

# Alumni Spotlight

*Steven Saric*

**Major: Chemistry and Physics**

*“Steve has a track record of excellence in the classroom and leadership in the research lab that I expect will carry him to success in the PhD program in physical chemistry at UC Berkeley.” –Dr. John Haan*



*Steven Saric pictured (center) with Dr. Allyson Fry-Petit and Dr. Andrew Petit at the Department of Chemistry and Biochemistry Commencement party.*

***Please tell us more about your research project.***

The purpose of my project is to develop an alternative energy storage device using fuel cell technology. With climate change as an ever-present threat to our planet, the interest in alternative energy sources such as solar and wind has increased exponentially in the last decade. While solar and wind technology have come a long way, they are intermittent in nature and it is not possible to produce power when the sun is not shining or the wind is not blowing. In addition, there are not many options for storing this energy on the home scale, and the only option that existed before a few years ago was to use several (10-15 in a single-family home) lead acid car batteries. This lack of clean and efficient ways to store alternative energy has been a major barrier for many people that want to switch to wind and solar.

Our research group proposed an idea a few years ago to use an electrolyzer that will convert carbon dioxide into formate. The electrolyzer is connected to an alternative energy source in order to drive the reaction forward. The formate produced is a fuel that can later be used in a fuel cell to regain the energy that was stored and regenerate the carbon dioxide. This whole process takes place in a central liquid reservoir and is overall carbon neutral. In 2015 our group was able to show a proof of concept of this device and we have been optimizing it ever since focusing mainly on the carbon dioxide to formate reaction which has many other potential uses such as for carbon sequestration.

***Congratulations on your acceptance to UC Berkeley's PhD program in Chemistry!  
What motivated you to pursue your doctorate degree, and what are your future career plans?***

I am actually a fair bit older than the average student. I first stepped foot on campus in 2004 directly out of high school. It turned out that I was not yet ready for the pressure that college and real life would place on me and I ended up dropping out around 2008, still a long way away from finishing my degree. While I was on my break, I spent most of my time working and did not have another opportunity to come back until 2014. My first intention when I returned to CSUF was to finish my degree and get out as quickly as possible; however, upon returning I realized how much I enjoyed learning and I finally had developed the maturity and life skills I needed to be successful in college. In addition, I took one class in particular that absolutely captivated my imagination (Physical Chemistry) and made me decide that I needed to pursue a career in science.

At this point, I also decided to join a research lab, which was both a requirement for my Biochemistry degree and an opportunity to see what real scientific research was like. I instantly fell in love with research, it combined many of the exciting concepts that I had learned about in my classes with the ability to run real experiments and solve real problems. Research gave me the ability to learn something new every day, even if most days that something is what not to do. These small collections of knowledge compound and eventually lead to real progress on problems that no one has ever solved before. Shortly after joining my lab I decided what I wanted to do, I wanted to be a Chemistry Professor. I had a major problem though, my previous time at CSUF had left me with a barely eligible GPA and a lot of failed classes. These things were major hurdles on my way to pursuing a Ph.D.

I set a plan into action in order to accomplish my goal, I switched my major from Biochemistry to a double major in Chemistry and Physics which would allow me to take more classes and repair my GPA as

well as learn more about the area of Chemistry that fascinates me the most, Physical Chemistry. Also, I made a plan to spend more time in the research lab trying to put in between 20 and 30 hours a week. This plan was not easy to implement for the first year and a half, I was going to school full-time taking all upper division Chemistry and Physics classes, working 45 hours a week as a manager, and trying to make time for my research commitment. Needless to say, I did not sleep very much. However, in the end my hard work paid off and now I have accepted an offer to pursue a Ph.D. at the highest ranking Physical Chemistry program in the United States.

***If you could give advice to current CSUF NSM students, what would you tell them?***

Don't be ashamed to ask for help. When I first came to CSUF I was far too afraid to ask for help. I did not know how to be a successful student and when I began to struggle I was ashamed to talk to people about it. After returning I was no longer shy, every time I struggled or had questions I asked someone and if I looked hard enough there was never a shortage of people willing to help with any problem that I had.

Schedule your study time like it's a class itself. This is the most important thing you can do to be successful in your classes. If you are taking a 3-unit science course you should spend 4-6 hours a week studying for that course. If you have assignments due, use that time to work on them, if not use that time to get ahead, but get in a habit of sitting down at the same time every week and studying for that class. If you do not have time in your schedule to put in 4-6 hours a week you need to lighten your class load. Trust me your GPA and sanity will thank you.

Go to office hours. This is important, but you will only get something out of it if you go in prepared. If a homework is due Thursday and your professor is holding office hours on Tuesday, you need to make sure you have at least attempted every homework problem and compiled a list of questions that you have by Monday. Coming in prepared will ensure that both you and your Professor get the most out of the time. Don't be shy, this is time set aside specifically to help you succeed, use it, but make sure you are using it wisely.

Take the time to find out what you are passionate about. Very few people in this world get to actually go to work every day and enjoy what they do. You owe it to yourself to try and find your passion. There have been times when I have been in lab late at night with no one else around and smiled because I know that I am exactly where I belong. You can find that bliss as well, but from my experience it doesn't just fall in your lap you have to look for it.