

McGill Engineering Inaugurates Benedek Integrated Laboratories in Environmental Engineering



Dr. Andrew Benedek and Dr. Diana Mourato-Benedek

June 11, 2010 — The Faculty of Engineering has officially inaugurated its new *Benedek Integrated Laboratories in Environmental Engineering*. The state-of-the-art teaching and research facilities are located on the 5th Floor of the Macdonald Engineering Building.

The labs are a gift from McGill alumni Andrew Benedek, BEng'66, DSc'05, and Diana Mourato-Benedek, BSc '81, MSc'83, PhD'90. The couple toured the new space June 11, 2010 and then participated in a symposium on environmental engineering. A poster session was also organized to mark the event.

The Benedeks are recognized internationally for their scholarly contributions to the field of environmental engineering. Dr. Andrew Benedek is a leader in the development of advanced membrane technologies used for water and wastewater treatment. Fellow scientist and business partner, Dr. Diana Mourato-Benedek, has had an equally successful career developing water treatment technologies.

More recently, the husband-and-wife team have been concentrating their energies on developing alternative energy sources from waste materials.

The Benedek labs are housed in the Department of Civil Engineering and Applied Mechanics, but the research conducted there will involve active collaboration with star McGill scientists in many departments and units, such as the Department of Chemical Engineering, the Brace Centre for Water Resources Management and the Faculty of Agricultural and Environmental Sciences.

The Benedeks' gift will increase Civil Engineering's environmental engineering lab space by almost 40%. Major features of the ultra-modern labs include:

- chemical fume hoods and biological safety cabinets for the safe handling of toxic pollutants and pathogens;
- state-of-the-art temperature control and ventilation systems;
- a clean room for cutting-edge, sensitive analytical instruments;
- chemical resistant flooring and extensive, well-equipped bench areas to conduct experiments.

Emerging areas of study

The Benedek labs also boast a unique, cold temperature facility designed to develop innovative techniques to clean sites contaminated by toxic chemicals in cold, northern regions. Advances in this area can help to restore fragile northern ecosystems that have been damaged by oil production, mining operations and past military activities.

Because of the Benedeks' gift, McGill will be better placed to move further into new and emerging areas of study in the field of sustainable engineering. These include:

- molecular biology and nanotechnology applications to engineered environmental treatment processes;
- water and wastewater treatment to eliminate emerging pollutants, such as pharmaceuticals and endocrine disrupting chemicals;
- developing biosensors to detect pollutants and pathogens;
- greenhouse gas management;
- and research to mitigate climate change.

Last, but not least, the Benedek labs will enable McGill Engineering to better promote inquiry-based learning among students in programs where intensive laboratory experience forms an integral part of their course load and thesis projects.

The integrated laboratories will provide multiple benefits to McGill students and significantly advance the ability of McGill researchers to tackle environmental engineering challenges facing current and future generations.

In thanking the couple for their generous gift, Faculty of Engineering Dean Christophe Pierre said the new integrated laboratories will provide enormous benefit to McGill, to Canada and to the international academic community.

Many practical applications inspired by recent advances in nanotechnology, molecular biology and green chemistry will flow from the work undertaken in the Benedek labs. Examples of these applications include adaptive technologies for:

- resilient biological wastewater treatment systems;
- rapid and effective restoration of aquifers and brownfields contaminated with toxic industrial wastes;
- protecting water resources from chemical pollutants and pathogens;
- and carbon capture and storage of carbon dioxide emitted from industrial smokestacks.

Biographical Sketches of Dr. Andrew Benedek and Dr. Diana Mourato-Benedek

Dr. Andrew Benedek received his engineering degree (chemical) from McGill University, Montreal, Canada, in 1966 and then obtained a Ph.D. in chemical engineering from the University of Washington, Seattle, U.S.A., with a focus on wastewater treatment. During a brief period in the petrochemical industry, he came to see the effect of pollution on the environment and decided to specialize in environmental engineering for his post-graduate work. He then accepted a professorship at McMaster University, in Hamilton, Ontario, Canada where he taught and conducted research to find ways of improving water quality.

In 1978, Dr. Benedek coordinated the internationally recognized Wastewater Research Group, an organization known for its excellence in research in the field of water treatment technologies. Recognizing that overuse and contamination seriously threatened the world's water sources, he founded ZENON Environmental Inc., in 1980, a company dedicated to solving water quality problems, through the use of advanced membrane technologies. Under his leadership, ZENON has invented many of the key membrane technologies used for water and wastewater treatment and became the global leader in this field. Dr. Benedek continued to be the chairman and CEO of ZENON until its June 2006 sale to General Electric. At the time of the sale, the company had annual sales of approximately CDN \$250 Million and employed 1,500 people.

Currently, Dr. Benedek is a Managing Director of UTS Biogastechnik GmbH, a German pioneer in biogas generation from waste. Dr. Benedek is the recipient of many industrial and personal awards, including the prestigious Stockholm Water Industry award in 2003 and the Lee Kuan Yew Water Prize in 2008.



Dr. Andrew Benedek responds to a questioner at the McGill symposium that he and his wife Diana attended on the topic of environmental engineering. Dr. Benedek is a world leader in developing water and wastewater treatment technologies.



During her student days at McGill, Dr. Diana Mourato-Benedek was the very first laboratory manager at the newly renovated facility that now bears her and her husband's name. Today she is a successful researcher and international businesswoman.

Dr. Diana Mourato-Benedek, a three-time McGill graduate (BSc'81, MSc'83, PhD'90) is president of Benedek LLC, a California-based company that explores and invests in alternative energy technologies and is a Directing Manager of UTS-Biogastechnik, a German Company specialized in generating biogas (alternative energy) from wastes.

Dr. Mourato-Benedek's career in environmental sciences began in Montreal, where she was manager of R&D at Sanexen International, a company specializing in the treatment of PCB-contaminated wastes and soils.

She subsequently joined SNC-Lavalin as manager of site remediation, where she gained an international reputation for her work in the development and management of the Toronto Harbor Soil Decontamination Facility, one of the largest soil decontamination projects in Canada, integrating 4 different soil treatment technologies.

In 1992 Dr. Mourato-Benedek was hired by ZENON Environmental Inc. as a junior vice-president of the Technology Applications Group. In

1995, her work at ZENON led to the establishment of a municipal division. She and her team are credited with establishing ZENON as a key player in the municipal market, starting the Group from nothing to \$200M revenues in less than 10 years. When the company was purchased by General Electric in 2006, Dr. Mourato-Benedek had risen to the position of senior vice-president, and was responsible for the company's North and South American operations.

Considered a pioneer in the use of membranes to treat water and wastewater treatment, Dr. Mourato-Benedek's practices are now used in many municipal plants around the world for both water and sewage treatment.

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