



EMSL Experience Rekindles Passion for Science

Being the only physicist at a small private liberal arts college for women can be an isolating experience professionally, so to be able to rub shoulders with other physicists and scientists and work at a national research laboratory was a dream come true for Peggy Perozzo, a professor at Mary Baldwin College in Virginia.

Perozzo spent four weeks at EMSL working with scientist Ken Beck and his team and using EMSL's state-of-the-art equipment to conduct research in optics and photonics. "The equipment at EMSL and the collaboration with other scientists enabled me to carry out my experiments successfully," Perozzo continues. "The project I was involved in with Ken's group was very lucrative in terms of results, and we were able to publish a paper. This will reflect very favorably for me as I undergo my fourth year review."

Using a turnable light from a Nd:YAG pumped frequency-doubled dye laser at EMSL, Perozzo and her colleagues measured the photo-stimulated neutral bromine atom yields from KBr, NaCl, and KCl single crystals as a function of time-delay between two ultraviolet laser pulses. Two-laser excitation experiments specifically excite laser-generated transient centers with the bulk crystal. Such secondary excitation leads to enhanced Br and Br* neutral emission. A time-of-flight mass spectrometer determined the mass of the products and the amplified output was sent to a 500 MHz video amplifier and a digital oscilloscope. Velocity profiles of the yields were transformed into kinetic energy distributions. "The experiments were important because they verified the generality of the excitonic model of surface excitation," says Perozzo.

Perozzo learned a lot during her time at EMSL and made new collaborative links. "It was a wonderful experience to be in a research lab again," she says. "I spent the past 7-8 years teaching physics at three liberal arts colleges and did not have the opportunity to engage in research. Though I was constantly aiming to perfect my classes and stay informed of new advances in the sciences, teaching the same introductory courses year after year can make one a bit stale. Working with Ken's group was refreshing for me professionally. Being in a one-person department, I don't often get the opportunity to discuss scientific research, at least not in my field. So to be able to participate in brainstorming sessions and data analysis, and tweaking lasers and taking data was an exciting opportunity, and it rekindled my passion for science and the joy of investigation."

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