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CITATION

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CAREER PROFILES Options and Insights

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Degree: When, where, what, and what in?

In college, I studied biology at Agnes Scott College with the intention of going into the medical field. The summer before my senior year, I took a course through the School for Field Studies in the Turks and Caicos Islands that focused on marine resource studies. That experience changed my career path trajectory, and I went on to study marine science in graduate school as a result. I earned my MS in marine science from the University of South Carolina, with a focus on physical-biological oceanographic interactions and the effectiveness of the boundaries of an existing marine protected area in protecting a snapper spawning ground along the Belize Barrier Reef. I went on to earn my PhD in marine science, with a focus on physical oceanography, from the University of South Florida. My doctoral work focused on combining real-time oceanographic data with numerical models to investigate various problems in the Tampa Bay estuary ranging from maritime transportation to search and rescue operations and environmental water quality issues.

Did you stay in academia at all, and if so, for how long?

I did not stay in academia after earning my doctorate. While I enjoyed the research and fieldwork associated with getting my doctorate degree, I had a desire to transition from academia to policy. I wanted to use my scientific training to translate data and research findings into easy-to-understand policy positions, so I began considering postdocs and fellowships that involved marine policy.

After earning my doctorate degree, I was awarded a fellowship on Capitol Hill and moved to Washington, DC. The John A. Knauss Marine Policy Fellowship is sponsored by the NOAA Sea Grant program. During the 12-month fellowship, I was immersed in marine policy at the national level.

The one-year Knauss fellowship places graduate students in an office in either the executive or the legislative branch of the government. I chose the legislative branch and was placed in the office of a US Representative from the central coast of California. During my fellowship, the Deepwater Horizon incident occurred, and I was thrown into preparations for Congressional committee hearings focusing on efforts to cap the oil spill, followed by the subsequent cleanup efforts. One thing I noticed throughout hearings was the involvement of the US Coast Guard and the US Navy in the government response efforts. Both services were providing not only ships and personnel, but also oceanographic and meteorological data to assist in the response effort. From that experience, I became interested in the military's role in providing what I now know to be called "maritime domain awareness" data to the local and federal governments involved in the response efforts.

How did you go about searching for a job outside of the university setting?

Many organizations send out weekly or monthly job postings for a particular career field. A few months before the end of my fellowship, I signed up for a number of these listservs and started receiving job announcements focused on ocean policy. Applying to jobs through these announcements, as well as through networking connections that I had gained during my time on Capitol Hill, I was able to interview for several ocean policy positions. It was not until I had gone through

several interviews that I realized that the job I really was looking for was one that allowed me to "get back into the science" and meet my goal of translating research data into policy positions, now with a broadened focus of including the defense industry in my job search, based on my fellowship experience.

It was difficult to turn down a couple of job offers at very reputable organizations, and risk possibly not finding a job once my fellowship was over, but in the end, it paid off. I was fortunate to be hired by a large defense company on a Navy contract to translate oceanographic modeling and simulation data into environmental policy.

Is this the only job (post-academia) that you've had? If not, what else did you do?

After three years on the environmental policy contract with the Navy, I sought out an opportunity with a smaller defense company to work on another defense contract, this time focusing on Arctic policy and the impacts to the Navy as this region becomes less ice covered.

What is your current job? What path did you take to get there?

Currently, I am Vice President of Program Development at the National Defense Industrial Association (NDIA). It is a

501(c)3 nonprofit association that strives to connect academia, industry, and government to provide innovative solutions that advance the national security and defense needs of the nation. I sought out this job to broaden my horizons and to learn more about the nonprofit sector.

What did your oceanographic education (or academic career) give you that is useful in your current job?

Even though my current job no longer exclusively focuses on oceanography, I still use aspects of my education and training in my daily work. My graduate education set me up with the expertise to be able to translate data and research findings into policy positions. My current job requires that I communicate effectively with high level federal and administration officials using skills that I gained on Capitol Hill during my marine policy fellowship.

Is there any course or other training you would have liked to have had as part of your graduate education to meet the demands of the job market?

I had some exposure to science writing and communication training when in graduate school, but I would have benefited from a formal course in these areas. I would have also welcomed a graduate-level mentoring program, perhaps one that paired me with a career professional, to better prepare me as I transitioned from academia to policy.

Is the job satisfying? What aspects of the job do you like best/least?

My job is very satisfying and rewarding. As a scientist, I enjoy being able to connect other scientists and researchers in academia with scientists in the Department of Defense and elsewhere in the US government. I'm also responsible for developing and coordinating program development initiatives and long-range strategic objectives. This means that part of my job entails traveling to conferences and seminars that feature cutting-edge technology or innovative thinking. I am fortunate to be able to stay engaged with the scientific community while also engaging with industry and government.

Do you have any recommendations for new grads looking for jobs?

My advice, and this is not specific to my field, would be to take advantage of any and all opportunities that are presented to you, whether you think they will be helpful to your current career path or not. My path involved a summer study program in college, an internship in grad school, and a post-graduate fellowship to arrive at my current professional occupation. Sometimes the path you think you're meant to be on can diverge and you can find yourself going in a completely different, but maybe more interesting, direction.

ANDREAS KRUPKE | Scientist III, Verification & Validation Department, Thermo Fisher Scientific (andreas.krupke@thermofisher.com)

Degree: When, where, what, and what in?

In 2013, I earned my PhD in biochemistry at the Max-Planck-Institute for Marine Microbiology in Bremen, Germany. My thesis focused on linking molecular biology with mass spectrometry, allowing me to discover an ecologically important group of marine cyanobacteria (UCYN-A) living in symbiosis with a eukaryotic cell and to provide the first physiological insights into this unique relationship.

Did you stay in academia at all, and if so, for how long?

After my PhD, I completed a 1.5-year postdoc position at the Woods Hole Oceanographic Institution (WHOI). During my tenure at WHOI, my work focused on open-ocean environments where I investigated the microbial phosphorus redox cycle. I also worked on a project to understand how bacterial infochemicals impact particle degradation in the ocean.

How did you go about searching for a job outside of the university setting?

When I started my search, I knew I wanted to be a bench scientist. I began by reading job descriptions to determine what skills were required for an industry position, and then comparing those requirements to my own skill set. This early research helped me define what jobs interested me outside of academia and what proficiencies were needed to be a viable applicant. In parallel, I reached out to individuals who held relevant industry positions to learn about their careers, day-to-day work responsibilities, and transitions into the private sector. I

strongly recommend the "informational interview" approach, as the conversations are relaxed and no one feels pressured to discuss specific job offers—this approach helps you build a professional network outside academia that can result in specific job referrals down the road. I also spent time networking as part of a local biotech "meet up" group, and I attended seminars at nearby universities relating to careers outside academia.

Graduate Student and Early Career Resources

https://tos.org/opportunities

The Oceanography Society has created a web page with resources relevant to ocean sciences graduate students and early career scientists. This portal contains links to information on jobs, fellowships, scholarships, and ship time/fieldwork opportunities, as well as links to useful articles. New resources are added regularly, so please be sure visit this site often!

Oceanography Student News

https://tos.org/opportunities

Have you read the latest issue of Oceanography Student News? Each newsletter includes a regular column by the student representative to the TOS Council, profiles of TOS student members, information about student activities related to TOS-sponsored meetings, and links to relevant student resources and articles in *Oceanography* magazine. Feel free to forward the links to the newsletters to other students, or print out a copy and post it on your department bulletin board. Any questions? Email TOS Student Rep Stefanie Mack at studentrep@tos.org.

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Is this the only job (post-academia) that you've had? If not, what else did you do?

This is my second job outside academia. My first role was a research scientist position in the R&D department at Thermo Fisher Scientific in San Jose, California, where I tested and developed technologies to link capillary electrophoresis to mass spectrometry for protein analysis (e.g., ZipChip Interface coupled to QE-Biopharma instrument). This position was very similar to my academic endeavors, as I spent most of my time in the lab and also presented project developments to my team members. I enjoyed this work, but was also interested in learning more about the business side of Thermo Fisher's operations.

What is your current job? What path did you take to get there?

I am a Scientist III in the Verification & Validation department at Thermo Fisher Scientific in South San Francisco, California. My main responsibility is to assure that products under development (e.g., capillary electrophoresis instruments) meet distinct quality and performance requirements before official release. I meet with colleagues from the R&D and business departments at Thermo Fisher in order to get both sides to agree regarding product specifications, which I then use to design, plan, and execute test protocols for upcoming products. Day to day, I spend some time in the lab trouble-shooting instruments and software. The remaining time I spend interfacing with others in my department to discuss results and key findings. There are also opportunities to develop and write research proposals internally at Thermo Fisher to acquire internal funding for additional innovative projects.

What did your oceanographic education (or academic career) give you that is useful in your current job?

My current job requires that I work effectively in an interdisciplinary environment with teams from various backgrounds such as engineering, biochemistry, and product management. I also need to be comfortable using and connecting new technologies with one another and translating scientific data into written forms and presentations. My academic background gave me experience in all of the above. Specifically, I give credit to the numerous hours I spent in the lab tinkering with new instruments, as well as the time I dedicated to publishing my projects.

Is there any course or other training you would have liked to have had as part of your graduate education to meet the demands of the job market?

If I were to go back to graduate school, I would take courses in product management and financial planning for commercializing products from the R&D stage to market. These are areas I touch upon on a daily basis, and have had to learn more about as I go along.

Is the job satisfying? What aspects of the job do you like best/least?

My job is satisfying because I can learn about cutting-edge technologies, especially ones that are not yet publicly available. I also find it rewarding to interact with teams who bring in expertise from R&D, business, marketing, and sales. Navigating through such terrain can be challenging, as I need to convey information to audiences with different agendas and vocabularies, but at the same time these challenges enable me to constantly gain new knowledge and skills.

Do you have any recommendations for new grads looking for jobs?

Identify aspects in your graduate role you like the most—what excites you? Conduct informational interviews, and network inside as well as outside academia. This will give you valuable information about the types of positions out there and the skills needed to help you strategize your next steps to land the job you like.