

Endowed Scholarships Support Outstanding Students

Graduating with a doctorate in environmental engineering and being hired by the Brookhaven National Laboratory in Long Island, New York, before Commencement might be enough accolades for most any one person.

But in his nearly three years at the University, India native Pramod Kulkarni, SI04, also helped develop a patented technology that can make our world safer, authored or co-authored 10 refereed publications, and presented research at 13 national and international conferences. In addition, one of his favorite activities at the University was mentoring undergraduates.

Mr.—now Dr.—Kulkarni, a recipient of the endowed Henry G. Schwartz Jr. Scholarship, received a bachelor's degree in civil engineering from the Walchand Institute of Technology and a master's degree in environmental engineering from the Indian Institute of Technology, both in Bombay. He began doctoral studies with Pratim Biswas at the University of Cincinnati in 1999 and moved with him and his research group to Washington University in 2000, when Professor Biswas was named the Stifel and Quinette Jens Professor of Environmental Engineering and director of the Environmental Engineering Science Program.

Dr. Kulkarni's graduate research focused on aerosols and particles. Many aerosols, nanoparticles suspended in air or gases, are of concern because they have deleterious effects on human health, air quality, and global climate. But there are also "good" aerosols, which enable environmentally benign technologies. The emergence of nanotechnology presents researchers the opportunity to develop "greener" technologies to clean up our air and water.

Conventional clean-up methods capture only about 30 to 40 percent of particles smaller than 20 nanometers in diameter. To improve that percentage, Dr. Kulkarni and Professor Biswas developed and patented a technology using soft-X-ray radiation to charge and capture nanometer-sized particles in devices that capture pollutants.

"With our new method, we can capture with efficiency often greater than 99 percent of these particles," says Dr. Kulkarni. "Technologies like these have increasing importance in control and inactivation of airborne viruses (anthrax and smallpox, for example) and in bio-aerosols and related technologies." The technology has drawn considerable interest from industry and government in America's war on terrorism.

With Professor Biswas, Dr. Kulkarni also developed a technique to improve the efficiency of conventional water filters by applying external electrical fields. Conventional filters have been shown to be ineffective in capturing biological particles such as



Barbara Carrow

Pramod Kulkarni, who completed requirements for a D.Sc. degree in December 2003, returned to campus for Commencement in May 2004 and stopped by the Urbauer Hall laboratory in which he conducted research as a graduate student.

Cryptosporidium parvum, a major public-health concern, especially after the major outbreak of cryptosporidiosis, a parasitic infection, in Milwaukee in 1992. (The infection, easily spread by contaminated food or water, causes diarrhea, nausea, vomiting, and stomach cramps.) Conventional filtering captures 10 to 20 percent of particles, whereas this new water-filtering method captures up to 95 percent.

Engineering is a staple in Dr. Kulkarni's family. His father, Srin, a recently retired civil engineer, and his mother, Hema, reside in India. Two younger sisters, Rohini and Ashwini, are engineers. And his wife, Debjani, a chemical engineer, just earned an M.B.A. degree in finance from the University of Maryland at College Park.

"I love the Washington University campus," Dr. Kulkarni says. "It's just the right size, with all the ingredients of an excellent academic environment, including the scholarship support graduate students like me need to complete doctoral work. Working with Dr. Biswas has been a wonderful experience. He has an effusive sense of energy and optimism that is quite contagious. He is a great mentor, and I owe him a lot for my development as an engineering scientist."

Professor Biswas notes, "Pramod has a very bright future and will continue making contributions to the field of nanoparticle technology and aerosol science and engineering."

One of the highest priorities in the *Campaign for Washington University* was to secure at least \$175 million in new endowment for scholarships. When the Campaign ended on June 30, \$185.1 billion in gifts and commitments had been received for that purpose, and more than 600 new endowed scholarships had been added. ♦

Tony Fitzpatrick contributed to this story.

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PRAMOD KULKARNI

3

Acknowledging the Generosity of Others

When Thomas E. Lowther, J.D. '62, M.L.A. '99, endowed the Thomas E. and Lois Lowther Law Scholarship during the *Campaign for Washington University*, he said he was doing so because “. . . all of my education beyond eighth grade was paid for in whole or in part through the generosity of others. This is my way of expressing appreciation to those who helped me. Lois and I hope that this will make the same difference for others aspiring to the profession of law.” Mr. Lowther is a partner in the St. Louis law firm The Stolar Partnership.