



# Bionic Innovation on the Horizon

The ability for everyone to walk up the stairs with ease.... to take long walks through the park....to live fully, regardless of injury or chronic illness. This is the vision of a dynamic team in Québec which brings together academic and industrial research.

Dr. Sawan explains how the bionic leg will be differentiated from other biomedical products currently on the market: "Most implants or artificial limbs do not enable the user to perform routine activities such as walking up the stairs with ease. Because they do not provide precise control signals, the motion of the limb is inhibited. This is a key focus for our research—enhancing the natural motion of the leg to enable greater ease in daily activities such as walking."

Dr. Mohamad Sawan, researchers at École Polytechnique de Montréal and Victhom Bionique Humaine are collaborating on microsystems research for biomedical application to improve the quality of life for individuals who have lost the use of their legs or other limbs. The team is developing a bionic leg to improve the range of motion and ease of movement for people who need to use artificial limbs. This innovation will include a wireless intelligent system embedded inside the bionic limb to monitor commands from an electronic implant that interfaces with the peripheral nervous system. The electronic device will monitor commands from the brain to the opposite limb to ensure coherent movement.

The bionic leg project was launched in June 2002, partnering Dr. Sawan's experienced PolySTIM Research Team with a dynamic biomedical start-up called Victhom Bionique Humaine in Québec City. Founded in 1999, the mission of Victhom is to develop and commercialize bionic devices that improve the quality of life for people with a physical dysfunction. The strong collaboration capitalizes upon the objectives and expertise of each organization, and will accelerate the commercialization of this microsystems research for biomedical application.

The PolySTIM team is currently targeting completion of prototype components by June 2003, and the development of a fully integrated implantable system by 2005. "Without CMC, university research could not be validated and brought to market as cost-effectively or quickly, and in some cases, not at all. The development of a working prototype is essential, especially in research for biomedical application."

CMC is proud to provide access to the tools and technology to help make this vision a reality, as the team prepares to take a microsystems innovation to market in 2005. *cmc*