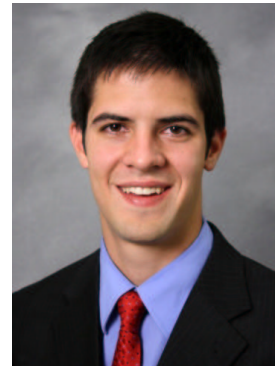


Adam Krueger

Global Professional Engineering Profile

Purdue University BSME/BSBME

November 12, 2009



Introduction

I am currently a student at Purdue University working toward my Bachelor's of Science in Mechanical Engineering to compliment my Bachelor's of Science in Biomedical Engineering. As I was growing up, I found that many people know that they want to be a doctor, or they know that they want to be a nurse. It is an easy fit for them because they realize the need to physically help people. I had this same desire as I was trying to determine my career path, yet the title of Doctor or Nurse Practitioner did not appeal to me. I wanted to solve the problems. I liked to work with mechanical parts with my hands, not see patients all day. After perusing many options for a career path, I discovered Purdue's mechanical and biomedical engineering degrees. I found that these degrees would allow me to pursue my dream job where I could design healthcare products to help people in a very direct way. I am confident I made the correct choice because through my experience I have found I can solve problems while physically improving the health of people.

Credentials and Experience

Early in my education, I realized the importance of getting experience in the mechanical engineering field. As a result I have had two internships, and I am currently involved in undergraduate research and organizations such as Engineering World Health (EWH) and Biomedical Engineering Society (BMES).

In my first internship, I worked for a company called Cook Med Institute. The company is known for manufacturing stents and endografts for arterial blockages and aneurisms respectively. During my time at Cook I was involved in Bench Top Testing of their products. My responsibilities included performing many validation tests for the products. In addition I aided in designing new testing procedures to improve the current testing methods. As a result I was able to use many critical thinking and teamwork skills that I have learned in my coursework.

My second internship was for a company called LICOR Biosciences. This company was involved with environmental and biological instrumentation. During my time at LICOR I was involved with the product development team on the environmental division of the company. The project I worked on was developing an Ethernet connection on instrumentation that measures soil CO₂ flux. In this way users could attach the device to increasingly available Ethernet connections to offload data. In this project I was able to be involved with redesigning the box and connectors to allow for the Ethernet port. As a

result I learned the design process that companies must go through in bringing a concept from concept to final product.

Early in my career at Purdue I was able to get involved with research that one of my professors was performing in the summer. During the summer, I was involved with a project to quantify the amounts of osteoinductive factors that are released from bone marrow when a stress is imposed on it. My role in this project was to design a system to load bone marrow to specified strain levels while maintaining sterility in the system as bone marrow is composed of living cells. There were many constraints in this project to consider, but I was able to work with a graduate student to develop a concept. After the initial design was done I learned to design the entire assembly in Computer Aided Design (CAD) software. Then I took the design from CAD files to the final product. This involved personally machining and purchasing all necessary parts and constructing a final product. This was a very valuable experience as I was able to see a project all the way from concept to final product that was used to conduct research.

During my summer research experience I was so intrigued with the research that was being done that I contacted the professor that I was working with to see if I could be involved with his laboratory during the school year. The professor was pleased with my work so he took me on as an undergraduate research assistant and I have worked in his lab to date. I am currently involved with designing and constructing a wound patch device to improve the healing time of large open wounds and decrease scar formation.

Professional Interests, Global Vision, and Career Goals

There are many engineering grand challenges that have been discussed in my classes as well as portrayed by organizations such as National Academy of engineering (NAE). After looking at the grand challenges in the near future I believe that the invention of better medicines is one of the most important discoveries to be made. In addition to this, I believe that I will be able to make the most contribution to this area. My background in Mechanical Engineering as well as Biomedical Engineering gives me a unique perspective on how bodily processes work. I hope to use this to my advantage in determining how different medicines could interact with each bodily process. In this way I might be able to engineer medicines of the future.

One of my career goals is to always be on the edge of breaking technology in the field. I want to make discoveries that transform the field. Specifically my professional interests lie in the pharmaceutical industry or the medical device industry. In these specific areas I will be able to exercise my full range of skills to make the most impact. Additionally, in the future when I enter the world as a global engineer I will be able to make a significant impact as a result of my knowledge of the global world. I will be able to do this because of the coursework that I have had educating me about the impact that you can have at a global level in anything that you do. As an example, I will have the foresight to see how a product can be used to aid people in other countries and how it should be adapted for their needs. This global characteristic is what will set me apart once I begin my career in the world today.