

UCDALI Fall 2025 Newsletter

Faculty Spotlight: Dr. Özge Heinz

Curiosity, creativity, and connection define Dr. Özge Heinz's approach to materials science—and to life.

This month, we spoke with Dr. Özge Heinz, lecturer in Materials Science and Engineering, who teaches both lecture and laboratory courses on the properties of materials. Outside the classroom, Dr. Heinz serves as an editor for the Perspectives series at ACS Langmuir, where she helps shape conversations at the forefront of surface and interface science.



What first drew you to materials science, and how have teaching and editorial work shaped your perspective?

I completed my undergraduate and master's degrees in chemical engineering, focusing on developing materials for sustained drug delivery systems. Working with natural polymers like silk fibroin and hyaluronic acid taught me how deeply a material's performance depends on its molecular organization, from chain structure to surface interactions.

Over time, my curiosity grew beyond biomedical materials. For my Ph.D., I moved into **Materials Science and Engineering**, where I could explore structure–property relationships across many systems. I wanted to understand why materials behave the way they do, how they adapt, interact, and respond in contexts from energy storage to sensing.

Teaching has added another dimension to that curiosity. Guiding students through experiments and discussions constantly makes me revisit first principles and see the field anew. Their questions often remind me that curiosity drives understanding.

My editorial work at ACS Langmuir complements that by offering a panoramic view of emerging research and the creative ways scientists are solving surface and interface challenges. Together, these roles remind me that materials aren't static objects; they're dynamic systems shaped by structure, environment, and imagination.

You're originally from Turkey—what brought you to the U.S., and how has that journey shaped your career?

It's not the most academic story! During my Ph.D. in Istanbul, I attended a workshop in Bangalore, India, where I met another materials scientist. We married in Germany and started our family in the U.S. Having a child while finishing my thesis, far from family, was both challenging and joyful. I defended my dissertation when my son was a year old, and I'll never forget seeing him in my advisor's arms at the celebration.

I later joined CU Boulder as a postdoctoral researcher in the Nanomaterials Lab, working on reverse-osmosis membranes. My postdoc ended just as the COVID-19 pandemic began, making it difficult to balance research and family. I focused on writing and reviewing papers and began collaborating with *ACS Langmuir*. Under Editor-in-Chief Gilbert Walker, we launched the *Perspectives* series, now in its fourth year. Today, I continue as both a handling editor and *Perspectives* editor, highlighting creative intersections in surface and interface science.

How does hands-on experimentation enhance students' understanding of materials behavior?

I have the privilege of teaching both Introduction to Materials Science and the accompanying lab, Properties of Engineering Materials. This overlap allows me to connect theory directly to practice, helping students see how structure, processing, and properties link together. In the lab, they measure hardness, analyze tensile and bending strength, and work in teams on design projects with written reports and presentations.

These hands-on experiences give students a tangible connection to theory. They realize that materials science isn't just about equations; it's about observing, analyzing, and creating. Watching those "aha" moments when concepts become real is one of the most rewarding parts of teaching.

What advice would you give to students and early-career researchers on building technical and communication skills?

Strong communication is as essential as technical mastery. As AI becomes more integrated into research, the *human* elements—clarity, empathy, intuition—are more valuable than ever. Technology can assist with data or drafting, but it can't replace understanding or the ability to explain complex ideas clearly.

I encourage students to describe their work as if speaking to someone outside their field. Doing so sharpens their thinking and reveals the essence of their ideas. In my classes, students give short, high-impact presentations explaining an engineering problem. These exercises build confidence, deepen understanding, and prepare them for dynamic communication.

AI tools are most effective when guided by skilled users. With a solid foundation and thoughtful questions, they become powerful tools for discovery. The future will favor those who pair strong expertise with clear and creative communication

How do you maintain balance between professional life and personal time?

Boulder quickly became a second home for me, offering a perfect mix of nature and community. I love tennis, hiking, and sharing long dinners with friends. At home, cooking and baking with my son, our “Chef in Residence”, is pure joy. We also love building Legos together; searching for the right piece always leads to the best conversations.

Travel is another passion, especially returning to my first home on the west coast of Turkey to visit family. Those moments of reconnection and reflection bring balance, perspective, and energy that sustain me in my teaching, editorial work, and everyday life.