

Digging Deep with Modern Technology

Dr. Jacob Hanley has good cause to be hopeful. With the help of a single piece of specialized equipment, the Saint Mary's University Geologist is poised to make ground-breaking contributions to the mining and exploration industry in Canada's Northwest Territories.

"We now have the tools to examine important microscopic features of mineral deposits without destroying them," he says, pointing to the laser Raman microscope in his Mineral Resources Lab at Saint Mary's. Funded in part by Nova Scotia Research and Innovation Trust (NSRIT), and in part by the Canada Foundation for Innovation (CFI), the Raman microscope will lead the way in helping the Northwest Territories Government better understand the origins of silver, uranium and other strategic metals in historically significant mining sites.

"I'm very optimistic about what we will find," says Dr. Hanley. "Mining valuable metals has sustained the northern economy for more than a century."

For most of that time, the general approach to mining has been 'harvest and move', with entire towns waxing and waning as mines ran the gamut from boom to bust. Today, there's a new awareness that old mining sites may be far more than symbols of Canada's rich mining tradition. With modern technologies like the laser Raman microscope, long forgotten mines could well be the key to a strong northern economy.

"The Northwest Territories has the advantage of polymetallic deposits that include silver, cobalt, copper, uranium and antimony," says Dr. Hanley. "Metals go in and out of demand, so there's a positive economic impact to developing an area that has more than one type of deposit."

In working with the Northwest Territories Government, Dr. Hanley's primary goals are to train Saint Mary's University's Geology students in innovative methods of mineral exploration, improve the quality of their exploration toolboxes, and attract new interest from industry.

"Laser Raman spectroscopy is a non-destructive way of identifying the microscopic pockets of fluids that are trapped inside rock --- the actual fluids that deposited the ore metals," he says. "With this technology, we don't need to grind up a rock to analyze it."

