

**Project 2003-5B: Geochemical signature of sulphide masses as tracers of fertile mineralisation environments**

This project is part of a ground-breaking study to establish the fertility of a hydrothermal system from the trace element signature contained in pyrite, measured using an LA-ICP-MS.

Established deposits were sampled in the Abitibi Subprovince to compare pyrite from systems characterised as fertile with pyrites from less fertile to sterile systems.

Preliminary results indicate consistent behaviour for elements Cr, Co, Ni, As and Sb considered to be in stoichiometric replacement in the pyrite structure. Characterisation of the pyrite compositional fingerprints is still at an experimental stage and work will continue in the future.



*A new machine at the cutting edge of technology, the LA-ICP-MS, is used to determine trace elements contained in pyrite.*

<b>Summary: Project 2003-5B</b>	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• To establish the trace element signature of fertile sulphide masses.</li> <li>• To evaluate a new tool and a new method for characterising hydrothermal fertility.</li> </ul>
<b>Results</b>	<ul style="list-style-type: none"> <li>• Quantification of the trace element content of typical fertile and sterile sulphides in the Abitibi using ICP-MS Laser;</li> <li>• Pyrite analyses;</li> <li>• Preliminary results:                             <ul style="list-style-type: none"> <li>- Coherent behaviour for the Cr, Co, Ni, As, Sb suite;</li> <li>- Metamorphic recrystallisation does not appear to alter the original pyrite signature.</li> </ul> </li> </ul>
<b>Tools and Innovations</b>	<ul style="list-style-type: none"> <li>• A new method for characterising hydrothermal fluids;</li> <li>• A tool in development for characterising hydrothermal fertility.</li> </ul>