Carolyn Valdez

Graduate Institution: University of Washington

Location: Seattle, Washington

Graduate Discipline: Inorganic Chemistry

Hometown: Littlerock, California

Research Interests:

I am particularly sympathetic to the impact our society will make on the earth and have chosen to devote my professional and personal life to reducing the burden of our energy-intensive lifestyle. As part of a joint effort, our research aims to create a solar energy conversion device that can separate water into its elemental components using sunlight. My project for the past three years with Harry Gray has focused on synthesizing and studying a dinuclear cobalt complex that will mediate the formation of dihydrogen for use in the solar fuel cell. My experience is mostly in synthetic inorganic chemistry, developing syntheses to the application of these compounds on silicon surfaces. More recently I have become interested in another pressing problem, the irreversible accumulation of CO_2 in the atmosphere. If one can capture the usually inert CO_2 from the atmosphere with transition metals, it may be possible to convert this greenhouse gas into a usable form of fuel. Utilization of CO_2 as a fuel would benefit society both by satisfying our energy need and reducing our impact on the atmosphere. As a chemist, I feel that it is our job to shift the paradigm of our fossil-fuel based energy consumption by providing an alternative.

About me:

In addition to research, I enjoy teaching and mentoring younger students in after-school programs and in classes. Using the Solar Hydrogen Activity Research Kit (SHArK), we help younger college and high school students become acquainted with the research process. While using the kit, they are conducting real research to look for novel materials for energy conversion. As a mentor, I am able to both introduce disadvantaged students to the specifics of research and be an example to them that it is possible to overcome personal barriers and study science. Outside of the lab, I enjoy cycling; a fun and exciting way explore cities and small towns. Growing up in California has given me a passion for traveling, hiking and seeing the outdoors, along with playing volleyball for official teams or just for fun (although I am only 5'3"!). I also love to bake and cook with new flavors to experience the taste of other cultures.