



# David J. Weinberg

**Graduate Institution:** Northwestern University

**Graduate Discipline:** Physical Chemistry

**Hometown:** Vestal, NY

**Relevant SC Research:** Basic Energy Sciences

## Research Interest:

I am interested in examining the interactions between excitonic and plasmonic nanocrystals in hybrid materials. Nanoplasmonic materials have the potential to enable fabrication of solar cells with reduced cost and improved power conversion efficiency over existing architectures by concentrating incoming light via near field enhancement of solar radiation. However, the literature devoted to plasmonic enhancement of photovoltaic devices is almost entirely focused on bulk improvements of device performance, and seldom addresses the microscopic interactions between surface plasmons and chromophores. I intend to examine processes such as electron and energy transfer between plasmonic and excitonic species by performing time resolved

spectroscopy on carefully designed heterostructures.

## About Me:

As an undergraduate at the University of Rochester, I was lucky to have formative experiences doing research in the field of solar energy as both a synthetic and physical chemist. I was inspired to seek out a scientific community with a focus on materials and renewable energy, and this interest led me to Northwestern University. I am a first year graduate student in the Department of Chemistry, and a member of Emily Weiss's research group.

Outside the lab, I enjoy engaging a broader community in science through outreach programs. I first became involved in science outreach as a high

school student, having spent many weekends assisting with public astronomy programs and operating the telescopes at my local observatory. I continued to engage in outreach through my time at Rochester, and I currently participate in the Northwestern Science in the Classroom initiative. My long term goal is to become a research scientist in industry or a national lab.

When I entered college, I aspired to become a professional bassoonist and make a living as a classical musician. Though my career took a U-turn at the end of my sophomore year, I continue to play in my spare time and try to take advantage of the rich music scene in Chicago. I also enjoy cooking (poorly for now, hopes of improvement) and reading science fiction.



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