I will immediately apply to the astronaut program at NASA. I will also apply for a research position at one of the NASA facilities and to design firms. I am most interested in finding a job that will be a constant challenge to me both technically and creatively. Ultimately, my goal in life is to use my intelligence, creativity, and natural curiosity to further human understanding of the world around us through the technical and physical challenges of space exploration.