

Wisconsin Student Receives Fellowship for Adsorptive Filtration Research

Fall 2004 - Boris Lau is definitely an international student. He was raised in Hong Kong, finished high school in Toronto, attended college in Montreal, lives in Madison, Wisconsin, and presents his research in cities such as Minneapolis, Seattle, New York, Philadelphia, and Zurich, Switzerland.

But even as he traverses the globe, Boris remains steadfast in his dedication to water science.

As a second-year doctoral student in the Environmental Engineering Program at the University of Wisconsin-Madison, Boris has already submitted two papers for publication, served on three committees for the American Water Works Association, and held various assistantships at the University of Wisconsin, the Wisconsin Department of Natural Resources, McGill University, and the Hong Kong Environmental Protection Department.

An assistantship at the Department of Microbiology at the University of Hong Kong intensified his interest in environmental and public health research. In the summer of 1998 — the year that Hong Kong had several outbreaks of *E. coli* — Boris was part of the team that provided clinical testing using molecular biology techniques. The experience made him realize the importance of faster diagnosis in disease control and medical treatment, and strengthened his goal of “bridging the gap between environmental engineering and infectious disease epidemiology” — a goal that he has been working hard to achieve.

“Boris has been a highly productive M.S. and Ph.D. student,” said his graduate advisor, Dr. Gregory Harrington, Associate Professor in the Department of Civil and Environmental Engineering at the University of Wisconsin-Madison. “In his one and a half years as a Ph.D. student, Boris has produced more material than most of my Ph.D. students produce within 3 years.”

And he isn't stopping anytime soon.

At present, Boris is managing two research projects. The first is a surface water project that recently received funding from the American Water Works Association Research Foundation. It will evaluate protozoa removal using an innovative combination of analytical technologies and novel pilot plant testing protocols.

The second is a groundwater project to develop and apply nanoparticles as coating materials for better removal of arsenic and viruses from groundwater. According to Boris's research, granular filter media coated with aluminum oxide nanoparticles can enhance filtration performance by changing the media's surface properties. This research will provide insight into how adsorptive filtration technology can be used to reduce chemical and microbial risk.

Because of the potential of his adsorptive filtration research, Boris was awarded an NWRI Fellowship.

The Fellowship requires annual meetings with NWRI's Research Advisory Board, which, Boris said, "will be an excellent opportunity for me to learn and interact with outstanding researchers in my field. I believe that it is important to learn what others are doing so that I am not re-inventing the wheel."

After he graduates, Boris would like to pursue postdoctoral research on the use of particle characterization tools in monitoring treatment processes, and to learn more about membrane research.

As for his long-term plans, he doesn't know where his research will take him, but he does know that water science is in his future.

"At the end of a seminar given by Professor Jim Morgan in Madison on March 26, 2002," he said, "I went up to ask for his autograph on my copy of his *Aquatic Chemistry* textbook. This is what he wrote: 'Dear Boris, My best wishes for a successful "aquatic" career!' I like to keep this as one of my goals for the future."