

AVS Recognition for Excellence in Leadership Presented to Stephan Burdin

The AVS Membership Committee is recognizing Stephan Burdin, University of Illinois, for Excellence in Leadership. The AVS seeks to recognize individuals who not only excel in science and/or engineering, but who also, through mentoring, have enhanced the careers of future generations who might not otherwise have considered or had access to opportunities in science, engineering, and technology. Their leadership in the effort to develop fully the world's human resources is critical to the best scientific and engineering progress. Recipients of this honor will have their profile displayed on the AVS Website, featured in this Newsletter and will receive a certificate of recognition. [Click here for eligibility & nominations criteria.](#)



Q: Describe a typical day in your life.

A: Like many people I start (and often end) my day going through messages. With the exception of regular meetings and training students, my schedule is rather free-form because of my role. Priorities shift frequently, often several times a day. I could be doing things such as discussing a problem on our magnetic sector SIMS, repairing a transmission electron microscope or a scanning electron microscope, or taking time during any of numerous interruptions to answer spontaneous questions from students* or other staff who need help with electronics, vacuum technique, or any of a number of things. (*It's amazing how resourceful some are; they find me even when I'm in the most unusual of places in the lab!)

I could be evaluating safety procedures for a proposed process or experiment, repairing a power supply for our microfabrication facility, helping out with AFM instruments, working in our laser & spectroscopy facility, or visiting a research group's lab to take a look at a random (to me) piece of equipment that needs some attention. On the rare occasion that I get some uninterrupted expanse of time, I might actually be found in my electronics work room designing or putting together new circuitry to extend the capabilities of one of our analytical systems, nominally one of the primary roles that I'm supposed to play. This doesn't last because it's far too easy for people to find me there. I find that the noon hour and evenings are more likely to afford me the luxury of some stretches of uninterrupted time. If this sounds like chaos, it probably is and I just haven't admitted to the futility of it. Still, things do get accomplished and progress does get made. It's not always easy to measure, but this is support of science; it's not predictable. I'm usually working five interruptions deep at any given moment. Things come up far more quickly than I can dispatch them and I certainly don't lack for variety.

Q: What are your leisurely interests and activities?

A: I enjoy hosting a Purple Martin colony at my home during the Spring/early Summer. I enjoy travel, stargazing, spending time outdoors, and even some windsurfing. I enjoy learning about energy conservation and renewable energy technologies in general and - as a mental exercise - thinking about how to make it easier for everyone to take part in ways that make sense. I like to keep as a constant goal, the ability to explain technical concepts to non-technical folks. These interests have resulted in my participation, during legislation-forming hearings for wind energy ordinances, as someone who can help make sense of the technical aspects that come up. I enjoy tinkering with these technologies when I can. I enjoy "escapes," ways to completely stop doing what I do and to stop thinking about them. Whether this means doing some gardening or taking a weekend trip, I feel that this keeps me energized when I "come back" and provides stamina for my abilities.

Q: Choose one word you feel explains you best.

A: Analytical

Q: What do you feel you are best known for?

A: I think that others regard me as the patient, level-headed, thoughtful person who can think through a situation and help them come up with a solution. Being a bit of an outsider - an electrical engineer in a scientist's world - has not only allowed me to learn, but also to offer another perspective and set of solutions. This often encourages the thought process that leads to ideas. That's fun.

Q: What is your favorite part of your job?

A: I have to say that there are two. I like to make things work and to understand something about how they work. Whether I'm working on a modern scanning electron microscope or a time of flight secondary ion mass spectrometer, or on our now 50-year-old, 3MeV Van de Graaff accelerator, I gain satisfaction from being able to make these things work when they're not happy. Admittedly the accelerator is one of my favorite things to work on. It's definitely a bit "before my time," but I really appreciate the outstanding engineering that is the reason we still operate it every day. I enjoy working on something that is so well made.

I also find it very satisfying to work with students who are really trying to understand and learn to analyze a problem. Often I try to encourage them to look at it a different way in order to find a solution. We have our share of those who just want to get work done, of course. But those who really want to learn about the analysis, add something to their research, and are appreciative for a little bit of help are the ones you just can't help but want to work with. If I can suggest an experiment to shed some light on their problem, I feel great.

Q: Is there a quote you live by or that inspires you, if so what is it?

A: I'm not especially inspired by those types of things. I'm a pragmatist, and am inspired by what's functional and what's practical. This is no doubt due in part to my parents who grew up and lived in worn-torn Europe before, throughout, and after WWII. Later, this was reinforced by the person I worked with most closely. I continue to be far more inspired by those types of things and traits.

Another thing that inspires me strongly is that much of what we do is about people. Our individuality, our success, our energy, and our drive are due to the people around us. All of us have benefited from the talent of others. We can all make an impact with individual talent. If we were all the same, we just wouldn't be where we are today.

Q: Who has encouraged you throughout your career and/or life? Inspired you?

A: I couldn't understand as a child what I inevitably came to appreciate as an adult. That is the life that my father endured being born in Poland during WWI, and being a young man at the beginning of WWII - drafted, sent to war, captured immediately, and sent to a work camp, then liberated by the Americans some years later. Then, with the relative freedom enjoyed by a person holding an allied ID card, making some semblance of an existence in post-WWII Germany selling cigarettes and liquor to soldiers. After all of those years he somehow managed to meet the woman who would become my mother (who grew up facing the growing threat of, and enduring WWII as well, and who was a refugee for a significant part of this timeframe). They emigrated in 1960 and raised a family in the United States. This desperately brooding tale serves as powerful inspiration to me of the human spirit, if I may put it in such inadequate terms.

Q: Did you have a mentor?

A: There is no doubt that I'm a fortunate beneficiary of interactions with numerous people but I have to say that, in my professional career, this credit must go to Ernie Sammann (AVS' 2003 George T. Hanyo award winner). Officially we became coworkers when I joined the University in 1990 but there's no doubt that this mentorship began then too. As time went by I came to realize that I had never met a better electrical engineer. I'm not talking about someone who designs a microprocessor; neither of us aspired to be that type of designer. I'm talking about a person who is amazingly creative and thoughtful when it comes to devising solutions, is a very thoughtful, patient, persistent person by nature, is someone that you feel you can learn something from every day (even after two decades!), and is a great role model. Most of us wouldn't think ourselves as a particularly good example of this because of our humility, but part of what makes this true is that he's comfortable being himself and doesn't try to be a super hero. We worked together for 22 years until his retirement and I continue to feel immensely fortunate to have had this relationship and interaction. I can't say enough about it.

Q: How did you become affiliated with AVS?

A: A number of my colleagues are long time AVS members.

Q: Do you belong to any other organizations?

A: I have been a member of the IEEE for just about 30 years. I am a member of the Purple Martin Conservation Association. While not a related scientific organization, it performs and sponsors

research and is aligned with one of the activities I enjoy very much - hosting a Purple Martin colony at my home. It's my small attempt to help conserve one of our important, native, migratory bird species that's in decline - and it's a lot of fun.

Q: What has been your paramount experience with AVS?

A: I have attended the AVS symposium. The student chapter here at Illinois is an active one, attracting some very interesting speakers. Watching students listen to and interact with notable figures in science is a lot of fun.

Q: What is the next big step in your career you plan on tackling?

A: I have a couple. I'm at the point in my career where I need to start teaching someone to do what I do. This will be no small accomplishment because it means that someone has to put up with me for significant stretches of time (hopefully that's not so tough).

I also have - as a largely personal goal - the desire to design a system to replace the mercury arc lamps we use with non-toxic sources for UV light. The research facilities in this department alone replace about six arc lamps every month and are always faced with the risk of these lamps rupturing, releasing their mercury into the air we breathe. I know of other places that 'extend' the use of these sources to save money but this happens at the cost of risk. I don't like to see folks feeling cornered and thus having to make these kinds of decisions. These UV sources also emit many wavelengths that are wasteful and are problematic to the equipment and processes. Anyone with mask aligners, mask writers and other intense UV light sources knows these concerns. I'd just love to see us end this for good because there are numerous benefits and because it's the right thing to do.

Q: If you could leave one piece of advice for our future generations, whether it is science related or not, what would it be?

A: We're all part of a community. Everything we do has an effect on those around us, whether that is our families, friends, coworkers, or the larger community (our neighborhood, our countrymen, our world). Think about that and own it, rather than working in a self-perceived isolation. Be aware of your impact and try to make it a positive one. Touch your environment in a positive way by being yourself and using the talents that you have. The impact will extend beyond your immediate surrounding.