AVS Recognition for Excellence in Mentorship Presented to Andrew V. Teplyakov

The AVS Membership Committee is recognizing Prof. Andrew V. Teplyakov, Dept. of Chemistry and Biochemistry, University of Delaware, for research and training in surface and interface functionalization of nanomaterials and solid films with applications in microelectronics and energy conversion. 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.

Q: Describe a typical day in your life.

A: That's the beauty of an academic position. There's no typical day! Every day is different. I usually start my day by gathering my thoughts over a cup of coffee while thinking about what's ahead. The schedule is already set (barring emergencies), so I prepare for the day. After that, it's all about diving into meetings, experiments, new projects, students, classes, and everything else.

Q: What are your leisurely interests and activities?
I love to hike. Other activities are also enjoyable, but this one gives me a chance to think. Interestingly, when I could run, I felt the same about it, but more recently, hiking has become my favorite activity.

A: Choose one word you feel explains you best.
Prompt. Time is a non-renewable resource that we possess. It pains me to waste others' time, and I strive to be as efficient as possible with it.

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

A: My career has taken several turns, but all my work focuses on surface functionalization. It could involve chemical or physical functions, controlling growth or etching, working with single crystals or nanomaterials, but it always aims to give a surface or interface a new property.

Q: What is your favorite part of your job?

A: Undoubtedly, seeing my students succeed at anything they set their minds to.

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

A: I wouldn't say there's a single defining quote that inspires me; however, Richard Feynman's "There's plenty of room at the bottom" is close. What motivates me is what we do not know or understand, and the nano world offers so much new that it will be more than enough for many generations.

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

A: It all began with my parents and family, but I also had several very important academic figures in my career, and I was trying my best to learn from them.

Q: Did you have a mentor?

A: I was very fortunate to have excellent mentors at every stage of my career, starting with my undergraduate studies. During my PhD work, I was advised by Professor Brian Bent at Columbia University. For the first time, I truly learned what it means to lead by example and how to treat others the way you want to be treated. Unfortunately, Brian passed away before I defended my thesis, and the last year of my research was guided by Professor George Flynn. I believe this is when I began to appreciate the "vision of science," as more than half of my manuscripts based on doctoral work were published during this and the following year. During my postdoctoral work, I had the opportunity to admire the strength and insight of the academic drive with Professor Stacey Bent at New York University and later at Stanford. Finally, when I started my independent career at the University of Delaware, I had numerous mentors—some more formal, some less so—but I learned the craft from the best, both in science and scholarship, and in teaching and mentorship.

Q: How did you become affiliated with AVS?

A: I became a member when I was a graduate student, probably around the time I joined ACS. But if ACS connected me with the broader world of chemistry, AVS gave me direct access to the field of my future work.

Q: Have you always wanted to be a member? What motivated you to join?

A: Initially, this was just a curiosity-driven decision. However, over the years, I have come to realize that this society has truly been effective in providing a platform for communication within the areas I find really interesting. In addition to the annual symposium, I regularly participate in the ALD/ALE conference and other meetings sponsored by AVS. After becoming a platinum member, I was also selected to be one of the AVS fellows.

Q: Do you belong to any other organizations?

A: I am a member of the ACS and Sigma Xi.

Q: What has been your paramount experience with AVS?

A: AVS offers a distinctive platform for sharing recent results, communicating with other researchers in the field, and providing opportunities for students to present and defend their findings. More importantly, this capability has stood the test of time. Even during the pandemic years, it remained a key platform for continuing research, scholarship, and mentorship in the field.

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

A: My future work plan involves atomically precise and laser-induced surface and interface processes. Exciting developments are happening in my group and with our collaborators, where understanding surface processes leads to controlled surface functionalization used in real-world applications. There are always new ideas, and we hope our students' interest and enthusiasm help turn some of them into reality.

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: "Dream big" is a cliché; however, with the current development of AI, future advances in science and technology are increasingly relying on models. It is easier to develop and improve algorithms based on big data. Still, what will define human progress for a long time is the unexpected, intuitive, and non-quantifiable. So go beyond any standards and models, and value human input from history, arts, and literature. New ideas can come from anywhere, as long as there is a strong scientific foundation to realize them.