

{WIN*tern*ships!}

First Prize

In the Midst of Saving the World

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With each day, our Earth's fossil fuels are squandered and will soon be completely depleted. Yet, we live in an exciting time when scientists are creating outstanding and novel renewable energy sources that will reduce our destructive dependence on fossil fuels. Lawrence Berkeley National Laboratory, where I interned for the summer of 2014 for ten weeks, has a mission

that aligns with my personal goals. As a young boy, I wanted to single-handedly solve the energy crisis and save the world. Obviously, the experience was not how I had envisioned in my childhood but it was as close to being a superhero as a future chemical engineer can get.

I was assigned to the Joint Center for Artificial Photosynthesis under LBNL where researchers focus on ways to convert atmospheric carbon dioxide gas into useful energy products such as methanol. As a research intern, my task was to model and analyze different metal catalysts that could chemically remove oxygen from the carbon dioxide molecule effectively. In doing so, I got the chance to use two of the world's largest and fastest supercomputers, Hopper and Edison, to perform the quantum mechanical calculations that are necessary to study chemical behaviors of the catalysts on a molecular level. Under the guidance of my mentor, I devised a method to increase the rate of conversion that utilizes a lesser amount of energy.

The experience taught me technical skills such as molecular modeling that I would need as a chemical engineer. More importantly, it confirmed my love for research in the fields of catalysis and renewable energy. Getting this opportunity to work at a US Department of Energy's national laboratory was a dream come true. It not only inspired me with the drive to become a professional chemical engineer but also validated that with hard work and passion, I could achieve my life-long goals.

Photo caption: Using the supercomputers: Hopper and Edison at the National Energy Research Scientific Computing Center (NERSC) in Oakland, CA