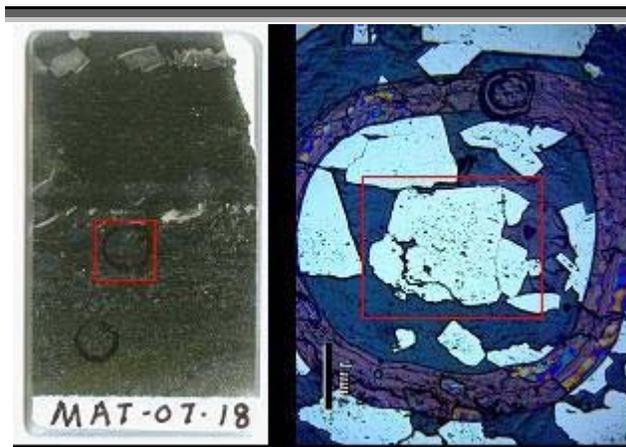


**2007-4: Tracers of volcanogenic fertility in volcanic hiatus indicators**

Volcanic hiatus indicators, such as concentrations of exhalite or chert (silicic tuff?) or graphitic clay horizons, are usually considered as favourable elements for the presence of volcanogenic mineralisation. This current project focuses more specifically on case studies that can help recognise ways for identifying fertile marker horizons. To this end, the testing of two sites was proposed. These sites are known to contain hiatus indicators in association with volcanogenic mineralisation.

The subject of the first case study was the Tortigny deposit in the Troilus-Frotet volcanic belt. It contains a region-wide graphitic clay horizon. The horizon is locally associated with a small cluster of VMS deposits. Samples were collected in the field at a range of distances from the deposit. In the Tortigny case, the carbon signature and the metal content can be tested in the clays. The analytical results helped identify a trend for carbon, with higher concentrations located at the deposit. As for the metal content, the mineralised zones are associated with a marked depletion in arsenic, nickel and cobalt. Although fragmentary, these results help identify possible future lines of attack.



*A pyrite grain selected from the Key Tuffite, Matagami for micro-XRF analysis.*

The subject of the second case study was the Key Tuffite in Matagami with sizeable regional extension. Using samples from several drill holes belonging to the mining company XStrata Zinc, this study helped to test changes in the composition of pyrite contained in the Key Tuffite (North, South and West Flanks) and in the pyrite inclusions to identify trends on approaching the mineralised zones. Using a micro-XRF at UQAC, composition maps were made of the selected pyrite grains. The main conclusions of this phase of the study are that pyrite grains have high levels of Cu only in the most proximal zones, whereas Zn values can be high up to 1000 m from the deposit.

The project makes it possible to define several new avenues of research that could be pursued to define practical guidelines for VMS exploration. Follow-up work to this project is currently the subject of a doctoral thesis at UQAC as part of a CONSOREM-DIVEX partnership.

<b>Project 2007-4: Summary</b>	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• To document the characteristics of exhalites and to develop a tool for identifying fertile horizon indicators.</li> <li>• To test trace element signatures present in the graphite and the pyrite as vectors of mineralisation.</li> </ul>
<b>Results</b>	<ul style="list-style-type: none"> <li>• Case studies of the Tortigny deposit and in the Matagami mining camp</li> <li>• Trend for carbon to be higher close to mineralised zones (Tortigny).</li> <li>• Tortigny clays are depleted in As, Ni, Co in the mineralised zones.</li> <li>• High Cu values in the Matagami pyrites appear to be more indicative of the proximity of mineralisation than high Zn values.</li> </ul>
<b>Innovations</b>	<ul style="list-style-type: none"> <li>• New avenues of research for determining hydrothermal overprint of volcanic hiatus indicators.</li> </ul>