

Dr. Kevin W. Bieg
Senior IP Counsel | email: kwbieg[at]sandia.gov

What do you do?

I am an intellectual property attorney working for Sandia National Laboratories. Primarily, I do patent preparation and prosecution in the areas of materials, nanotechnologies, photonics and phononics, and microelectromechanical systems (MEMS). I also work on transactional matters (e.g., cooperative research agreements and licensing agreements) with universities and industry, copyright and trademark, and litigation. I also work on policy matters related to intellectual property and technology transfer.

What do you like most about your current position?

I enjoy learning about the many new technologies being developed at Sandia, as well as translating these inventions into patent applications.

What do you like least?

Bureaucracy.

What makes your current position distinct vs. other career options you could have chosen?

I've been fortunate in my professional life in having essentially three separate careers – as a research scientist, as an advisor to the government, and as a lawyer. The main difference is that as a scientist, you are on the leading edge of innovation, whereas as a patent lawyer, you are trying to exploit someone else's innovation. Both perspectives can bring personal satisfaction. However, science is a very competitive profession and I think that it is difficult to sustain a high level of creativity and concomitant financial support over the course of a scientific career, whereas it is easier to manage your own career as a lawyer and the pay can be better. On the other hand, patent law is not as sure a bet or as lucrative as it was ten years ago and, now that I've seen it from the inside, I think that there are serious problems with our legal system that are harming the nation's economic competitiveness.

How did you get there?

Realizing that the labs' technologies frequently were not making it into commercialization, I became interested in technology transfer in the mid-90s. I became particularly interested in law while serving as a congressional fellow on the House Science Committee after realizing that most of the committee staffers were – lawyers! I thought that I could marry my background in science with my interest in law to improve technology transfer from the lab, so I enrolled in night school at George Washington University while working as a science advisor at the Department of Energy during the

day. While there have been improvements, the labs are still struggling with transferring technologies to the private sector.

What is your next career step?

Retirement. Advising local start-up companies on intellectual property matters.

Do you have any advice for young scientists whose goal is to end up in a similar position?

If you are interested in patent law, have a strong technical background and go to the best law school that you can get into. Realize that law is a very different profession from science.

Dr. Margaret E. Gordon
Technical Staff at Sandia National Laboratories
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What do you do?

I am a chemist at Sandia. In my job I write many proposals, both internal and external. I work in lab on my own projects. I mentor HS and college interns. I write papers and reports, and I team with others on their work. I also take care of the safety paperwork and obligatory institutional requirements for running a chemistry lab here.

What do you like most about your current position?

I enjoy brainstorming with others and developing proposal ideas. At Sandia, since we are organized by general purpose (solar energy) instead of discipline (inorganic chemistry), I often interact with people that have a very different background, so the conversations can be very interesting.

What do you like least?

The paperwork and regulations take time away from lab work and can be very laborious.

What makes your current position distinct vs. other career options you could have chosen?

Several things make working at Sandia different from elsewhere. While I can write a proposal on anything I like, I will get much needed support from my management if the proposal is in line with our mission. Some projects are classified, meaning external publications are not in general allowed. I can hire interns and postdocs if my projects would support and benefit from their help, but no teaching is required. The amount of bureaucracy continues to surprise me. I have a manager and go through performance reviews every year.

How did you get there?

I accepted a postdoc position here, and was converted to staff. As a postdoc I tried to network and get involved with many different people and learn as much about Sandia as possible.

What is your next career step?

Sandia offers opportunities to work in DOE for a year or two; this might be an interesting opportunity in the next 5 years.

Do you have any advice for young scientists whose goal is to end up in a similar position?

Try interning over the summer or during the year at a national lab to really get a feel for the kind of workplace it is. Different departments within Sandia are different; keep that in mind. Try to meet and interact with scientists at the labs. A scientist could pursue a line a research related to the areas Sandia National Laboratories is interested in which might increase the hiring probabilities.

Dr. Ilia A. Guzei

Director of Crystallography at the University of Wisconsin
Madison | email: iguzei[at]chem.wisc.edu

What do you do?

I supervise a crystallography lab with three single-crystal and powder diffractometers, give lectures in crystallography, teach practical crystallographic courses, write scientific papers and crystallographic software. I have served as a co-editor of Acta Cryst. C for nine years.

What do you like most about your current position?

The combination of mathematics and chemistry is an ideal blend for me. Being a chemist is critical to being a successful crystallographer, and of course in crystallography one does a lot of computations which I like. Interacting with colleagues and students in a stimulating academic environment has been a rewarding experience.

What do you like least?

This is hard question as I am very satisfied in my position. I can only wish to have sabbaticals!

What makes your current position distinct vs. other career options you could have chosen?

I have interviewed with and had offers from chemical and crystallography equipment manufacturer companies. I like the academic environment, its challenges, and the ability to attend conferences, conduct workshops, and publish scientific research. Working with young people is also big plus – they keep one young and on his toes. Making a difference in their lives and seeing them become mature scientists is gratifying.

How did you get there?

Prior to getting my chemistry degree from Wayne State University I was fortunate enough to spend two weeks in Arnie Rheingold's lab. Arnie and I liked each other and it opened the possibility of doing crystallography in the US for me. When Arnie's postdoc left shortly after my visit Arnie told me that I could have his position if I arrived within two months. I wrote up my thesis and graduated within several weeks and took the job. Working under a well-respected and prolific professor allowed me to gain a lot of experience and to co-author over 60 papers. After that I took the job of an X-ray facility director at Iowa State University and then in 2000 I became a crystallographer at UW-Madison.

What is your next career step?

In all positions one eventually reaches a ceiling. Currently I want to share my experience and contribute to the crystallographic community – I am reviewer for many journals, a co-editor, I have been the poster chair at the ACA meetings for four years. I have also served on many university and international society committees.

Do you have any advice for young scientists whose goal is to end up in a similar position?

It is extremely important to find what you like to do – ideally work and play should be the same thing. Students who think crystallography is engaging fun should try this hat on and do several structures from start to finish on their own. As exciting as this profession is, there are many routine chores, both technical and paperwork. With many jobs, at first you like it, then you hate it, then it becomes an everyday experience. Ensuring that crystallography is interesting enough to you and that you will stay stimulated is important.

Dr. Joseph Orgel

Associate Professor of Biology, Physics and Biomedical Engineering at the Illinois Institute of Technology (IIT) and the Associate Director of BioCAT. | email: orgel[at]iit.edu

What do you do?

I have a very broad range of activities from macromolecular structural characterization to clinical program design and consultation for neurology to museum exhibit organization to bio-reactor implementation for tissue engineering. I'm probably best known for my labs work on the structure and organization of collagen within tissues.

What do you like most about your current position?

I'm a better idea initiator, leader and scientist than I was a sub-ordinate. I like being useful and responsible to peers and students better than I do the leadership of another for my day to day work. The scope I have for creative and innovative science is wonderful.

What do you like least?

The horror that is public funding for science and teaching overload (when not on sabbatical...). Simply maintaining a source of support for one's day job is a full time job in its own right.

What makes your current position distinct vs. other career options you could have chosen?

Academic 'freedom'. Lower income *perhaps*, but my limitations are largely defined by my initiative and perseverance or lack thereof. Mentorship. Being aware of the long term positive impact one can have on dozens of individuals is a strong plus.

How did you get there?

Last man standing? Determination is a big key. I would not have these positions if I hadn't made a solid contribution within my field which was / is a particularly difficult and often harsh task. Securing funding.

What is your next career step?

There are multiple options, don't be too closed minded as to possibilities you don't yet know about. I care more about certain scientific problems to be resolved than I do getting to full professor for example. However both are linked and I am not blind to that.

Do you have any advice for young scientists whose goal is to end up in a similar position?

Don't avoid hard career paths just because they are hard but also don't be blind to the costs and plan or decide which accordingly. Keep family and things you love to do in prospective at the same time. Also be aware that occupation and vocation can be but don't have to be the same thing. You have all the time in the world you're going to have available right now or in the near prospective future, and you need to make conscious decisions to utilize it rather than waiting for when you 'have more time' (which occurs rarely by chance). On the other hand, workaholicism is a scientist's disease so remember to be kind to yourself in this respect also.

Dr. Jim Pflugrath

Research Scientist at Rigaku | email: Jim.Pflugrath[at]rigaku.com

What do you do?

I am a Senior Fellow at Rigaku Americas where I have worked for more about 20 years. I help sell and support of Rigaku X-ray generators, detectors, and robots for single crystal X-ray diffraction. I help develop software to process diffraction images, help solve problems with diffraction data collection for customers and my colleagues, and help with the 401(k) plan at Rigaku. I help teach crystallography annually at Cold Spring Harbor Lab, too, where I was previously a Senior Staff Investigator.

In the past, my group did some of the “protein crystal structures for hire” work at Rigaku. Basically, I’ve been involved in almost all facets of developing, building, trouble-shooting, using, and marketing X-ray diffraction equipment for macromolecular crystallography.

What do you like most about your current position?

I get to do something new and different almost every day. Also I really like helping people solve problems they bring to me. I like new technology and get to influence what will be the next big thing.

What do you like least?

Does anybody like to fill out weekly reports and time sheets? But one does need to let others know what they have been up to.

What makes your current position distinct vs. other career options you could have chosen?

I have a job that is a hybrid between academia and corporate. Unlike academia, I do not have to write grants, but I do need to write proposals and publish technical work as well as marketing materials. Unlike some pharmaceutical jobs, I am not strictly focused on solving crystal structures. I am more focused on technology development.

How did you get there?

I took a traditional career path for an academic scientist: College, Grad School, Post-doc, and Principal Investigator. I had a grant to buy an area detector and was visiting Molecular Structure Corporation for a demo when they offered me job. I’ve been working there ever since.

What is your next career step?

I don't see a next career step for me; my career is complete.

Do you have any advice for young scientists whose goal is to end up in a similar position?

The landscape is different that when I started out. It just seems so much tougher nowadays. I always recommend that one get and read "What Color Is Your Parachute?" which is a book about getting a job, finding a career, and solving problems for others. One should be able to find something that they are passionate about and have zeal for. A friend once told me that a good career is one where "They would have to pay me a million dollars not to do it." That's kind of even more passionate than the "I would work for free." But if someone wanted to end up in a similar position, they would be developing technology and writing software while in graduate school. And they would be getting their name out there by getting folks to use the technology and software that they had developed. More specifically, when they went to meetings, they would not sit with their friends from the same university, but would be making new friends and contacts at every poster session and at every meal. I think we call that networking and it's more important than one might think.

Dr. Claudia J. Rawn
Associate Professor and Director of the Center for Materials
Processing at University of Tennessee at Knoxville
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What do you do?

I do a variety of things including teaching a variety of Materials Science and Engineering courses, mentoring both undergraduate and graduate students doing research, writing technical papers, giving presentations, applying for external funding and managing those programs when I am successful. For the Center for Materials Processing I also have some financial and supervisory responsibilities.

What do you like most about your current position?

Every day is different and I get to interact with a wide variety of people.

What do you like least?

Days when I have too many meetings.

What makes your current position distinct vs. other career options you could have chosen?

Being a university faculty member gives you a lot of freedom to do interdisciplinary research on a variety of topics.

How did you get there?

I didn't plan it. One thing lead to another and pretty soon I found myself where I am. I've always enjoyed being a scientist in general and I always try to do my best.

What is your next career step?

I am pretty happy where I am. I just was appointed Associate Professor so in a couple of years I would like to go up for promotion to Full Professor.

Do you have any advice for young scientists whose goal is to end up in a similar position?

You have to love what you do. If you don't enjoy what you are doing don't be afraid to look for alternatives. If do love it, it will be easy to get where you want to be.