French connections: Manijeh Razeghi thinks globally

Part of Manijeh Razeghi’s heart and soul will always be in France. Though she came to the United States more than 17 years ago, she got her start in Paris, and all of her family is still there. She keeps up her French connections by collaborating with prestigious French universities — and recruiting their best students.

"The French students are hard working with good backgrounds," she says. "Our connection with France is growing all the time."

Razeghi, the Walter P. Murphy Professor of Electrical Engineering and Computer Science and director of the Center for Quantum Devices, received her MS, PhD, and ES science doctorate in physics from the University of Paris 6 and 11. She began her career in France, first as a senior research scientist and then head of the Exploratory Materials Lab at Thomson CSF, one of the leading international companies in semiconductor devices. At that time, she already had many connections with the academic world, especially with the Ecole Normale Supérieure in Paris and the Ecole Polytechnique, and she has continued those relationships to this day.

Each year Razeghi hosts several visiting student researchers from France. Many come from the Ecole Polytechnique, where every student must perform a four-month internship. Now every time Razeghi goes back to Paris, she interviews students who want to come to her lab. "From 8 o'clock in the morning, they come group by group," she says. "I want to be sure they know it's hard, and I want to see how good they are. This collaboration works well for me because they send very strong students, and working in my facility is hard. It's a very competitive area."

Some students have even decided to pursue their PhDs at Northwestern after completing their four-month internship. To formalize this type of arrangement, she is discussions with Ecole Normale Supérieure and Ecole Polytechnique to create a collaborative PhD program. Razeghi also receives master's students from the Université Pierre et Marie Curie for internships.

When students arrive in Razeghi's lab, they find that the work is challenging, but it ultimately pays off. Ecole Polytechnique alumni and current McCormick PhD student Simeon Bogdanov says that he heard about Razeghi’s lab from his adviser and then contacted Razeghi to see about doing a master’s thesis in her lab. "I was expecting a master’s thesis in six months," he says. "She said, 'No. You have to apply for a PhD.' It only took me 30 seconds to decide."

"I don't want to accept students for just six months," Razeghi laughs. "I want them for their PhD. I want to invest for the long term."

Another former Ecole Polytechnique student, Minh Binh Nguyen, says his time in Razeghi’s lab changed his life. "I realized that experimental work is just as important as the theoretical work. Professor Razeghi told me I could do theory here as long as it was applied to what we are doing. Once I saw the results in our group, I realized how lucky I am to have invaluable experimental data to build and to support a theory."

In addition to lab work, Razeghi’s students are involved in research with Nanovation, a French company founded by Razeghi’s daughter, F. Hosseini Teherani, who was the Eshbach Scholar at McCormick in 2008. Nanovation manufactures and commercializes high-quality zinc oxide thin-film coatings and nanostuctures. The collaboration between Razeghi’s lab and Nanovation has brought about new designs for white light-emitting diodes, which may eventually replace light bulbs for lighting applications.

With such a successful track record, Razeghi says she will continue to do her best to facilitate future collaborations with France. She is confident that these collaborations strengthen both McCormick’s relationship with France and the scientific community as a whole.

—Emily Ayshford
Robert R. McCormick School of Engineering and Applied Science

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