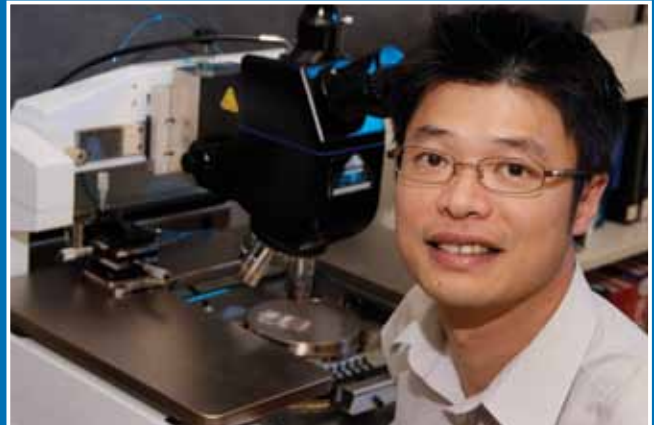




# IMPACT

## Making Small Biomedical Tools that Make Sense

Today's biomedical tools may be shrinking at a rapid rate, but there's nothing diminutive about their enhanced ability to improve medical diagnoses and treatment. At Dr. John Yeow's lab at the University of Waterloo, an interdisciplinary team of dedicated researchers are creating micro- and nano- devices that make a sizable contribution to the diagnosis and treatment of cancer and many other diseases.



Dr. John Yeow and his research team at the Advanced Micro-/Nano- Devices lab at the University of Waterloo, are working towards improving radiation techniques for cancer patients.

**D**r. Yeow developed a passion for developing and enhancing biomedical devices as a Ph.D. student at the University of Toronto, where he created a MEMS mirror to be integrated with an Optical Tomographic Imaging System for in vivo imaging. He has since become a leader in the design of biomedical micro/nano devices, and currently works with a talented team at the Advanced Micro-/Nano- Devices Lab at the University of Waterloo.

"Our work involves a great deal of collaboration with hospitals and cancer centres, as well as a diverse team of researchers, engineers, biophysicists and physicians," says Dr. Yeow. "It's very fulfilling to be able to work with such an incredibly multi-disciplinary team of experts." The Lab's projects include the development of a miniature x-ray generator to provide faster imaging capability with higher spatial resolution, as well as a capacitive micro-machined ultrasound transducer (CMUT) that can acquire clearer images more quickly.

A recent project involving the Grand River Regional Cancer Centre in Kitchener, Ontario has resulted in the development of a flexible and transparent radiation detector that measures ionizing radiation delivered to cancer patients during treatment. "The ability to measure radiation in real time helps us understand and characterize the effectiveness of these treatments," says Dr. Yeow. The detector will become commercially available to health care centres around the world through ARTsensing Inc., a spin-off company developed through Dr. Yeow's lab.

A dedicated teacher and mentor, Dr. Yeow has also guided a number of students through the intricacies of nanotechnology. One of his Ph.D. students, Andrew Logan, has been working on CMUT technology to provide faster higher resolution images, for applications such as endoscopic imaging. Logan won the Micalyne Microsystem Design Award in 2008 for his work on CMUT, an award that Dr. Yeow himself won in 2004.

As a user of CMC-delivered services since 1999, Dr. Yeow says that the organization provides the collaborative environment and support that's vital for discovery. "My group has been proud to be a lead client for much of the experimental equipment that CMC has developed over the years," he says. "Access to their equipment and services has been essential to our discoveries, and they truly are an important partner to our success." *cmc*