

October 8, 2007

In synch with technology Saskatoon takes lead role in scientific research

By [BILL KAUFMANN](#), CALGARY SUN

SASKATOON -- For a few precious moments, scientific history in the making had conjured its own energy.

A clutch of researchers clustered around a computer monitor bearing a blotchy, magnified image of a zebra fish larva marvelled at the baby blue rings denoting mercury around its microscopic eyes.

"The mercury is in the water he's swimming around in," said Dr. Graham George, a Canada Research Chair at the University of Saskatchewan.

"It's a fascinating finding and a very difficult experiment. This is going into the Journal of Science."

Moments later, a powerful hum not unlike that of a vacuum cleaner fills the ether, heralding the acceleration of light particles through what's become the scientific pride of Saskatchewan and increasingly indispensable tool for Canadian researchers and business -- the National Synchrotron.

To Saskatchewanites, it's the ultimate proof their province is more than hay bales and pancake flat horizons.

Acting as a gargantuan microscope, the device produces light millions of times brighter than the sun, propelling it at nearly the speed of light to break down and analyze chemical compounds.

From above, inside the silver, futuristic structure on the north side of U of S campus, the Canadian Light Source Synchrotron appears as a jagged industrial ring sheathed in pipes, cable and wire with a series of cabled legs sprouting off in the form of beamlines, which direct light onto samples.

"I've heard it described as an open Swiss Army knife," says Matt Dalzell, spokesman for the facility who then breaks down the synchrotron process in layman's terms like he's done so many times before.

"It covers the entire spectrum. It's extremely concentrated on the light particles that hit a small area, very coherent like a laser and very tuneable to get the kind of light you want to use in an experiment.

"It does things you just can't do in any other place."

Its applications are incredibly varied, from analyzing the oils in French fries to determining the type of arsenic present in mine tailings -- the latter particularly relevant to activity in

northern Saskatchewan.

Progress on biomedical research has also been accelerated by the humming goliath as have studies aiding the oil industry.

How did Saskatoon acquire Canada's only synchrotron, which has scientists from afar beating a path to its beamlines since it began operating in 2004? Canada was the last of the G8 countries without such a device and with a push on to rectify that, "the people and the province of Saskatchewan wanted it more. It's the only city in the world that pumped money into this -- \$2.4 million," says Dalzell, adding the \$174-million project is among 40 others in the world.

Dr. William Thomlinson, the facility's director general, notes the Alberta government pumped in \$10 million to get the Synchrotron fired up.

"Alberta has been one of our lead provinces in the very first phase and we would anticipate there'd be additional support from Alberta," says Thomlinson.

The marvel's relevance to Alberta's energy industry and in dealing with global warming, he says, make that Wild Rose investment a wise one.

"There are the emissions processes and you have to worry about the effects of efficiency and the utilization of those resources and byproducts," he says.

Canadian Light Source has set aside 25% of the synchrotron's operations for commercial applications.

Bringing business around to see the light doesn't happen overnight, says Thomlinson.

"It takes years and years -- we're very aggressive in developing the industrial context -- maybe more than anywhere in the world."