

My undergraduate research advisor once told me, “**Atmospheric chemists are jacks of all trades.**” Indeed, I have fared this advice well. Throughout my chemical education I have become familiar and intimate with gas chromatography and liquid chromatography/mass spectrometry (MS), high performance liquid chromatography, ion chromatography, UV/VIS spectroscopy, FTIR spectroscopy, attenuated total reflectance FTIR spectroscopy, aerosol sizing mobility analysis, aerosol optical counting, electrospray ionization MS, matrix assisted laser desorption/ionization MS, X-ray photoelectron spectroscopy (XPS), atomic force microscopy and even molecular dynamics simulations. Certainly, the techniques at the beginning of the list have been heavily exploited in atmospheric chemistry research for nearly four decades since the United States Environmental Protection Agency’s conception in 1970. The techniques at the end of the list have showed up only in the last decade in atmospheric chemistry research and I believe maintaining a connection with the old and new provides balance and direction as a career educator and researcher.

After completing my Ph.D. on *Hygroscopicity of Amphiphilic Nanoparticles: The Role of Size and Composition*, I would like to pursue a **post-doctoral position** in the newly emerging ambient surface science community. I find the recent work on liquid micro jets and ambient pressure XPS studies, just to name a few examples, fascinating and I believe it is a logical direction to proceed for the atmospheric chemistry community. When examining the number of recent collaborations with surface science and atmospheric science it has become desirable to me to learn how to conduct experiments which can probe first principle interactions as well as maintain matrix specificity. I also find keeping a close connection with the computational community paramount, which is why I elected to learn how to conduct molecular dynamics in my Ph.D. work and plan on using that tool in my future as a physical chemist.

I would like to pursue a **tenure track position** at a premiere research institute once my post-doctoral position is completed. The most important feature of the ever popular Figure SPM.2, on page 4 of the Intergovernmental Panel on Climate Change’s Summary for Policymakers 2007: The Physical Science Basis, is the tiny column tucked away, over to the far right, labeled LOSU (level of scientific understanding). I find this column the most important because of the nine radiative forcing components listed only two of them receive a *High* LOSU rating; whereas two of them receive a *Med-Low* LOSU rating and four of them receive a *Low* LOSU rating. In other words, there is a lot of work to be done. I find it important to work with policy makers striving toward the same common goal. I am also heavily involved in community outreach and plan on maintaining that balance well into my career. I have participated as a judge in the California State Science Fair for three years in a row and have given talks on climate change to high schools and middle schools all throughout Orange County, CA. As a principle investigator I will encourage my students to do the same.

**Earth’s atmosphere** is a complex and rich place. It is a fishbowl containing some  $10^{21}$  liters of fluid, rotating about a point at roughly 1,000 miles per hour, making its hurtling journey through space at an unfathomable 67,000 miles per hour. The number of microseconds in all of recorded human history is a drop in the bucket compared to the number of trace atmospheric pollutant molecules in the entire, column integrated troposphere. Given this daunting amount of seemingly useless information, how in the world is a scientist to think of all the possible reactions and interactions taking place in Earth’s atmosphere? The mantra that has been bestowed upon me in my education as a young scientist is *one at a time*. Literally, shrinking one’s self down to the size of a molecule and applying the fundamentals of physics and chemistry on a very, very large scale. This is what I have learned in my education and this is what I’d like to teach in my ensuing career as a higher educator of physical science and atmospheric chemistry research.

Regards,



Chris Harmon