



Man in Motion

From vehicles to magic wands,
new microsensors hit
global market

The automotive industry is expected to be the key market for Dr. Albert Leung's specialized microchip.

Inventions often have applications far beyond what the creator ever imagined. Take Dr. Albert Leung's accelerometer for example.

Developed at Simon Fraser University (SFU) over the past decade, the micromachine device detects and precisely measures motion via a heated "bubble" of air inside a thumbnail-sized microchip. It has no moving parts and can be manufactured at a fraction of the cost of competing devices.

An early prototype was manufactured with CMC support, with subsequent versions designed using tools and technologies provided by CMC. "We gained a lot of knowledge and experience on that initial run," says Dr. Leung.

The market potential for the accelerometer is dizzying. It can be used in any product that produces motion, tilt, force, impact or shock. The largest market will be the automotive sector, where it can be used in rollover detection, anti-theft alarms, airbags, suspension and headlight angle control. Then there are the applications Dr. Leung could not have imagined. Magic Labs in California are using the accelerometer in the new Harry Potter magic wand, which performs 12 different spells in response to hand movements.

"When choosing a research project, I always look at how many people will be able to use what I'm developing, and its relevance to industry," says Dr. Leung.

MEMSIC Inc. of Andover, Massachusetts was formed to commercialize Dr. Leung's invention, and expects to produce 20 million chips per month at full production. In September 2003, the company began shipping production quantities of the accelerometers to Autoliv Electronics, one of the largest manufacturers of safety systems for the automobile industry. SFU will share in royalties from the sales.

"CMC has enabled Canadian researchers to make tremendous strides in the area of MEMS. I anticipate taking full advantage of these products and services in my current research." cmc